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Space systems — Structural design — Determination of loading levels for static qualification testing of launch vehicles

Systèmes spatiaux — Conception des structures — Détermination des niveaux de chargement pour un essai statique de qualification des véhicules lanceurs

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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.

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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 14953:2000), which has been technically revised.

The main changes are as follows:

— the formula for J_C has been changed so that all the terms are multiplicative,

— a new correction factor has been introduced to take into account the structure imperfections.

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Space systems — Structural design — Determination of loading levels for static qualification testing of launch vehicles

1 Scope

This document specifies a procedure for determining the loading level of a qualification test of a launch vehicle structure and takes into account all the minimum allowable strength characteristics necessary for these structures.

2 Normative references

There are no normative references in this document.

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/

3.1
external loading
system of forces, moments and pressures external to a structure and applied to that structure

3.2
failure mode
manner in which failure occurs

Note 1 to entry: A failure mode may be defined by the function lost or other state transition that occurred.

Note 2 to entry: Structural failure modes include: rupture, collapse, detrimental deformation, excessive wear or any other phenomenon resulting in an inability to sustain loads, pressures and corresponding environments, or that jeopardizes mission success.

[SOURCE: IEC 60050-192:2015, 192-03-17, modified — Note 2 to entry has been added reflecting the definition in ISO 10786:2011, 3.19.]

3.3
limit load
design limit load
maximum load, or combination of loads, which a structure or a component in a structural assembly is expected to experience during its service life, in association with the applicable operating environments

Note 1 to entry: Load is a generic term for thermal load, pressure, external mechanical load (force, moment, or enforced displacement) or internal mechanical load (residual stress, pretension, or inertial load).

Note 2 to entry: The corresponding stress or strain is called limit stress or limit strain.

[SOURCE: ISO 24638:2021, 3.13, modified — "maximum expected load" has been replaced by "maximum load".]

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