

Transport Canada Holdover Time (HOT) Guidelines Winter 2024-2025

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This document should be used in conjunction with the most recent version of the TP 14052E - *Guidelines for Aircraft Ground Icing Operations*. These two documents complement each other and should be used together for a thorough understanding of the subject matter.

Questions or comments on the content of the holdover time guidelines should be addressed to Transport Canada Civil Aviation Communication Centre
Telephone 1-800-305-2059 Facsimile 613-957-4208 e-mail services@tc.gc.ca

To receive notification of HOT Guideline updates, subscribe to or update your e-news subscription at the following Transport Canada Web site: <http://wwwapps.tc.gc.ca/Comm/5/ListServ/menu.aspx>. Subscribing to e-news will require an email address and selecting Holdover Time (HOT) Guidelines under Publications / Air Transportation / Aviation Safety - Safety Information.

CHANGE CONTROL RECORDS

This page indicates any changes made to individual pages within the document. Changed pages have sidebars to assist in identifying where significant changes have been made on these pages.

It is the responsibility of the end user to periodically check the following website for updates:
<https://tc.canada.ca/en/aviation/general-operating-flight-rules/holdover-time-hot-guidelines-icing-anti-icing-aircraft>.

<i>REVISION</i>	<i>DATE</i>	<i>DESCRIPTION OF CHANGES</i>	<i>AFFECTED PAGES</i>	<i>AUTHOR</i>

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HOW TO USE THIS DOCUMENT

Complementary Documents

This document should be used in conjunction with the most recent version of the TP 14052E - Guidelines for Aircraft Ground Icing Operations. These two documents complement each other and should be used together for a thorough understanding of the subject matter.

Beginning in the winter of 2021-22, Transport Canada has published an annual database of degree-specific holdover times (DSHOTs) for snow and snow-related precipitation conditions (including snow, snow grains, and snow pellets). The DSHOT database contains an expanded set of snow precipitation HOTS for all undiluted Type II, III and IV anti icing fluids listed in the Transport Canada HOT Guidelines. This database can be found at <https://tc.canada.ca/en/aviation/general-operating-flight-rules/holdover-time-hot-guidelines-icing-anti-icing-aircraft>. Guidance and conditions on the use of DSHOT data can be found in Advisory Circular (AC) 700-061 at <https://tc.canada.ca/en/aviation/reference-centre/advisory-circulars/advisory-circular-ac-no-ac-700-061>.

Applicability

A new version of this document is published for each winter operating season, typically in early August preceding the winter operating season. Updates to the winter's document may be published at any time after the Original Issue document is published. When a new document is published, either mid-season or each new season, the previous document becomes obsolete. It is the responsibility of the end user to periodically check for document updates on the following website: <https://tc.canada.ca/en/aviation/general-operating-flight-rules/holdover-time-hot-guidelines-icing-anti-icing-aircraft>.

Main Document Structure and Content

This document is divided into several sections.

- Change Control Records: Provides details of any changes made to the document in mid-season document updates.
- Table of Contents: Provides a list of sections, tables, and appendices in the document.
- How to Use This Document: Provides top-level guidance on how to use the document.
- Highlights and Changes for Winter 2024-2025: Describes key changes made to the document for the current winter operating season.
- Holdover Time Guidelines: Series of tables that provide estimated holdover times (in hh:mm). Fluids are divided by fluid type (Type I, II, III, and IV), aircraft construction materials (Type I only), fluid brand (Type II, III, IV), aircraft rotation speed (Type III only), and fluid application temperature (Type III only). Columns in the tables divide the information by precipitation type; rows in the tables divide the information by temperature and fluid dilution. Notes in the tables refer to additional information on the specific HOTS. Cautions that apply to all tables in a section are located on the flysheets before each section.
- Allowance Times Tables: Tables that provide allowance times (in minutes) for Type III and Type IV fluids. Rows in the tables divide the information by precipitation type; columns in the tables divide the information by temperature. Notes in the tables refer to additional information on the specific allowance times. Cautions that apply to all allowance times tables are located on the flysheet before the section. Use of these tables must be validated by first confirming that fluid being used is listed in the "List of Fluids Validated for Use with Allowance Times".
- Supplementary Guidance: Series of tables that provide supplementary information for using the holdover time guidelines and allowance times tables. Includes a table for estimating snowfall intensity from prevailing visibility, tables of fluid information (one table per fluid type), and tables of fluid application guidance (by fluid type).

Appendices

The appendices contain complementary content.

- Appendix A: Provides adjusted holdover time guidelines (holdover time guidelines and allowance times tables) for operations when flaps and slats are deployed prior to de/anti-icing.
- Appendix B: Provides information on laboratories involved in testing de/anti-icing fluids.
- Appendix C: Provides the latest de/anti-icing fluid manufacturer contact information at the time of publication.

HIGHLIGHTS AND CHANGES FOR WINTER 2024-2025

CHANGED THIS YEAR

The principal changes from this year are briefly indicated herein.

How to Use this Document

- The allowance time tables section has been expanded to describe the purpose of the new list of fluids validated for use with allowance times table.

Holdover Time Tables

- Fluid specific HOT guidelines have been created for four new fluids: ALAB International PROFLIGHT PG4 (Type IV), Chongqing Joba Chemical Co FW-IV (Type IV), MKS DevO Chemicals COREICEPHOB TYPE-IV PG (Type IV), and Shaanxi Cleanway Cleansurface IV (Type IV).
- Fluid specific HOT Guidelines have been adjusted for two existing fluids: MKS DevO Chemicals COREICEPHOB Type II (Type II) and ALAB International PROFLIGHT EG4.
- The HOT guidelines for Clariant Safewing MP II FLIGHT PLUS (Type II), JSC RCP Nordix Defrost PG 2 (Type II), AllClear ClearWing ECO (Type IV), Clariant Max Flight AVIA (Type IV), Clariant Max Flight SNEG (Type IV), and Clariant Safewing EG IV NORTH (Type IV) have been removed.
- Increases have been made to the Type II generic holdover times in freezing drizzle and in light freezing rain at -3°C and above, as a result of the removed fluids.
- Increases have been made to the Type IV generic holdover times in snow and in freezing fog below -8 to -14°C as a result of removed fluids.
- Several decreases have been made to the Type IV generic holdover times in snow and in freezing fog as a result of the newly added fluids.
- A new “Snow mixed with Freezing Fog” column has been added to all Type I, II, III, and IV HOT tables with fluid specific values. The Generic “Snow mixed with Freezing Fog” table has been removed.
- A note was added in all Type I, II, III, and IV HOT tables indicating that the visibility table must be used in conditions of snow mixed with freezing fog in order to confirm the snowfall intensity.
- The Type I column in the Active Frost HOT table has been split into two to separate aluminum and composite HOTs.
- A caution relating to cold-soaked wing with the use of 50/50 fluids from the Type II/IV fluid application table was added to the Type II and IV fluid HOT table cautions.
- A caution relating to shortened protection times in heavy weather conditions that applies to all Type I, II, III, and IV HOT tables has been updated to include blowing snow.
- A caution was removed for all Type IV fluids indicating that the HOT tables are for use with aircraft conforming to the SAE AS5900 high speed aerodynamic test criterion.

Allowance Times Tables

- The table “List of Fluid Validated for Use with Allowance Times” was added indicating which Type III and IV fluids are validated for use with which allowance times.
- The condition Moderate Ice Pellets Mixed with Moderate Snow has been added to the Type IV allowance time tables.
- The condition Light Ice Pellets Mixed with Light Rain and Light Snow has been added to the Type IV allowance time tables.
- The condition Light Ice Pellets Mixed with Light Freezing Rain and Light Snow has been added to the Type IV allowance time tables.

- A new “Above 0°C” column was added to all allowance time tables and the tables were restructured accordingly. Notes limiting certain conditions to above 0°C have been removed
- The Light Ice Pellets and Moderate Ice Pellets allowance times for Type IV EG fluids have been expanded in temperature below -5 to -10°C.
- The precipitation type column and the METAR codes column have been merged into a single column.
- The small hail note was updated to provide clarity and the corresponding small hail METAR codes have been added to all conditions in the tables.
- The note regarding the 90 minute rule has been updated to add clarity and to include the new allowance time conditions.

Supplemental Guidance

- The list of fluids (Tables 49, 50, 51 and 52) has been updated to reflect the latest information available on all de/anti-icing fluids.

UNCHANGED FROM PREVIOUS YEAR**Supplemental Guidance**

- The fluid application tables are unchanged.

ACTIVE FROST HOLDOVER TIME (HOT) GUIDELINES WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.

TABLE 1: ACTIVE FROST HOLDOVER TIMES FOR SAE TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS¹

Outside Air Temperature ^{2,3,4}	Type I Aluminum	Type I Composite	Outside Air Temperature ^{3,4}	Concentration Fluid/Water By % Volume	Type II	Type III ⁵	Type IV			
-1 °C and above (30 °F and above)	0:45	0:35	-1 °C and above (30 °F and above)	100/0	8:00	2:00	12:00			
				75/25	5:00	1:00	5:00			
				50/50	2:00	0:30	3:00			
			below -1 to -3 °C (below 30 to 27 °F)	0:45	0:35	below -1 to -3 °C (below 30 to 27 °F)	100/0	8:00	2:00	12:00
							75/25	5:00	1:00	5:00
							50/50	1:30	0:30	3:00
			below -3 to -10 °C (below 27 to 14 °F)	0:45	0:35	below -3 to -10 °C (below 27 to 14 °F)	100/0	8:00	2:00	10:00
							75/25	4:00	1:00	5:00
below -10 to -14 °C (below 14 to 7 °F)	0:45	0:35	below -10 to -14 °C (below 14 to 7 °F)	100/0	6:00	2:00	6:00			
				75/25	1:00	1:00	1:00			
below -14 to -21 °C (below 7 to -6 °F)	0:45	0:35	below -14 to -21 °C (below 7 to -6 °F)	100/0	3:00	2:00	6:00			
below -21 to -25 °C (below -6 to -13 °F)			100/0	2:00	2:00	4:00				
below -25 °C to LOU (below -13 °F to LOU)	0:45	0:35	below -25 °C (below -13 °F)	100/0	No Holdover Time Guidelines Exist					

NOTES

- 1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the List of Qualified Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 49-Table 52). Any restrictions on the use of the fluid have to be identified and applied.
- 2 Type I Fluid / Water Mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.
- 3 Ensure that the lowest operational use temperature (LOU) is respected.
- 4 Changes in outside air temperature (OAT) over the course of longer frost events can be significant; the appropriate holdover time to use is the one provided for the coldest OAT that has occurred in the time between the de/anti-icing fluid application and takeoff.
- 5 To use the Type III fluid frost holdover times, the fluid brand being used must be known. AllClear AeroClear MAX must be applied unheated.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 9.

HOLDOVER TIME (HOT) GUIDELINES FOR SAE TYPE I FLUIDS WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- The time of protection will be shortened in heavy weather conditions, heavy precipitation rates, or high moisture content.
- High wind velocity, jet blast or blowing snow may reduce holdover time below the lowest time stated in the range.
- The holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.

TABLE 2: HOLDOVER TIMES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF ALUMINUM¹

Outside Air Temperature ^{2,3}	Freezing Fog, Freezing Mist ⁴ , or Ice Crystals ⁵	Snow mixed with Freezing Fog ⁶	Very Light Snow, Snow Grains or Snow Pellets ^{7,8,9}	Light Snow, Snow Grains or Snow Pellets ^{7,8,9}	Moderate Snow, Snow Grains or Snow Pellets ^{7,9}	Freezing Drizzle ¹⁰	Light Freezing Rain	Rain on Cold-Soaked Wing ¹¹	Other ¹²
-3°C and above (27°F and above)	0:11 - 0:17	0:05 - 0:08	0:18 - 0:22	0:11 - 0:18	0:06 - 0:11	0:09 - 0:13	0:04 - 0:06	0:02 - 0:05	CAUTION: No holdover time guidelines exist
below -3 to -6°C (below 27 to 21°F)	0:08 - 0:13	0:04 - 0:06	0:14 - 0:17	0:08 - 0:14	0:05 - 0:08	0:05 - 0:09	0:04 - 0:06		
below -6 to -10°C (below 21 to 14°F)	0:06 - 0:10	0:03 - 0:05	0:11 - 0:13	0:06 - 0:11	0:04 - 0:06	0:04 - 0:07	0:02 - 0:05		
below -10°C (below 14°F)	0:05 - 0:09	0:02 - 0:03	0:07 - 0:08	0:04 - 0:07	0:02 - 0:04				

NOTES

- 1 These holdover times apply to aircraft with critical surfaces constructed predominantly or entirely of aluminum materials that have demonstrated satisfactory use of these holdover times. Takeoff after the longest applicable holdover time has been exceeded is not permitted for Type I fluids.
- 2 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.
- 3 Ensure that the lowest operational use temperature (LOUT) is respected.
- 4 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 5 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 6 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 7 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 8 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 9 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 10 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 11 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 12 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 11.

TABLE 3: HOLDOVER TIMES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF COMPOSITES¹

Outside Air Temperature ^{2,3}	Freezing Fog, Freezing Mist ⁴ , or Ice Crystals ⁵	Snow mixed with Freezing Fog ⁶	Very Light Snow, Snow Grains or Snow Pellets ^{7,8,9}	Light Snow, Snow Grains or Snow Pellets ^{7,8,9}	Moderate Snow, Snow Grains or Snow Pellets ^{7,9}	Freezing Drizzle ¹⁰	Light Freezing Rain	Rain on Cold-Soaked Wing ¹¹	Other ¹²
-3°C and above (27°F and above)	0:09 - 0:16	0:02 - 0:04	0:12 - 0:15	0:06 - 0:12	0:03 - 0:06	0:08 - 0:13	0:04 - 0:06	0:01 - 0:05	CAUTION: No holdover time guidelines exist
below -3 to -6°C (below 27 to 21°F)	0:06 - 0:08	0:02 - 0:04	0:11 - 0:13	0:05 - 0:11	0:02 - 0:05	0:05 - 0:09	0:04 - 0:06		
below -6 to -10°C (below 21 to 14°F)	0:04 - 0:08	0:02 - 0:04	0:09 - 0:12	0:05 - 0:09	0:02 - 0:05	0:04 - 0:07	0:02 - 0:05		
below -10°C (below 14°F)	0:04 - 0:07	0:02 - 0:03	0:07 - 0:08	0:04 - 0:07	0:02 - 0:04				

NOTES

- 1 These holdover times apply to newer aircraft with critical surfaces constructed predominantly or entirely of composite materials. Takeoff after the longest applicable holdover time has been exceeded is not permitted for Type I fluids.
- 2 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.
- 3 Ensure that the lowest operational use temperature (LOUT) is respected.
- 4 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 5 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 6 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 7 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 8 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 9 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 10 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 11 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 12 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 11.

HOLDOVER TIME (HOT) GUIDELINES FOR SAE TYPE II FLUIDS WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable table cell.
- The time of protection will be shortened in heavy weather conditions, heavy precipitation rates, or high moisture content.
- High wind velocity, jet blast or blowing snow may reduce holdover time below the lowest time stated in the range.
- The holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold-soaked wing, the 50/50 dilutions of Type II or IV shall not be used for the anti-icing step because fluid freezing may occur.

TABLE 4: GENERIC HOLDOVER TIMES FOR SAE TYPE II FLUIDS¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Snow, Snow Grains or Snow Pellets ^{6,7,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27°F and above)	100/0	0:55 - 1:50	0:20 - 0:40	0:30 - 0:55	0:35 - 1:05	0:25 - 0:35	0:07 - 0:45	CAUTION: No holdover time guidelines exist
	75/25	0:40 - 1:10	0:15 - 0:25	0:15 - 0:30	0:25 - 0:40	0:15 - 0:25	0:04 - 0:25	
	50/50	0:15 - 0:30	0:05 - 0:10	0:07 - 0:15	0:09 - 0:15	0:06 - 0:09		
below -3 to -8°C (below 27 to 18°F)	100/0	0:30 - 0:45	0:15 - 0:30	0:20 - 0:40	0:20 - 0:45	0:15 - 0:20		
	75/25	0:25 - 0:55	0:09 - 0:15	0:10 - 0:25	0:15 - 0:30	0:08 - 0:15		
below -8 to -14°C (below 18 to 7°F)	100/0	0:30 - 0:45	0:10 - 0:25	0:15 - 0:30	0:20 - 0:45 ¹²	0:15 - 0:20 ¹²		
	75/25	0:25 - 0:55	0:07 - 0:15	0:09 - 0:20	0:15 - 0:30 ¹²	0:08 - 0:15 ¹²		
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:20	0:01 - 0:05	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:15 - 0:20	0:00 - 0:02	0:01 - 0:03				
below -25°C to LOU ¹³ (below -13°F to LOU)	100/0	0:15 - 0:20	0:00 - 0:00	0:00 - 0:01				

NOTES

- 1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the Type II Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 50). Any restrictions on the use of the fluid have to be identified and applied.
- 2 Ensure that the lowest operational use temperature (LOU) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 12 No holdover time guidelines exist for this condition below -10°C (14°F).
- 13 If the LOU is unknown, no holdover time guidelines exist below -25°C (-13°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 5: TYPE II HOLDOVER TIMES FOR ABAX ECOWING AD-2

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:20 - 3:00	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:40 - 1:15	0:40 - 1:40	0:30 - 0:45	0:09 - 1:25	CAUTION: No holdover time guidelines exist
	75/25	1:15 - 1:25	0:20 - 0:40	1:45 - 2:00	0:55 - 1:45	0:25 - 0:55	0:35 - 1:05	0:20 - 0:30	0:04 - 0:50	
	50/50	0:15 - 0:30	0:05 - 0:10	0:35 - 0:40	0:15 - 0:35	0:07 - 0:15	0:09 - 0:15	0:06 - 0:09		
below -3 to -8°C (below 27 to 18°F)	100/0	0:45 - 2:30	0:25 - 0:45	2:00 - 2:00	1:00 - 2:00	0:30 - 1:00	0:25 - 1:10	0:20 - 0:30		
	75/25	0:35 - 1:55	0:20 - 0:35	1:40 - 2:00	0:50 - 1:40	0:25 - 0:50	0:15 - 0:55	0:20 - 0:35		
below -8 to -14°C (below 18 to 7°F)	100/0	0:45 - 2:30	0:20 - 0:40	1:45 - 2:00	0:55 - 1:45	0:30 - 0:55	0:25 - 1:10 ¹¹	0:20 - 0:30 ¹¹		
	75/25	0:35 - 1:55	0:20 - 0:35	1:35 - 2:00	0:50 - 1:35	0:25 - 0:50	0:15 - 0:55 ¹¹	0:20 - 0:35 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:40	0:01 - 0:05	0:20 - 0:30	0:07 - 0:20	0:02 - 0:07				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:15 - 0:40	0:00 - 0:02	0:09 - 0:15	0:03 - 0:09	0:01 - 0:03				
below -25 to -27°C (below -13 to -17°F)	100/0	0:15 - 0:40	0:00 - 0:00	0:05 - 0:07	0:01 - 0:05	0:00 - 0:01				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 6: TYPE II HOLDOVER TIMES FOR AVIATION XI'AN HIGH-TECH CLEANWING II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27 °F and above)	100/0	0:55 - 1:50	0:20 - 0:40	1:35 - 1:55	0:55 - 1:35	0:30 - 0:55	0:35 - 1:05	0:25 - 0:35	0:10 - 0:55	CAUTION: No holdover time guidelines exist
	75/25	0:50 - 1:20	0:20 - 0:35	1:20 - 1:40	0:45 - 1:20	0:25 - 0:45	0:35 - 1:00	0:20 - 0:30	0:07 - 0:50	
	50/50	0:35 - 1:00	0:10 - 0:20	0:50 - 1:05	0:25 - 0:50	0:15 - 0:25	0:20 - 0:40	0:10 - 0:20		
below -3 to -8°C (below 27 to 18°F)	100/0	0:45 - 1:50	0:15 - 0:30	1:20 - 1:35	0:40 - 1:20	0:25 - 0:40	0:30 - 0:55	0:20 - 0:25		
	75/25	0:40 - 1:45	0:20 - 0:35	1:20 - 1:35	0:45 - 1:20	0:25 - 0:45	0:35 - 0:40	0:20 - 0:25		
below -8 to -14°C (below 18 to 7°F)	100/0	0:45 - 1:50	0:15 - 0:25	1:05 - 1:20	0:35 - 1:05	0:20 - 0:35	0:30 - 0:55 ¹¹	0:20 - 0:25 ¹¹		
	75/25	0:40 - 1:45	0:20 - 0:35	1:20 - 1:35	0:45 - 1:20	0:25 - 0:45	0:35 - 0:40 ¹¹	0:20 - 0:25 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:20 - 0:50	0:09 - 0:20	0:45 - 1:00	0:25 - 0:45	0:15 - 0:25				
below -18 to -25°C (below 0 to -13°F)	100/0	0:20 - 0:50	0:05 - 0:10	0:30 - 0:35	0:15 - 0:30	0:07 - 0:15				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 7: TYPE II HOLDOVER TIMES FOR CLARIANT SAFEWING MP II FLIGHT

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	3:30 - 4:00	0:45 - 1:10	2:00 - 2:00	1:35 - 2:00	1:00 - 1:35	1:20 - 2:00	0:45 - 1:25	0:10 - 1:30	CAUTION: No holdover time guidelines exist
	75/25	1:50 - 2:45	0:30 - 1:00	2:00 - 2:00	1:20 - 2:00	0:40 - 1:20	1:10 - 1:30	0:30 - 0:55	0:06 - 0:50	
	50/50	0:55 - 1:45	0:09 - 0:20	0:45 - 0:55	0:25 - 0:45	0:10 - 0:25	0:20 - 0:30	0:10 - 0:15		
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 - 1:45	0:35 - 1:00	2:00 - 2:00	1:15 - 2:00	0:45 - 1:15	0:35 - 1:30	0:25 - 0:45		
	75/25	0:25 - 1:05	0:20 - 0:40	1:45 - 2:00	0:55 - 1:45	0:30 - 0:55	0:25 - 1:10	0:20 - 0:35		
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 - 1:45	0:30 - 0:50	1:50 - 2:00	1:05 - 1:50	0:40 - 1:05	0:35 - 1:30 ¹¹	0:25 - 0:45 ¹¹		
	75/25	0:25 - 1:05	0:15 - 0:30	1:20 - 1:40	0:40 - 1:20	0:20 - 0:40	0:25 - 1:10 ¹¹	0:20 - 0:35 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 0:50	0:06 - 0:20	1:10 - 1:40	0:25 - 1:10	0:08 - 0:25				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:30 - 0:50	0:02 - 0:07	0:30 - 0:40	0:10 - 0:30	0:03 - 0:10				
below -25 to -29°C (below -13 to -20°F)	100/0	0:30 - 0:50	0:01 - 0:05	0:20 - 0:30	0:07 - 0:20	0:02 - 0:07				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 8: TYPE II HOLDOVER TIMES FOR CRYOTECH POLAR GUARD® II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:50 - 4:00	0:50 - 1:25	2:00 - 2:00	1:55 - 2:00	1:05 - 1:55	1:35 - 2:00	1:15 - 1:30	0:15 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	2:30 - 4:00	0:30 - 1:05	2:00 - 2:00	1:25 - 2:00	0:40 - 1:25	1:40 - 2:00	0:40 - 1:10	0:09 - 1:40	
	50/50	0:50 - 1:25	0:07 - 0:20	1:10 - 1:35	0:25 - 1:10	0:10 - 0:25	0:20 - 0:45	0:09 - 0:20		
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 - 2:30	0:35 - 1:05	2:00 - 2:00	1:25 - 2:00	0:50 - 1:25	0:35 - 1:35	0:35 - 0:45		
	75/25	0:40 - 1:30	0:25 - 0:50	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	0:25 - 1:05	0:35 - 0:45		
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 - 2:30	0:30 - 0:50	2:00 - 2:00	1:10 - 2:00	0:40 - 1:10	0:35 - 1:35 ¹¹	0:35 - 0:45 ¹¹		
	75/25	0:40 - 1:30	0:20 - 0:45	2:00 - 2:00	0:55 - 2:00	0:25 - 0:55	0:25 - 1:05 ¹¹	0:35 - 0:45 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:25 - 0:50	0:08 - 0:25	1:35 - 2:00	0:35 - 1:35	0:10 - 0:35				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:25 - 0:50	0:03 - 0:10	0:40 - 0:55	0:15 - 0:40	0:04 - 0:15				
below -25 to -30.5°C (below -13 to -23°F)	100/0	0:25 - 0:50	0:02 - 0:05	0:25 - 0:30	0:07 - 0:25	0:02 - 0:07				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 9: TYPE II HOLDOVER TIMES FOR KILFROST ABC-K PLUS

