



Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, D.C.

TSO-C203

Effective
Date: 07/01/14

Technical Standard Order

Subject: *Fire Containment Covers (FCC)*

1. PURPOSE. This technical standard order (TSO) is for manufacturers applying for a TSO authorization (TSOA) or letter of design approval (LODA). In it, we (the Federal Aviation Administration, (FAA)) tell you what minimum performance standards (MPS) your Fire Containment Covers (FCC) must first meet for approval and identification with the applicable TSO marking.

2. APPLICABILITY. TSO-C203 is applicable for new applications after the effective date of this TSO.

3. REQUIREMENTS. New models of Type I FCC or Type II FCC, identified and manufactured on or after the effective date of this TSO must meet the MPS qualification and documentation requirements in SAE International AS6453, Fire Containment Cover-Design, Performance, and Testing Requirements, August 2013, as modified by the Appendix of this TSO.

a. Functionality. This TSO's design, performance and testing requirements apply to Fire Containment Covers intended to be used to cover unitized cargo contained/restrained in an air cargo pallet and net assembly to improve fire protection in aircraft cargo compartments. Type I FCC requires separate devices be installed over a pallet's load below a net. Type II FCC requires devices permanently attached to a pallet net.

b. Failure Condition Classifications. There is no standard minimum failure condition classification for this TSO. The failure condition classification appropriate for the equipment will depend on the intended use of the equipment in a specific aircraft. Document the loss of function and malfunction failure condition classification for which the equipment is designed

c. Functional Qualification. Demonstrate the required performance under the test conditions specified in SAE AS6453 Sections 4, 5 and 6 as modified in the appendix of this TSO.

d. Environmental Qualification. Demonstrate the required performance under the test conditions specified in SAE AS6453 Section 4.6 and Sections 6.1.2 through 6.1.5 as modified in the appendix of this TSO.

e. Deviations. We have provisions for using alternate or equivalent means of compliance to the criteria in the MPS of this TSO. If you invoke these provisions, you must show that your equipment maintains an equivalent level of safety. Apply for a deviation under the provision of 14 CFR § 21.618.

4. MARKING.

a. Mark at least one major component permanently and legibly with all the information in 14 CFR § 45.15(b). The marking must include the serial number and date of manufacture.

b. Also, mark the following permanently and legibly, with at least the manufacturer's name, subassembly part number, and the TSO number:

(1) Each component that is easily removable (without hand tools); and,

(2) Each subassembly of the article that you determined may be interchangeable.

c. Each fire containment cover conforming to this Standard shall bear at least the following markings near the bottom edges on the two opposite long sides:

— "FIRE CONTAINMENT COVER", in bold characters at least 150 mm (6 in) high,

— Substantiated protection time (e.g. "Minimum protection duration 6 hours"),

— The IATA ULD ID (size) codes for the pallets and nets with which the FCC can be used.

— Expiration date in the format "EXP YYYY-MM".

d. In addition each fire containment cover conforming to this Standard shall bear the markings identified in SAE AS6453 Section 7.3 and Section 7.4 as modified in the appendix of this TSO.

5. APPLICATION DATA REQUIREMENTS. You must give the FAA aircraft certification office (ACO) manager responsible for your facility a statement of conformance, as specified in 14 CFR § 21.603(a)(1) and one copy each of the following technical data to support your design and production approval. LODA applicants must submit the same data (excluding paragraph 5.e) through their civil aviation authority.

- a.** A Manual(s) containing the following:
- (1)** Operating instructions and article limitations sufficient to describe the equipment's operational capability.
 - (2)** Describe in detail any deviations.
 - (3)** Installation procedures and limitations sufficient to ensure that the FCC, when installed according to the installation or operational procedures, still meets this TSO's requirements. Limitations must identify any unique aspects of the installation. The limitations must include a note with the following statement:

