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Space systems — Structural components and assemblies

Systèmes spatiaux — Composants et assemblages de structure

FDIS stage

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

This second edition cancels and replaces the first edition (ISO 10786:2011), which has been technically revised.

The main changes are as follows:

— clarification of the Scope;

— updates of the normative references and their citations in the text;

— updates of the terms and definitions to harmonize with the other ISO structural related standards.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Structures are the backbones of all spaceflight systems. A structural failure can cause the loss of human lives for crewed space systems or can jeopardize the intended mission for uncrewed space systems.

The purpose of this document is to establish general requirements for structures in all space flight systems. It provides the uniform requirements necessary to minimize the duplication of effort and the differences between approaches taken by the participating nations and their commercial space communities in developing structures. In addition, the use of agreed-upon standards can facilitate cooperation and communication among space programmes.

This document, when implemented for a particular space system, ~~assures~~ensures high confidence in achieving safe and reliable operation in all phases of its planned mission.

Space systems — Structural components and assemblies

1 Scope

This document establishes requirements for the design, material selection and characterization, fabrication, testing and inspection of all structural items in space systems, including expendable and reusable launch vehicles, satellites and their payloads.

This document applies to all structural items, including fracture-critical hardware used in space systems during all phases of the mission, with the following exceptions: adaptive structures, propulsion systems, nuclear systems, and thermal protection systems.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14623, *Space systems - Pressure vessels and pressurized structures — Design and operation*

ISO 15864, *Space systems — General test methods for spacecraft, subsystems and units*

ISO 16126, *Space systems — Survivability of unmanned spacecraft against space debris and meteoroid impacts for the purpose of space debris mitigation*

ISO 16454, *Space systems — Structural design — Stress analysis requirements*

ISO 21347, *Space systems — Fracture and damage control*

ISO 21648, *Space systems — Flywheel module design and testing*

ISO 24113, *Space systems — Space debris mitigation requirements*

ISO 24638, *Space systems — Pressure components and pressure system integration*

ISO 24917, *Space systems — General test requirements for launch vehicles*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ~~—~~ISO Online browsing platform: available at https://www.iso.org/obp

— ~~—~~IEC Electropedia: available at https://www.electropedia.org/