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Snow, Snow Grains or Snow Pellets ^{5,6,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:15 - 3:45	0:45 - 1:15	1:00 - 1:40	1:50 - 2:00	1:00 - 1:25	0:20 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	1:40 - 2:30	0:25 - 0:50	0:35 - 1:10	1:25 - 2:00	0:50 - 1:10	0:15 - 2:00	
	50/50	0:35 - 1:05	0:05 - 0:10	0:07 - 0:15	0:20 - 0:30	0:10 - 0:15		
below -3 to -8°C (below 27 to 18°F)	100/0	0:30 - 1:05	0:40 - 1:10	0:55 - 1:30	0:25 - 1:00	0:15 - 0:35		
	75/25	0:25 - 1:25	0:25 - 0:50	0:35 - 1:05	0:20 - 0:55	0:09 - 0:30		
below -8 to -14°C (below 18 to 7°F)	100/0	0:30 - 1:05	0:40 - 1:05	0:50 - 1:25	0:25 - 1:00 ¹¹	0:15 - 0:35 ¹¹		
	75/25	0:25 - 1:25	0:25 - 0:50	0:35 - 1:05	0:20 - 0:55 ¹¹	0:09 - 0:30 ¹¹		
below -14 to -18°C (below 7 to 0 °F)	100/0	0:30 - 0:55	0:01 - 0:05	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:30 - 0:55	0:00 - 0:02	0:01 - 0:03				
below -25 to -29°C (below -13 to -20°F)	100/0	0:30 - 0:55	0:00 - 0:00	0:00 - 0:01				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 10: TYPE II HOLDOVER TIMES FOR KILFROST ICE CLEAR II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:25 - 2:25	0:30 - 1:00	2:00 - 2:00	1:20 - 2:00	0:40 - 1:20	1:00 - 1:35	0:40 - 1:05	0:15 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:05 - 2:35	0:30 - 0:50	2:00 - 2:00	1:10 - 2:00	0:40 - 1:10	0:30 - 1:15	0:35 - 0:55		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:05 - 2:35	0:25 - 0:50	2:00 - 2:00	1:05 - 2:00	0:35 - 1:05	0:30 - 1:15 ¹¹	0:35 - 0:55 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:35 - 0:45	0:10 - 0:20	0:55 - 1:05	0:30 - 0:55	0:15 - 0:30				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:35 - 0:45	0:06 - 0:10	0:30 - 0:35	0:15 - 0:30	0:08 - 0:15				
below -25 to -28°C (below -13 to -18°F)	100/0	0:35 - 0:45	0:05 - 0:09	0:25 - 0:30	0:10 - 0:25	0:06 - 0:10				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 11: TYPE II HOLDOVER TIMES FOR MKS DEVO CHEMICALS COREICEPHOB TYPE II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:55 - 2:45	0:30 - 1:00	2:00 - 2:00	1:25 - 2:00	0:40 - 1:25	1:10 - 2:00	0:45 - 1:00	0:15 - 1:35	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	1:05 - 1:45	0:15 - 0:35	1:35 - 1:55	0:45 - 1:35	0:25 - 0:45	0:50 - 1:15	0:25 - 0:30		
below -3 to -8°C (below 27 to 18°F)	100/0	0:45 - 1:25	0:25 - 0:45	1:50 - 2:00	1:00 - 1:50	0:30 - 1:00	0:30 - 1:10	0:25 - 0:35		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:45 - 1:25	0:20 - 0:35	1:30 - 1:50	0:50 - 1:30	0:25 - 0:50	0:30 - 1:10 ¹¹	0:25 - 0:35 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:25	0:01 - 0:05	0:20 - 0:30	0:07 - 0:20	0:02 - 0:07				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:15 - 0:25	0:00 - 0:02	0:09 - 0:15	0:03 - 0:09	0:01 - 0:03				
below -25 to -27°C (below -13 to -17°F)	100/0	0:15 - 0:25	0:00 - 0:00	0:05 - 0:07	0:01 - 0:05	0:00 - 0:01				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 12: TYPE II HOLDOVER TIMES FOR NEWAVE AEROCHEMICAL FCY-2

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Snow, Snow Grains or Snow Pellets ^{5,6,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:15 - 2:25	0:25 - 0:40	0:30 - 0:55	0:35 - 1:05	0:25 - 0:35	0:08 - 0:45	CAUTION: No holdover time guidelines exist
	75/25	0:50 - 1:30	0:15 - 0:30	0:20 - 0:40	0:25 - 0:45	0:15 - 0:25	0:05 - 0:25	
	50/50	0:25 - 0:35	0:09 - 0:20	0:15 - 0:25	0:10 - 0:20	0:07 - 0:10		
below -3 to -8°C (below 27 to 18°F)	100/0	0:45 - 1:30	0:15 - 0:30	0:20 - 0:40	0:20 - 0:45	0:15 - 0:20		
	75/25	0:30 - 1:05	0:10 - 0:20	0:15 - 0:25	0:15 - 0:30	0:08 - 0:15		
below -8 to -14°C (below 18 to 7°F)	100/0	0:45 - 1:30	0:10 - 0:25	0:15 - 0:30	0:20 - 0:45 ¹¹	0:15 - 0:20 ¹¹		
	75/25	0:30 - 1:05	0:08 - 0:15	0:10 - 0:20	0:15 - 0:30 ¹¹	0:08 - 0:15 ¹¹		
below -14 to -18°C (below 7 to 0 °F)	100/0	0:25 - 0:35	0:01 - 0:05	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:25 - 0:35	0:00 - 0:02	0:01 - 0:03				
below -25 to -28°C (below -13 to -18°F)	100/0	0:25 - 0:35	0:00 - 0:00	0:00 - 0:01				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 13: TYPE II HOLDOVER TIMES FOR ROMCHIM ADD-PROTECT NG TYPE II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:10 - 2:25	0:25 - 0:55	2:00 - 2:00	1:10 - 2:00	0:35 - 1:10	0:50 - 1:20	0:35 - 0:50	0:07 - 1:10	CAUTION: No holdover time guidelines exist
	75/25	1:00 - 1:50	0:20 - 0:40	1:55 - 2:00	0:55 - 1:55	0:25 - 0:55	0:40 - 1:15	0:25 - 0:40	0:07 - 0:55	
	50/50	0:25 - 0:55	0:10 - 0:20	0:55 - 1:05	0:30 - 0:55	0:15 - 0:30	0:20 - 0:35	0:10 - 0:20		
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 - 1:35	0:20 - 0:40	1:50 - 2:00	0:50 - 1:50	0:25 - 0:50	0:35 - 1:10	0:25 - 0:35		
	75/25	0:55 - 1:25	0:15 - 0:30	1:25 - 1:45	0:40 - 1:25	0:20 - 0:40	0:25 - 1:05	0:20 - 0:30		
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 - 1:35	0:15 - 0:30	1:25 - 1:50	0:40 - 1:25	0:20 - 0:40	0:35 - 1:10 ¹¹	0:25 - 0:35 ¹¹		
	75/25	0:55 - 1:25	0:10 - 0:25	1:05 - 1:25	0:30 - 1:05	0:15 - 0:30	0:25 - 1:05 ¹¹	0:20 - 0:30 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:20	0:01 - 0:05	0:20 - 0:30	0:07 - 0:20	0:02 - 0:07				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:15 - 0:20	0:00 - 0:02	0:09 - 0:15	0:03 - 0:09	0:01 - 0:03				
below -25 to -28°C (below -13 to -18°F)	100/0	0:15 - 0:20	0:00 - 0:00	0:05 - 0:07	0:01 - 0:05	0:00 - 0:01				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

TABLE 14: TYPE II HOLDOVER TIMES FOR ROMCHIM ADD-PROTECT TYPE II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:40 - 3:30	0:20 - 0:45	1:55 - 2:00	1:00 - 1:55	0:30 - 1:00	0:40 - 1:35	0:25 - 0:45	0:09 - 0:50	CAUTION: No holdover time guidelines exist
	75/25	0:40 - 1:10	0:15 - 0:25	1:00 - 1:10	0:30 - 1:00	0:15 - 0:30	0:25 - 0:40	0:15 - 0:25	0:05 - 0:25	
	50/50	0:20 - 0:35	0:07 - 0:15	0:30 - 0:35	0:15 - 0:30	0:09 - 0:15	0:10 - 0:30	0:08 - 0:10		
below -3 to -8°C (below 27 to 18°F)	100/0	0:30 - 0:45	0:15 - 0:30	1:20 - 1:40	0:40 - 1:20	0:20 - 0:40	0:25 - 0:50	0:20 - 0:30		
	75/25	0:30 - 0:55	0:09 - 0:15	0:40 - 0:50	0:25 - 0:40	0:10 - 0:25	0:20 - 0:30	0:15 - 0:20		
below -8 to -14°C (below 18 to 7°F)	100/0	0:30 - 0:45	0:15 - 0:25	1:05 - 1:20	0:35 - 1:05	0:15 - 0:35	0:25 - 0:50 ¹¹	0:20 - 0:30 ¹¹		
	75/25	0:30 - 0:55	0:07 - 0:15	0:35 - 0:40	0:20 - 0:35	0:09 - 0:20	0:20 - 0:30 ¹¹	0:15 - 0:20 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:25	0:01 - 0:05	0:20 - 0:30	0:07 - 0:20	0:02 - 0:07				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:15 - 0:25	0:00 - 0:02	0:09 - 0:15	0:03 - 0:09	0:01 - 0:03				
below -25 to -28°C (below -13 to -18°F)	100/0	0:15 - 0:25	0:00 - 0:00	0:05 - 0:07	0:01 - 0:05	0:00 - 0:01				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 14.

HOLDOVER TIME (HOT) GUIDELINES FOR SAE TYPE III FLUIDS WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable table cell.
- The time of protection will be shortened in heavy weather conditions, heavy precipitation rates, or high moisture content.
- High wind velocity, jet blast or blowing snow may reduce holdover time below the lowest time stated in the range.
- The holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.

TABLE 15: TYPE III HOLDOVER TIMES FOR ALLCLEAR AEROCLEAR MAX APPLIED UNHEATED ON LOW SPEED AIRCRAFT¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Very Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Moderate Snow, Snow Grains or Snow Pellets ^{6,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27 °F and above)	100/0	0:45 - 1:55	0:13 - 0:30	1:20 - 1:45	0:40 - 1:20	0:18 - 0:40	0:25 - 0:50	0:14 - 0:25	0:05 - 0:40	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10°C (below 27 to 14°F)	100/0	0:50 - 1:40	0:13 - 0:30	1:20 - 1:45	0:40 - 1:20	0:18 - 0:40	0:25 - 0:45	0:15 - 0:25		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -16°C (below 14 to 3°F)	100/0	0:40 - 1:45	0:13 - 0:30	1:20 - 1:45	0:40 - 1:20	0:18 - 0:40				

NOTES

- 1 These holdover times are for aircraft conforming to the SAE AS5900 low speed aerodynamic test criterion. Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid applied heated. If uncertain whether the aircraft conforms to the low, middle, or high speed aerodynamic test criterion, no holdover time guidelines exist below -16°C (3°F).
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 26.

TABLE 16: TYPE III HOLDOVER TIMES FOR ALLCLEAR AEROCLEAR MAX APPLIED UNHEATED ON MIDDLE SPEED AIRCRAFT¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Very Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Moderate Snow, Snow Grains or Snow Pellets ^{6,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27°F and above)	100/0	0:45 - 1:55	0:13 - 0:30	1:20 - 1:45	0:40 - 1:20	0:18 - 0:40	0:25 - 0:50	0:14 - 0:25	0:05 - 0:40	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10°C (below 27 to 14°F)	100/0	0:50 - 1:40	0:13 - 0:30	1:20 - 1:45	0:40 - 1:20	0:18 - 0:40	0:25 - 0:45	0:15 - 0:25		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -20.5°C (below 14 to -5°F)	100/0	0:40 - 1:45	0:13 - 0:30	1:20 - 1:45	0:40 - 1:20	0:18 - 0:40				

NOTES

- 1 These holdover times are for aircraft conforming to the SAE AS5900 middle speed aerodynamic test criterion. Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid applied heated. If uncertain whether the aircraft conforms to the low, middle, or high speed aerodynamic test criterion, no holdover time guidelines exist below -16°C (3°F).
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 26.

TABLE 17: TYPE III HOLDOVER TIMES FOR ALLCLEAR AEROCLEAR MAX APPLIED UNHEATED ON HIGH SPEED AIRCRAFT¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Very Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Moderate Snow, Snow Grains or Snow Pellets ^{6,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27 °F and above)	100/0	0:45 - 1:55	0:13 - 0:30	1:20 - 1:45	0:40 - 1:20	0:18 - 0:40	0:25 - 0:50	0:14 - 0:25	0:05 - 0:40	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10°C (below 27 to 14°F)	100/0	0:50 - 1:40	0:13 - 0:30	1:20 - 1:45	0:40 - 1:20	0:18 - 0:40	0:25 - 0:45	0:15 - 0:25		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -25°C (below 14 to -13°F)	100/0	0:40 - 1:45	0:13 - 0:30	1:20 - 1:45	0:40 - 1:20	0:18 - 0:40				
below -25 to -35°C (below -13 to -31°F)	100/0	0:25 - 1:00	0:07 - 0:16	0:45 - 1:00	0:20 - 0:45	0:10 - 0:20				

NOTES

- 1 These holdover times are for aircraft conforming to the SAE AS5900 high speed aerodynamic test criterion. Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid applied heated. If uncertain whether the aircraft conforms to the low, middle, or high speed aerodynamic test criterion, no holdover time guidelines exist below -16°C (3°F).
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 45 provides allowance times for ice pellets and small hail for SAE Type III fluids, applied unheated).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 26.

HOLDOVER TIME (HOT) GUIDELINES FOR SAE TYPE IV FLUIDS WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable table cell.
- The time of protection will be shortened in heavy weather conditions, heavy precipitation rates, or high moisture content.
- High wind velocity, jet blast or blowing snow may reduce holdover time below the lowest time stated in the range.
- The holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold-soaked wing, the 50/50 dilutions of Type II or IV shall not be used for the anti-icing step because fluid freezing may occur.

TABLE 18: GENERIC HOLDOVER TIMES FOR SAE TYPE IV FLUIDS¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Very Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Moderate Snow, Snow Grains or Snow Pellets ^{6,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27°F and above)	100/0	1:15 - 2:15	0:25 - 0:45	1:55 - 2:00	1:00 - 1:55	0:30 - 1:00	0:40 - 1:10	0:20 - 0:35	0:08 - 1:05	CAUTION: No holdover time guidelines exist
	75/25	1:25 - 2:40	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:40 - 1:15	1:00 - 1:20	0:30 - 0:50	0:09 - 1:20	
	50/50	0:30 - 0:55	0:07 - 0:20	1:00 - 1:10	0:25 - 1:00	0:10 - 0:25	0:15 - 0:40	0:09 - 0:20		
below -3 to -8°C (below 27 to 18°F)	100/0	0:15 - 0:35	0:20 - 0:40	1:45 - 2:00	0:55 - 1:45	0:25 - 0:55	0:25 - 1:10	0:20 - 0:25		
	75/25	0:40 - 1:20	0:25 - 0:50	1:50 - 2:00	1:05 - 1:50	0:30 - 1:05	0:20 - 1:05	0:15 - 0:25		
below -8 to -14°C (below 18 to 7°F)	100/0	0:15 - 0:35	0:15 - 0:35	1:30 - 1:50	0:45 - 1:30	0:20 - 0:45	0:25 - 1:10 ¹²	0:20 - 0:25 ¹²		
	75/25	0:40 - 1:20	0:20 - 0:45	1:45 - 2:00	0:55 - 1:45	0:25 - 0:55	0:20 - 1:05 ¹²	0:15 - 0:25 ¹²		
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:30	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09				
below -18 to -25°C (below 0 to -13°F)	100/0	0:15 - 0:30	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03				
below -25°C to LOU ¹³ (below -13°F to LOU)	100/0	0:15 - 0:30	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02				

NOTES

- 1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the Type IV Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 52). Any restrictions on the use of the fluid have to be identified and applied.
- 2 Ensure that the lowest operational use temperature (LOU) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids and Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail. If the glycol type is unknown, the allowance times for SAE Type IV PG fluids should be used).
- 12 No holdover time guidelines exist for this condition below -10°C (14°F).
- 13 If the LOU is unknown, no holdover time guidelines exist below -25.5°C (-14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 19: TYPE IV HOLDOVER TIMES FOR ABAX ECOWING AD-49

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	3:20 - 4:00	0:45 - 1:25	2:00 - 2:00	1:55 - 2:00	1:00 - 1:55	1:25 - 2:00	1:00 - 1:25	0:10 - 1:55	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:20 - 1:35	0:35 - 1:05	2:00 - 2:00	1:30 - 2:00	0:45 - 1:30	0:25 - 1:25	0:20 - 0:25		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:20 - 1:35	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:40 - 1:15	0:25 - 1:25 ¹¹	0:20 - 0:25 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:25 - 0:40	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:25 - 0:40	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03				
below -25 to -26°C (below -13 to -15°F)	100/0	0:25 - 0:40	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 20: TYPE IV HOLDOVER TIMES FOR ALAB INTERNATIONAL PROFLIGHT EG4

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	3:05 - 4:00	0:45 - 1:25	2:00 - 2:00	1:50 - 2:00	1:00 - 1:50	1:25 - 2:00	0:40 - 1:00	0:10 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	2:30 - 3:55	0:45 - 1:25	2:00 - 2:00	1:50 - 2:00	1:00 - 1:50	1:05 - 2:00	0:50 - 1:35		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	2:30 - 3:55	0:45 - 1:25	2:00 - 2:00	1:50 - 2:00	1:00 - 1:50	1:05 - 2:00 ¹¹	0:50 - 1:35 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:35 - 1:35	0:07 - 0:20	0:50 - 1:05	0:25 - 0:50	0:10 - 0:25				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:35 - 1:35	0:03 - 0:10	0:40 - 0:55	0:15 - 0:40	0:05 - 0:15				
below -25 to -26°C (below -13 to -15°F)	100/0	0:35 - 1:35	0:01 - 0:06	0:25 - 0:35	0:08 - 0:25	0:02 - 0:08				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 21: TYPE IV HOLDOVER TIMES FOR ALAB INTERNATIONAL PROFLIGHT PG4

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:25 - 2:15	0:30 - 1:00	2:00 - 2:00	1:20 - 2:00	0:40 - 1:20	1:05 - 1:25	0:40 - 0:50	0:15 - 1:20	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:05 - 2:20	0:25 - 0:50	2:00 - 2:00	1:10 - 2:00	0:35 - 1:10	0:45 - 1:10	0:35 - 0:45		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:05 - 2:20	0:20 - 0:45	2:00 - 2:00	1:00 - 2:00	0:30 - 1:00	0:45 - 1:10 ¹¹	0:35 - 0:45 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:35 - 0:50	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:35 - 0:50	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03				
below -25 to -29°C (below -13 to -20°F)	100/0	0:35 - 0:50	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 22: TYPE IV HOLDOVER TIMES FOR ALLCLEAR CLEARWING EG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:50 - 3:15	0:30 - 1:00	2:00 - 2:00	1:20 - 2:00	0:40 - 1:20	1:10 - 1:35	0:30 - 1:00	0:10 - 1:30	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:35 - 3:45	0:25 - 0:55	2:00 - 2:00	1:10 - 2:00	0:35 - 1:10	1:05 - 1:30	0:30 - 1:00		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:35 - 3:45	0:25 - 0:50	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	1:05 - 1:30 ¹¹	0:30 - 1:00 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:55 - 2:00	0:15 - 0:35	1:35 - 2:00	0:45 - 1:35	0:20 - 0:45				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:55 - 2:00	0:09 - 0:20	0:55 - 1:10	0:25 - 0:55	0:15 - 0:25				
below -25 to -29°C (below -13 to -20°F)	100/0	0:55 - 2:00	0:07 - 0:15	0:45 - 0:55	0:20 - 0:45	0:10 - 0:20				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 23: TYPE IV HOLDOVER TIMES FOR ASGLOBAL 4FLITE EG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:35 - 3:15	0:25 - 0:45	2:00 - 2:00	1:00 - 2:00	0:30 - 1:00	0:40 - 1:10	0:20 - 0:35	0:08 - 1:05	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:25 - 2:45	0:20 - 0:40	1:50 - 2:00	0:55 - 1:50	0:25 - 0:55	0:40 - 1:10	0:20 - 0:35		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:25 - 2:45	0:20 - 0:35	1:35 - 2:00	0:50 - 1:35	0:25 - 0:50	0:40 - 1:10 ¹¹	0:20 - 0:35 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:50 - 1:25	0:15 - 0:35	1:35 - 2:00	0:45 - 1:35	0:20 - 0:45				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:50 - 1:25	0:15 - 0:30	1:20 - 1:40	0:35 - 1:20	0:20 - 0:35				
below -25 to -30°C (below -13 to -22°F)	100/0	0:30 - 1:05	0:09 - 0:20	0:55 - 1:05	0:25 - 0:55	0:10 - 0:25				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 24: TYPE IV HOLDOVER TIMES FOR ASGLOBAL 4FLITE PG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:50 - 3:15	0:40 - 1:10	2:00 - 2:00	1:35 - 2:00	0:50 - 1:35	1:10 - 1:35	0:45 - 1:05	0:15 - 1:20	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:05 - 1:55	0:30 - 0:50	2:00 - 2:00	1:10 - 2:00	0:35 - 1:10	0:55 - 1:10	0:35 - 0:55		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:05 - 1:55	0:20 - 0:40	1:40 - 2:00	0:55 - 1:40	0:30 - 0:55	0:55 - 1:10 ¹¹	0:35 - 0:55 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 0:45	0:15 - 0:25	1:05 - 1:20	0:35 - 1:05	0:15 - 0:35				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:30 - 0:45	0:07 - 0:15	0:35 - 0:45	0:20 - 0:35	0:09 - 0:20				
below -25 to -26°C (below -13 to -15°F)	100/0	0:30 - 0:45	0:06 - 0:15	0:35 - 0:45	0:20 - 0:35	0:08 - 0:20				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 25: TYPE IV HOLDOVER TIMES FOR AVIAFLUID AVIAFLIGHT EG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:30 - 3:05	0:30 - 0:50	1:55 - 2:00	1:10 - 1:55	0:40 - 1:10	1:05 - 2:00	0:30 - 0:50	0:10 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:20 - 3:00	0:25 - 0:45	1:45 - 2:00	1:00 - 1:45	0:35 - 1:00	0:55 - 1:30	0:35 - 0:50		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:20 - 3:00	0:25 - 0:40	1:35 - 1:55	0:55 - 1:35	0:30 - 0:55	0:55 - 1:30 ¹¹	0:35 - 0:50 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:35 - 1:45	0:20 - 0:40	1:40 - 2:00	0:50 - 1:40	0:25 - 0:50				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:35 - 1:45	0:15 - 0:30	1:20 - 1:35	0:40 - 1:20	0:20 - 0:40				
below -25 to -31°C (below -13 to -24°F)	100/0	0:35 - 1:05	0:07 - 0:15	0:35 - 0:45	0:20 - 0:35	0:09 - 0:20				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 26: TYPE IV HOLDOVER TIMES FOR AVIAFLUID AVIAFLIGHT PG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:15 - 4:00	0:40 - 1:15	2:00 - 2:00	1:40 - 2:00	0:55 - 1:40	2:00 - 2:00	1:10 - 1:55	0:20 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:05 - 2:10	0:25 - 0:50	2:00 - 2:00	1:05 - 2:00	0:35 - 1:05	0:35 - 1:55	0:45 - 1:05		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:05 - 2:10	0:20 - 0:35	1:30 - 1:50	0:50 - 1:30	0:25 - 0:50	0:35 - 1:55 ¹¹	0:45 - 1:05 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:20 - 0:35	0:10 - 0:20	0:50 - 1:00	0:25 - 0:50	0:15 - 0:25				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:20 - 0:35	0:05 - 0:09	0:25 - 0:30	0:15 - 0:25	0:06 - 0:15				
below -25 to -25.5°C (below -13 to -14°F)	100/0	0:20 - 0:35	0:05 - 0:09	0:25 - 0:30	0:10 - 0:25	0:06 - 0:10				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 27: TYPE IV HOLDOVER TIMES FOR CHEMCO CHEMR EG IV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:05 - 3:35	0:25 - 1:00	2:00 - 2:00	1:15 - 2:00	0:35 - 1:15	0:45 - 1:40	0:25 - 0:40	0:09 - 1:45	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:25 - 3:40	0:25 - 1:00	2:00 - 2:00	1:15 - 2:00	0:35 - 1:15	1:00 - 1:35	0:35 - 0:50		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:25 - 3:40	0:25 - 1:00	2:00 - 2:00	1:15 - 2:00	0:35 - 1:15	1:00 - 1:35 ¹¹	0:35 - 0:50 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:40 - 1:25	0:15 - 0:30	1:25 - 1:45	0:40 - 1:25	0:20 - 0:40				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:40 - 1:25	0:15 - 0:30	1:25 - 1:45	0:40 - 1:25	0:20 - 0:40				
below -25 to -27°C (below -13 to -17°F)	100/0	0:40 - 1:25	0:15 - 0:30	1:25 - 1:45	0:40 - 1:25	0:20 - 0:40				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 28: TYPE IV HOLDOVER TIMES FOR CHEMCO CHEMR NORDIK IV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:15 - 4:00	0:40 - 1:20	2:00 - 2:00	1:45 - 2:00	0:55 - 1:45	1:20 - 2:00	0:55 - 1:20	0:25 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:50 - 4:00	0:40 - 1:20	2:00 - 2:00	1:45 - 2:00	0:55 - 1:45	1:15 - 2:00	0:45 - 1:20		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:50 - 4:00	0:40 - 1:20	2:00 - 2:00	1:45 - 2:00	0:55 - 1:45	1:15 - 2:00 ¹¹	0:45 - 1:20 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:40 - 1:30	0:35 - 1:10	2:00 - 2:00	1:35 - 2:00	0:50 - 1:35				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:40 - 1:30	0:25 - 0:50	2:00 - 2:00	1:05 - 2:00	0:35 - 1:05				
below -25 to -29°C (below -13 to -20°F)	100/0	0:40 - 1:30	0:20 - 0:40	1:50 - 2:00	0:55 - 1:50	0:30 - 0:55				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 29: TYPE IV HOLDOVER TIMES FOR CHONGQING JOBA CHEMICAL FW-IV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	3:15 - 4:00	0:35 - 1:15	2:00 - 2:00	1:40 - 2:00	0:50 - 1:40	1:30 - 2:00	0:45 - 1:05	0:15 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	2:30 - 4:00	0:30 - 1:00	2:00 - 2:00	1:25 - 2:00	0:40 - 1:25	0:50 - 2:00	0:35 - 1:10		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	2:30 - 4:00	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:35 - 1:15	0:50 - 2:00 ¹¹	0:35 - 1:10 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:35 - 1:40	0:20 - 0:40	2:00 - 2:00	0:55 - 2:00	0:25 - 0:55				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:35 - 1:40	0:15 - 0:30	1:20 - 1:45	0:35 - 1:20	0:15 - 0:35				
below -25 to -29°C (below -13 to -20°F)	100/0	0:35 - 1:40	0:10 - 0:25	1:10 - 1:30	0:30 - 1:10	0:15 - 0:30				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 30: TYPE IV HOLDOVER TIMES FOR CLARIANT SAFEWING MP IV LAUNCH