"This article meets the minimum performance and quality control standards required by a technical standard order (TSO). Installation of this article requires separate approval."
- b.** Instructions covering periodic maintenance, and repair, for the functional performance of the FCC. Include recommended inspection intervals and service life, as appropriate.
- c.** A drawing depicting how the article will be marked with the information required by paragraph **4** of this TSO.
- d.** Identify functionality or performance contained in the article not evaluated under paragraph **3** of this TSO (that is, non-TSO functions). Non-TSO functions are accepted in parallel with the TSO authorization. For those non-TSO functions to be accepted, you must declare these functions and include the following information with your TSO application:
- (1)** Description of the non-TSO function(s), such as performance specifications, failure condition classifications, software, hardware, and environmental qualification levels. Include a statement confirming that the non-TSO function(s) don't interfere with the article's compliance with the requirements of paragraph **3**.
 - (2)** Installation procedures and limitations sufficient to ensure that the non-TSO function(s) meets the declared functions and performance specification(s) described in paragraph **5.d (1)**.
 - (3)** Instructions for continued performance applicable to the non-TSO function(s) described in paragraph **5.d (1)**.
 - (4)** Interface requirements and applicable installation test procedures to ensure compliance with the performance data defined in paragraph **5.d.(1)**.

(5) Test plans, analysis and results, as appropriate, to verify that performance of the hosting TSO article is not affected by the non-TSO function(s).

(6) Test plans, analysis and results, as appropriate, to verify the function and performance of the non-TSO function(s) as described in paragraph 5.d.(1).

e. The quality system description required by 14 CFR § 21.608, including functional test specifications. The quality system should ensure that you will detect any change to the approved design that could adversely affect compliance with the TSO MPS, and reject the article accordingly. (Not required for LODA applicants.)

f. Material and process specifications list.

g. List of all drawings and processes (including revision level) that define the article's design.

h. Manufacturer's TSO qualification report showing results of testing accomplished according to paragraph 3.c of this TSO.

6. MANUFACTURER DATA REQUIREMENTS. Besides the data given directly to the responsible ACO, have the following technical data available for review by the responsible ACO:

a. Functional qualification specifications for qualifying each production article to ensure compliance with this TSO.

b. Schematic drawings.

c. Material and process specifications.

d. If the article contains non-TSO function(s), you must also make available items 6.a through 6.d as they pertain to the non-TSO function(s).

7. FURNISHED DATA REQUIREMENTS.

a. If furnishing one or more articles manufactured under this TSO to one entity (such as an operator or repair station), provide one copy or on-line access to the data in paragraphs 5.a and 5.b of this TSO. Add any other data needed for the proper installation, certification, use, or for continued compliance with the TSO, of the FCC.

b. If the article contains declared non-TSO function(s), include one copy of the data in paragraphs 5.d.(1) through 5.d.(4).

8. HOW TO GET REFERENCED DOCUMENTS.

a. Order RTCA documents from RTCA Inc., 1150 18th Street NW, Suite 910, Washington, D.C. 20036. Telephone (202) 833-9339, fax (202) 833-9434. You can also order copies online at www.rtca.org.

a. Order SAE documents from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001. Telephone (724) 776-4970, fax (724) 776-0790. You can also order copies online at www.sae.org.

b. Order copies of 14 CFR parts 21 and 45 {add additional applicable parts} from the Superintendent of Documents, Government Printing Office, P.O. Box 979050, St. Louis, MO 63197. Telephone (202) 512-1800, fax (202) 512-2250. You can also order copies online at www.access.gpo.gov. Select "Access," then "Online Bookstore." Select "Aviation," then "Code of Federal Regulations."

c. You can find a current list of technical standard orders and advisory circulars on the FAA Internet website Regulatory and Guidance Library at <http://rgl.faa.gov/>. You will also find the TSO Index of Articles at the same site.

d. You can find DOT/FAA/AR-0012 Aircraft Materials Fire Test Handbook, May 18, 2006 on the FAA William J. Hughes Technical Center Internet website at <http://www.fire.tc.faa.gov/pdf/00-12.pdf>



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APPENDIX. MINIMUM PERFORMANCE STANDARD (MPS) FOR FIRE CONTAINMENT COVERS

1. **Purpose:** This appendix prescribes the MPS for Fire Containment Covers. The applicable standard is SAE International AS6453, Fire Containment Cover – Design, Performance, and Testing Requirements dated August 2013 as modified by the FAA for reference in this TSO.
2. The standard applicable to this TSO is SAE International AS6453, Fire Containment Cover-Design, Performance, and Testing Requirements, August 2013. We modified the standard as follows:

GENERAL NOTES

It is permissible to utilize the procedures described in DOT/FAA/AR-0012 Aircraft Materials Fire Test Handbook, May 18, 2006 to show compliance with the requirements of CFR 14 Parts 25.853, 25.855 and Part 25 Appendix F.

