

**Lennunduse ja kosmonautika seeria.
Konstruktsiooniliimid. Katsemeetodid.
Osa 4: Metall-kärksüdamikuga
lamedakujulise konstruktsiooni
tõmbekatse**

Aerospace series - Non-metallic materials -
Structural adhesives - Test method - Part 4: Metal-
honeycomb core flatwise tensile test

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 2243-4:2005 sisaldab Euroopa standardi EN 2243-4:2005 ingliskeelset teksti. Käesolev dokument on jõustatud 28.12.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 2243-4:2005 consists of the English text of the European standard EN 2243-4:2005. This document is endorsed on 28.12.2005 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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Käsitlusala: Standard määrab kindlaks teimimeetodid konstruktsiooniliimi tugevuse määramiseks lamedakujulistel metall-kärgkonstruktsioonidel keskkonna temperatuuril ja muudel temperatuuridel.	Scope: This standard defines the general requirements for the determination of strength of structural adhesives by testing in tension metal to honeycomb core joints, at ambient or other temperatures.
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Võtmesõnad: lennukitööstus, liim, liimid, metallid, teimikeha, teimiolud, tõmbeteim

English Version

**Aerospace series - Non-metallic materials - Structural adhesives
- Test method - Part 4: Metal-honeycomb core flatwise tensile
test**

Série aérospatiale - Matériaux non-métalliques - Système
d'adhésifs structuraux - Méthodes d'essai - Partie 4 : Essai
de traction perpendiculaire pour métal-nid d'abeilles

Luft- und Raumfahrt - Nichtmetallische Werkstoffe -
Strukturelle Klebstoffsysteme - Prüfverfahren - Teil 4:
Zugversuch senkrecht zur Deckschicht für
Wabenkernverbunde

This European Standard was approved by CEN on 26 September 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This European Standard (EN 2243-4:2005) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard supersedes EN 2243-4:1991.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This standard is part of the series of EN non-metallic material standards for aerospace applications. The general organization of this series is described in EN 4385. This standard is a level 3 document as defined in EN 4385.

1 Scope

This standard defines the general requirements for the determination of strength of structural adhesives by testing in tension metal to honeycomb core joints, at ambient or other temperatures.

Two types of test pieces are defined:

Type A: direct bonding of honeycomb to facing blocks;

Type B: bonding of honeycomb between the two facing sheets, then bonding of the whole to the facing blocks.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system (ISO 7500-1:2004).*

EN 2090, *Aerospace series — Aluminium alloy AL-P2024- — T3 — Clad sheet and strip — $0,3 \text{ mm} \leq a \leq 6 \text{ mm}$.*¹⁾

EN 2334, *Aerospace series — Chromic-sulphuric acid pickle of aluminium and aluminium alloys.*

EN 2419, *Aerospace series — Aluminium alloy AL-P2024- — T351 — Plate — $6 \text{ mm} < a \leq 80 \text{ mm}$.*¹⁾

EN 2497, *Aerospace series — Dry abrasive blasting of titanium and titanium alloys.*

EN 2540, *Aerospace series — Steel FE-PM3902 (X7CrNiAl17-7) — Air melted — Solution treated and precipitation hardened — Sheet and strip — $a \leq 6 \text{ mm}$ — $1\,240 \text{ MPa} \leq R_m \leq 1\,450 \text{ MPa}$.*¹⁾

EN 3456, *Aerospace series — Titanium alloy TI-P64001 — Annealed — Sheet and strip, hot rolled — $a \leq 6 \text{ mm}$.*¹⁾

EN 3464, *Aerospace series — Titanium alloy TI-P64001 — Annealed — Plate — $6 \text{ mm} < a \leq 100 \text{ mm}$.*¹⁾

EN 3487, *Aerospace series — Steel FE-PA13 — Softened — $500 \leq R_m \leq 700 \text{ MPa}$ — Bar for machining — $D_e \leq 100 \text{ mm}$.*¹⁾

¹⁾ Published as AECMA Prestandard at the date of publication of this standard.

EN 4385, *Aerospace series — Non-metallic materials — General organisation of standardisation — Links between types of standards.*¹⁾

EN 4606, *Aerospace series — Aluminium honeycomb core.*²⁾

3 Definitions, symbols and abbreviations

3.1 Definitions

Not applicable

3.2 Symbols and abbreviations

For the purposes of this document, the following symbols and abbreviations apply.

R tensile strength (in mega pascals);

F load at failure (in newtons);

L_i dimensions (in millimetres).

4 Health and safety

This standard does not necessarily include all health and safety requirements, associated with its use.

Persons using this standard shall be familiar with normal laboratory/test house practices.

It is the responsibility of the user to establish satisfactory health and safety practices and to ensure conformity with any European, national or local laws/regulations.

5 Principle/Technique

Not applicable

6 Resources

6.1 Apparatus

All test equipment shall be calibrated at intervals not exceeding 12 months.

6.1.1 Tensile testing machine

The tensile testing machine shall conform to class 1 of EN ISO 7500-1. The failing load of the test specimen shall be within 10 % and 90 % of the upper limit of the selected loading range of the machine.

2) In preparation at the date of publication of this standard.