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	4:00 – 4:00	0:50 - 1:20	2:00 – 2:00	1:45 – 2:00	1:05 – 1:45	1:30 – 2:00	1:00 – 1:40	0:15 – 1:40	CAUTION: No holdover time guidelines exist
	75/25	3:40 – 4:00	0:45 - 1:20	2:00 – 2:00	1:45 – 2:00	1:00 – 1:45	1:40 – 2:00	0:45 – 1:15	0:10 – 1:45	
	50/50	1:25 – 2:45	0:20 - 0:35	1:25 – 1:40	0:45 – 1:25	0:25 – 0:45	0:30 – 0:50	0:20 – 0:25		
below -3 to -8°C (below 27 to 18°F)	100/0	1:00 – 1:55	0:40 - 1:05	2:00 – 2:00	1:30 – 2:00	0:55 – 1:30	0:35 – 1:40	0:25 – 0:45		
	75/25	0:40 – 1:20	0:40 - 1:10	2:00 – 2:00	1:30 – 2:00	0:50 – 1:30	0:25 – 1:10	0:25 – 0:45		
below -8 to -14°C (below 18 to 7°F)	100/0	1:00 – 1:55	0:35 - 1:00	2:00 – 2:00	1:20 – 2:00	0:50 – 1:20	0:35 – 1:40 ¹¹	0:25 – 0:45 ¹¹		
	75/25	0:40 – 1:20	0:35 - 1:00	2:00 – 2:00	1:25 – 2:00	0:45 – 1:25	0:25 – 1:10 ¹¹	0:25 – 0:45 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 – 0:50	0:05 - 0:15	1:15 – 1:45	0:20 – 1:15	0:06 – 0:20				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:30 – 0:50	0:02 - 0:06	0:30 – 0:45	0:09 – 0:30	0:02 – 0:09				
below -25 to -28.5°C (below -13 to -19°F)	100/0	0:30 – 0:50	0:01 - 0:04	0:20 – 0:30	0:06 – 0:20	0:01 – 0:06				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 31: TYPE IV HOLDOVER TIMES FOR CLARIANT SAFEWING MP IV LAUNCH PLUS

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	3:55 – 4:00	0:40 - 1:35	2:00 – 2:00	2:00 – 2:00	0:55 – 2:00	2:00 – 2:00	1:00 – 2:00	0:20 – 2:00	CAUTION: No holdover time guidelines exist
	75/25	3:55 – 4:00	0:35 - 1:25	2:00 – 2:00	1:55 – 2:00	0:50 – 1:55	2:00 – 2:00	1:20 – 1:25	0:20 – 1:50	
	50/50	1:15 – 1:50	0:15 - 0:35	1:35 – 2:00	0:45 – 1:35	0:20 – 0:45	0:25 – 1:00	0:15 – 0:20		
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 – 2:15	0:35 - 1:15	2:00 – 2:00	1:40 – 2:00	0:45 – 1:40	0:25 – 1:35	0:25 – 0:40		
	75/25	0:40 – 2:00	0:30 - 1:05	2:00 – 2:00	1:30 – 2:00	0:35 – 1:30	0:20 – 1:05	0:20 – 0:30		
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 – 2:15	0:30 - 1:05	2:00 – 2:00	1:25 – 2:00	0:40 – 1:25	0:25 – 1:35 ¹¹	0:25 – 0:40 ¹¹		
	75/25	0:40 – 2:00	0:25 - 0:55	2:00 – 2:00	1:15 – 2:00	0:30 – 1:15	0:20 – 1:05 ¹¹	0:20 – 0:30 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:25 – 0:50	0:05 - 0:20	1:15 – 1:50	0:25 – 1:15	0:07 – 0:25				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:25 – 0:50	0:02 - 0:07	0:30 – 0:45	0:09 – 0:30	0:03 – 0:09				
below -25 to -29°C (below -13 to -20°F)	100/0	0:25 – 0:50	0:01 - 0:04	0:20 – 0:30	0:06 – 0:20	0:02 – 0:06				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 32: TYPE IV HOLDOVER TIMES FOR CRYOTECH POLAR GUARD® ADVANCE

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:50 - 4:00	0:50 - 1:25	2:00 - 2:00	1:55 - 2:00	1:05 - 1:55	1:35 - 2:00	1:15 - 1:30	0:15 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	2:30 - 4:00	0:30 - 1:05	2:00 - 2:00	1:25 - 2:00	0:40 - 1:25	1:40 - 2:00	0:40 - 1:10	0:09 - 1:40	
	50/50	0:50 - 1:25	0:07 - 0:20	1:10 - 1:35	0:25 - 1:10	0:10 - 0:25	0:20 - 0:45	0:09 - 0:20		
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 - 2:30	0:35 - 1:05	2:00 - 2:00	1:25 - 2:00	0:50 - 1:25	0:35 - 1:35	0:35 - 0:45		
	75/25	0:40 - 1:30	0:25 - 0:50	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	0:25 - 1:05	0:35 - 0:45		
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 - 2:30	0:30 - 0:50	2:00 - 2:00	1:10 - 2:00	0:40 - 1:10	0:35 - 1:35 ¹¹	0:35 - 0:45 ¹¹		
	75/25	0:40 - 1:30	0:20 - 0:45	2:00 - 2:00	0:55 - 2:00	0:25 - 0:55	0:25 - 1:05 ¹¹	0:35 - 0:45 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:25 - 0:50	0:08 - 0:25	1:35 - 2:00	0:35 - 1:35	0:10 - 0:35				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:25 - 0:50	0:03 - 0:10	0:40 - 0:55	0:15 - 0:40	0:04 - 0:15				
below -25 to -30.5°C (below -13 to -23°F)	100/0	0:25 - 0:50	0:02 - 0:05	0:25 - 0:30	0:07 - 0:25	0:02 - 0:07				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 33: TYPE IV HOLDOVER TIMES FOR CRYOTECH POLAR GUARD® XTEND

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:30 - 4:00	0:50 - 1:30	2:00 - 2:00	2:00 - 2:00	1:05 - 2:00	2:00 - 2:00	1:00 - 1:50	0:20 - 1:45	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:00 - 1:50	0:40 - 1:10	2:00 - 2:00	1:35 - 2:00	0:50 - 1:35	0:35 - 1:40	0:50 - 0:55		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:00 - 1:50	0:35 - 1:00	2:00 - 2:00	1:20 - 2:00	0:45 - 1:20	0:35 - 1:40 ¹¹	0:50 - 0:55 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:25 - 0:40	0:15 - 0:30	1:20 - 1:40	0:40 - 1:20	0:20 - 0:40				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:25 - 0:40	0:05 - 0:10	0:30 - 0:40	0:15 - 0:30	0:06 - 0:15				
below -25 to -29°C (below -13 to -20°F)	100/0	0:25 - 0:40	0:03 - 0:06	0:20 - 0:25	0:09 - 0:20	0:04 - 0:09				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 34: TYPE IV HOLDOVER TIMES FOR DOW INC. UCAR ENDURANCE™ EG106

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:05 - 3:10	0:30 - 1:00	2:00 - 2:00	1:20 - 2:00	0:40 - 1:20	1:10 - 2:00	0:50 - 1:15	0:20 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:50 - 3:20	0:25 - 0:50	2:00 - 2:00	1:10 - 2:00	0:35 - 1:10	0:55 - 1:50	0:45 - 1:10		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:50 - 3:20	0:25 - 0:45	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	0:55 - 1:50 ¹¹	0:45 - 1:10 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 1:05	0:15 - 0:35	1:45 - 2:00	0:50 - 1:45	0:25 - 0:50				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:30 - 1:05	0:15 - 0:30	1:30 - 1:55	0:40 - 1:30	0:20 - 0:40				
below -25 to -29°C (below -13 to -20°F)	100/0	0:30 - 1:05	0:15 - 0:30	1:20 - 1:45	0:40 - 1:20	0:20 - 0:40				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 35: TYPE IV HOLDOVER TIMES FOR DOW INC. UCAR™ FLIGHTGUARD™ AD-49

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	3:20 - 4:00	0:45 - 1:25	2:00 - 2:00	1:55 - 2:00	1:00 - 1:55	1:25 - 2:00	1:00 - 1:25	0:10 - 1:55	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:20 - 1:35	0:35 - 1:05	2:00 - 2:00	1:30 - 2:00	0:45 - 1:30	0:25 - 1:25	0:20 - 0:25		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:20 - 1:35	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:40 - 1:15	0:25 - 1:25 ¹¹	0:20 - 0:25 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:25 - 0:40	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:25 - 0:40	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03				
below -25 to -26°C (below -13 to -15°F)	100/0	0:25 - 0:40	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 36: TYPE IV HOLDOVER TIMES FOR INLAND TECHNOLOGIES ECO-SHIELD®

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:15 - 2:40	0:35 - 1:00	2:00 - 2:00	1:20 - 2:00	0:45 - 1:20	0:40 - 1:30	0:35 - 0:40	0:15 - 1:35	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:10 - 2:35	0:30 - 0:55	2:00 - 2:00	1:10 - 2:00	0:40 - 1:10	0:50 - 1:25	0:30 - 0:40		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:10 - 2:35	0:25 - 0:50	1:55 - 2:00	1:05 - 1:55	0:35 - 1:05	0:50 - 1:25 ¹¹	0:30 - 0:40 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 1:00	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:30 - 1:00	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03				
below -25 to -25.5°C (below -13 to -14°F)	100/0	0:30 - 1:00	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 37: TYPE IV HOLDOVER TIMES FOR JSC RCP NORDIX DEFROST ECO 4

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:30 - 2:40	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:35 - 1:15	1:05 - 1:30	0:40 - 1:05	0:15 - 1:10	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 - 2:35	0:25 - 0:50	2:00 - 2:00	1:05 - 2:00	0:35 - 1:05	0:50 - 1:20	0:35 - 0:50		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 - 2:35	0:25 - 0:45	2:00 - 2:00	1:00 - 2:00	0:30 - 1:00	0:50 - 1:20 ¹¹	0:35 - 0:50 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 0:50	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:30 - 0:50	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03				
below -25 to -25.5°C (below -13 to -14°F)	100/0	0:30 - 0:50	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 38: TYPE IV HOLDOVER TIMES FOR JSC RCP NORDIX DEFROST NORTH 4

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:10 - 4:00	0:30 - 1:00	2:00 - 2:00	1:25 - 2:00	0:40 - 1:25	1:05 - 2:00	0:30 - 0:50	0:09 - 1:55	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	2:40 - 4:00	0:30 - 1:00	2:00 - 2:00	1:25 - 2:00	0:40 - 1:25	1:05 - 2:00	0:40 - 1:00		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	2:40 - 4:00	0:30 - 1:00	2:00 - 2:00	1:25 - 2:00	0:40 - 1:25	1:05 - 2:00 ¹¹	0:40 - 1:00 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:45 - 1:55	0:07 - 0:20	0:50 - 1:05	0:25 - 0:50	0:10 - 0:25				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:45 - 1:55	0:03 - 0:10	0:40 - 0:55	0:15 - 0:40	0:05 - 0:15				
below -25 to -26°C (below -13 to -15°F)	100/0	0:45 - 1:55	0:01 - 0:06	0:25 - 0:35	0:08 - 0:25	0:02 - 0:08				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 39: TYPE IV HOLDOVER TIMES FOR KILFROST ABC-S PLUS

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:10 - 4:00	0:55 - 1:35	2:00 - 2:00	2:00 - 2:00	1:15 - 2:00	1:50 - 2:00	1:05 - 2:00	0:25 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	1:25 - 2:40	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:45 - 1:15	1:00 - 1:20	0:30 - 0:50	0:10 - 1:20	
	50/50	0:30 - 0:55	0:15 - 0:25	1:00 - 1:10	0:30 - 1:00	0:15 - 0:30	0:15 - 0:40	0:15 - 0:20		
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 - 3:30	0:50 - 1:25	2:00 - 2:00	1:50 - 2:00	1:05 - 1:50	0:25 - 1:35	0:20 - 0:30		
	75/25	0:45 - 1:50	0:30 - 0:50	1:50 - 2:00	1:05 - 1:50	0:40 - 1:05	0:20 - 1:10	0:15 - 0:25		
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 - 3:30	0:45 - 1:15	2:00 - 2:00	1:45 - 2:00	1:00 - 1:45	0:25 - 1:35 ¹¹	0:20 - 0:30 ¹¹		
	75/25	0:45 - 1:50	0:25 - 0:45	1:45 - 2:00	1:00 - 1:45	0:35 - 1:00	0:20 - 1:10 ¹¹	0:15 - 0:25 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:40 - 1:00	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:40 - 1:00	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03				
below -25 to -28°C (below -13 to -18°F)	100/0	0:40 - 1:00	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 40: TYPE IV HOLDOVER TIMES FOR MKS DEVO CHEMICALS COREICEPHOB TYPE-IV PG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:20 - 3:50	0:35 - 1:15	2:00 - 2:00	1:40 - 2:00	0:45 - 1:40	1:25 - 2:00	0:50 - 1:20	0:10 - 1:40	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:15 - 0:35	0:25 - 0:55	2:00 - 2:00	1:10 - 2:00	0:35 - 1:10	0:40 - 1:30	0:20 - 0:35		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:15 - 0:35	0:20 - 0:45	2:00 - 2:00	0:55 - 2:00	0:25 - 0:55	0:40 - 1:30 ¹¹	0:20 - 0:35 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:30	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:15 - 0:30	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03				
below -25 to -29°C (below -13 to -20°F)	100/0	0:15 - 0:30	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 41: TYPE IV HOLDOVER TIMES FOR NEWAVE AEROCHEMICAL FCY 9311

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:55 - 4:00	0:25 - 0:55	2:00 - 2:00	1:10 - 2:00	0:35 - 1:10	1:10 - 2:00	0:40 - 1:05	0:15 - 1:25	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:35 - 2:05	0:20 - 0:40	1:50 - 2:00	0:55 - 1:50	0:30 - 0:55	0:35 - 1:20	0:20 - 0:35		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:35 - 2:05	0:20 - 0:35	1:35 - 2:00	0:50 - 1:35	0:25 - 0:50	0:35 - 1:20 ¹¹	0:20 - 0:35 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 0:55	0:10 - 0:20	1:00 - 1:15	0:30 - 1:00	0:15 - 0:30				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:30 - 0:55	0:05 - 0:10	0:35 - 0:40	0:15 - 0:35	0:07 - 0:15				
below -25 to -29.5°C (below -13 to -21°F)	100/0	0:30 - 0:55	0:05 - 0:10	0:30 - 0:40	0:15 - 0:30	0:06 - 0:15				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 42: TYPE IV HOLDOVER TIMES FOR NEWAVE AEROCHEMICAL FCY-EGIV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:35 - 4:00	0:25 - 0:55	2:00 - 2:00	1:10 - 2:00	0:35 - 1:10	1:20 - 2:00	0:40 - 1:05	0:15 - 2:00	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:25 - 3:25	0:20 - 0:45	2:00 - 2:00	1:00 - 2:00	0:25 - 1:00	0:50 - 2:00	0:45 - 1:05		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:25 - 3:25	0:20 - 0:40	1:55 - 2:00	0:50 - 1:55	0:25 - 0:50	0:50 - 2:00 ¹¹	0:45 - 1:05 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:35 - 1:55	0:15 - 0:30	1:35 - 2:00	0:40 - 1:35	0:15 - 0:40				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:35 - 1:55	0:09 - 0:20	1:10 - 1:35	0:30 - 1:10	0:15 - 0:30				
below -25 to -29°C (below -13 to -20°F)	100/0	0:35 - 1:55	0:08 - 0:20	1:00 - 1:20	0:25 - 1:00	0:10 - 0:25				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 46 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

TABLE 43: TYPE IV HOLDOVER TIMES FOR SHAANXI CLEANWAY CLEANSURFACE IV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:30 - 4:00	0:30 - 1:15	2:00 - 2:00	1:40 - 2:00	0:40 - 1:40	1:20 - 2:00	0:40 - 1:10	0:15 - 1:50	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 - 2:05	0:20 - 0:45	2:00 - 2:00	1:00 - 2:00	0:25 - 1:00	0:30 - 1:30	0:25 - 0:35		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 - 2:05	0:15 - 0:35	1:45 - 2:00	0:45 - 1:45	0:20 - 0:45	0:30 - 1:30 ¹¹	0:25 - 0:35 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:25 - 0:35	0:10 - 0:20	1:05 - 1:20	0:30 - 1:05	0:15 - 0:30				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:25 - 0:35	0:05 - 0:10	0:35 - 0:45	0:15 - 0:35	0:07 - 0:15				
below -25 to -30°C (below -13 to -22°F)	100/0	0:20 - 0:30	0:04 - 0:09	0:30 - 0:35	0:15 - 0:30	0:06 - 0:15				

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 47 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page 30.

ALLOWANCE TIMES TABLES FOR WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- Allowance time cannot be extended by an inspection of the aircraft critical surfaces.

TABLE 44: LIST OF FLUIDS VALIDATED FOR USE WITH ALLOWANCE TIMES¹

Manufacturer	Fluid Name	Applicable Allowance Times (ATs)
Type III Fluids		
AllClear Systems LLC	AeroClear MAX	ATs for Type III Fluids
Type IV EG Fluids		
ALAB International	PROFLIGHT EG4	ATs for Type IV EG Fluids ³
AllClear Systems LLC	ClearWing EG	ATs for Type IV EG Fluids
ASGlobal	4Flite EG	Fluid has not been validated ²
AVIAFLUID International Ltd	AVIAflight EG	ATs for Type IV EG Fluids
CHEMCO Inc.	ChemR EG IV	ATs for Type IV EG Fluids
CHEMCO Inc.	ChemR Nordik IV	ATs for Type IV EG Fluids
Chongqing Joba Chemical Co., Ltd	FW-IV	ATs for Type IV EG Fluids ³
Dow Inc.	UCAR ENDURANCE™ EG106 ADF/AAF	ATs for Type IV EG Fluids
JSC RCP Nordix	Defrost NORTH 4	ATs for Type IV EG Fluids
Newave Aerochemical Co. Ltd.	FCY-EGIV	ATs for Type IV EG Fluids
Type IV PG Fluids		
ABAX Industries	ECOWING AD-49	ATs for Type IV PG Fluids
ALAB International	PROFLIGHT PG4	ATs for Type IV PG Fluids ³
ASGlobal	4Flite PG	ATs for Type IV PG Fluids
AVIAFLUID International Ltd	AVIAflight PG	ATs for Type IV PG Fluids
Clariant Produkte (Deutschland) GmbH	Safewing MP IV LAUNCH	ATs for Type IV PG Fluids
Clariant Produkte (Deutschland) GmbH	Safewing MP IV LAUNCH PLUS	ATs for Type IV PG Fluids
Cryotech Deicing Technology	Polar Guard® Advance	ATs for Type IV PG Fluids
Cryotech Deicing Technology	Polar Guard® Xtend	ATs for Type IV PG Fluids
Dow Chemical Company	UCAR™ FLIGHTGUARD™ AD-49	ATs for Type IV PG Fluids
Inland Technologies Inc.	ECO-SHIELD®	ATs for Type IV PG Fluids
JSC RCP Nordix	Defrost ECO 4	ATs for Type IV PG Fluids
Kilfrost Limited	ABC-S Plus	ATs for Type IV PG Fluids
MKS DevO Chemicals	COREICEPHOB TYPE-IV PG	ATs for Type IV PG Fluids ³
Newave Aerochemical Co. Ltd.	FCY 9311	ATs for Type IV PG Fluids
Shaanxi Cleanway Aviation Chemical Co., Ltd.	Cleansurface IV	ATs for Type IV PG Fluids ³

NOTES

- 1 Allowance times are for use with undiluted (100/0) Type III, Type IV EG, and Type IV PG fluids only. No allowance times exist for Type II fluids.
- 2 No allowance times exist for this fluid at the time of publication as the allowance times have not yet been validated.
- 3 Fluid is new to market and in the process of commercialization. The applicable allowance times can be used for a limited grace period of two testing opportunities that is made available to the manufacturer. The fluid must be validated within this time frame to continue the use of the allowance times.

TABLE 45: ALLOWANCE TIMES FOR SAE TYPE III FLUIDS^{1,2}

Precipitation Types or Combinations and Applicable METAR Codes ⁴	Outside Air Temperature			
	Above 0 °C (32 °F and above)	0 to -5 °C (32 to 23 °F)	Below -5 to -10 °C (Below 23 to 14 °F)	Below -10 °C ³ (Below 14 °F)
Light Ice Pellets -PL -GS	10 minutes	10 minutes	10 minutes	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Light Snow -PLSN, -SNPL, -GSSN, -SNGS	10 minutes	10 minutes	10 minutes	
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle -PLFZDZ, -FZDZPL, FZDZPL, -GSFZDZ, -FZDZGS, FZDZGS		7 minutes	5 minutes	
Light Ice Pellets Mixed with Light or Moderate Drizzle -PLDZ, -DZPL, DZPL, -GSDZ, -DZGS, DZGS	7 minutes			
Light Ice Pellets Mixed with Light Freezing Rain -PLFZRA, -FZRAPL, -GSFZRA, -FZRAGS		7 minutes	5 minutes	
Light Ice Pellets Mixed with Light Rain -PLRA, -RAPL, -GSRA, -RAGS	7 minutes			
Moderate Ice Pellets (or Small Hail) PL, GS	5 minutes	5 minutes	5 minutes	

NOTES

- 1 These allowance times are for use with undiluted (100/0) fluids applied unheated on aircraft with rotation speeds of 100 knots or greater. To use the allowance times in this table, ensure the fluid being used is listed in the List of Fluids Validated for the Use of Allowance Times Table (Table 44).
- 2 Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. Takeoff is not permitted if the OAT decreases during the 90 minutes in conditions of light ice pellets mixed with either: light freezing drizzle, moderate freezing drizzle, light freezing rain, or light rain.
- 3 Ensure that the lowest operational use temperature (LOUT) is respected.
- 4 In the US, small hail is reported as GR with the remark “GR LESS THAN ¼”. Outside of the US, small hail is reported as GS. If the METAR does not report an intensity for small hail, use the “moderate ice pellets or small hail” allowance times. If the METAR reports an intensity with small hail, the condition with the equivalent intensity can be used. This also applies in mixed conditions.

CAUTIONS

- The cautions that apply to the allowance times in the table above can be found on page 57.

**TABLE 46: ALLOWANCE TIMES FOR SAE TYPE IV
ETHYLENE GLYCOL (EG) FLUIDS^{1,2}**

Precipitation Types or Combinations and Applicable METAR Codes ⁵	Outside Air Temperature				
	Above 0 °C ³ (32 °F and above)	0 to -5 °C ³ (32 to 23 °F)	Below -5 to -10 °C ³ (Below 23 to 14 °F)	Below -10 to -16 °C ³ (Below 14 to 3 °F)	Below -16 to -22 °C ^{3,4} (Below 3 to -8 °F)
Light Ice Pellets -PL, -GS	70 minutes	70 minutes	70 minutes	50 minutes	30 minutes
Light Ice Pellets Mixed with Light Snow -PLSN, -SNPL, -GSSN, -SNGS	50 minutes	50 minutes	30 minutes	25 minutes	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle -PLFZDZ, -FZDZPL, FZDZPL, -GSFZDZ, -FZDZGS, FZDZGS		40 minutes	30 minutes		
Light Ice Pellets Mixed with Light or Moderate Drizzle -PLDZ, -DZPL, DZPL, -GSDZ, -DZGS, DZGS	40 minutes				
Light Ice Pellets Mixed with Light Freezing Rain -PLFZRA, -FZRAPL, -GSFZRA, -FZRAGS		40 minutes	30 minutes		
Light Ice Pellets Mixed with Light Rain -PLRA, -RAPL, -GSRA, -RAGS	40 minutes				
Light Ice Pellets Mixed with Light Rain and Light Snow -PLRASN, -PLSNRA, -RAPLSN, -RASNPL, -SNPLRA, -SNRAPL, -GSRASN, -GSSNRA, -RAGSSN, -RASNGS, -SNGSRA, -SNRAGS	20 minutes				
Light Ice Pellets Mixed with Light Freezing Rain and Light Snow -PLFZRASN, -PLSNFZRA, -FZRAPLSN, -FZRASNPL, -SNPLFZRA, -SNFZRAPL, -GSFZRASN, -GSSNFZRA, -FZRAGSSN, -FZRASNGS, -SNGSFZRA, -SNFZRAGS		20 minutes			
Moderate Ice Pellets (or Small Hail) PL, GS	35 minutes	35 minutes	35 minutes	15 minutes	10 minutes
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Snow PLSN, SNPL, GSSN, SNGS	25 minutes	15 minutes	10 minutes		Caution: No allowance times currently exist
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Freezing Drizzle PLFZDZ, GSFZDZ		20 minutes	10 minutes		
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Drizzle PLDZ, GSDZ	20 minutes				
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Rain PLRA, GSRA, RAPL, RAGS	15 minutes				

NOTES

- The notes that apply to the allowance times in the table above can be found on page 61.

CAUTIONS

- The cautions that apply to the allowance times in the table above can be found on page 57.

