



AEROSPACE STANDARD

AS6163™

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Temperature Controlled Container - Performance Requirements and Test Parameters

RATIONALE

While Temperature Controlled Containers (TCC) being transported as air cargo is not flight critical and the energy elements/systems are in compliance with Dangerous Goods Regulations (DGR), they nonetheless present the potential to interfere with the safe operation of the aircraft systems and, therefore, need to have deterministic functions and failure modes.

This SAE Aerospace Standard (AS) defines the minimum performance standard to demonstrate compliance with the regulatory design, test and operational requirements for a TCC. This compliance includes parameters such as design integrity, performance testing and operational airworthiness criteria that requires substantiation by the manufacturer when applying for aviation regulatory authority approvals.

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Documents

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1. SCOPE

This SAE Aerospace Standard (AS) defines the minimum performance standard to demonstrate compliance with the regulatory design, test and operational requirements for a Temperature Controlled Container (TCC).

1.1 Purpose

- Establish the minimum performance standard and test parameters that can be cited by global regulatory authorities within a Technical Standard Orders (TSO) for TCC.
- Provide a means to verify that the design and operation of the TCC shall have no impact on the safe operation of the aircraft and the functionality of the on board systems.
- Provide a means to verify that the design and operation of the TCC shall create no additional burden to the flight crew of the aircraft.

1.2 Field of Application

This Aerospace Standard applies to all airworthiness approved Temperature Controlled Container (TCC) intended for carriage on board civil transport category aircraft.

It is intended to provide the TCC manufacturers, airworthiness certification authorities and air cargo carriers/operators with the means to define and execute a unified program of airworthiness design approval, irrespective of the Aircraft Certification Office (ACO) or global regulatory authority via a TSO approval (or ETSO equivalent).

In addition to the design approval requirements defined within this document, the TCC manufacturer shall also have to demonstrate an appropriate Design Organization Approval (DOA) and/or Production Organization Approval (POA) status for the article with their regional aviation regulatory authority.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AS8036	Cargo Compartment Fire Detection Instruments
ARP4761	Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment
ARP4754	Guidelines for Development of Civil Aircraft and Systems
AS36100	Air Cargo Unit Load Devices - Performance Requirements and Test Parameters
AS36102	Air Cargo Unit Load Devices - Testing Devices

2.1.2 Code of Federal Regulations (CFR)

Available from the United States Government Printing Office, 732 North Capitol Street, NW, Washington, DC 20401, Tel: 202-512-1800, www.gpo.gov.

2.1.2.1 Title 14 CFR, Part 21 - Certification Procedures for Products and Parts

Applicable parts within Title 14 CFR Part 21, Subpart 'O' Technical Standard Order Approval, sections 21.601 to 21.621

2.1.2.2 Title 14 CFR, Part 25 - Airworthiness Standards: Transport Category Airplanes

Applicable parts within Title 14 CFR Part 25, sections 25.1 to 25.1733

Sections referenced within this document:

25.3	Special Provisions for ETOPS Type Design Approvals
25.561	General
25.853(a)	Compartment Interiors
25.851(b)	Built-in Fire Extinguishers
25.855	Cargo or Baggage Compartment
25.857	Cargo Compartment Classification
25.858	Cargo or Baggage Compartment Smoke or Fire Detection Systems
25.869	Fire Protection: Systems
25.1301	Function and Installation
25.1309	Equipment, Systems, and Installation
25.1353	Electrical Equipment and Installations
25.1529	Instructions for Continued Airworthiness
25.1713	Fire Protection: EWIS

2.1.2.3 Title 49 CFR - Code of Federal Regulations

Applicable Parts within Title 49 CFR Parts 100 to 185 Hazardous Materials Transportation (HMR).

Parts referenced within this document:

49 CFR § 173.159	Batteries, wet
49 CFR § 173.159(a)	Exception for non-spillable batteries

2.1.3 Federal Aviation Administration (FAA) National Policy Documents

Available from Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591, Tel: 866-835-5322, www.faa.gov.

TSO C90 Cargo Pallets, Nets and Containers

TSO C173 Nickel-Cadmium, Nickel Metal-Hydride, and Lead Acid Batteries

AC 20-152 Design Assurance Guidance for Airborne Electronic Hardware

AC 25-9 Smoke Detection, Penetration, and Evacuation Tests and Related ANM Flight Manual Emergency Procedures

AC 25.1309-1 System Design and Analysis

2.1.4 ISO Standards

Available at <http://webstore.ansi.org/>

ISO 7137 Environmental Conditions and Test Procedures for Airborne Equipment

ISO 21100 Air Cargo Unit Load Devices — Performance Requirements and Testing Parameters

ISO 11242 Aircraft - Pressure Equalization Requirements for Cargo Containers

2.1.5 RTCA Publications

Available from RTCA, Inc., 1150 18th Street, NW, Suite 910, Washington, DC 20036, Tel: 202-833-9339, www.rtca.org.

DO-160 Environmental Conditions and Test Procedures for Airborne Equipment

DO-178 Software Considerations in Airborne Systems and Equipment Certification

DO-254 Design Assurance Guidance for Airborne Electronic Hardware

DO-293 Minimum Operational Performance Standards for Nickel-Cadmium and Lead Acid Batteries

2.1.6 Airlines for America (A4A) Publications (Formerly ATA)

Available from Airlines for America (A4A), 1301 Pennsylvania Avenue, NW, Suite 1100, Washington, DC 20004, Tel: 202-626-4000, www.airlines.org.

ATA Spec 100 Manufacturers Technical Data

ATA iSpec 2200 Information Standards for Aviation Maintenance

2.1.7 IATA Publications

Available from International Air Transport Association, Publications Assistant, 800 Place Victoria, P.O. Box 113, Montreal, Quebec H4Z 1M1, Canada, Tel: 1-514-874-0202, www.iata.org.

IATA ULD Regulations (ULDR)

IATA Dangerous Goods Regulations (DGR)

2.1.8 ICAO Publications

Available from International Civil Aviation Organization, 999 University Street, Montreal, Quebec H3C 5H7, Canada, Tel: +1 514-954-8219, <http://www.icao.int/>.

Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc. 9284-AN/905)

2.2 European Publications

The following European publications are included as reference documents and may be substituted by European manufacturers to form part of this document to the extent specified herein. The latest issue of all publications shall apply unless stated otherwise. The applicable issue of publications shall be the latest issue in effect on the date of use. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

2.2.1 European Union Publications

Available from European Aviation Safety Agency, Postfach 10 12 53, D-50452 Cologne, Germany, Tel: +49-221-8999-000, www.easa.eu.int.

European Aviation Safety Agency (EASA) CS-25, Certification Specifications for Large Aeroplanes

European Aviation Safety Agency (EASA) CS-ETSO, Certification Specifications for European Technical Standard Orders

European Technical Standard Order (ETSO) C90 - Cargo Pallets, Nets and Containers

European Technical Standard Order (ETSO) C173 - Nickel-Cadmium and Lead Acid Batteries

European Aviation Safety Agency (EASA) I.A.W EU965/2012 - Technical requirements and administrative procedures related to air operations

European Aviation Safety Agency (EASA) GM1 CAT.GEN.MPA.200 – Transport of dangerous goods

2.2.2 EUROCAE Publications

Available from EUROCAE Secretariat, 102 rue Etienne Dolet, 92240 Malakoff, France, Tel: +33 1 40 92 79 30, www.eurocae.net.

ED-12 Software Considerations in Airborne Systems and Equipment Certification

ED-14 Environmental Conditions and Test Procedures for Airborne Equipment