The FAA does not recognize EUROCAE ED-14G as an acceptable equivalent to RTCA DO-160G for requirements. The two documents cannot be alternatively applied to this TSO. Only RTCA DO-160G is acceptable.

The FAA does not recognize ISO TR 8647 as an acceptable equivalent to SAE International AIR 1490C for requirements. The two documents cannot be alternatively applied to this TSO. Only AIR 1490C is acceptable. Environmental degradation data other than AIR 1490C may be used if you substantiate the data and it is approved by the FAA Aircraft Certification Office (ACO) manager responsible for administering your TSO or LODA. An FCC must meet the minimum performance requirements of this TSO at any time during its service life.

<i>When reading AS6453...</i>	<i>Do the following:</i>
Section 1.1 – 1.2	Disregard
Section 1.4	Disregard
Section 1.7	Disregard
Section 2	Disregard references to EASA Regulations EASA CS-25, CS-25.855/25.857 and ETSO C90d, Japanese Airworthiness Standard Part 3 and Civil Aviation Agency of China Regulations CAAC CCAR-25 and CTSO C90 and EUROCAE
Section 3.2	Disregard second sentence
Section 4.1	Disregard
Section 4.2.1	Disregard Note 4 and Note 6.
Section 4.3.1	Add to the end of the sentence “which is sufficiently flexible to allow the FCC to collapse with the fire load”.
Section 4.3.3 – 4.3.6	Disregard
Section 4.4	Disregard

Section 4.5.3	Disregard
Section 4.5.4	Disregard
Section 4.5.6 – 4.5.8	Disregard
Section 4.6.5	Disregard the phrase “as part of the required traceability code (see 7.2)”
Section 4.6.7	Disregard
Section 4.7	Disregard
Section 5.1.1	Add “seams and corners” after “The fire container cover’s material”.
Section 5.1.1	Disregard references to CS-25, CCAR-25 and JAS Part 3
Section 5.1.2	Disregard
Section 5.1.3	Disregard
Section 5.2.2	Disregard references to CS-25, CCAR-25 and JAS Part 3
Section 5.2.4	Disregard
Section 5.3.1	Disregard second sentence
Section 5.3	Disregard
Section 6.1.1.1	Disregard references to CS-25, CCAR-25 and JAS Part 3
Section 6.1.1.2.b	Disregard references to CS-25, CCAR-25 and JAS Part 3
Section 6.1.1.5	Add the following sentence to the end of this section “The FAA Aircraft Materials Fire Test Handbook includes an allowance for a brief ignition on the upper surface of the test specimen as long as the 400 degree F requirement is not exceeded.”
Section 6.1.1.6 – 6.1.1.7	Disregard
Section 6.1.6	Disregard
Section 6.2.1	Replace the words in the end of the second sentence “paragraph 4.3.2 of the US DOT/FAA/AR-TN05/20 document (see reference [16] in Bibliography).” with the following, “the bulk load fire scenario section of report US DOT/FAA/TC-TN12/11.”
Section 6.2.3	Disregard references to CS-25, CCAR-25 and JAS Part 3
Section 6.2.4	Disregard
Section 6.2.6	Disregard “, then with a repaired unit in order to substantiate the retained repair method. The test record files shall be used to substantiate the defined degree of damage as allowable operational serviceability limits, and repair method approval”
Section 6.2.7	Disregard
Section 6.2.8	Disregard
Section 6.2.9	Disregard
Section 7.1	Disregard
Section 7.2	Disregard
Section 7.3	Disregard last sentence
Section 7.5	Disregard
Section 8	Disregard
Section 9	Disregard
Annex D	Disregard