

<b>STN</b>	<b>Zabezpečovanie výrobkov kozmického programu. Redukcia mikrobiálnej kontaminácie suchým teplom v konštrukčných častiach v letectve a kozmonautike.</b>	<b>STN EN 16602-70-57</b>
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Space product assurance - Dry Heat Bioburden Reduction for Flight Hardware

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/16

Obsahuje: EN 16602-70-57:2015

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Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, 2016  
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

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 European Standard was approved by CEN on 16 November 2014.

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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 and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

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## European foreword

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This document (EN 16602-70-57:2015) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16602-70-57:2015) originates from ECSS-Q-ST-70-57C.

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of an identical text or by endorsement, at the latest by March 2016, and conflicting national standards shall be withdrawn at the latest by March 2016.

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

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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

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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.

## 2

## Normative references

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The following normative documents contain provisions which, through reference in this text, constitute provisions of this ECSS Standard. For dated references, subsequent amendments to, or revision of any of these publications do not apply. However, parties to agreements based on this ECSS Standard are encouraged to investigate the possibility of applying the more recent editions of the normative documents indicated below. For undated references, the latest edition of the publication referred to applies.

EN reference	Reference in text	Title
EN 16601-00-01	ECSS-S-ST-00-01	ECSS system - Glossary of terms
EN 16601-40	ECSS-M-ST-40	Space project management - Configuration and information management
EN 16602-10-09	ECSS-Q-ST-10-09	Space product assurance - Nonconformances control system
EN 16602-70-01	ECSS-Q-ST-70-01	Space product assurance - Cleanliness and contamination control
EN 16602-70-53	ECSS-Q-ST-70-53	Space product assurance - Materials and hardware compatibility tests for sterilization processes
EN 16602-70-55	ECSS-Q-ST-70-55	Space product assurance - Microbial examination of flight hardware and cleanrooms
EN 16602-70-58	ECSS-Q-ST-70-58	Space product assurance - Bioburden control of cleanrooms
	IEST-STD-CC1246D	Institute of environmental science and technology - product cleanliness levels and contamination control program

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**