



SLOVENSKI STANDARD
kSIST FprEN 16602-70-57:2014
01-julij-2014

Zagotavljanje varnih proizvodov v vesoljski tehniki - Zmanjšanje biološke obremenitve s suho vročino za letalsko strojno opremo

Space product assurance - Dry Heat Bioburden Reduction for Flight Hardware

Raumfahrtproduktsicherung - Reduktion der Gesamtkeimzahl bei trockener Hitze für Flughardware

Assurance produit des projets spatiaux - Réduction par chaleur sèche de la charge microbienne des matériels de vol

Ta slovenski standard je istoveten z: FprEN 16602-70-57

ICS:

49.140 Vesoljski sistemi in operacije Space systems and operations

kSIST FprEN 16602-70-57:2014 en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

FINAL DRAFT
FprEN 16602-70-57

May 2014

ICS 49.140

English version

Space product assurance - Dry Heat Bioburden Reduction for Flight Hardware

Assurance produit des projets spatiaux - Réduction par chaleur sèche de la charge microbienne des matériels de vol

Raumfahrtproduktsicherung - Reduktion der Gesamtkeimzahl bei trockener Hitze für Flughardware

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/CLC/TC 5.

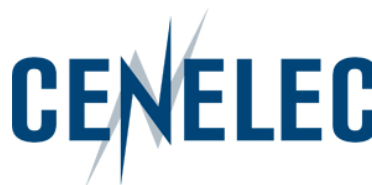
If this draft becomes a European Standard, CEN and CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN and CENELEC in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN and CENELEC members are the national standards bodies and national electrotechnical committees of 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 United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



CEN-CENELEC Management Centre:
Avenue Marnix 17, B-1000 Brussels

Table of contents

Foreword	4
Introduction	5
1 Scope	6
2 Normative references	7
3 Terms and abbreviated terms	8
3.1 Terms from other standards.....	8
3.2 Terms specific to the present standard	8
3.3 Abbreviated terms.....	10
3.4 Nomenclature	10
4 Principles	11
5 Requirements	13
5.1 General requirements	13
5.2 Product requirements	13
5.2.1 Product compatibility with process	13
5.2.2 Product cleanliness	13
5.2.3 Product packaging	14
5.2.4 Product release	14
5.3 Process requirements.....	14
5.3.1 Procedure requirements.....	14
5.3.2 Bioburden reduction cycle requirements	17
5.4 Equipment requirements.....	17
Annex A (normative) Dry heat bioburden reduction specification - DRD	19
Annex B (normative) Dry heat bioburden reduction proposal - DRD	21
Annex C (normative) Dry heat bioburden reduction report - DRD	23
Annex D (informative) D-values for 2 to 3 orders of magnitude reduction	25
Annex E (informative) Effective D-values for 4 to 6 orders of magnitude reduction	27

Bibliography	29
---------------------------	-----------

Figures

Figure 4-1: Dry heat bioburden reduction process overview	12
Figure D-1 : D-values for 2 to 3 orders of magnitude reduction.....	25
Figure E-1 : Effective D-values for 4 to 6 orders of magnitude surface reduction.....	27

Tables

Table D-1 : D-values for 2 to 3 orders of magnitude reduction.....	26
Table E-1 : Effective D-values for 4 to 6 orders of magnitude surface reduction.....	28

Foreword

This document (FprEN 16602-70-57:2014) has been prepared by Technical Committee CEN/CLC/TC 5 "Space", the secretariat of which is held by DIN (Germany).

This document (FprEN 16602-70-57:2014) originates from ECSS-Q-ST-70-57C.

This document is currently submitted to the Unique Acceptance Procedure.

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

Introduction

The UN Outer Space Treaty of 1967 sets up the general principles applicable to the exploration and use of outer space. Article IX of the Outer Space Treaty constitutes the primary statement of international law:

“States parties shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, when necessary, adopt appropriate measures for this purpose.”

Harmful contamination in that sense is defined as biological contamination, including organic-constituents, to protect the environment in order to allow future exobiology research. The Committee On Space Research (COSPAR) has established some planetary protection guidelines, based on the Outer Space Treaty. These guidelines impose requirements on spaceflight missions according to target body/mission type combinations.

The objective of this Standard is to ensure that proper procedures for reducing the microbiological contamination on flight hardware are in place to meet the planetary protection constraints.

1

Scope

This standard defines procedures for the reduction of microbiological contamination of flight hardware using heat.

The procedures described in this standard cover:

- Reduction of microbiological contamination on exposed surfaces, mated surfaces and encapsulated in materials.
- Reduction of microbiological contamination in dry, ambient and uncontrolled humidity environments.

This standard also sets requirements for the conditioning of the flight hardware, bioburden reduction cycle development, and equipment to be used for applying a bioburden reduction procedure.

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