



BSI Standards Publication

Space systems — Adhesives — General requirements

National foreword

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A list of organizations represented on this committee can be obtained on request to its committee manager.

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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 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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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*.

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

The organic adhesive materials have been widely applied in most components of space systems, not only for structural adhesion but also in embedding electronic units and fixing little devices. Hence, the reliability and performance of adhesive materials is essential to the space system performance and safety. Especially for space applications, the environmental adaptability and reliability of adhesive materials is the critical factor to mission schedule and success. This document establishes primary characteristics requirements, selection criterion and procedure for helping space system designer or manufacturer select the best-fit adhesive. Manufacturing process requirements and quality assurance for adhesive materials selection are provided to confirm their compliance with the requirements of space applications. [Annex A](#) provides references for general test methods for property characterization, additional surface preparation and cleaning requirements, and verification of the adhesive lifetime.

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Space systems — Adhesives — General requirements

1 Scope

This document specifies general requirements for adhesive selection with the adhesive bonding process and quality assurance used in space systems.

This document can be applied to different types of adhesive materials in space systems, such as launch vehicles, satellites, spacecraft and space station for the following applications: bonding, components embedding (only for space application), sealing, fixing and repairing.

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 14624-3](#), *Space systems — Safety and compatibility of materials — Part 3: Determination of offgassed products from materials and assembled articles*

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

coefficient of linear thermal expansion

reversible increase of a material per unit length per degree change in temperature

3.2

coefficient of moisture expansion

α_{CME}

$$\alpha_{\text{CME}} = \frac{\Delta l / l}{m_{\text{water}} / m_{\text{sample}}}$$

where

$\Delta l / l$ is the relative length change referred to as strain;

m_{water} is the weight of the absorbed water;

m_{sample} is the dry weight of the sample