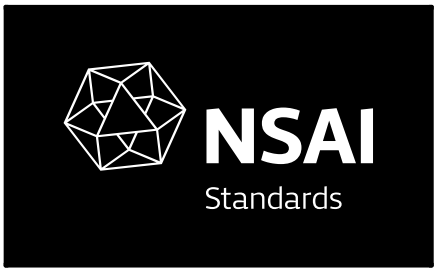

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Space product assurance - Particles contamination monitoring for spacecraft systems and cleanrooms

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This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

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Space product assurance - Particles contamination monitoring for spacecraft systems and cleanrooms

Assurance produit des projets spatiaux - Surveillance de la contamination aux particules des systèmes orbitaux et des salles blanches

Raumfahrtproduktsicherung - Überwachung der Teilchenkontamination von Raumfahrzeugsystemen und Reinräumen

This European Standard was approved by CEN on 25 October 2014.

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Foreword

This document (EN 16602-70-50:2015) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16602-70-50:2015) originates from ECSS-Q-ST-70-50C.

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of an identical text or by endorsement, at the latest by July 2015, and conflicting national standards shall be withdrawn at the latest by July 2015.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

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

Introduction

Particulate contaminants can be hazardous to spacecraft in a number of ways including failure of precision mechanisms, light absorption and scattering, points of high local electric field and associated electrostatic discharge, and noise on electrical contacts. It is therefore important to control, measure and verify the particulate contamination levels on spacecraft systems and the environments in which they reside, in order that an assessment can be made on any hazards that may be present as a result of such contamination.

The objective of this standard is to ensure that the particle monitoring of spacecraft systems and cleanrooms utilised in the production of such systems, is carried out in an appropriate manner, and is controlled both in terms of the precision of the measurements and the reproducibility of such measurements.

1
Scope

This standard defines the requirements and guidelines for the measurement of particulate contamination on the surfaces of spacecraft systems and those of the cleanrooms or other cleanliness controlled areas in which they reside.

This includes the measurement of particulate contamination that is present on the spacecraft or cleanroom surfaces via the use of representative witness samples placed in the vicinity of the spacecraft hardware, the direct measurement of particulate contamination levels on surfaces of spacecraft hardware from the direct surface transfer to adhesive tape-lift samples and particulate contaminant levels within fluids used for the cleaning or rinsing of such spacecraft system components and cleanroom surfaces. This standard also defines the methods to be used for the visual inspection of spacecraft system hardware for particulate contamination.

The measurement of airborne particulate contamination is not covered in this standard and ISO 14644 “Cleanrooms and associated controlled environments” is applicable in this case.

This standard does not cover particulate contamination monitoring for spacecraft propulsion hardware which is covered in ECSS-E-ST-35-06.

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