

**ISO/FDIS 14622:2024(en)**

ISO/TC 20/SC 14

Secretariat:- ANSI

~~Second edition~~

~~2024-12-13~~

Date: 2025-xx

## Space systems — Structural design — Loads and induced environment

Systèmes spatiaux — Conception des structures — Charges et environnement induit

## FDIS stage

FDIS 14622

https://standards.iteh.ai/catalog/standards/sist/5917ebf3-82b-44fe-acf5-410000000000/iso-fdis-14622

© ISO 20242025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

Formatted: Font: Bold

Formatted: Font: Bold

Formatted: Font: Bold

Formatted: HeaderCentered

Commented [eXtyles1]: The reference "ISO 2024" is to a withdrawn standard

Formatted: Default Paragraph Font

Formatted: Adjust space between Latin and Asian text, Adjust space between Asian text and numbers

Formatted: French (France)

Formatted: French (France)

Formatted: French (France)

# iTeh Standards (<https://standards.iteh.ai>) Document Preview

ISO/FDIS 14622

<https://standards.iteh.ai/catalog/standards/iso/33917ebf-382b-44fc-acf5-d0e4bad0bc49/iso-fdis-14622>

ICS 49.140

Price based on 9 pages

Error! Reference source not found.

© ISO 2025 – All rights reserved

Formatted: FooterPageRomanNumber, Line spacing: single

Contents — Page

Foreword ..... iv

Introduction ..... v

1 Scope ..... 1

2 Normative references ..... 1

3 Terms and definitions ..... 1

4 Determination of loads and the induced environment ..... 5

4.1 General input data ..... 5

4.2 Determination of loading conditions ..... 7

4.3 Safety factors ..... 9

4.4 Design load cases ..... 10

Bibliography ..... 11

Foreword ..... iv

1 Scope ..... 2

2 Normative references ..... 2

3 Terms and definitions ..... 2

4 Determination of loads and the induced environment ..... 8

4.1 General input data ..... 8

4.2 Determination of loading conditions ..... 9

4.3 Safety factors ..... 11

4.4 Design load cases ..... 12

4.5 Calculated safety margins ..... 12

Formatted: Font: Bold

Formatted: Font: Bold

Formatted: HeaderCentered, Left

Formatted: Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Tab stops: Not at 0.71 cm + 18 cm

Formatted: Font: 10 pt

Formatted: Font: 10 pt

Formatted: FooterCentered, Left, Space Before: 0 pt, Line spacing: single

Formatted: Font: 11 pt

Formatted: FooterPageRomanNumber, Left, Space After: 0 pt, Line spacing: single

## 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 documents 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed /patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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](http://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 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](http://www.iso.org/members.html).

ICS 49.140

Price based on 9 pages

Error! Reference source not found.

Formatted: Font: Bold

Formatted: Font: Bold

Formatted: Font: Bold

Formatted: HeaderCentered

Formatted: Adjust space between Latin and Asian text, Adjust space between Asian text and numbers

Formatted: Default Paragraph Font

Formatted: Default Paragraph Font

Formatted: Default Paragraph Font

Formatted: Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Tab stops: Not at 0.7 cm + 1.4 cm + 2.1 cm + 2.8 cm + 3.5 cm + 4.2 cm + 4.9 cm + 5.6 cm + 6.3 cm + 7 cm

Formatted: Adjust space between Latin and Asian text, Adjust space between Asian text and numbers

Commented [eXtyle2]: The URL <https://www.iso.org/members.html> has been redirected to <http://www.iso.org/about/members>. Please verify the URL.

Formatted: FooterPageRomanNumber, Line spacing: single

Formatted: Font: Bold

Formatted: Font: Bold

Formatted: HeaderCentered, Left

## Introduction

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.

Formatted: Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Tab stops: Not at 0.7 cm + 1.4 cm + 2.1 cm + 2.8 cm + 3.5 cm + 4.2 cm + 4.9 cm + 5.6 cm + 6.3 cm + 7 cm

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

Formatted: Adjust space between Latin and Asian text, Adjust space between Asian text and numbers

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.

iTeh Standards  
(<https://standards.itih.ai>)  
Document Preview

ISO/FDIS 14622

<https://standards.itih.ai/catalog/standards/iso/33917ebf-382b-44fc-acf5-d0e4bad0bc49/iso-fdis-14622>

Formatted: Font: 10 pt

Formatted: Font: 10 pt

Formatted: FooterCentered, Left, Space Before: 0 pt, Line spacing: single

Formatted: Font: 11 pt

Formatted: FooterPageRomanNumber, Left, Space After: 0 pt, Line spacing: single

