Irish Standard
I.S. EN 16602-70-02:2014

Space product assurance - Thermal vacuum outgassing test for the screening of space materials

I.S. EN 16602-70-02:2014

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English version

Space product assurance - Thermal vacuum outgassing test for the screening of space materials

Assurance produit des projets spatiaux - Essai de dégazage sous vide thermique pour sélection des matériaux d'un projet spatial

Raumfahrtproduktsicherung - Thermo-Vakuum-Ausgasungstest für die Auswahl von Raumfahrtmaterialien

This European Standard was approved by CEN on 13 March 2014.

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Foreword

This document (EN 16602-70-02:2014) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16602-70-02:2014) originates from ECSS-Q-ST-70-02C.

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of an identical text or by endorsement, at the latest by April 2015, and conflicting national standards shall be withdrawn at the latest by April 2015.

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 document supersedes EN 14091:2002.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document has been developed to cover specifically space systems and has therefore precedence over any EN covering the same scope but with a wider domain of applicability (e.g. : aerospace).

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Introduction

The kinetics of an outgassing process is influenced by vacuum and temperature conditions.

The method described in this Standard gives reliable data for material screening use exclusively. The nominal temperature for the screening test, as described in this standard is 125 °C. Results from the nominal screening test can be used for the screening of materials that have an operational temperature below 50 °C, especially if they are exposed for an extended period of time (in the order of weeks and above).

1 Scope

This Standard describes a thermal vacuum test to determine the outgassing screening properties of materials proposed for use in the fabrication of spacecraft and associated equipment, for vacuum facilities used for flight hardware tests and for certain launcher hardware.

This Standard covers the following:

- critical design parameters of the test system;
- critical test parameters such as temperature, time, pressure;
- material sample preparation;
- conditioning parameters for samples and collector plates;
- presentation of the test data;
- acceptance criteria;
- certification of test systems and their operators by audits and round robin tests.

The test described in this Standard is applicable for all unmanned spacecraft, launchers, payloads, experiments. The test is also valid for external hardware of inhabited space systems and for hardware to be used in terrestrial vacuum test facilities.

The outgassing and condensation acceptance criteria for a material depend upon the application and location of the material and can be more severe than the standard requirements as given in clause 5.5.3.1.

This standard may be tailored for the specific characteristics and constrains of a space project in conformance with ECSS-S-ST-00.