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Space systems — Structural design — Loads and induced environment

*Systèmes spatiaux — Conception des structures — Charges et
environnement induit*

ISO 14622

**Second edition
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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 14622:2000), which has been technically revised.

The main changes are as follows:

- updates of the terms and definitions to harmonize with the other structural-related ISO documents,
- clarifications on the value of safety factors,
- A bibliography has been added.

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.

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The structures of a space system have to be designed in such a way that the capacity to fulfil the mission is ensured. During the different phases of the service life, structures are indeed submitted to a number of mechanical and/or thermal loads which may damage materials with a number of possible consequences:

- permanent deformation that may prevent the successive operation of a mechanical function,
- rupture of secondary structures which may indirectly endanger the mission (malfunction and/or release of dangerous debris),
- rupture of primary structures which directly lead to the loss of the mission.

The probability of such events has to be reduced to an acceptable level.

This is why the identification of the different loads both in terms of nature and intensity is of primary importance.

In the early developments of aeronautics, aircrafts were sized against a static force equivalent to a multiple of the gravity. This situation has soon changed to use estimations and measurements of the different loads. Nowadays, simulations of the different physics involved allows getting accurate assessments of the main loads and the corresponding statistical distribution.

This document describes the different types of load sources and the principle of the deterministic sizing, where safety of factors are applied on the loads.