BS EN 16603-35-10:2014

BSI Standards Publication

Space engineering — Compatibility testing for liquid propulsion components, subsystems and systems

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of EN 16603-35-10:2014.

The UK participation in its preparation was entrusted to Technical Committee ACE/68, Space systems and operations.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 84095 1

ICS 49.140

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2014.

Amendments issued since publication

Date	Text affected

BS EN 16603-35-10:2014

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16603-35-10

September 2014

ICS 49.140

English version

Space engineering - Compatibility testing for liquid propulsion components, subsystems and systems

Ingénierie spatiale - Essais de compatibilité des composants, sous-systèmes et systèmes de propulsion liquide

Raumfahrttechnik - Kompatibilitätstests für Flüssigkeitsantriebe

This European Standard was approved by CEN on 1 March 2014.

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

Table of contents

Figures

Tables

Foreword

This document (EN 16603-35-10:2014) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16603-35-10:2014) originates from ECSS-E-ST-35-10C.

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of an identical text or by endorsement, at the latest by March 2015, and conflicting national standards shall be withdrawn at the latest by March 2015.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

1
Scope

ECSS-E-ST-35-10 belongs to the propulsion field of the mechanical discipline, as defined in ECSS-S-ST-00, and concerns itself with compatibility testing of propulsion components, sub-systems and systems.

Compatibility encompasses the interaction of two or more materials, solids (e.g. structural materials), liquids (e.g. propellants, simulation and cleaning liquids) or gases (e.g. air, pressurants). In case the interaction has the effect that the properties of the materials change, there is the possibility of a compatibility issue.

The standard:

- identifies materials used in propulsion for which incompatibility can create problems,
- identifies the time scale at which problems can occur. It makes a difference whether a system is only stored or operational for a short period and is to function only during launch (time scale measured in months) and systems that have a long life in orbit (time scale measured in years),
- identifies the liquid propulsion components, subsystems and systems to be subject to compatibility testing,
- identifies, specifies and defines the tests, test conditions and compatibility test procedures to ensure that representative compatibility testing can take place, and
- establishes the test requirements.

The standard is applicable to the design and the qualification of liquid propulsion components, sub-systems and systems and can be applied to their development; it also applies to COTS items procured for the propulsion system.

From the tests described in this standard the effects of interactions of space propulsion materials and fluids on the components, subsystems and systems can be established. In this way it can be assured that the component, subsystem or system satisfies the requirements.

This standard is limited to tests on component-, subsystem- and system-level. Only for those cases where new materials, substances or conditions are involved for which there is no experience or data available, the performance of screening tests is specified.

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