**TABLE 46 (CONT'D): ALLOWANCE TIMES FOR SAE TYPE IV
ETHYLENE GLYCOL (EG) FLUIDS****NOTES**

- 1 These allowance times are for use with undiluted (100/0) EG based fluids. If the glycol type is unknown, the allowance times for SAE Type IV PG fluids should be used. To use the allowance times in this table, ensure the fluid being used is listed in the List of Fluids Validated for the Use of Allowance Times Table (Table 44).
- 2 Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. Takeoff is not permitted if the OAT decreases during the 90 minutes in conditions of light ice pellets mixed with either: light or moderate freezing drizzle, light or moderate drizzle, light freezing rain, light rain, light rain and light snow, or light freezing rain and light snow..
- 3 No allowance times exist for EG based fluids when used on aircraft with rotation speeds less than 100 knots.
- 4 Ensure that the lowest operational use temperature (LOUT) is respected.
- 5 In the US, small hail is reported as GR with the remark "GR LESS THAN ¼". Outside of the US, small hail is reported as GS. If the METAR does not report an intensity for small hail, use the "moderate ice pellets or small hail" allowance times. If the METAR reports an intensity with small hail, the condition with the equivalent intensity can be used.

**TABLE 47: ALLOWANCE TIMES FOR SAE TYPE IV
PROPYLENE GLYCOL (PG) FLUIDS^{1,2}**

Precipitation Types or Combinations and Applicable METAR Codes ⁶	Outside Air Temperature				
	Above 0 °C ³ (32 °F and above)	0 to -5 °C ³ (32 to 23 °F)	Below -5 to -10 °C ³ (Below 23 to 14 °F)	Below -10 to -16 °C ⁴ (Below 14 to 3 °F)	Below -16 to -22 °C ^{4,5} (Below 3 to -8 °F)
Light Ice Pellets -PL, -GS	50 minutes	50 minutes	30 minutes	30 minutes	20 minutes
Light Ice Pellets Mixed with Light Snow -PLSN, -SNPL, -GSSN, -SNGS	40 minutes	40 minutes	15 minutes	15 minutes	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle -PLFZDZ, -FZDZPL, FZDZPL, -GSFZDZ, -FZDZGS, FZDZGS		25 minutes	10 minutes		
Light Ice Pellets Mixed with Light or Moderate Drizzle -PLDZ, -DZPL, DZPL, -GSDZ, -DZGS, DZGS	25 minutes				
Light Ice Pellets Mixed with Light Freezing Rain -PLFZRA, -FZRAPL, -GSFZRA, -FZRAGS		25 minutes	10 minutes		
Light Ice Pellets Mixed with Light Rain -PLRA, -RAPL, -GSRA, -RAGS	25 minutes				
Light Ice Pellets Mixed with Light Rain and Light Snow -PLRASN, -PLSNRA, -RAPLSN, -RASNPL, -SNPLRA, -SNRAPL, -GSRASN, -GSSNRA, -RAGSSN, -RASNGS, -SNGSRA, -SNRAGS	20 minutes				
Light Ice Pellets Mixed with Light Freezing Rain and Light Snow -PLFZRASN, -PLSNFZRA, -FZRAPLSN, -FZRASNPL, -SNPLFZRA, -SNFZRAPL, -GSFZRASN, -GSSNFZRA, -FZRAGSSN, -FZRASNGS, -SNGSFZRA, -SNFZRAGS		20 minutes			
Moderate Ice Pellets (or Small Hail) PL, GS	15 minutes	15 minutes	10 minutes	10 minutes	
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Snow PLSN, SNPL, GSSN, SNGS	15 minutes	5 minutes	5 minutes		
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Freezing Drizzle PLFZDZ, GSFZDZ		10 minutes	7 minutes		
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Drizzle PLDZ, GSDZ	10 minutes			Caution: No allowance times currently exist	
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Rain PLRA, GSRA, RAPL, RAGS	10 minutes				

NOTES

- The notes that apply to the allowance times in the table above can be found on page 63.

CAUTIONS

- The cautions that apply to the allowance times in the table above can be found on page 57.

**TABLE 47 (CONT'D): ALLOWANCE TIMES FOR SAE TYPE IV
PROPYLENE GLYCOL (PG) FLUIDS****NOTES**

- 1 These allowance times are for use with undiluted (100/0) PG based fluids applied on aircraft with rotation speeds of 100 knots or greater. If the glycol type is unknown, the allowance times for SAE Type IV PG fluids should be used. To use the allowance times in this table, ensure the fluid being used is listed in the List of Fluids Validated for the Use of Allowance Times Table (Table 44).
- 2 Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. Takeoff is not permitted if the OAT decreases during the 90 minutes in conditions of light ice pellets mixed with either: light or moderate freezing drizzle, light or moderate drizzle, light freezing rain, light rain, light rain and light snow, or light freezing rain and light snow.
- 3 No allowance times exist for PG based fluids when used on aircraft with rotation speeds less than 100 knots.
- 4 No allowance times exist for PG based fluids when used on aircraft with rotation speeds less than 115 knots.
- 5 Ensure that the lowest operational use temperature (LOUT) is respected.
- 6 In the US, small hail is reported as GR with the remark "GR LESS THAN ¼". Outside of the US, small hail is reported as GS. If the METAR does not report an intensity for small hail, use the "moderate ice pellets or small hail" allowance times. If the METAR reports an intensity with small hail, the condition with the equivalent intensity can be used.

SUPPLEMENTAL GUIDANCE FOR WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

TABLE 48: SNOWFALL INTENSITIES AS A FUNCTION OF PREVAILING VISIBILITY

Visibility		Day		Night	
Statute Miles	Meters	Below -1°C Below 30 °F	-1°C and above 30 °F and above	Below -1°C Below 30 °F	-1°C and above 30 °F and above
≤1/4 (≤3/8)	≤400 (≤600)	Heavy	Heavy	Heavy	Heavy
1/2 (>3/8 to ≤5/8)	800 (>600 to ≤1000)	Moderate	Heavy	Heavy	Heavy
3/4 (>5/8 to ≤7/8)	1200 (>1000 to ≤1400)	Moderate	Moderate	Heavy	Heavy
1 (>7/8 to ≤1 1/8)	1600 (>1400 to ≤1800)	Light	Light	Moderate	Heavy
1 ¼ (>1 1/8 to ≤1 3/8)	2000 (>1800 to ≤2200)	Light	Light	Moderate	Moderate
1 ½ (>1 3/8 to ≤1 5/8)	2400 (>2200 to ≤2600)	Light	Light	Moderate	Moderate
1 ¾ (>1 5/8 to ≤1 7/8)	2800 (>2600 to ≤3000)	Light	Light	Light	Light
2 (>1 7/8 to ≤2 ¼)	3200 (>3000 to ≤3600)	Very Light	Very Light	Light	Light
2 ½ (>2 ¼ to ≤2 ¾)	4000 (>3600 to ≤4400)	Very Light	Very Light	Light	Light
3 (>2 ¾ to ≤3 ¼)	4800 (>4400 to ≤5200)	Very Light	Very Light	Very Light	Light
≥3 ½ (>3 ¼)	≥5600 (>5200)	Very Light	Very Light	Very Light	Very Light

NOTES

- The METAR/SPECI reported visibility or flight crew observed visibility will be used with this visibility table to establish snowfall intensity for Type I, II, III and IV holdover time guidelines, during snow, snow grain, or snow pellet precipitation conditions. This visibility table will also be used when snow, snow grains, or snow pellets are accompanied by blowing or drifting snow, or when snow is mixed with ice crystals or freezing fog in the METAR/SPECI.
- The use of Runway Visual Range (RVR) is not permitted for determining visibility used with the holdover tables.
- Some METARs contain tower visibility as well as surface visibility. Whenever surface visibility is available from an official source, such as a METAR, in either the main body of the METAR or in the Remarks (“RMK”) section, the preferred action is to use the surface visibility value.
- If the visibility is being reduced by snow along with form(s) of obscuration such as fog, haze, smoke, etc., use of the table above may overestimate the actual snowfall intensity. However, use of the snowfall intensity being reported in accordance with the Environment and Climate Change Canada Manual of Surface Weather Observations (MANOBS), may underestimate the actual snowfall intensity. as it does not directly correlate to the snowfall intensities used when determining holdover times. Use of the visibility table in all snow conditions with or without obscuration is recommended.

Example for how to read and use the table: *CYVO 160200Z 15011G17KT 1SM -SN DRSN OVC009 M06/M08 A2948*
In the above METAR the snowfall intensity is reported as light. However, based upon the “Snowfall Intensities as a Function of Prevailing Visibility” table, with a visibility of 1 statute mile, at night and a temperature of -6°C, the snowfall intensity is classified as moderate. The snowfall intensity of moderate - not the METAR reported intensity of light - will be used to determine which holdover time guideline value is appropriate for the fluid in use.

**TABLE 49:
TYPE I FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**
(see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Lowest Operational Use Temperature ³						
			Dilution ^{4,5} (fluid/water)	low speed aerodynamic test ⁶		middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶	
				°C	°F	°C	°F	°C	°F
ABAX Industries									
DE-950	PG	26-06-01	71/29	-26	-15	Not tested ¹¹		-31	-24
ADDCON EUROPE GmbH¹⁰									
<i>IceFree I.80</i>	PG	21-03-14 ⁹	70/30	-26	-15	Not tested ¹¹		-32	-26
Aéro Mag 2000									
DeiceX PG ADF Concentrate (Multiple Location)	PG	Y-M-D ¹²	65/35	-25	-13	Not tested ¹¹		-31.5	-25
ALAB Industries¹⁰									
<i>WDF 1</i>	EG	22-03-02 ⁹	70/30	-40	-40	Not tested ¹¹		-45	-49
ALAB International									
PROFLIGHT EG1	EG	25-06-01	70/30	-43.5	-46	Not tested ¹¹		-44	-47
AllClear Systems LLC									
Lift-Off E-188	EG	26-06-01	70/30	-40	-40	Not tested ¹¹		-41.5	-43
Lift-Off P-88	PG	26-06-01	70/30	-24.5	-12	Not tested ¹¹		-29.5	-21
Arcton Ltd.¹⁰									
<i>Arctica DG ready-to-use</i>	DEG	22-03-26 ⁹	<i>as supplied</i>	-26	-15	Not tested ¹¹		-26	-15
ASGlobal									
Sky-Go EG	EG	26-09-23	70/30	-31 ¹⁴	-24 ¹⁴	Not tested ¹¹		-44	-47
Sky-Go PG	PG	26-07-27	70/30	-21.5 ¹⁴	-7 ¹⁴	Not tested ¹¹		-30.5	-23
Sky-Go PG 80	PG	27-08-07	70/30	-25 ¹⁴	-13 ¹⁴	Not tested ¹¹		-31.5	-25
AVIAFLUID International Ltd									
AVIAFLO EG	EG	21-06-19 ⁹	70/30	-40.5	-41	Not tested ¹¹		-44	-47
AVIAFLO PG	PG	22-02-10 ⁹	70/30	Not tested ¹¹		Not tested ¹¹		-30	-22
Aviation Xi'an High-Tech Physical Chemical Co. Ltd.									
Cleanwing I	PG	27-06-08	75/25	Not tested ¹¹		Not tested ¹¹		-39.5	-39
<i>Cleanwing E</i>	EG	22-07-09 ¹³	75/25	-37	-35	Not tested ¹¹		-37	-35
<i>Cleanwing S-92</i>	EG	22-06-03 ¹³	75/25	-35	-31	Not tested ¹¹		-40	-40
KHF-1	PG	27-06-08	75/25	Not tested ¹¹		Not tested ¹¹		-38.5	-37

**TABLE 49 (CONT'D):
TYPE I FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**
(see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Lowest Operational Use Temperature ³						
			Dilution ^{4,5} (fluid/water)	low speed aerodynamic test ⁶		middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶	
				°C	°F	°C	°F	°C	°F
Beijing Wangye Aviation Chemical Product Co Ltd.¹⁰									
KLA-1A	EG	22-05-22 ⁹	60/40	Not tested ¹¹		Not tested ¹¹		-32	-26
Beijing Yadilite Aviation Advanced Materials Corporation¹⁰									
YD-101 Type I	PG	21-03-07 ⁹	60/40	Not tested ¹¹		Not tested ¹¹		-30	-22
YD-101A Type I	EG	25-02-26	70/30	Not tested ¹¹		Not tested ¹¹		-38	-36
CHEMCO Inc.									
CHEMR EG I	EG	28-06-01	70/30	-37	-35	Not tested ¹¹		-43	-45
CHEMR REG I	EG	26-06-01	75/25	-36.5	-34	Not tested ¹¹		-43.5	-46
Chongqing Joba Chemical Co., Ltd									
FW-I	EG	25-11-07	75/25	-43	-45	Not tested ¹¹		-46	-51
Clariant Produkte (Deutschland) GmbH									
Octaflo EF Concentrate	PG	22-03-28 ⁹	65/35	-25	-13	Not tested ¹¹		-33	-27
Safewing MP I 1938 ECO (80)	PG	24-06-23 ⁹	71/29	-25	-13	Not tested ¹¹		-32.5	-27
Safewing MP I ECO PLUS (80)	PG	27-06-01	71/29	-25	-13	Not tested ¹¹		-33	-27
Safewing MP I LFD 80	PG	25-04-15	71/29	-26	-15	Not tested ¹¹		-33	-27
Safewing MP I LFD 80 Pre-Mix 55%	PG	27-06-01	as supplied	Not tested ¹¹		Not tested ¹¹		-17	1
Safewing MP I LFD 88	PG	27-06-01	65/35	-26	-15	Not tested ¹¹		-33	-27
Safewing MP I LFD PLUS 88	PG	26-06-01	65/35	-25	-13	Not tested ¹¹		-34	-29
Cryotech Deicing Technology									
Polar Plus® LT	PG	28-06-01	63/37	-27	-17	Not tested ¹¹		-33	-27
Polar Plus® LT (80)	PG	28-06-01	70/30	-27	-17	Not tested ¹¹		-33	-27
Dow Inc.									
UCAR™ ADF Concentrate	EG	27-06-01	75/25	-36	-33	Not tested ¹¹		-45	-49
UCAR™ ADF XL54 ¹⁵	EG	27-06-01	as supplied	-33	-27	Not tested ¹¹		-33	-27
UCAR™ PG ADF Concentrate	PG	27-06-01	65/35	-25	-13	Not tested ¹¹		-32	-26
UCAR™ PG ADF Dilute 55/45 ¹⁶	PG	27-06-01	as supplied	-24	-11	Not tested ¹¹		-25	-13

**TABLE 49 (CONT'D):
TYPE I FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**
(see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Lowest Operational Use Temperature ³						
			Dilution ^{4,5} (fluid/water)	low speed aerodynamic test ⁶		middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶	
				°C	°F	°C	°F	°C	°F
Heilongjiang Hangjie Aero-chemical Technology Co. Ltd.¹⁰									
HJF-1	EG	21-06-14 ⁹	65/35	Not tested ¹¹		Not tested ¹¹		-42	-44
HOC Industries									
SafeTemp® ES Plus	PG	24-06-30 ¹³	65/35	-25.5	-14	Not tested ¹¹		-29	-20
Inland Technologies Inc.									
DuraGly-E Type I ADF Concentrate	EG	23-02-08 ¹³	60/40	-33	-27	Not tested ¹¹		-33	-27
Inland ADF Concentrate (Multiple Location)	EG	Y-M-D ¹⁷	75/25	-36	-33	Not tested ¹¹		-42.5	-45
SafeTemp® ES Plus (Multiple Location)	PG	Y-M-D ¹⁸	65/35	-25.5	-14	Not tested ¹¹		-31	-24
JSC RCP Nordix									
DEFROST EG 88.1	EG	25-04-13	70/30	-40.5	-41	Not tested ¹¹		-44.5	-48
DEFROST PG 1	PG	23-11-21 ⁹	70/30	-24.5	-12	Not tested ¹¹		-31.5	-25
Kilfrosth Limited									
Kilfrosth DF Plus	PG	27-06-01	69/31	-25.5	-14	Not tested ¹¹		-32	-26
Kilfrosth DF Plus (80)	PG	24-07-14 ⁹	69/31	-26	-15	Not tested ¹¹		-31.5	-25
Kilfrosth DF Plus (88)	PG	23-06-05 ⁹	63/37	-25.5	-14	Not tested ¹¹		-32	-26
Kilfrosth Ice Clear I	PG	27-06-01	70/30	-26	-15	Not tested ¹¹		-33	-27
LNT Solutions¹⁰									
LNT E188	EG	25-08-13	70/30	-30.5	-23	Not tested ¹¹		-41	-42
LNT P180	PG	26-11-10	69/31	-26	-15	Not tested ¹¹		-32	-26
MKS DevO Chemicals									
COREICEPHOB TYPE I	PG	26-06-01	71/29	Not tested ¹¹		Not tested ¹¹		-32.5	-27
Newave Aerochemical Co. Ltd.									
FCY-1A	EG	27-06-01	75/25	-40 ¹⁴	-40 ¹⁴	Not tested ¹¹		-40	-40
FCY-1Bio+	EG	25-06-22	75/25	-40.5	-41	Not tested ¹¹		-40.5	-41
FCY-1Bio+ (R)	EG	25-12-01	75/25	Not tested ¹¹		Not tested ¹¹		-46	-51

**TABLE 49 (CONT'D):
TYPE I FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**
(see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Lowest Operational Use Temperature ³						
			Dilution ^{4,5} (fluid/water)	low speed aerodynamic test ⁶		middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶	
				°C	°F	°C	°F	°C	°F
ROMCHIM PROTECT SRL									
ADD-PROTECT NG Type I	EG	26-06-01	60/40	-22	-8	Not tested ¹¹		-22	-8
ADD-PROTECT Type I	PG	27-06-01	70/30	-25.5	-14	Not tested ¹¹		-31	-24
Shaanxi Cleanway Aviation Chemical Co., Ltd									
Cleansurface I	EG	25-06-07	75/25	Not tested ¹¹		Not tested ¹¹		-40.5	-41
Cleansurface I-BIO	EG	22-05-02 ⁹	75/25	Not tested ¹¹		Not tested ¹¹		-37	-35
Topan LLP¹⁰									
TOPAN TYPE I	EG	24-07-13 ⁹	75/25	-35.5	-32	Not tested ¹¹		-42	-44
Xinjiang Zhongtian Liyang Aviation Newmaterial Technology Co., Ltd.¹⁰									
Clearice-I	EG	23-10-24 ⁹	60/40	Not tested ¹¹		Not tested ¹¹		-30	-22
Clearice-IB	EG	24-08-04 ⁹	75/25	Not tested ¹¹		Not tested ¹¹		-43.5	-46

TABLE 50:
TYPE II FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE
 (see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Dilution (fluid/water)	Lowest Operational Use Temperature ³				AS 9968 Viscosity ⁷ (mPa.s)			
				middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶		Lowest On-Wing Viscosity ⁸		Highest On-Wing Viscosity ⁸	
				°C	°F	°C	°F	Manufacturer Method	Alternate Method	Manufacturer Method	Alternate Method
ABAX Industries											
ECOWING AD-2	PG	25-06-01	100/0	Not tested ¹¹	-27	-17	5 750 (a)	Not Available ¹⁹	17 200 (a)	14 000 (h)	
			75/25	Not tested ¹¹	-15	5	12 000 (c)	Not Available ¹⁹	30 200 (c)	32 000 (h)	
			50/50 ⁹	Not tested ¹¹	-3	27	7 500 (a)	Not Available ¹⁹	26 900 (c)	36 800 (h)	
Aviation Xi'an High-Tech Physical Chemical Co. Ltd.											
Cleanwing II	PG	25-07-06	100/0	Not tested ¹¹	-25	-13	4 650 (e)	4 500 (a)	13 500 (a)	11 100 (i)	
			75/25	Not tested ¹¹	-15	5	9 450 (e)	10 000 (a)	14 600 (i)	Not Available ¹⁹	
			50/50	Not tested ¹¹	-4.5	24	10 150 (e)	10 200 (a)	12 900 (i)	Not Available ¹⁹	
Clariant Produkte (Deutschland) GmbH											
Safewing MP II FLIGHT	PG	26-06-01	100/0	Not tested ¹¹	-29	-20	3 340 (a)	Not Available ¹⁹	20 500 (q)	20 500 (c)	
			75/25	Not tested ¹¹	-14	7	12 900 (c)	Not Available ¹⁹	47 800 (q)	47 800 (c)	
			50/50	Not tested ¹¹	-3.5	26	11 500 (a)	Not Available ¹⁹	63 000 (q)	63 000 (c)	
Cryotech Deicing Technology											
Polar Guard® II	PG	25-06-01	100/0	Not tested ¹¹	-30.5	-23	4 400 (f)	4 050 (a)	17 000 (f)	16 200 (a)	
			75/25	Not tested ¹¹	-14	7	11 600 (f)	9 750 (a)	38 000 (c)	Not Available ¹⁹	
			50/50	Not tested ¹¹	-3.5	26	80 (a)	Not Available ¹⁹	48 000 (c)	Not Available ¹⁹	
Kilfrost Limited											
ABC-K Plus	PG	25-06-01	100/0	Not tested ¹¹	-29	-20	2 850 (e)	2 640 (a)	13 400 (a)	Not Available ¹⁹	
			75/25	Not tested ¹¹	-14.5	6	12 650 (e)	12 650 (c)	29 000 (c)	Not Available ¹⁹	
			50/50	Not tested ¹¹	-3.5	26	4 200 (e)	5 260 (a)	15 000 (a)	Not Available ¹⁹	
Ice Clear II	PG	26-06-01	100/0	Not tested ¹¹	-28	-18	4 100 (a)	18 000 (m)	26 000 (c)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
MKS DevO Chemicals											
COREICEPHOB Type II	PG	26-06-01	100/0	Not tested ¹¹	-27	-17	34 400 (i)	Not Available ¹⁹	50 200 (i)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Not tested ¹¹	-3.5	26	20 700 (i)	Not Available ¹⁹	30 700 (i)	Not Available ¹⁹	

**TABLE 50 (CONT'D):
TYPE II FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**
(see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Dilution (fluid/water)	Lowest Operational Use Temperature ³				AS 9968 Viscosity ⁷ (mPa.s)			
				middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶		Lowest On-Wing Viscosity ⁸		Highest On-Wing Viscosity ⁸	
				°C	°F	°C	°F	Manufacturer Method	Alternate Method	Manufacturer Method	Alternate Method
Newave Aerochemical Co. Ltd.											
FCY-2	PG	25-07-13	100/0	Not tested ¹¹	-28	-18	7 000 (e)	8 920 (a)	24 800 (c)	Not Available ¹⁹	
			75/25	Not tested ¹¹	-14.5	6	18 550 (e)	18 550 (c)	31 300 (i)	Not Available ¹⁹	
			50/50	Not tested ¹¹	-4.5	24	6 750 (e)	7 030 (a)	15 200 (i)	Not Available ¹⁹	
ROMCHIM PROTECT SRL											
ADD-PROTECT NG Type II	PG	25-06-01	100/0	Not tested ¹¹	-28	-18	5 200 (a)	Not Available ¹⁹	12 400 (a)	Not Available ¹⁹	
			75/25	Not tested ¹¹	-14.5	6	8 250 (a)	Not Available ¹⁹	43 800 (i)	Not Available ¹⁹	
			50/50	Not tested ¹¹	-3	27	5 850 (a)	Not Available ¹⁹	38 900 (i)	Not Available ¹⁹	
ADD-PROTECT Type II	PG	25-06-01	100/0	Not tested ¹¹	-28	-18	4 000 (a)	Not Available ¹⁹	18 250 (a)	12 900 (i)	
			75/25	Not tested ¹¹	-14	7	7 700 (a)	Not Available ¹⁹	23 300 (c)	23 200 (i)	
			50/50	Not tested ¹¹	-3	27	14 500 (a)	Not Available ¹⁹	31 400 (c)	22 600 (i)	

**TABLE 51:
TYPE III FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**
(see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Dilution (fluid/water)	Lowest Operational Use Temperature ³						AS 9968 Viscosity ⁷ (mPa.s)			
				low speed aerodynamic test ⁶		middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶		Lowest On-Wing Viscosity ⁸		Highest On-Wing Viscosity ⁸	
				°C	°F	°C	°F	°C	°F	Manufacturer Method	Alternate Method	Manufacturer Method	Alternate Method
AllClear Systems LLC													
AeroClear MAX	EG	24-03-08 ¹³	100/0	-16	3	-20.5	-5	-35	-31	7 800 (o)	Not Available ¹⁹	15 000 (o)	Not Available ¹⁹
			75/25	Dilution Not Applicable						Dilution Not Applicable			
			50/50	Dilution Not Applicable						Dilution Not Applicable			

TABLE 52:
TYPE IV FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE
 (see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Dilution (fluid/water)	Lowest Operational Use Temperature ³				AS 9968 Viscosity ⁷ (mPa.s)			
				middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶		Lowest On-Wing Viscosity ⁸		Highest On-Wing Viscosity ⁸	
				°C	°F	°C	°F	Manufacturer Method	Alternate Method	Manufacturer Method	Alternate Method
ABAX Industries											
ECOWING AD-49	PG	26-06-01	100/0	Not tested ¹¹	-26	-15	12 150 (h)	11 000 (a)	22 400 (h)	25 900 (c)	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
ALAB International											
PROFLIGHT EG4	EG	25-06-01	100/0	Not tested ¹¹	-26	-15	1 840 (a)	Not Available ¹⁹	6 180 (a)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
PROFLIGHT PG4	PG	26-06-01	100/0	Not tested ¹¹	-29	-20	10 600 (a)	Not Available ¹⁹	17 800 (h)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
AllClear Systems LLC											
ClearWing EG	EG	25-06-01	100/0	Not tested ¹¹	-29	-20	35 500 (n)	13 350 (a)	51 800 (k)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
ASGlobal											
4Flite EG	EG	24-07-15 ¹³	100/0	Not tested ¹¹	-30	-22	6 600 (a)	Not Available ¹⁹	17 300 (a)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
4Flite PG	PG	25-08-04	100/0	Not tested ¹¹	-26	-15	26 100 (c)	Not Available ¹⁹	36 500 (c)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
AVIAFLUID International Ltd											
AVIAFlight EG	EG	22-04-28 ⁹	100/0	Not tested ¹¹	-31	-24	5 600 (a)	Not Available ¹⁹	12 800 (a)	11 200 (i)	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
AVIAFlight PG	PG	23-07-01 ⁹	100/0	Not tested ¹¹	-25.5	-14	28 600 (c)	Not Available ¹⁹	35 900 (c)	22 200 (i)	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			

