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NSAI Standards

Irish Standard
I.S. EN 16602-70-04:2014

Space product assurance - Thermal testing for the evaluation of space materials, processes, mechanical parts and assemblies

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16602-70-04

October 2014

ICS 49.140

Supersedes EN 14098:2001

English version

Space product assurance - Thermal testing for the evaluation of space materials, processes, mechanical parts and assemblies

Assurance produit des projets spatiaux - Essais thermiques pour l'évaluation des matériaux, des processus, des composants et assemblages mécaniques d'un projet spatial

Raumfahrtproduktsicherung - Temperaturtest zur Untersuchung von Werkstoffen, Prozessen, mechanischen Teilen und Zusammenbauten der Raumfahrttechnik

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Foreword

This document (EN 16602-70-04:2014) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16602-70-04:2014) originates from ECSS-Q-ST-70-04C.

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of an identical text or by endorsement, at the latest by April 2015, and conflicting national standards shall be withdrawn at the latest by April 2015.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

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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 deleterious effects to be anticipated during the thermal cycling test under vacuum include:

- outgassing,
- cracking or fracture of materials or assemblies due to sudden dimensional changes by expansion,
- contraction or pressure,
- short circuiting of electrical wiring,
- overheating of materials or assemblies due to change in convection and conductive heat transfer characteristics.

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1 Scope

This Standard establishes the requirements for the specification, the procedures, the execution and the reporting of a thermal cycling test under vacuum for the evaluation of materials, processes, mechanical parts and assemblies intended for use in the fabrication of spacecraft and associated equipment. This is one of the tests to determine the ability of theses articles to withstand changes of ambient temperature under vacuum.

Typical materials or assemblies that can be evaluated by means of this test method are listed below.

- adhesives;
- adhesive bonded joints;
- coatings (paint, thermal and protective);
- insulating materials;
- metallic bonded joints;
- metallic samples, finished by plating or chemical conversion;
- metallized plastic films;
- organic or non-organic bonding;
- plated surfaces;
- potting compounds;
- reinforced structural laminates;
- sealants.

NOTE This is not an exhaustive list and other products or items can be tested.

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

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