**TABLE 52 (CONT'D):
TYPE IV FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**
(see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Dilution (fluid/water)	Lowest Operational Use Temperature ³				AS 9968 Viscosity ⁷ (mPa.s)			
				middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶		Lowest On-Wing Viscosity ⁸		Highest On-Wing Viscosity ⁸	
				°C	°F	°C	°F	Manufacturer Method	Alternate Method	Manufacturer Method	Alternate Method
CHEMCO Inc.											
ChemR EG IV	EG	23-04-07 ⁹	100/0	Not tested ¹¹	-27	-17	46 400 (m)	19 450 (c)	67 000 (m)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
ChemR Nordik IV	EG	25-06-01	100/0	Not tested ¹¹	-29	-20	60 800 (n)	43 100 (c)	87 100 (n)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
Chongqing Joba Chemical Co.,Ltd											
FW-IV	EG	25-11-01	100/0	Not tested ¹¹	-29	-20	32 600 (j)	Not Available ¹⁹	66 200 (j)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
Clariant Produkte (Deutschland) GmbH											
Safewing MP IV LAUNCH	PG	26-06-01	100/0	Not tested ¹¹	-28.5	-19	7 550 (a)	Not Available ¹⁹	20 500 (q)	20 500 (c)	
			75/25	Not tested ¹¹	-14	7	18 000 (a)	Not Available ¹⁹	47 800 (q)	47 800 (c)	
			50/50	Not tested ¹¹	-3.5	26	17 800 (a)	Not Available ¹⁹	63 000 (q)	63 000 (c)	
Safewing MP IV LAUNCH PLUS	PG	25-06-01	100/0	Not tested ¹¹	-29	-20	8 700 (p)	8 450 (a)	21 000 (q)	21 000 (c)	
			75/25	Not tested ¹¹	-14	7	18 800 (q)	17 200 (c)	51 600 (q)	51 600 (c)	
			50/50	Not tested ¹¹	-3.5	26	9 700 (p)	12 150 (a)	65 700 (q)	65 700 (c)	
Cryotech Deicing Technology											
Polar Guard® Advance	PG	25-06-01	100/0	Not tested ¹¹	-30.5	-23	4 400 (f)	4 050 (a)	17 000 (f)	16 200 (a)	
			75/25	Not tested ¹¹	-14	7	11 600 (f)	9 750 (a)	38 000 (c)	Not Available ¹⁹	
			50/50	Not tested ¹¹	-3.5	26	80 (a)	Not Available ¹⁹	48 000 (c)	Not Available ¹⁹	
Polar Guard® Xtend	PG	25-06-01	100/0	Not tested ¹¹	-29	-20	6 000 (f)	6 350 (a)	23 500 (f)	23 200 (c)	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			

**TABLE 52 (CONT'D):
TYPE IV FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**
(see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Dilution (fluid/water)	Lowest Operational Use Temperature ³				AS9968 Viscosity ⁷ (mPa.s)			
				middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶		Lowest On-Wing Viscosity ⁸		Highest On-Wing Viscosity ⁸	
				°C	°F	°C	°F	Manufacturer Method	Alternate Method	Manufacturer Method	Alternate Method
Dow Inc.											
UCAR ENDURANCE™ EG106 ADF/AAF	EG	25-06-01	100/0	Not tested ¹¹	-29	-20	24 850 (j)	2 230 (a)	47 800 (j)	5 900 (a)	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
UCAR™ FLIGHTGUARD™ AD-49	PG	25-06-08	100/0	Not tested ¹¹	-26	-15	12 150 (h)	11 000 (a)	22 400 (h)	25 900 (c)	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
Inland Technologies Inc.											
ECO-SHIELD®	PG	24-10-28	100/0	Not tested ¹¹	-25.5	-14	11 050 (a)	Not Available ¹⁹	25 800 (i)	34 500 (c)	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
JSC RCP Nordix											
Defrost ECO 4	PG	23-08-12 ⁹	100/0	Not tested ¹¹	-25.5	-14	9 800 (h)	12 350 (a)	14 800 (i)	17 340 (a)	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
Defrost NORTH 4	EG	23-06-01 ⁹	100/0	Not tested ¹¹	-26	-15	2 500 (a)	Not Available ¹⁹	5 350 (a)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
Kilfrost Limited											
ABC-S Plus	PG	25-06-15	100/0	Not tested ¹¹	-28	-18	17 900 (e)	17 900 (c)	43 800 (c)	Not Available ¹⁹	
			75/25	Not tested ¹¹	-14.5	6	18 300 (e)	18 300 (c)	58 000 (c)	Not Available ¹⁹	
			50/50	Not tested ¹¹	-3.5	26	7 500 (e)	7 500 (a)	27 000 (c)	Not Available ¹⁹	
MKS DevO Chemicals											
COREICEPHOB TYPE-IV PG	PG	26-06-01	100/0	Not tested ¹¹	-29	-20	50 200 (i)	Not Available ¹⁹	60 900 (i)	Not Available ¹⁹	
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			

**TABLE 52 (CONT'D):
TYPE IV FLUIDS TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**
(see cautions and notes on pages 77 and 78)

Fluid Name	Type of Glycol ¹	Expiry ² (y-m-d)	Dilution (fluid/water)	Lowest Operational Use Temperature ³				AS9968 Viscosity ⁷ (mPa.s)			
				middle speed aerodynamic test ⁶		high speed aerodynamic test ⁶		Lowest On-Wing Viscosity ⁸		Highest On-Wing Viscosity ⁸	
				°C	°F	°C	°F	Manufacturer Method	Alternate Method	Manufacturer Method	Alternate Method
Newave Aerochemical Co. Ltd.											
FCY 9311	PG	26-06-01	100/0	Not tested ¹¹		-29.5	-21	14 100 (c)	Not Available ¹⁹	27 600 (c)	25 700 (i)
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
FCY-EGIV	EG	26-06-01	100/0	Not tested ¹¹		-29	-20	24 800 (g)	6 300 (a)	43 700 (k)	78 000 (c)
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			
Shaanxi Cleanway Aviation Chemical Co., Ltd											
Cleansurface IV	PG	25-11-28	100/0	Not tested ¹¹		-30	-22	16 750 (a)	Not Available ¹⁹	29 700 (d)	Not Available ¹⁹
			75/25	Dilution Not Applicable				Dilution Not Applicable			
			50/50	Dilution Not Applicable				Dilution Not Applicable			

CAUTIONS AND NOTES FOR TABLES 49, 50, 51, 52**CAUTIONS**

- These tables list fluids that have been tested with respect to endurance time performance (Holdover Times), anti-icing performance (Water Spray Endurance Testing/High Humidity Endurance Testing) and aerodynamic acceptance (Type I: SAE ARP6207 §3.4.1, AMS1424 §3.5.2 and §3.5.3; Type II/ III/ IV: SAE ARP5718 §FOREWARD, AMS1428 §3.2.4 and §3.2.5) only. These tests were conducted by APS Aviation Inc. (www.apsaviation.ca) and Anti-icing Materials International Laboratory (AMIL) (www.uqac.ca/amil). The end user is responsible for contacting the fluid manufacturer to confirm all other SAE AMS1424/1428 technical requirement tests, such as fluid stability, toxicity, materials compatibility, etc. have been conducted. These technical requirement tests are typically conducted by Scientific Material International (SMI) (www.smiinc.com) and AMIL, or any acceptable source.
- LOU data provided in these tables is based strictly on the manufacturer's data; the end user is responsible for verifying the validity of this data.
- Type I fluids supplied in concentrated form must not be used in that form and must be diluted.

NOTES

- 1 PG = conventional glycol (propylene glycol); EG = conventional glycol (ethylene glycol); DEG = conventional glycol (diethylene glycol); NCG = non-conventional glycol (organic non-ionic diols and triols, e.g. 1,3-propanediol, glycerine) and mixtures of non-conventional glycol and conventional glycol; NG = non-glycol (e.g. organic salts) and mixtures of non-glycol and glycol.
- 2 Expiry date is the earlier expiry date of the Aerodynamic Test(s) or Water Spray Endurance Test. Fluids that are tested after the issuance of this list will appear in a later update.
- 3 The values in this table were determined using test results from pre-production fluid samples when available. In some cases, the fluid manufacturer requested the publication of a more conservative value than the pre-production test value. The lowest operational use temperature (LOU) for a given fluid is the higher (warmer) of:
 - a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or
 - b) The actual freezing point of the fluid plus its freezing point buffer (Type I = 10 °C/18 °F; Type II/III/IV = 7 °C/13 °F).Note: LOUs are rounded to the nearest half degree Celsius and the values in degrees Fahrenheit are calculated to the nearest whole degree.
- 4 The LOU for Type I fluids that are intended to be diluted is derived from a dilution that provides the lowest operational use temperature. For other Type I dilutions, determine the freezing point of the fluid and add a 10 °C freezing point buffer, as a dilution will usually yield a higher and more restrictive operational use temperature. Consult the fluid manufacturer or fluid documentation for further clarification and guidance on establishing the appropriate operational use temperature of a diluted fluid.
- 5 Type I concentrate fluids have also been tested at 50/50 (glycol/water) dilution.
- 6 If uncertain whether the aircraft to be treated conforms to the low speed, the middle speed, or the high speed aerodynamic test, consult the aircraft manufacturer. The aerodynamic test is defined in SAE AS5900 (latest version).
- 7 The Alternate viscosity method should only be used for field verification and auditing purposes; when in doubt as to which method is appropriate, use the manufacturer method. Viscosity measurement methods are indicated as letters (in parentheses) beside each viscosity value. Details of each measurement method are shown in the table on the following page. The exact measurement method (spindle, container, fluid volume, temperature, speed, duration) must be used to compare the viscosity of a sample to a viscosity given in this table.
- 8 The lowest on-wing viscosity (LOWV), and highest on-wing viscosity (HOWV) values in this table are those of the fluids provided by the manufacturers for holdover time testing, and initial qualification aerodynamic testing. For the holdover times and lowest operation use temperature to be valid, the viscosity of the fluid on the wing shall not be lower than the LOWV value in this table and higher than the HOWV value in this table. The user should periodically ensure that the viscosity of a fluid sample taken from the wing surface complies with these limits.
- 9 Aerodynamic Performance and Anti-Icing Performance test data has expired; fluids listed in italics will be removed from this listing four years after expiry.
- 10 Manufacturer has not provided fluid information as required in SAE ARP5718B; fluid may be removed from this listing in subsequent revisions.
- 11 Manufacturer has indicated fluid was not tested.
- 12 Dow UCAR™ PG ADF Concentrate, sold under the product name DeiceX PG ADF Concentrate, qualified from 2023-06-15.
- 13 Currently in the test/re-test process. Contact the fluid manufacturer for latest information (see Appendix C for latest available contact information).
- 14 Fluid was not retested for low speed aerodynamics. This data will be removed four years after the expiry of the last low speed test.
- 15 For UCAR™ ADF XL54, refer to primary site qualification of UCAR™ ADF Concentrate.
- 16 For UCAR™ PG ADF Dilute 55/45, refer to primary site qualification of UCAR™ PG ADF Concentrate.
- 17 Dow UCAR™ ADF Concentrate, sold under the product name Inland ADF Concentrate, qualified from 2015-09-04.
- 18 Refer to preproduction qualification of SafeTemp® ES Plus submitted by HOC Industries, qualified from 2017-11-20.
- 19 Manufacturer has not provided an alternate method for measuring viscosity. Please use the Manufacturer Method.

**TABLE 53:
VISCOSITY MEASUREMENT METHODS FOR TYPE II, III, AND IV FLUIDS
TESTED FOR ANTI-ICING PERFORMANCE AND AERODYNAMIC ACCEPTANCE**

Method	Brookfield Spindle*	Container	Fluid Volume	Temp.**	Speed	Duration
a	LV1 (with guard leg)	600 mL low form (Griffin) beaker	575 mL***	20 °C	0.3 rpm	10.0 minutes
b	LV1 (with guard leg)	600 mL low form (Griffin) beaker	575 mL***	20 °C	0.3 rpm	33.3 minutes
c	LV2-disc (with guard leg)	600 mL low form (Griffin) beaker	425 mL***	20 °C	0.3 rpm	10.0 minutes
d	LV2-disc (with guard leg)	600 mL low form (Griffin) beaker	575 mL***	20 °C	0.3 rpm	10.0 minutes
e	LV2-disc (with guard leg)	150 mL tall form (Berzelius) beaker	135 mL***	20 °C	0.3 rpm	10.0 minutes
f	SC4-34/13R	small sample adapter	10 mL	20 °C	0.3 rpm	10.0 minutes
g	SC4-34/13R	small sample adapter	10 mL	0 °C	0.3 rpm	30.0 minutes
h	SC4-31/13R	small sample adapter	10 mL	20 °C	0.3 rpm	10.0 minutes
i	SC4-31/13R	small sample adapter	10 mL	20 °C	0.3 rpm	30.0 minutes
j	SC4-31/13R	small sample adapter	10 mL	0 °C	0.3 rpm	10.0 minutes
k	SC4-31/13R	small sample adapter	10 mL	0 °C	0.3 rpm	30.0 minutes
l	SC4-31/13R	small sample adapter	9 mL	20 °C	0.3 rpm	15.0 minutes
m	SC4-31/13R	small sample adapter	9 mL	0 °C	0.3 rpm	10.0 minutes
n	SC4-31/13R	small sample adapter	9 mL	0 °C	0.3 rpm	30.0 minutes
o	SC4-31/13R	small sample adapter	9 mL	0 °C	0.3 rpm	65.0 minutes
p	LV1	big sample adapter	55 mL	20 °C	0.3 rpm	10.0 minutes
q	LV2-disc	big sample adapter	60 mL	20 °C	0.3 rpm	10.0 minutes

* Spindle must be attached to a Brookfield viscometer model equipped with an LV spring.

** Sample temperature will affect readings; ensure sufficient time is allowed for sample to reach thermal equilibrium before starting test. Use of a cooling bath strongly recommended.

*** If necessary, adjust fluid volume to ensure fluid is level with notch on the spindle shaft.

TABLE 54: GUIDELINES FOR THE APPLICATION OF SAE TYPE I FLUID

Outside Air Temperature (OAT) ¹	One-Step Procedure Deicing Only ²	One-Step Procedure Anti-icing Only ³	Two-Step Procedure	
			First Step: Deicing ²	Second Step: Anti-icing ^{4,5}
0°C (32°F) and above	Heated Type I fluid/water mixture with a freezing point of at least 10°C (18°F) below OAT	Fluid/water mixture heated to at least 60°C (140°F) at the nozzle	Heated water or a heated fluid/water mixture	Fluid/water mixture heated to at least 60°C (140°F) at the nozzle with a freezing point of at least 10°C (18°F) below OAT
Below 0°C (32°F) to LOU ^T			Heated fluid/water mixture with a freezing point at OAT or below	

NOTES

- 1 Fluids used for the anti-icing procedure must not be used at temperatures below their lowest operational use temperature (LOU^T). First step fluids must not be used below their freezing points. The LOU^T for a given Type I fluid is the higher (warmer) of:
 - a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or
 - b) The actual freezing point of the fluid plus its freezing point buffer of 10°C (18°F).
- 2 When deicing, there is no minimum fluid quantity required, use as much fluid as necessary to ensure the aircraft is free of frozen contamination. A fluid temperature of at least 60°C (140°F) at the nozzle is desirable. Deicing is complete after all contamination is removed. There is no holdover time for a “deicing only” operation.
- 3 One-step anti-icing only procedure is only possible on a clean aircraft. If deicing and anti-icing are required, a two-step procedure should be followed.
- 4 To be applied before first step fluid freezes, typically within 3 minutes. This time may be longer than 3 minutes in some conditions, but potentially shorter in heavy precipitation, colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area (sectionally).
- 5 When anti-icing, a minimum quantity of 1 litre/m² (~2 gal./100 sq. ft.) of Type I fluid mixture heated to at least 60°C (140°F). This application is necessary to heat the surfaces, as heat contributes significantly to the Type I fluid holdover times.

CAUTIONS

- For heated fluids, the upper temperature limit shall not exceed fluid and aircraft manufacturers’ recommendations.
- Wing skin temperatures may be colder or warmer than the OAT. Causes can include: radiation cooling, cold-soaked wing, or hangar storage, etc. Consult the appropriate guidance (HOT Tables and TP14052) for the contaminant in question.

TABLE 55: GUIDELINES FOR THE APPLICATION OF SAE TYPE II AND IV FLUID
(FLUID CONCENTRATIONS IN % VOLUME)

Outside Air Temperature (OAT) ¹	One-Step Procedure Deicing Only ²	One-Step Procedure Anti-icing Only ³	Two-Step Procedure	
			First Step: Deicing ²	Second Step: Anti-icing ⁴
0°C (32°F) and above	Heated Type II or IV fluid/water mixture	100/0, 75/25, or 50/50 Heated or Unheated Type II or IV fluid/water mixture	Heated water or a heated fluid/water mixture	100/0, 75/25, or 50/50 Heated or Unheated Type II or IV fluid/water mixture
Below 0°C (32°F) to -3°C (27°F)		100/0, 75/25, or 50/50 Heated or Unheated Type II or IV fluid/water mixture	Heated fluid/water mixture with a freezing point at OAT or below	100/0, 75/25, or 50/50 Heated or Unheated Type II or IV fluid/water mixture
Below -3°C (27°F) to -14°C (7°F)		100/0 or 75/25 Heated or Unheated Type II or IV fluid/water mixture		100/0 or 75/25 Heated or Unheated Type II or IV fluid/water mixture
Below -14°C (7°F) to LOU ^T		100/0 Heated or Unheated Type II or IV fluid		100/0 Heated or Unheated Type II or IV fluid

NOTES

1 Fluids used for the anti-icing procedure must not be used at temperatures below their lowest operational use temperature (LOU^T). First step fluids must not be used below their freezing points. Consider the use of Type I/III fluid when Type II/IV fluid cannot be used due to LOU^T limitations (see Table 50 and Table 52). The LOU^T for a given Type II/IV fluid is the higher (warmer) of:

- a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or
- b) The actual freezing point of the fluid plus its freezing point buffer of 7°C (13°F).

Some diluted fluids have LOU^Ts that are below the coldest temperature for which holdover times are provided. Holdover times do not apply when anti-icing at temperatures for which holdover times are not provided.

- 2 When deicing, there is no minimum fluid quantity required, use as much fluid as necessary to ensure the aircraft is free of frozen contamination. A fluid temperature of at least 60°C (140°F) at the nozzle is desirable. Deicing is complete after all contamination is removed. There is no holdover time for a “deicing only” operation.
- 3 One-step anti-icing only procedure is only possible on a clean aircraft. If deicing and anti-icing are required, a two-step procedure should be followed.
- 4 To be applied before first step fluid freezes, typically within 3 minutes. This time may be longer than 3 minutes in some conditions, but potentially shorter in heavy precipitation, in colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area (sectionally).

CAUTIONS

- For heated fluids, the upper temperature limit shall not exceed fluid and aircraft manufacturers’ recommendations.
- Wing skin temperatures may be colder or warmer than the OAT. Causes can include: radiation cooling, cold-soaked wing, or hangar storage, etc. Consult the appropriate guidance (HOT Tables and TP14052) for the contaminant in question.
- Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold-soaked wing, the 50/50 dilutions of Type II or IV shall not be used for the anti-icing step because fluid freezing may occur.
- An insufficient amount of anti-icing fluid may cause a substantial loss of holdover time. This is particularly true when using a Type I fluid mixture for the first step in a two-step procedure.

TABLE 56: GUIDELINES FOR THE APPLICATION OF UNHEATED SAE TYPE III FLUID
(FLUID CONCENTRATIONS IN % VOLUME)

Outside Air Temperature (OAT) ¹	One-Step Procedure Deicing Only ²	One-Step Procedure Anti-icing Only ³	Two-Step Procedure	
			First Step: Deicing ²	Second Step: Anti-icing ⁴
0°C (32°F) and above	Heated Type III fluid/water mixture	100/0, 75/25 or 50/50 Unheated Type III fluid/water mixture	Heated water or a heated fluid/water mixture	100/0, 75/25 or 50/50 Unheated Type III fluid/water mixture
Below 0°C (32°F) to -3°C (27°F)		100/0, 75/25 or 50/50 Unheated Type III fluid/water mixture	Heated fluid/water mixture with a freezing point at OAT or below	100/0, 75/25 or 50/50 Unheated Type III fluid/water mixture
Below -3°C (27°F) to -10°C (14°F)		100/0 or 75/25 Unheated Type III fluid/water mixture		100/0 or 75/25 Unheated Type III fluid/water mixture
Below -10°C (14°F) to LOU ^T		100/0 Unheated Type III fluid/water mixture		100/0 Unheated Type III fluid/water mixture

NOTES

1 Fluids used for the anti-icing procedure must not be used at temperatures below their lowest operational use temperature (LOU^T). First step fluids must not be used below their freezing points. Consider the use of Type I when Type III fluid cannot be used due to LOU^T limitations (see Table 54). The LOU^T for a given Type III fluid is the higher (warmer) of:

- a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or
- b) The actual freezing point of the fluid plus its freezing point buffer of 7°C (13°F).

Some diluted fluids have LOU^Ts that are below the coldest temperature for which holdover times are provided. Holdover times do not apply when anti-icing at temperatures for which holdover times are not provided.

- 2 When deicing, there is no minimum fluid quantity required, use as much fluid as necessary to ensure the aircraft is free of frozen contamination. Deicing is complete after all contamination is removed. There is no holdover time for a “deicing only” operation.
- 3 One-step anti-icing only procedure is only possible on a clean aircraft. If deicing and anti-icing are required, a two-step procedure should be followed.
- 4 To be applied before first step fluid freezes, typically within 3 minutes. This time may be longer than 3 minutes in some conditions, but potentially shorter in heavy precipitation, in colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area (sectionally).

CAUTIONS

- For heated fluids, a fluid temperature not less than 60°C (140°F) at the nozzle is desirable. Upper temperature limit shall not exceed fluid and aircraft manufacturers’ recommendations.
- Wing skin temperatures may be colder or warmer than the OAT. Causes can include: radiation cooling, cold-soaked wing, or hangar storage, etc. Consult the appropriate guidance (HOT Tables and TP14052) for the contaminant in question.
- Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold-soaked wing, the 50/50 dilutions of Type III shall not be used for the anti-icing step because fluid freezing may occur.
- An insufficient amount of anti-icing fluid may cause a substantial loss of holdover time. This is particularly true when using a Type I fluid mixture for the first step in a two-step procedure.

**APPENDIX A:
ADJUSTED HOLDOVER TIME (HOT) GUIDELINES**

These tables are for use when flaps/slats are deployed prior to de/anti-icing. Holdover and allowance times have been adjusted to 76 percent of standard times. Standard holdover and allowance times can be used if flaps and slats are deployed as close to departure as safety allows.

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ADJUSTED ACTIVE FROST HOT GUIDELINES WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.

TABLE ADJ-1: ADJUSTED ACTIVE FROST HOLDOVER TIMES FOR SAE TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS¹

Outside Air Temperature ^{2,3,4}	Type I Aluminum	Type I Composite	Outside Air Temperature ^{3,4}	Concentration Fluid/Water By % Volume	Type II	Type III ⁵	Type IV									
-1 °C and above (30 °F and above)	0:34	0:27	-1 °C and above (30 °F and above)	100/0	6:05	1:31	9:07									
				75/25	3:48	0:46	3:48									
				50/50	1:31	0:23	2:17									
			below -1 to -3 °C (below 30 to 27 °F)	100/0	6:05	1:31	1:31	9:07	75/25	3:48	0:46	3:48				
													50/50	1:08	0:23	2:17
			below -10 to -14 °C (below 14 to 7 °F)	75/25	3:02	0:46	3:48	4:34	100/0	4:34	1:31	4:34				
													below -14 to -21 °C (below 7 to -6 °F)	75/25	0:46	0:46
below -14 to -21 °C (below 7 to -6 °F)	100/0	2:17	1:31	1:31	4:34	100/0	1:31	1:31	3:02							
below -21 to -25 °C (below -6 to -13 °F)	100/0	1:31	1:31	1:31	3:02	100/0	1:31	1:31	3:02							
below -25 °C to LOU (below -13 °F to LOU)	100/0	No Holdover Time Guidelines Exist														

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 To use the HOTS in this table, ensure that the fluid and dilution being used is listed in the List of Qualified Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 49 - Table 52). Any restrictions on the use of the fluid have to be identified and applied.
- 2 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.
- 3 Ensure that the lowest operational use temperature (LOU) is respected.
- 4 Changes in outside air temperature (OAT) over the course of longer frost events can be significant; the appropriate holdover time to use is the one provided for the coldest OAT that has occurred in the time between the de/anti-icing fluid application and takeoff.
- 5 To use the Type III fluid frost holdover times, the fluid brand being used must be known. AllClear AeroClear MAX must be applied unheated.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-3.

ADJUSTED HOT GUIDELINES FOR SAE TYPE I FLUIDS WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- The time of protection will be shortened in heavy weather conditions, heavy precipitation rates, or high moisture content.
- High wind velocity, jet blast or blowing snow may reduce holdover time below the lowest time stated in the range.
- The holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.

TABLE ADJ-2: ADJUSTED HOLDOVER TIMES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF ALUMINUM¹

Outside Air Temperature ^{2,3}	Freezing Fog, Freezing Mist ⁴ , or Ice Crystals ⁵	Snow mixed with Freezing Fog ⁶	Very Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Light Snow, Snow Grains or Snow Pellets ^{7,8,9}	Moderate Snow, Snow Grains or Snow Pellets ^{7,9}	Freezing Drizzle ¹⁰	Light Freezing Rain	Rain on Cold-Soaked Wing ¹¹	Other ¹²
-3°C and above (27°F and above)	0:08 - 0:13	0:04 - 0:06	0:14 - 0:17	0:08 - 0:14	0:05 - 0:08	0:07 - 0:10	0:03 - 0:05	0:02 - 0:04	CAUTION: No holdover time guidelines exist
below -3 to -6°C (below 27 to 21°F)	0:06 - 0:10	0:03 - 0:05	0:11 - 0:13	0:06 - 0:11	0:04 - 0:06	0:04 - 0:07	0:03 - 0:05		
below -6 to -10°C (below 21 to 14°F)	0:05 - 0:08	0:02 - 0:04	0:08 - 0:10	0:05 - 0:08	0:03 - 0:05	0:03 - 0:05	0:02 - 0:04		
below -10°C (below 14°F)	0:04 - 0:07	0:02 - 0:02	0:05 - 0:06	0:03 - 0:05	0:02 - 0:03				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 These holdover times apply to aircraft with critical surfaces constructed predominantly or entirely of aluminum materials that have demonstrated satisfactory use of these holdover times. Takeoff after the longest applicable holdover time has been exceeded is not permitted for Type I fluids.
- 2 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.
- 3 Ensure that the lowest operational use temperature (LOUT) is respected.
- 4 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 5 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 6 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 7 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 8 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 9 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 10 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 11 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 12 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-5.

TABLE ADJ-3: ADJUSTED HOLDOVER TIMES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF COMPOSITES¹

Outside Air Temperature ^{2,3}	Freezing Fog, Freezing Mist ⁴ , or Ice Crystals ⁵	Snow mixed with Freezing Fog ⁶	Very Light Snow, Snow Grains or Snow Pellets ^{7,8,9}	Light Snow, Snow Grains or Snow Pellets ^{7,8,9}	Moderate Snow, Snow Grains or Snow Pellets ^{7,9}	Freezing Drizzle ¹⁰	Light Freezing Rain	Rain on Cold-Soaked Wing ¹¹	Other ¹²
-3°C and above (27°F and above)	0:07 - 0:12	0:02 - 0:03	0:09 - 0:11	0:05 - 0:09	0:02 - 0:05	0:06 - 0:10	0:03 - 0:05	0:01 - 0:04	CAUTION: No holdover time guidelines exist
below -3 to -6°C (below 27 to 21°F)	0:05 - 0:06	0:02 - 0:03	0:08 - 0:10	0:04 - 0:08	0:02 - 0:04	0:04 - 0:07	0:03 - 0:05		
below -6 to -10°C (below 21 to 14°F)	0:03 - 0:06	0:02 - 0:03	0:07 - 0:09	0:04 - 0:07	0:02 - 0:04	0:03 - 0:05	0:02 - 0:04		
below -10°C (below 14°F)	0:03 - 0:05	0:02 - 0:02	0:05 - 0:06	0:03 - 0:05	0:02 - 0:03				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 These holdover times apply to newer aircraft with critical surfaces constructed predominantly or entirely of composite materials. Takeoff after the longest applicable holdover time has been exceeded is not permitted for Type I fluids.
- 2 Type I Fluid / Water Mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.
- 3 Ensure that the lowest operational use temperature (LOUT) is respected.
- 4 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 5 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 6 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 7 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 8 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 9 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 10 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 11 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 12 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-5.

ADJUSTED HOT GUIDELINES FOR SAE TYPE II FLUIDS WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable table cell.
- The time of protection will be shortened in heavy weather conditions, heavy precipitation rates, or high moisture content.
- High wind velocity, jet blast or blowing snow may reduce holdover time below the lowest time stated in the range.
- The holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold-soaked wing, the 50/50 dilutions of Type II or IV shall not be used for the anti-icing step because fluid freezing may occur.

TABLE ADJ-4: ADJUSTED GENERIC HOLDOVER TIMES FOR SAE TYPE II FLUIDS¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Snow, Snow Grains or Snow Pellets ^{6,7,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27 °F and above)	100/0	0:42 - 1:24	0:15 - 0:30	0:23 - 0:42	0:27 - 0:49	0:19 - 0:27	0:05 - 0:34	CAUTION: No holdover time guidelines exist
	75/25	0:30 - 0:53	0:11 - 0:19	0:11 - 0:23	0:19 - 0:30	0:11 - 0:19	0:03 - 0:19	
	50/50	0:11 - 0:23	0:04 - 0:08	0:05 - 0:11	0:07 - 0:11	0:05 - 0:07		
below -3 to -8°C (below 27 to 18°F)	100/0	0:23 - 0:34	0:11 - 0:23	0:15 - 0:30	0:15 - 0:34	0:11 - 0:15		
	75/25	0:19 - 0:42	0:07 - 0:11	0:08 - 0:19	0:11 - 0:23	0:06 - 0:11		
below -8 to -14°C (below 18 to 7°F)	100/0	0:23 - 0:34	0:08 - 0:19	0:11 - 0:23	0:15 - 0:34 ¹²	0:11 - 0:15 ¹²		
	75/25	0:19 - 0:42	0:05 - 0:11	0:07 - 0:15	0:11 - 0:23 ¹²	0:06 - 0:11 ¹²		
below -14 to -18°C (below 7 to 0 °F)	100/0	0:11 - 0:15	0:01 - 0:04	0:02 - 0:05				
below -18 to -25°C ¹³ (below 0 to -13°F)	100/0	0:11 - 0:15	0:00 - 0:02	0:01 - 0:02				
below -25°C to LOU ¹³ (below -13°F to LOU)	100/0	0:11 - 0:15	0:00 - 0:00	0:00 - 0:01				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the Type II Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 50). Any restrictions on the use of the fluid have to be identified and applied.
- 2 Ensure that the lowest operational use temperature (LOU) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 12 No holdover time guidelines exist for this condition below -10°C (14°F).
- 13 If the LOU is unknown, no holdover time guidelines exist below -25°C (-13°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-5: ADJUSTED TYPE II HOLDOVER TIMES FOR ABAX ECOWING AD-2

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:01 - 2:17	0:23 - 0:42	1:50 - 2:00	0:57 - 1:50	0:30 - 0:57	0:30 - 1:16	0:23 - 0:34	0:07 - 1:05	CAUTION: No holdover time guidelines exist
	75/25	0:57 - 1:05	0:15 - 0:30	1:20 - 1:39	0:42 - 1:20	0:19 - 0:42	0:27 - 0:49	0:15 - 0:23	0:03 - 0:38	
	50/50	0:11 - 0:23	0:04 - 0:08	0:27 - 0:30	0:11 - 0:27	0:05 - 0:11	0:07 - 0:11	0:05 - 0:07		
below -3 to -8°C (below 27 to 18°F)	100/0	0:34 - 1:54	0:19 - 0:34	1:31 - 1:50	0:46 - 1:31	0:23 - 0:46	0:19 - 0:53	0:15 - 0:23		
	75/25	0:27 - 1:27	0:15 - 0:27	1:16 - 1:35	0:38 - 1:16	0:19 - 0:38	0:11 - 0:42	0:15 - 0:27		
below -8 to -14°C (below 18 to 7°F)	100/0	0:34 - 1:54	0:15 - 0:30	1:20 - 1:35	0:42 - 1:20	0:23 - 0:42	0:19 - 0:53 ¹¹	0:15 - 0:23 ¹¹		
	75/25	0:27 - 1:27	0:15 - 0:27	1:12 - 1:31	0:38 - 1:12	0:19 - 0:38	0:11 - 0:42 ¹¹	0:15 - 0:27 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:11 - 0:30	0:01 - 0:04	0:15 - 0:23	0:05 - 0:15	0:02 - 0:05				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:11 - 0:30	0:00 - 0:02	0:07 - 0:11	0:02 - 0:07	0:01 - 0:02				
below -25 to -27°C (below -13 to -17°F)	100/0	0:11 - 0:30	0:00 - 0:00	0:04 - 0:05	0:01 - 0:04	0:00 - 0:01				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-6: ADJUSTED TYPE II HOLDOVER TIMES FOR AVIATION XI'AN HIGH-TECH CLEANWING II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27 °F and above)	100/0	0:42 - 1:24	0:15 - 0:30	1:12 - 1:27	0:42 - 1:12	0:23 - 0:42	0:27 - 0:49	0:19 - 0:27	0:08 - 0:42	CAUTION: No holdover time guidelines exist
	75/25	0:38 - 1:01	0:15 - 0:27	1:01 - 1:16	0:34 - 1:01	0:19 - 0:34	0:27 - 0:46	0:15 - 0:23	0:05 - 0:38	
	50/50	0:27 - 0:46	0:08 - 0:15	0:38 - 0:49	0:19 - 0:38	0:11 - 0:19	0:15 - 0:30	0:08 - 0:15		
below -3 to -8°C (below 27 to 18°F)	100/0	0:34 - 1:24	0:11 - 0:23	1:01 - 1:12	0:30 - 1:01	0:19 - 0:30	0:23 - 0:42	0:15 - 0:19		
	75/25	0:30 - 1:20	0:15 - 0:27	1:01 - 1:12	0:34 - 1:01	0:19 - 0:34	0:27 - 0:30	0:15 - 0:19		
below -8 to -14°C (below 18 to 7°F)	100/0	0:34 - 1:24	0:11 - 0:19	0:49 - 1:01	0:27 - 0:49	0:15 - 0:27	0:23 - 0:42 ¹¹	0:15 - 0:19 ¹¹		
	75/25	0:30 - 1:20	0:15 - 0:27	1:01 - 1:12	0:34 - 1:01	0:19 - 0:34	0:27 - 0:30 ¹¹	0:15 - 0:19 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:38	0:07 - 0:15	0:34 - 0:46	0:19 - 0:34	0:11 - 0:19				
below -18 to -25°C (below 0 to -13°F)	100/0	0:15 - 0:38	0:04 - 0:08	0:23 - 0:27	0:11 - 0:23	0:05 - 0:11				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-7: ADJUSTED TYPE II HOLDOVER TIMES FOR CLARIANT SAFEWING MP II FLIGHT

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:40 - 3:02	0:34 - 0:53	1:58 - 2:00	1:12 - 1:58	0:46 - 1:12	1:01 - 1:31	0:34 - 1:05	0:08 - 1:08	CAUTION: No holdover time guidelines exist
	75/25	1:24 - 2:05	0:23 - 0:46	1:58 - 2:00	1:01 - 1:58	0:30 - 1:01	0:53 - 1:08	0:23 - 0:42	0:05 - 0:38	
	50/50	0:42 - 1:20	0:07 - 0:15	0:34 - 0:42	0:19 - 0:34	0:08 - 0:19	0:15 - 0:23	0:08 - 0:11		
below -3 to -8°C (below 27 to 18°F)	100/0	0:42 - 1:20	0:27 - 0:46	1:35 - 1:54	0:57 - 1:35	0:34 - 0:57	0:27 - 1:08	0:19 - 0:34		
	75/25	0:19 - 0:49	0:15 - 0:30	1:20 - 1:39	0:42 - 1:20	0:23 - 0:42	0:19 - 0:53	0:15 - 0:27		
below -8 to -14°C (below 18 to 7°F)	100/0	0:42 - 1:20	0:23 - 0:38	1:24 - 1:39	0:49 - 1:24	0:30 - 0:49	0:27 - 1:08 ¹¹	0:19 - 0:34 ¹¹		
	75/25	0:19 - 0:49	0:11 - 0:23	1:01 - 1:16	0:30 - 1:01	0:15 - 0:30	0:19 - 0:53 ¹¹	0:15 - 0:27 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:23 - 0:38	0:05 - 0:15	0:53 - 1:16	0:19 - 0:53	0:06 - 0:19				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:23 - 0:38	0:02 - 0:05	0:23 - 0:30	0:08 - 0:23	0:02 - 0:08				
below -25 to -29°C (below -13 to -20°F)	100/0	0:23 - 0:38	0:01 - 0:04	0:15 - 0:23	0:05 - 0:15	0:02 - 0:05				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-8: ADJUSTED TYPE II HOLDOVER TIMES FOR CRYOTECH POLAR GUARD® II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:09 - 3:02	0:38 - 1:05	2:00 - 2:00	1:27 - 2:00	0:49 - 1:27	1:12 - 1:31	0:57 - 1:08	0:11 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	1:54 - 3:02	0:23 - 0:49	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	1:16 - 1:31	0:30 - 0:53	0:07 - 1:16	
	50/50	0:38 - 1:05	0:05 - 0:15	0:53 - 1:12	0:19 - 0:53	0:08 - 0:19	0:15 - 0:34	0:07 - 0:15		
below -3 to -8°C (below 27 to 18°F)	100/0	0:42 - 1:54	0:27 - 0:49	1:50 - 2:00	1:05 - 1:50	0:38 - 1:05	0:27 - 1:12	0:27 - 0:34		
	75/25	0:30 - 1:08	0:19 - 0:38	1:46 - 2:00	0:49 - 1:46	0:23 - 0:49	0:19 - 0:49	0:27 - 0:34		
below -8 to -14°C (below 18 to 7°F)	100/0	0:42 - 1:54	0:23 - 0:38	1:31 - 1:46	0:53 - 1:31	0:30 - 0:53	0:27 - 1:12 ¹¹	0:27 - 0:34 ¹¹		
	75/25	0:30 - 1:08	0:15 - 0:34	1:31 - 1:54	0:42 - 1:31	0:19 - 0:42	0:19 - 0:49 ¹¹	0:27 - 0:34 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:19 - 0:38	0:06 - 0:19	1:12 - 1:43	0:27 - 1:12	0:08 - 0:27				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:19 - 0:38	0:02 - 0:08	0:30 - 0:42	0:11 - 0:30	0:03 - 0:11				
below -25 to -30.5°C (below -13 to -23°F)	100/0	0:19 - 0:38	0:02 - 0:04	0:19 - 0:23	0:05 - 0:19	0:02 - 0:05				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-9: ADJUSTED TYPE II HOLDOVER TIMES FOR KILFROST ABC-K PLUS

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Snow, Snow Grains or Snow Pellets ^{5,6,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:43 - 2:51	0:34 - 0:57	0:46 - 1:16	1:24 - 1:31	0:46 - 1:05	0:15 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	1:16 - 1:54	0:19 - 0:38	0:27 - 0:53	1:05 - 1:31	0:38 - 0:53	0:11 - 1:31	
	50/50	0:27 - 0:49	0:04 - 0:08	0:05 - 0:11	0:15 - 0:23	0:08 - 0:11		
below -3 to -8°C (below 27 to 18°F)	100/0	0:23 - 0:49	0:30 - 0:53	0:42 - 1:08	0:19 - 0:46	0:11 - 0:27		
	75/25	0:19 - 1:05	0:19 - 0:38	0:27 - 0:49	0:15 - 0:42	0:07 - 0:23		
below -8 to -14°C (below 18 to 7°F)	100/0	0:23 - 0:49	0:30 - 0:49	0:38 - 1:05	0:19 - 0:46 ¹¹	0:11 - 0:27 ¹¹		
	75/25	0:19 - 1:05	0:19 - 0:38	0:27 - 0:49	0:15 - 0:42 ¹¹	0:07 - 0:23 ¹¹		
below -14 to -18°C (below 7 to 0 °F)	100/0	0:23 - 0:42	0:01 - 0:04	0:02 - 0:05				
below -18 to -25°C (below 0 to -13°F)	100/0	0:23 - 0:42	0:00 - 0:02	0:01 - 0:02				
below -25 to -29°C (below -13 to -20°F)	100/0	0:23 - 0:42	0:00 - 0:00	0:00 - 0:01				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-10: ADJUSTED TYPE II HOLDOVER TIMES FOR KILFROST ICE CLEAR II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:05 - 1:50	0:23 - 0:46	1:50 - 2:00	1:01 - 1:50	0:30 - 1:01	0:46 - 1:12	0:30 - 0:49	0:11 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:49 - 1:58	0:23 - 0:38	1:39 - 1:58	0:53 - 1:39	0:30 - 0:53	0:23 - 0:57	0:27 - 0:42		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:49 - 1:58	0:19 - 0:38	1:31 - 1:50	0:49 - 1:31	0:27 - 0:49	0:23 - 0:57 ¹¹	0:27 - 0:42 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:27 - 0:34	0:08 - 0:15	0:42 - 0:49	0:23 - 0:42	0:11 - 0:23				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:27 - 0:34	0:05 - 0:08	0:23 - 0:27	0:11 - 0:23	0:06 - 0:11				
below -25 to -28°C (below -13 to -18°F)	100/0	0:27 - 0:34	0:04 - 0:07	0:19 - 0:23	0:08 - 0:19	0:05 - 0:08				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-11: ADJUSTED TYPE II HOLDOVER TIMES FOR MKS DEVO CHEMICALS COREICEPHOB TYPE II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:27 - 2:05	0:23 - 0:46	1:58 - 2:00	1:05 - 1:58	0:30 - 1:05	0:53 - 1:31	0:34 - 0:46	0:11 - 1:12	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	0:49 - 1:20	0:11 - 0:27	1:12 - 1:27	0:34 - 1:12	0:19 - 0:34	0:38 - 0:57	0:19 - 0:23		
below -3 to -8°C (below 27 to 18°F)	100/0	0:34 - 1:05	0:19 - 0:34	1:24 - 1:43	0:46 - 1:24	0:23 - 0:46	0:23 - 0:53	0:19 - 0:27		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:34 - 1:05	0:15 - 0:27	1:08 - 1:24	0:38 - 1:08	0:19 - 0:38	0:23 - 0:53 ¹¹	0:19 - 0:27 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:11 - 0:19	0:01 - 0:04	0:15 - 0:23	0:05 - 0:15	0:02 - 0:05				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:11 - 0:19	0:00 - 0:02	0:07 - 0:11	0:02 - 0:07	0:01 - 0:02				
below -25 to -27°C (below -13 to -17°F)	100/0	0:11 - 0:19	0:00 - 0:00	0:04 - 0:05	0:01 - 0:04	0:00 - 0:01				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-12: ADJUSTED TYPE II HOLDOVER TIMES FOR NEWAVE AEROCHEMICAL FCY-2

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Snow, Snow Grains or Snow Pellets ^{5,6,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	0:57 - 1:50	0:19 - 0:30	0:23 - 0:42	0:27 - 0:49	0:19 - 0:27	0:06 - 0:34	CAUTION: No holdover time guidelines exist
	75/25	0:38 - 1:08	0:11 - 0:23	0:15 - 0:30	0:19 - 0:34	0:11 - 0:19	0:04 - 0:19	
	50/50	0:19 - 0:27	0:07 - 0:15	0:11 - 0:19	0:08 - 0:15	0:05 - 0:08		
below -3 to -8°C (below 27 to 18°F)	100/0	0:34 - 1:08	0:11 - 0:23	0:15 - 0:30	0:15 - 0:34	0:11 - 0:15		
	75/25	0:23 - 0:49	0:08 - 0:15	0:11 - 0:19	0:11 - 0:23	0:06 - 0:11		
below -8 to -14°C (below 18 to 7°F)	100/0	0:34 - 1:08	0:08 - 0:19	0:11 - 0:23	0:15 - 0:34 ¹¹	0:11 - 0:15 ¹¹		
	75/25	0:23 - 0:49	0:06 - 0:11	0:08 - 0:15	0:11 - 0:23 ¹¹	0:06 - 0:11 ¹¹		
below -14 to -18°C (below 7 to 0 °F)	100/0	0:19 - 0:27	0:01 - 0:04	0:02 - 0:05				
below -18 to -25°C (below 0 to -13°F)	100/0	0:19 - 0:27	0:00 - 0:02	0:01 - 0:02				
below -25 to -28°C (below -13 to -18°F)	100/0	0:19 - 0:27	0:00 - 0:00	0:00 - 0:01				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-13: ADJUSTED TYPE II HOLDOVER TIMES FOR ROMCHIM ADD-PROTECT NG TYPE II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	0:53 - 1:50	0:19 - 0:42	1:58 - 2:00	0:53 - 1:58	0:27 - 0:53	0:38 - 1:01	0:27 - 0:38	0:05 - 0:53	CAUTION: No holdover time guidelines exist
	75/25	0:46 - 1:24	0:15 - 0:30	1:27 - 1:50	0:42 - 1:27	0:19 - 0:42	0:30 - 0:57	0:19 - 0:30	0:05 - 0:42	
	50/50	0:19 - 0:42	0:08 - 0:15	0:42 - 0:49	0:23 - 0:42	0:11 - 0:23	0:15 - 0:27	0:08 - 0:15		
below -3 to -8°C (below 27 to 18°F)	100/0	0:42 - 1:12	0:15 - 0:30	1:24 - 1:46	0:38 - 1:24	0:19 - 0:38	0:27 - 0:53	0:19 - 0:27		
	75/25	0:42 - 1:05	0:11 - 0:23	1:05 - 1:20	0:30 - 1:05	0:15 - 0:30	0:19 - 0:49	0:15 - 0:23		
below -8 to -14°C (below 18 to 7°F)	100/0	0:42 - 1:12	0:11 - 0:23	1:05 - 1:24	0:30 - 1:05	0:15 - 0:30	0:27 - 0:53 ¹¹	0:19 - 0:27 ¹¹		
	75/25	0:42 - 1:05	0:08 - 0:19	0:49 - 1:05	0:23 - 0:49	0:11 - 0:23	0:19 - 0:49 ¹¹	0:15 - 0:23 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:11 - 0:15	0:01 - 0:04	0:15 - 0:23	0:05 - 0:15	0:02 - 0:05				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:11 - 0:15	0:00 - 0:02	0:07 - 0:11	0:02 - 0:07	0:01 - 0:02				
below -25 to -28°C (below -13 to -18°F)	100/0	0:11 - 0:15	0:00 - 0:00	0:04 - 0:05	0:01 - 0:04	0:00 - 0:01				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-8.

TABLE ADJ-14: ADJUSTED TYPE II HOLDOVER TIMES FOR ROMCHIM ADD-PROTECT TYPE II

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:16 - 2:40	0:15 - 0:34	1:27 - 1:50	0:46 - 1:27	0:23 - 0:46	0:30 - 1:12	0:19 - 0:34	0:07 - 0:38	CAUTION: No holdover time guidelines exist
	75/25	0:30 - 0:53	0:11 - 0:19	0:46 - 0:53	0:23 - 0:46	0:11 - 0:23	0:19 - 0:30	0:11 - 0:19	0:04 - 0:19	
	50/50	0:15 - 0:27	0:05 - 0:11	0:23 - 0:27	0:11 - 0:23	0:07 - 0:11	0:08 - 0:23	0:06 - 0:08		
below -3 to -8°C (below 27 to 18°F)	100/0	0:23 - 0:34	0:11 - 0:23	1:01 - 1:16	0:30 - 1:01	0:15 - 0:30	0:19 - 0:38	0:15 - 0:23		
	75/25	0:23 - 0:42	0:07 - 0:11	0:30 - 0:38	0:19 - 0:30	0:08 - 0:19	0:15 - 0:23	0:11 - 0:15		
below -8 to -14°C (below 18 to 7°F)	100/0	0:23 - 0:34	0:11 - 0:19	0:49 - 1:01	0:27 - 0:49	0:11 - 0:27	0:19 - 0:38 ¹¹	0:15 - 0:23 ¹¹		
	75/25	0:23 - 0:42	0:05 - 0:11	0:27 - 0:30	0:15 - 0:27	0:07 - 0:15	0:15 - 0:23 ¹¹	0:11 - 0:15 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:11 - 0:19	0:01 - 0:04	0:15 - 0:23	0:05 - 0:15	0:02 - 0:05				
below -18 to -25°C (below 0 to -13 °F)	100/0	0:11 - 0:19	0:00 - 0:02	0:07 - 0:11	0:02 - 0:07	0:01 - 0:02				
below -25 to -28°C (below -13 to -18°F)	100/0	0:11 - 0:19	0:00 - 0:00	0:04 - 0:05	0:01 - 0:04	0:00 - 0:01				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

The cautions that apply to the holdover times in the table above can be found on page A-8.

ADJUSTED HOT GUIDELINES FOR SAE TYPE III FLUIDS WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable table cell.
- The time of protection will be shortened in heavy weather conditions, heavy precipitation rates, or high moisture content.
- High wind velocity, jet blast or blowing snow may reduce holdover time below the lowest time stated in the range.
- The holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.

TABLE ADJ-15: ADJUSTED TYPE III HOLDOVER TIMES FOR ALLCLEAR AEROCLEAR MAX APPLIED UNHEATED ON LOW SPEED AIRCRAFT¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Very Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Moderate Snow, Snow Grains or Snow Pellets ^{6,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27 °F and above)	100/0	0:34 - 1:27	0:10 - 0:23	1:01 - 1:20	0:30 - 1:01	0:14 - 0:30	0:19 - 0:38	0:11 - 0:19	0:05 - 0:40	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10°C (below 27 to 14°F)	100/0	0:38 - 1:16	0:10 - 0:23	1:01 - 1:20	0:30 - 1:01	0:14 - 0:30	0:19 - 0:34	0:11 - 0:19		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -16°C (below 14 to 3°F)	100/0	0:30 - 1:20	0:10 - 0:23	1:01 - 1:20	0:30 - 1:01	0:14 - 0:30				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 These holdover times are for aircraft conforming to the SAE AS5900 low speed aerodynamic test criterion. Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid applied heated. If uncertain whether the aircraft conforms to the low, middle, or high speed aerodynamic test criterion, no holdover time guidelines exist below -16°C (3°F).
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-20.

TABLE ADJ-16: ADJUSTED TYPE III HOLDOVER TIMES FOR ALLCLEAR AEROCLEAR MAX APPLIED UNHEATED ON MIDDLE SPEED AIRCRAFT¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Very Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Moderate Snow, Snow Grains or Snow Pellets ^{6,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27°F and above)	100/0	0:34 - 1:27	0:10 - 0:23	1:01 - 1:20	0:30 - 1:01	0:14 - 0:30	0:19 - 0:38	0:11 - 0:19	0:04 - 0:30	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10°C (below 27 to 14°F)	100/0	0:38 - 1:16	0:10 - 0:23	1:01 - 1:20	0:30 - 1:01	0:14 - 0:30	0:19 - 0:34	0:11 - 0:19		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -20.5°C (below 14 to -5°F)	100/0	0:30 - 1:20	0:10 - 0:23	1:01 - 1:20	0:30 - 1:01	0:14 - 0:30				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 These holdover times are for aircraft conforming to the SAE AS5900 middle speed aerodynamic test criterion. Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid applied heated. If uncertain whether the aircraft conforms to the low, middle, or high speed aerodynamic test criterion, no holdover time guidelines exist below -16°C (3°F).
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-20.

TABLE ADJ-17: ADJUSTED TYPE III HOLDOVER TIMES FOR ALL CLEAR AEROCLEAR MAX APPLIED UNHEATED ON HIGH SPEED AIRCRAFT¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Very Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Moderate Snow, Snow Grains or Snow Pellets ^{6,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27 °F and above)	100/0	0:34 - 1:27	0:10 - 0:23	1:01 - 1:20	0:30 - 1:01	0:14 - 0:30	0:19 - 0:38	0:11 - 0:19	0:04 - 0:30	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -10°C (below 27 to 14°F)	100/0	0:38 - 1:16	0:10 - 0:23	1:01 - 1:20	0:30 - 1:01	0:14 - 0:30	0:19 - 0:34	0:11 - 0:19		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -10 to -25°C (below 14 to -13°F)	100/0	0:30 - 1:20	0:10 - 0:23	1:01 - 1:20	0:30 - 1:01	0:14 - 0:30				
below -25 to -35°C (below -13 to -31°F)	100/0	0:19 - 0:46	0:05 - 0:12	0:34 - 0:46	0:15 - 0:34	0:08 - 0:15				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 These holdover times are for aircraft conforming to the SAE AS5900 high speed aerodynamic test criterion. Fluid must be applied unheated to use these holdover times. No holdover times exist for this fluid applied heated. If uncertain whether the aircraft conforms to the low, middle, or high speed aerodynamic test criterion, no holdover time guidelines exist below -16°C (3°F).
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type III fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-44 provides allowance times for ice pellets and small hail for SAE Type III fluids, applied unheated).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-20.

ADJUSTED HOT GUIDELINES FOR SAE TYPE IV FLUIDS WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable table cell.
- The time of protection will be shortened in heavy weather conditions, heavy precipitation rates, or high moisture content.
- High wind velocity, jet blast or blowing snow may reduce holdover time below the lowest time stated in the range.
- The holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold-soaked wing, the 50/50 dilutions of Type II or IV shall not be used for the anti-icing step because fluid freezing may occur.

TABLE ADJ-18: ADJUSTED GENERIC HOLDOVER TIMES FOR SAE TYPE IV FLUIDS¹

Outside Air Temperature ²	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ³ , or Ice Crystals ⁴	Snow mixed with Freezing Fog ⁵	Very Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Light Snow, Snow Grains or Snow Pellets ^{6,7,8}	Moderate Snow, Snow Grains or Snow Pellets ^{6,8}	Freezing Drizzle ⁹	Light Freezing Rain	Rain on Cold-Soaked Wing ¹⁰	Other ¹¹
-3°C and above (27°F and above)	100/0	0:57 - 1:43	0:19 - 0:34	1:27 - 1:46	0:46 - 1:27	0:23 - 0:46	0:30 - 0:53	0:15 - 0:27	0:06 - 0:49	CAUTION: No holdover time guidelines exist
	75/25	1:05 - 2:02	0:23 - 0:42	1:35 - 1:50	0:57 - 1:35	0:30 - 0:57	0:46 - 1:01	0:23 - 0:38	0:07 - 1:01	
	50/50	0:23 - 0:42	0:05 - 0:15	0:46 - 0:53	0:19 - 0:46	0:08 - 0:19	0:11 - 0:30	0:07 - 0:15		
below -3 to -8°C (below 27 to 18°F)	100/0	0:11 - 0:27	0:15 - 0:30	1:20 - 1:35	0:42 - 1:20	0:19 - 0:42	0:19 - 0:53	0:15 - 0:19		
	75/25	0:30 - 1:01	0:19 - 0:38	1:24 - 1:39	0:49 - 1:24	0:23 - 0:49	0:15 - 0:49	0:11 - 0:19		
below -8 to -14°C (below 18 to 7°F)	100/0	0:11 - 0:27	0:11 - 0:27	1:08 - 1:24	0:34 - 1:08	0:15 - 0:34	0:19 - 0:53 ¹²	0:15 - 0:19 ¹²		
	75/25	0:30 - 1:01	0:15 - 0:34	1:20 - 1:31	0:42 - 1:20	0:19 - 0:42	0:15 - 0:49 ¹²	0:11 - 0:19 ¹²		
below -14 to -18°C (below 7 to 0°F)	100/0	0:11 - 0:23	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:11 - 0:23	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02				
below -25°C to LOU ¹³ (below -13°F to LOU)	100/0	0:11 - 0:23	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the Type IV Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 52). Any restrictions on the use of the fluid have to be identified and applied.
- 2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 3 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 5 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids and Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail. If the glycol type is unknown, the allowance times for SAE Type IV PG fluids should be used).
- 12 No holdover time guidelines exist for this condition below -10°C (14°F).
- 13 If the LOU is unknown, no holdover time guidelines exist below -25.5°C (-14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-19: ADJUSTED TYPE IV HOLDOVER TIMES FOR ABAX ECOWING AD-49

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:32 - 3:02	0:34 - 1:05	2:00 - 2:00	1:27 - 2:00	0:46 - 1:27	1:05 - 1:31	0:46 - 1:05	0:08 - 1:27	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:15 - 1:12	0:27 - 0:49	2:00 - 2:00	1:08 - 2:00	0:34 - 1:08	0:19 - 1:05	0:15 - 0:19		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:15 - 1:12	0:23 - 0:42	1:50 - 2:00	0:57 - 1:50	0:30 - 0:57	0:19 - 1:05 ¹¹	0:15 - 0:19 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:19 - 0:30	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:19 - 0:30	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02				
below -25 to -26°C (below -13 to -15°F)	100/0	0:19 - 0:30	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-20: ADJUSTED TYPE IV HOLDOVER TIMES FOR ALAB INTERNATIONAL PROFLIGHT EG4

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:21 - 3:02	0:34 - 1:05	2:00 - 2:00	1:24 - 2:00	0:46 - 1:24	1:05 - 1:31	0:30 - 0:46	0:08 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:54 - 2:59	0:34 - 1:05	2:00 - 2:00	1:24 - 2:00	0:46 - 1:24	0:49 - 1:31	0:38 - 1:12		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:54 - 2:59	0:34 - 1:05	2:00 - 2:00	1:24 - 2:00	0:46 - 1:24	0:49 - 1:31 ¹¹	0:38 - 1:12 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:27 - 1:12	0:05 - 0:15	0:38 - 0:49	0:19 - 0:38	0:08 - 0:19				
below -18 to -25°C (below 0 to -13°F)	100/0	0:27 - 1:12	0:02 - 0:08	0:30 - 0:42	0:11 - 0:30	0:04 - 0:11				
below -25 to -26°C (below -13 to -15°F)	100/0	0:27 - 1:12	0:01 - 0:05	0:19 - 0:27	0:06 - 0:19	0:02 - 0:06				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-21: ADJUSTED TYPE IV HOLDOVER TIMES FOR ALAB INTERNATIONAL PROFLIGHT PG4

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:05 - 1:43	0:23 - 0:46	2:00 - 2:00	1:01 - 2:00	0:30 - 1:01	0:49 - 1:05	0:30 - 0:38	0:11 - 1:01	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:49 - 1:46	0:19 - 0:38	1:46 - 2:00	0:53 - 1:46	0:27 - 0:53	0:34 - 0:53	0:27 - 0:34		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:49 - 1:46	0:15 - 0:34	1:35 - 1:58	0:46 - 1:35	0:23 - 0:46	0:34 - 0:53 ¹¹	0:27 - 0:34 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:27 - 0:38	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:27 - 0:38	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02				
below -25 to -29°C (below -13 to -20°F)	100/0	0:27 - 0:38	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-22: ADJUSTED TYPE IV HOLDOVER TIMES FOR ALLCLEAR CLEARWING EG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:24 - 2:28	0:23 - 0:46	2:00 - 2:00	1:01 - 2:00	0:30 - 1:01	0:53 - 1:12	0:23 - 0:46	0:08 - 1:08	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:12 - 2:51	0:19 - 0:42	1:50 - 2:00	0:53 - 1:50	0:27 - 0:53	0:49 - 1:08	0:23 - 0:46		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:12 - 2:51	0:19 - 0:38	1:43 - 2:00	0:49 - 1:43	0:23 - 0:49	0:49 - 1:08 ¹¹	0:23 - 0:46 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:42 - 1:31	0:11 - 0:27	1:12 - 1:35	0:34 - 1:12	0:15 - 0:34				
below -18 to -25°C (below 0 to -13°F)	100/0	0:42 - 1:31	0:07 - 0:15	0:42 - 0:53	0:19 - 0:42	0:11 - 0:19				
below -25 to -29°C (below -13 to -20°F)	100/0	0:42 - 1:31	0:05 - 0:11	0:34 - 0:42	0:15 - 0:34	0:08 - 0:15				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-23: ADJUSTED TYPE IV HOLDOVER TIMES FOR ASGLOBAL 4FLITE EG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:12 - 2:28	0:19 - 0:34	1:35 - 1:58	0:46 - 1:35	0:23 - 0:46	0:30 - 0:53	0:15 - 0:27	0:06 - 0:49	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:05 - 2:05	0:15 - 0:30	1:24 - 1:43	0:42 - 1:24	0:19 - 0:42	0:30 - 0:53	0:15 - 0:27		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:05 - 2:05	0:15 - 0:27	1:12 - 1:31	0:38 - 1:12	0:19 - 0:38	0:30 - 0:53 ¹¹	0:15 - 0:27 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:38 - 1:05	0:11 - 0:27	1:12 - 1:31	0:34 - 1:12	0:15 - 0:34				
below -18 to -25°C (below 0 to -13°F)	100/0	0:38 - 1:05	0:11 - 0:23	1:01 - 1:16	0:27 - 1:01	0:15 - 0:27				
below -25 to -30°C (below -13 to -22°F)	100/0	0:23 - 0:49	0:07 - 0:15	0:42 - 0:49	0:19 - 0:42	0:08 - 0:19				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-24: ADJUSTED TYPE IV HOLDOVER TIMES FOR ASGLOBAL 4FLITE PG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:24 - 2:28	0:30 - 0:53	2:00 - 2:00	1:12 - 2:00	0:38 - 1:12	0:53 - 1:12	0:34 - 0:49	0:11 - 1:01	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:49 - 1:27	0:23 - 0:38	1:35 - 1:54	0:53 - 1:35	0:27 - 0:53	0:42 - 0:53	0:27 - 0:42		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:49 - 1:27	0:15 - 0:30	1:16 - 1:31	0:42 - 1:16	0:23 - 0:42	0:42 - 0:53 ¹¹	0:27 - 0:42 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:23 - 0:34	0:11 - 0:19	0:49 - 1:01	0:27 - 0:49	0:11 - 0:27				
below -18 to -25°C (below 0 to -13°F)	100/0	0:23 - 0:34	0:05 - 0:11	0:27 - 0:34	0:15 - 0:27	0:07 - 0:15				
below -25 to -26°C (below -13 to -15°F)	100/0	0:23 - 0:34	0:05 - 0:11	0:27 - 0:34	0:15 - 0:27	0:06 - 0:15				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-25: ADJUSTED TYPE IV HOLDOVER TIMES FOR AVIAFLUID AVIAFLIGHT EG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:08 - 2:21	0:23 - 0:38	1:27 - 1:46	0:53 - 1:27	0:30 - 0:53	0:49 - 1:31	0:23 - 0:38	0:08 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:01 - 2:17	0:19 - 0:34	1:20 - 1:35	0:46 - 1:20	0:27 - 0:46	0:42 - 1:08	0:27 - 0:38		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:01 - 2:17	0:19 - 0:30	1:12 - 1:27	0:42 - 1:12	0:23 - 0:42	0:42 - 1:08 ¹¹	0:27 - 0:38 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:27 - 1:20	0:15 - 0:30	1:16 - 1:31	0:38 - 1:16	0:19 - 0:38				
below -18 to -25°C (below 0 to -13°F)	100/0	0:27 - 1:20	0:11 - 0:23	1:01 - 1:12	0:30 - 1:01	0:15 - 0:30				
below -25 to -31°C (below -13 to -24°F)	100/0	0:27 - 0:49	0:05 - 0:11	0:27 - 0:34	0:15 - 0:27	0:07 - 0:15				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-26: ADJUSTED TYPE IV HOLDOVER TIMES FOR AVIAFLUID AVIAFLIGHT PG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:43 - 3:02	0:30 - 0:57	2:00 - 2:00	1:16 - 2:00	0:42 - 1:16	1:31 - 1:31	0:53 - 1:27	0:15 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:49 - 1:39	0:19 - 0:38	1:31 - 1:50	0:49 - 1:31	0:27 - 0:49	0:27 - 1:27	0:34 - 0:49		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:49 - 1:39	0:15 - 0:27	1:08 - 1:24	0:38 - 1:08	0:19 - 0:38	0:27 - 1:27 ¹¹	0:34 - 0:49 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:27	0:08 - 0:15	0:38 - 0:46	0:19 - 0:38	0:11 - 0:19				
below -18 to -25°C (below 0 to -13°F)	100/0	0:15 - 0:27	0:04 - 0:07	0:19 - 0:23	0:11 - 0:19	0:05 - 0:11				
below -25 to -25.5°C (below -13 to -14°F)	100/0	0:15 - 0:27	0:04 - 0:07	0:19 - 0:23	0:08 - 0:19	0:05 - 0:08				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-27: ADJUSTED TYPE IV HOLDOVER TIMES FOR CHEMCO CHEMR EG IV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:35 - 2:43	0:19 - 0:46	2:00 - 2:00	0:57 - 2:00	0:27 - 0:57	0:34 - 1:16	0:19 - 0:30	0:07 - 1:20	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:05 - 2:47	0:19 - 0:46	2:00 - 2:00	0:57 - 2:00	0:27 - 0:57	0:46 - 1:12	0:27 - 0:38		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:05 - 2:47	0:19 - 0:46	2:00 - 2:00	0:57 - 2:00	0:27 - 0:57	0:46 - 1:12 ¹¹	0:27 - 0:38 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 1:05	0:11 - 0:23	1:05 - 1:20	0:30 - 1:05	0:15 - 0:30				
below -18 to -25°C (below 0 to -13°F)	100/0	0:30 - 1:05	0:11 - 0:23	1:05 - 1:20	0:30 - 1:05	0:15 - 0:30				
below -25 to -27°C (below -13 to -17°F)	100/0	0:30 - 1:05	0:11 - 0:23	1:05 - 1:20	0:30 - 1:05	0:15 - 0:30				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-28: ADJUSTED TYPE IV HOLDOVER TIMES FOR CHEMCO CHEMR NORDIK IV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:43 - 3:02	0:30 - 1:01	2:00 - 2:00	1:20 - 2:00	0:42 - 1:20	1:01 - 1:31	0:42 - 1:01	0:19 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:24 - 3:02	0:30 - 1:01	2:00 - 2:00	1:20 - 2:00	0:42 - 1:20	0:57 - 1:31	0:34 - 1:01		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:24 - 3:02	0:30 - 1:01	2:00 - 2:00	1:20 - 2:00	0:42 - 1:20	0:57 - 1:31 ¹¹	0:34 - 1:01 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 1:08	0:27 - 0:53	2:00 - 2:00	1:12 - 2:00	0:38 - 1:12				
below -18 to -25°C (below 0 to -13°F)	100/0	0:30 - 1:08	0:19 - 0:38	1:39 - 2:00	0:49 - 1:39	0:27 - 0:49				
below -25 to -29°C (below -13 to -20°F)	100/0	0:30 - 1:08	0:15 - 0:30	1:24 - 1:43	0:42 - 1:24	0:23 - 0:42				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-29: ADJUSTED TYPE IV HOLDOVER TIMES FOR CHONGQING JOBA CHEMICAL FW-IV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:28 - 3:02	0:27 - 0:57	2:00 - 2:00	1:16 - 2:00	0:38 - 1:16	1:08 - 1:31	0:34 - 0:49	0:11 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:54 - 3:02	0:23 - 0:46	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	0:38 - 1:31	0:27 - 0:53		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:54 - 3:02	0:23 - 0:42	1:50 - 2:00	0:57 - 1:50	0:27 - 0:57	0:38 - 1:31 ¹¹	0:27 - 0:53 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:27 - 1:16	0:15 - 0:30	1:31 - 1:58	0:42 - 1:31	0:19 - 0:42				
below -18 to -25°C (below 0 to -13°F)	100/0	0:27 - 1:16	0:11 - 0:23	1:01 - 1:20	0:27 - 1:01	0:11 - 0:27				
below -25 to -29°C (below -13 to -20°F)	100/0	0:27 - 1:16	0:08 - 0:19	0:53 - 1:08	0:23 - 0:53	0:11 - 0:23				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-30: ADJUSTED TYPE IV HOLDOVER TIMES FOR CLARIANT SAFEWING MP IV LAUNCH

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	3:02 - 3:02	0:38 - 1:01	2:00 - 2:00	1:20 - 2:00	0:49 - 1:20	1:08 - 1:31	0:46 - 1:16	0:11 - 1:16	CAUTION: No holdover time guidelines exist
	75/25	2:47 - 3:02	0:34 - 1:01	2:00 - 2:00	1:20 - 2:00	0:46 - 1:20	1:16 - 1:31	0:34 - 0:57	0:08 - 1:20	
	50/50	1:05 - 2:05	0:15 - 0:27	1:05 - 1:16	0:34 - 1:05	0:19 - 0:34	0:23 - 0:38	0:15 - 0:19		
below -3 to -8°C (below 27 to 18°F)	100/0	0:46 - 1:27	0:30 - 0:49	1:50 - 2:00	1:08 - 1:50	0:42 - 1:08	0:27 - 1:16	0:19 - 0:34		
	75/25	0:30 - 1:01	0:30 - 0:53	2:00 - 2:00	1:08 - 2:00	0:38 - 1:08	0:19 - 0:53	0:19 - 0:34		
below -8 to -14°C (below 18 to 7°F)	100/0	0:46 - 1:27	0:27 - 0:46	1:39 - 1:54	1:01 - 1:39	0:38 - 1:01	0:27 - 1:16 ¹¹	0:19 - 0:34 ¹¹		
	75/25	0:30 - 1:01	0:27 - 0:46	1:50 - 2:00	1:05 - 1:50	0:34 - 1:05	0:19 - 0:53 ¹¹	0:19 - 0:34 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:23 - 0:38	0:04 - 0:11	0:57 - 1:20	0:15 - 0:57	0:05 - 0:15				
below -18 to -25°C (below 0 to -13°F)	100/0	0:23 - 0:38	0:02 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -25 to -28.5°C (below -13 to -19°F)	100/0	0:23 - 0:38	0:01 - 0:03	0:15 - 0:23	0:05 - 0:15	0:01 - 0:05				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-31: ADJUSTED TYPE IV HOLDOVER TIMES FOR CLARIANT SAFEWING MP IV LAUNCH PLUS

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:59 - 3:02	0:30 - 1:12	2:00 - 2:00	1:35 - 2:00	0:42 - 1:35	1:31 - 1:31	0:46 - 1:31	0:15 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	2:59 - 3:02	0:27 - 1:05	2:00 - 2:00	1:27 - 2:00	0:38 - 1:27	1:31 - 1:31	1:01 - 1:05	0:15 - 1:24	
	50/50	0:57 - 1:24	0:11 - 0:27	1:12 - 1:31	0:34 - 1:12	0:15 - 0:34	0:19 - 0:46	0:11 - 0:15		
below -3 to -8°C (below 27 to 18°F)	100/0	0:42 - 1:43	0:27 - 0:57	2:00 - 2:00	1:16 - 2:00	0:34 - 1:16	0:19 - 1:12	0:19 - 0:30		
	75/25	0:30 - 1:31	0:23 - 0:49	2:00 - 2:00	1:08 - 2:00	0:27 - 1:08	0:15 - 0:49	0:15 - 0:23		
below -8 to -14°C (below 18 to 7°F)	100/0	0:42 - 1:43	0:23 - 0:49	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	0:19 - 1:12 ¹¹	0:19 - 0:30 ¹¹		
	75/25	0:30 - 1:31	0:19 - 0:42	2:00 - 2:00	0:57 - 2:00	0:23 - 0:57	0:15 - 0:49 ¹¹	0:15 - 0:23 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:19 - 0:38	0:04 - 0:15	0:57 - 1:24	0:19 - 0:57	0:05 - 0:19				
below -18 to -25°C (below 0 to -13°F)	100/0	0:19 - 0:38	0:02 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -25 to -29°C (below -13 to -20°F)	100/0	0:19 - 0:38	0:01 - 0:03	0:15 - 0:23	0:05 - 0:15	0:02 - 0:05				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-32: ADJUSTED TYPE IV HOLDOVER TIMES FOR CRYOTECH POLAR GUARD® ADVANCE

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:09 - 3:02	0:38 - 1:05	2:00 - 2:00	1:27 - 2:00	0:49 - 1:27	1:12 - 1:31	0:57 - 1:08	0:11 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	1:54 - 3:02	0:23 - 0:49	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	1:16 - 1:31	0:30 - 0:53	0:07 - 1:16	
	50/50	0:38 - 1:05	0:05 - 0:15	0:53 - 1:12	0:19 - 0:53	0:08 - 0:19	0:15 - 0:34	0:07 - 0:15		
below -3 to -8°C (below 27 to 18°F)	100/0	0:42 - 1:54	0:27 - 0:49	1:50 - 2:00	1:05 - 1:50	0:38 - 1:05	0:27 - 1:12	0:27 - 0:34		
	75/25	0:30 - 1:08	0:19 - 0:38	1:46 - 2:00	0:49 - 1:46	0:23 - 0:49	0:19 - 0:49	0:27 - 0:34		
below -8 to -14°C (below 18 to 7°F)	100/0	0:42 - 1:54	0:23 - 0:38	1:31 - 1:46	0:53 - 1:31	0:30 - 0:53	0:27 - 1:12 ¹¹	0:27 - 0:34 ¹¹		
	75/25	0:30 - 1:08	0:15 - 0:34	1:31 - 1:54	0:42 - 1:31	0:19 - 0:42	0:19 - 0:49 ¹¹	0:27 - 0:34 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:19 - 0:38	0:06 - 0:19	1:12 - 1:43	0:27 - 1:12	0:08 - 0:27				
below -18 to -25°C (below 0 to -13°F)	100/0	0:19 - 0:38	0:02 - 0:08	0:30 - 0:42	0:11 - 0:30	0:03 - 0:11				
below -25 to -30.5°C (below -13 to -22°F)	100/0	0:19 - 0:38	0:02 - 0:04	0:19 - 0:23	0:05 - 0:19	0:02 - 0:05				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-33: ADJUSTED TYPE IV HOLDOVER TIMES FOR CRYOTECH POLAR GUARD® XTEND

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:54 - 3:02	0:38 - 1:08	2:00 - 2:00	1:31 - 2:00	0:49 - 1:31	1:31 - 1:31	0:46 - 1:24	0:15 - 1:20	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:46 - 1:24	0:30 - 0:53	2:00 - 2:00	1:12 - 2:00	0:38 - 1:12	0:27 - 1:16	0:38 - 0:42		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:46 - 1:24	0:27 - 0:46	1:50 - 2:00	1:01 - 1:50	0:34 - 1:01	0:27 - 1:16 ¹¹	0:38 - 0:42 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:19 - 0:30	0:11 - 0:23	1:01 - 1:16	0:30 - 1:01	0:15 - 0:30				
below -18 to -25°C (below 0 to -13°F)	100/0	0:19 - 0:30	0:04 - 0:08	0:23 - 0:30	0:11 - 0:23	0:05 - 0:11				
below -25 to -29°C (below -13 to -20°F)	100/0	0:19 - 0:30	0:02 - 0:05	0:15 - 0:19	0:07 - 0:15	0:03 - 0:07				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-34: ADJUSTED TYPE IV HOLDOVER TIMES FOR DOW INC. UCAR ENDURANCE™ EG106

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:35 - 2:24	0:23 - 0:46	2:00 - 2:00	1:01 - 2:00	0:30 - 1:01	0:53 - 1:31	0:38 - 0:57	0:15 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:24 - 2:32	0:19 - 0:38	1:50 - 2:00	0:53 - 1:50	0:27 - 0:53	0:42 - 1:24	0:34 - 0:53		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:24 - 2:32	0:19 - 0:34	1:39 - 2:00	0:49 - 1:39	0:23 - 0:49	0:42 - 1:24 ¹¹	0:34 - 0:53 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:23 - 0:49	0:11 - 0:27	1:20 - 1:43	0:38 - 1:20	0:19 - 0:38				
below -18 to -25°C (below 0 to -13°F)	100/0	0:23 - 0:49	0:11 - 0:23	1:08 - 1:27	0:30 - 1:08	0:15 - 0:30				
below -25 to -29°C (below -13 to -20°F)	100/0	0:23 - 0:49	0:11 - 0:23	1:01 - 1:20	0:30 - 1:01	0:15 - 0:30				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-35: ADJUSTED TYPE IV HOLDOVER TIMES FOR DOW INC. UCAR™ FLIGHTGUARD™ AD-49

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	2:32 - 3:02	0:34 - 1:05	2:00 - 2:00	1:27 - 2:00	0:46 - 1:27	1:05 - 1:31	0:46 - 1:05	0:08 - 1:27	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:15 - 1:12	0:27 - 0:49	2:00 - 2:00	1:08 - 2:00	0:34 - 1:08	0:19 - 1:05	0:15 - 0:19		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:15 - 1:12	0:23 - 0:42	1:50 - 2:00	0:57 - 1:50	0:30 - 0:57	0:19 - 1:05 ¹¹	0:15 - 0:19 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:19 - 0:30	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:19 - 0:30	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02				
below -25 to -26°C (below -13 to -15°F)	100/0	0:19 - 0:30	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-36: ADJUSTED TYPE IV HOLDOVER TIMES FOR INLAND TECHNOLOGIES ECO-SHIELD®

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	0:57 - 2:02	0:27 - 0:46	1:50 - 2:00	1:01 - 1:50	0:34 - 1:01	0:30 - 1:08	0:27 - 0:30	0:11 - 1:12	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:53 - 1:58	0:23 - 0:42	1:35 - 1:54	0:53 - 1:35	0:30 - 0:53	0:38 - 1:05	0:23 - 0:30		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:53 - 1:58	0:19 - 0:38	1:27 - 1:43	0:49 - 1:27	0:27 - 0:49	0:38 - 1:05 ¹¹	0:23 - 0:30 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:23 - 0:46	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:23 - 0:46	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02				
below -25 to -25.5°C (below -13 to -14°F)	100/0	0:23 - 0:46	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-37: ADJUSTED TYPE IV HOLDOVER TIMES FOR JSC RCP NORDIX DEFROST ECO 4

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:08 - 2:02	0:23 - 0:42	1:54 - 2:00	0:57 - 1:54	0:27 - 0:57	0:49 - 1:08	0:30 - 0:49	0:11 - 0:53	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:42 - 1:58	0:19 - 0:38	1:43 - 2:00	0:49 - 1:43	0:27 - 0:49	0:38 - 1:01	0:27 - 0:38		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:42 - 1:58	0:19 - 0:34	1:35 - 1:58	0:46 - 1:35	0:23 - 0:46	0:38 - 1:01 ¹¹	0:27 - 0:38 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:23 - 0:38	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:23 - 0:38	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02				
below -25 to -25.5°C (below -13 to -14°F)	100/0	0:23 - 0:38	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-38: ADJUSTED TYPE IV HOLDOVER TIMES FOR JSC RCP NORDIX DEFROST NORTH 4

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:39 - 3:02	0:23 - 0:46	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	0:49 - 1:31	0:23 - 0:38	0:07 - 1:27	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	2:02 - 3:02	0:23 - 0:46	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	0:49 - 1:31	0:30 - 0:46		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	2:02 - 3:02	0:23 - 0:46	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	0:49 - 1:31 ¹¹	0:30 - 0:46 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:34 - 1:27	0:05 - 0:15	0:38 - 0:49	0:19 - 0:38	0:08 - 0:19				
below -18 to -25°C (below 0 to -13°F)	100/0	0:34 - 1:27	0:02 - 0:08	0:30 - 0:42	0:11 - 0:30	0:04 - 0:11				
below -25 to -26°C (below -13 to -15°F)	100/0	0:34 - 1:27	0:01 - 0:05	0:19 - 0:27	0:06 - 0:19	0:02 - 0:06				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-39: ADJUSTED TYPE IV HOLDOVER TIMES FOR KILFROST ABC-S PLUS

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:39 - 3:02	0:42 - 1:12	2:00 - 2:00	1:35 - 2:00	0:57 - 1:35	1:24 - 1:31	0:49 - 1:31	0:19 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	1:05 - 2:02	0:23 - 0:42	1:35 - 1:50	0:57 - 1:35	0:34 - 0:57	0:46 - 1:01	0:23 - 0:38	0:08 - 1:01	
	50/50	0:23 - 0:42	0:11 - 0:19	0:46 - 0:53	0:23 - 0:46	0:11 - 0:23	0:11 - 0:30	0:11 - 0:15		
below -3 to -8°C (below 27 to 18°F)	100/0	0:42 - 2:40	0:38 - 1:05	2:00 - 2:00	1:24 - 2:00	0:49 - 1:24	0:19 - 1:12	0:15 - 0:23		
	75/25	0:34 - 1:24	0:23 - 0:38	1:24 - 1:39	0:49 - 1:24	0:30 - 0:49	0:15 - 0:53	0:11 - 0:19		
below -8 to -14°C (below 18 to 7°F)	100/0	0:42 - 2:40	0:34 - 0:57	2:00 - 2:00	1:20 - 2:00	0:46 - 1:20	0:19 - 1:12 ¹¹	0:15 - 0:23 ¹¹		
	75/25	0:34 - 1:24	0:19 - 0:34	1:20 - 1:31	0:46 - 1:20	0:27 - 0:46	0:15 - 0:53 ¹¹	0:11 - 0:19 ¹¹		
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 0:46	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:30 - 0:46	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02				
below -25 to -28°C (below -13 to -18°F)	100/0	0:30 - 0:46	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-40: ADJUSTED TYPE IV HOLDOVER TIMES FOR MKS DEVO CHEMICALS COREICEPHOB TYPE-IV PG

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:46 - 2:55	0:27 - 0:57	2:00 - 2:00	1:16 - 2:00	0:34 - 1:16	1:05 - 1:31	0:38 - 1:01	0:08 - 1:16	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:11 - 0:27	0:19 - 0:42	1:58 - 2:00	0:53 - 1:58	0:27 - 0:53	0:30 - 1:08	0:15 - 0:27		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:11 - 0:27	0:15 - 0:34	1:35 - 2:00	0:42 - 1:35	0:19 - 0:42	0:30 - 1:08 ¹¹	0:15 - 0:27 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:11 - 0:23	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07				
below -18 to -25°C (below 0 to -13°F)	100/0	0:11 - 0:23	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02				
below -25 to -29°C (below -13 to -20°F)	100/0	0:11 - 0:23	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-41: ADJUSTED TYPE IV HOLDOVER TIMES FOR NEWAVE AEROCHEMICAL FCY 9311

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:27 - 3:02	0:19 - 0:42	1:46 - 2:00	0:53 - 1:46	0:27 - 0:53	0:53 - 1:31	0:30 - 0:49	0:11 - 1:05	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:27 - 1:35	0:15 - 0:30	1:24 - 1:46	0:42 - 1:24	0:23 - 0:42	0:27 - 1:01	0:15 - 0:27		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:27 - 1:35	0:15 - 0:27	1:12 - 1:31	0:38 - 1:12	0:19 - 0:38	0:27 - 1:01 ¹¹	0:15 - 0:27 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:23 - 0:42	0:08 - 0:15	0:46 - 0:57	0:23 - 0:46	0:11 - 0:23				
below -18 to -25°C (below 0 to -13°F)	100/0	0:23 - 0:42	0:04 - 0:08	0:27 - 0:30	0:11 - 0:27	0:05 - 0:11				
below -25 to -29.5°C (below -13 to -21°F)	100/0	0:23 - 0:42	0:04 - 0:08	0:23 - 0:30	0:11 - 0:23	0:05 - 0:11				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-42: ADJUSTED TYPE IV HOLDOVER TIMES FOR NEWAVE AEROCHEMICAL FCY-EGIV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:58 - 3:02	0:19 - 0:42	1:58 - 2:00	0:53 - 1:58	0:27 - 0:53	1:01 - 1:31	0:30 - 0:49	0:11 - 1:31	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	1:05 - 2:36	0:15 - 0:34	1:39 - 2:00	0:46 - 1:39	0:19 - 0:46	0:38 - 1:31	0:34 - 0:49		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	1:05 - 2:36	0:15 - 0:30	1:27 - 1:50	0:38 - 1:27	0:19 - 0:38	0:38 - 1:31 ¹¹	0:34 - 0:49 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:27 - 1:27	0:11 - 0:23	1:12 - 1:35	0:30 - 1:12	0:11 - 0:30				
below -18 to -25°C (below 0 to -13°F)	100/0	0:27 - 1:27	0:07 - 0:15	0:53 - 1:12	0:23 - 0:53	0:11 - 0:23				
below -25 to -29°C (below -13 to -20°F)	100/0	0:27 - 1:27	0:06 - 0:15	0:46 - 1:01	0:19 - 0:46	0:08 - 0:19				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-45 provides allowance times for Type IV EG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

TABLE ADJ-43: ADJUSTED TYPE IV HOLDOVER TIMES FOR SHAANXI CLEANWAY CLEANSURFACE IV

Outside Air Temperature ¹	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist ² , or Ice Crystals ³	Snow mixed with Freezing Fog ⁴	Very Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Light Snow, Snow Grains or Snow Pellets ^{5,6,7}	Moderate Snow, Snow Grains or Snow Pellets ^{5,7}	Freezing Drizzle ⁸	Light Freezing Rain	Rain on Cold-Soaked Wing ⁹	Other ¹⁰
-3°C and above (27°F and above)	100/0	1:54 - 3:02	0:23 - 0:57	2:00 - 2:00	1:16 - 2:00	0:30 - 1:16	1:01 - 1:31	0:30 - 0:53	0:11 - 1:24	CAUTION: No holdover time guidelines exist
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
below -3 to -8°C (below 27 to 18°F)	100/0	0:42 - 1:35	0:15 - 0:34	1:50 - 2:00	0:46 - 1:50	0:19 - 0:46	0:23 - 1:08	0:19 - 0:27		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -8 to -14°C (below 18 to 7°F)	100/0	0:42 - 1:35	0:11 - 0:27	1:20 - 1:43	0:34 - 1:20	0:15 - 0:34	0:23 - 1:08 ¹¹	0:19 - 0:27 ¹¹		
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
below -14 to -18°C (below 7 to 0°F)	100/0	0:19 - 0:27	0:08 - 0:15	0:49 - 1:01	0:23 - 0:49	0:11 - 0:23				
below -18 to -25°C (below 0 to -13°F)	100/0	0:19 - 0:27	0:04 - 0:08	0:27 - 0:34	0:11 - 0:27	0:05 - 0:11				
below -25 to -30°C (below -13 to -22°F)	100/0	0:15 - 0:23	0:03 - 0:07	0:23 - 0:27	0:11 - 0:23	0:05 - 0:11				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
- 2 Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
- 3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.
- 4 These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
- 5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
- 6 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm that the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
- 7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
- 8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
- 9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
- 10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-46 provides allowance times for Type IV PG fluids in ice pellets and small hail).
- 11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

- The cautions that apply to the holdover times in the table above can be found on page A-24.

ADJUSTED ALLOWANCE TIMES TABLES FOR WINTER 2024-2025

The HOT Guidelines are provided for information and guidance purposes. The HOT Guidelines on their own do not change, create, amend or permit deviations from regulatory requirements.

The HOT Guidelines may use mandatory terms such as “must”, “shall” and “is/are required” so as to convey the intent of meeting regulatory requirements and SAE Standards, where applicable. The term “should” is to be understood, unless an alternative method of achieving safety is implemented that would meet or exceed the intent of the recommendation.

CAUTIONS

- The responsibility for the application of these data remains with the user.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- Allowance time cannot be extended by an inspection of the aircraft critical surfaces.

TABLE ADJ-44: ADJUSTED ALLOWANCE TIMES FOR SAE TYPE III FLUIDS^{1,2}

Precipitation Types or Combinations and Applicable METAR Codes ⁴	Outside Air Temperature			
	Above 0 °C (32 °F and above)	0 to -5 °C (32 to 23 °F)	Below -5 to -10 °C (Below 23 to 14 °F)	Below -10 °C ³ (Below 14 °F)
Light Ice Pellets -PL, -GS	8 minutes	8 minutes	8 minutes	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Light Snow -PLSN, -SNPL, -GSSN, -SNGS	8 minutes	8 minutes	8 minutes	
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle -PLFZDZ, -FZDZPL, FZDZPL, -GSFZDZ, -FZDZGS, FZDZGS		5 minutes	4 minutes	
Light Ice Pellets Mixed with Light or Moderate Drizzle -PLDZ, -DZPL, DZPL, -GSDZ, -DZGS, DZGS	5 minutes			
Light Ice Pellets Mixed with Light Freezing Rain -PLFZRA, -FZRAPL, -GSFZRA, -FZRAGS		5 minutes	4 minutes	
Light Ice Pellets Mixed with Light Rain -PLRA, -RAPL, -GSRA, -RAGS	5 minutes			
Moderate Ice Pellets (or Small Hail) PL, GS	4 minutes	4 minutes	4 minutes	

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. ALLOWANCE TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- 1 These allowance times are for use with undiluted (100/0) fluids applied unheated on aircraft with rotation speeds of 100 knots or greater. To use the allowance times in this table, ensure the fluid being used is listed in the List of Fluids Validated for the Use of Allowance Times Table (Table 44).
- 2 Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. Takeoff is not permitted if the OAT decreases during the 90 minutes in conditions of light ice pellets mixed with either: light freezing drizzle, moderate freezing drizzle, light freezing rain, or light rain.
- 3 Ensure that the lowest operational use temperature (LOUT) is respected.
- 4 In the US, small hail is reported as GR with the remark "GR LESS THAN ¼". Outside of the US, small hail is reported as GS. If the METAR does not report an intensity for small hail, use the "moderate ice pellets or small hail" allowance times. If the METAR reports an intensity with small hail, the condition with the equivalent intensity can be used. This also applies in mixed conditions.

CAUTIONS

- The cautions that apply to the allowance times in the table above can be found on page A-51.

**TABLE ADJ-45: ADJUSTED ALLOWANCE TIMES FOR SAE TYPE IV
ETHYLENE GLYCOL (EG) FLUIDS^{1,2}**

Precipitation Types or Combinations and Applicable METAR Codes ⁵	Outside Air Temperature				
	Above 0 °C ³ (32 °F and above)	0 to -5 °C ³ (32 to 23 °F)	Below -5 to -10 °C ³ (Below 23 to 14 °F)	Below -10 to -16 °C ³ (Below 14 to 3 °F)	Below -16 to -22 °C ^{3,4} (Below 3 to -8 °F)
Light Ice Pellets -PL, -GS	53 minutes	53 minutes	53 minutes	38 minutes	23 minutes
Light Ice Pellets Mixed with Light Snow -PLSN, -SNPL, -GSSN, -SNGS	38 minutes	38 minutes	23 minutes	19 minutes	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle -PLFZDZ, -FZDZPL, FZDZPL, -GSFZDZ, -FZDZGS, FZDZGS		30 minutes	23 minutes		
Light Ice Pellets Mixed with Light or Moderate Drizzle -PLDZ, -DZPL, DZPL, -GSDZ, -DZGS, DZGS	30 minutes				
Light Ice Pellets Mixed with Light Freezing Rain -PLFZRA, -FZRAPL, -GSFZRA, -FZRAGS		30 minutes	23 minutes		
Light Ice Pellets Mixed with Light Rain -PLRA, -RAPL, -GSRA, -RAGS	30 minutes				
Light Ice Pellets Mixed with Light Rain and Light Snow -PLRASN, -PLSNRA, -RAPLSN, -RASNPL, -SNPLRA, -SNRAPL, -GSRASN, -GSSNRA, -RAGSSN, -RASNGS, -SNGSRA, -SNRAGS	15 minutes				
Light Ice Pellets Mixed with Light Freezing Rain and Light Snow -PLFZRASN, -PLSNFZRA, -FZRAPLSN, -FZRASNPL, -SNPLFZRA, -SNFZRAPL, -GSFZRASN, -GSSNFZRA, -FZRAGSSN, -FZRASNGS, -SNGSFZRA, -SNFZRAGS		15 minutes			
Moderate Ice Pellets (or Small Hail) PL, GS	27 minutes	27 minutes	27 minutes	11 minutes	8 minutes
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Snow PLSN, SNPL, GSSN, SNGS	19 minutes	11 minutes	8 minutes		Caution: No allowance times currently exist
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Freezing Drizzle PLFZDZ, GSFZDZ		15 minutes	8 minutes		
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Drizzle PLDZ, GSDZ	15 minutes				
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Rain PLRA, GSRA, RAPL, RAGS	11 minutes				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. ALLOWANCE TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- The notes that apply to the allowance times in the table above can be found on page A-54.

CAUTIONS

- The cautions that apply to the allowance times in the table above can be found on page A-51.

**TABLE ADJ-45 (CONT'D): ADJUSTED ALLOWANCE TIMES FOR SAE TYPE IV
ETHYLENE GLYCOL (EG) FLUIDS****NOTES**

- 1 These allowance times are for use with undiluted (100/0) EG based fluids. If the glycol type is unknown, the allowance times for SAE Type IV PG fluids should be used. To use the allowance times in this table, ensure the fluid being used is listed in the List of Fluids Validated for the Use of Allowance Times Table (Table 44).
- 2 Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. Takeoff is not permitted if the OAT decreases during the 90 minutes in conditions of light ice pellets mixed with either: light or moderate freezing drizzle, light or moderate drizzle, light freezing rain, light rain, light rain and light snow, or light freezing rain and light snow.
- 3 No allowance times exist for EG based fluids when used on aircraft with rotation speeds less than 100 knots.
- 4 Ensure that the lowest operational use temperature (LOUT) is respected.
- 5 In the US, small hail is reported as GR with the remark "GR LESS THAN ¼". Outside of the US, small hail is reported as GS. If the METAR does not report an intensity for small hail, use the "moderate ice pellets or small hail" allowance times. If the METAR reports an intensity with small hail, the condition with the equivalent intensity can be used.

**TABLE ADJ-46: ADJUSTED ALLOWANCE TIMES FOR SAE TYPE IV
PROPYLENE GLYCOL (PG) FLUIDS^{1,2}**

Precipitation Types or Combinations and Applicable METAR Codes ⁶	Outside Air Temperature				
	Above 0 °C ³ (32 °F and above)	0 to -5 °C ³ (32 to 23 °F)	Below -5 to -10 °C ³ (Below 23 to 14 °F)	Below -10 to -16 °C ⁴ (Below 14 to 3 °F)	Below -16 to -22 °C ^{4,5} (Below 3 to -8 °F)
Light Ice Pellets -PL, -GS	38 minutes	38 minutes	23 minutes	23 minutes	15 minutes
Light Ice Pellets Mixed with Light Snow -PLSN, -SNPL, -GSSN, -SNGS	30 minutes	30 minutes	11 minutes	11 minutes	Caution: No allowance times currently exist
Light Ice Pellets Mixed with Light or Moderate Freezing Drizzle -PLFZDZ, -FZDZPL, FZDZPL, -GSFZDZ, -FZDZGS, FZDZGS		19 minutes	8 minutes		
Light Ice Pellets Mixed with Light or Moderate Drizzle -PLDZ, -DZPL, DZPL, -GSDZ, -DZGS, DZGS	19 minutes				
Light Ice Pellets Mixed with Light Freezing Rain -PLFZRA, -FZRAPL, -GSFZRA, -FZRAGS		19 minutes	8 minutes		
Light Ice Pellets Mixed with Light Rain -PLRA, -RAPL, -GSRA, -RAGS	19 minutes				
Light Ice Pellets Mixed with Light Rain and Light Snow -PLRASN, -PLSNRA, -RAPLSN, -RASNPL, -SNPLRA, -SNRAPL, -GSRASN, -GSSNRA, -RAGSSN, -RASNGS, -SNGSRA, -SNRAGS	15 minutes				
Light Ice Pellets Mixed with Light Freezing Rain and Light Snow -PLFZRASN, -PLSNFZRA, -FZRAPLSN, -FZRASNPL, -SNPLFZRA, -SNFZRAPL, -GSFZRASN, -GSSNFZRA, -FZRAGSSN, -FZRASNGS, -SNGSFZRA, -SNFZRAGS		15 minutes			
Moderate Ice Pellets (or Small Hail) PL, GS	11 minutes	11 minutes	8 minutes	8 minutes	
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Snow PLSN, SNPL, GSSN, SNGS	11 minutes	4 minutes	4 minutes		
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Freezing Drizzle PLFZDZ, GSFZDZ		8 minutes	5 minutes		
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Drizzle PLDZ, GSDZ	8 minutes				Caution: No allowance times currently exist
Moderate Ice Pellets (or Small Hail) Mixed with Moderate Rain PLRA, GSRA, RAPL, RAGS	8 minutes				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. ALLOWANCE TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

- The notes that apply to the allowance times in the table above can be found on page A-56.

CAUTIONS

- The cautions that apply to the allowance times in the table above can be found on page A-51.

**TABLE ADJ-46 (CONT'D): ADJUSTED ALLOWANCE TIMES FOR SAE TYPE IV
PROPYLENE GLYCOL (PG) FLUIDS****NOTES**

- 1 These allowance times are for use with undiluted (100/0) PG based fluids applied on aircraft with rotation speeds of 100 knots or greater. If the glycol type is unknown, the allowance times for SAE Type IV PG fluids allowance times in this table, ensure the fluid being used is listed in the List of Fluids Validated for the Use of Allowance Times Table (Table 44).
- 2 Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. Takeoff is not permitted if the OAT decreases during the 90 minutes in conditions of light ice pellets mixed with either: light or moderate freezing drizzle, light or moderate drizzle, light freezing rain, light rain, light rain and light snow, or light freezing rain and light snow.
- 3 No allowance times exist for PG based fluids when used on aircraft with rotation speeds less than 100 knots.
- 4 No allowance times exist for PG based fluids when used on aircraft with rotation speeds less than 115 knots.
- 5 Ensure that the lowest operational use temperature (LOUT) is respected.
- 6 In the US, small hail is reported as GR with the remark "GR LESS THAN ¼". Outside of the US, small hail is reported as GS. If the METAR does not report an intensity for small hail, use the "moderate ice pellets or small hail" allowance times. If the METAR reports an intensity with small hail, the condition with the equivalent intensity can be used.

**APPENDIX B:
TESTING LABORATORIES**

TESTING LABORATORIES

The following laboratories are known to provide testing for de/anti-icing fluids given they verifiably adhere to internationally accepted standards and recommended practices that are associated with the holdover times published by Transport Canada.

Please enquire directly with the laboratories for a full list of testing available.

- **Anti-icing Materials International Laboratory (AMIL):** 555, boulevard de l'Université, Chicoutimi, Québec, G7H 2B1, Canada, 418-545-5011 ext. 2406, www.amillaboratory.ca. Provides testing for anti-icing performance (described in AMS1424, AMS1428, and AS5901), aerodynamic acceptance (described in AMS1424, AMS1428 and AS5900), physical properties including fluid stability (described in AMS1424 and AMS1428), environmental information (described in AMS1424 and AMS1428) and most of tests to evaluate materials compatibility (described in AMS1424 and AMS1428).
- **APS Aviation Inc.:** 6700, chemin de la Côte-de-Liesse, Suite 102, Saint-Laurent, Quebec, H4T 2B5, Canada, 514-878-4388, www.apsaviation.ca. Provides endurance time testing (described in ARP5485B and ARP5945A).
- **Scientific Material International (SMI):** 12219 SW 131st Avenue, Miami, Florida, USA 33186-6401; 305-971-7047, www.smiinc.com. Provides testing for physical properties including fluid stability (described in AMS1424 and AMS1428), environmental information (described in AMS1424 and AMS1428) and most of tests to evaluate materials compatibility (described in AMS1424 and AMS1428).

**APPENDIX C:
AIRCRAFT DEICING FLUID (ADF)/AIRCRAFT ANTI-ICING FLUID (AAF)
MANUFACTURERS**

TABLE C-1: ADF/AAF MANUFACTURERS CONTACT INFORMATION¹

Fluid Manufacturer	Primary contact	Email Address
ABAX Industries	Cristina Poupet	c.poupet@abax.eu
ADDCON EUROPE GmbH	Norman Kilian	norman.kilian@addcon.com
Aero Mag 2000 SYR LLC	Mark Vilcek	m.vilcek@aeromag2000.com
ALAB Industries	Marat Zhazbek	info@alab.kz
Alab International	Kuanyshbay Bissenov	deicing@alab.kz
AllClear Systems LLC	Steve Szafara	SSzafara@allclearsys.com
Arcton Ltd.	Bulat Hamitov	bulathamitov@yandex.ru
ASGlobal	Paulo de Oliveira	paulo@asglobal.biz
AVIAFLUID International Ltd	Igor Derbasov	iderbasov@aviafluid.ru
Aviation Xi'an High-Tech Physical Chemical Co. Ltd.	Arella	xiangaokelihua@163.com
Beijing Wangye Aviation Chemical Product Co Ltd.	Sina Gong	hswgyh@sina.com
Beijing Yadilite Aviation Advanced Materials Corporation	Kewei Wang	wangkewei@yadilite.com
CHEMCO Inc.	Claude Grenon	claudio.grenon@chemco-inc.com
Chongqing Joba Chemical Co.,Ltd.	Cherry Wang	info@changfengchem.com
Clariant Produkte (Deutschland) GmbH	Andreas Brueck	andreas.brueck@clariant.com
Cryotech Deicing Technology	Melissa Copeland	melissa.copeland@cryotech.com
Dow Inc.	Sarah Venckeleer	fdeicer@dow.com
Heilongjiang Hangjie Aero-chemical Technology Co. Ltd.	<i>Wang Dawen</i>	dawen_hrb@163.com
HOC Industries	Jeremy Wilcoxson	jwilcoxson@hocindustries.com
Inland Technologies Inc.	Alex McLeod	amcleod@inlandgroup.ca
JSC RCP Nordix	Ruslan Ukraintsev	defrost@nordway.ru
Kilfrost Limited	Lee Stokes	lee.stokes@kilfrost.com
LNT Solutions	Philip Newton	philip.newton@lntsolutions.com
MKS DevO Chemicals	Efe Dikergil	efe.dikergil@mksdevo.com
Newave Aerochemical Co. Ltd.	Peng Aiqun	lwgs@newave.cn
ROMCHIM PROTECT SRL	Eugenia Hongu	contact@romchimprotect.ro
Shaanxi Cleanway Aviation Chemical Co., Ltd	Arella	xiangaokelihua@163.com
Topan LLC	Almat Kurmanov	almat.kurmanov@topan.kz
Xinjiang Zhongtian Liyang Chemical Technology Co., Ltd	Huang Liang	heima.54@foxmail.com

¹ Contact information provided above is the latest information as of the time of publication, August 6, 2024.