



BSI Standards Publication

Space product assurance — Materials, mechanical parts and processes obsolescence management handbook

National foreword

This Published Document is the UK implementation of CEN/CLC/TR 17602-70-23:2021.

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 committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication is not to be regarded as a British Standard.

© The British Standards Institution 2021
Published by BSI Standards Limited 2021

ISBN 978 0 539 17539 4

ICS 49.140

Compliance with a Published Document cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 November 2021.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

October 2021

ICS 49.140

English version

Space product assurance - Materials, mechanical parts and processes obsolescence management handbook

Assurance produit des projets spatiaux - Manuel de
gestion de l'obsolescence des matériaux, des pièces
mécaniques et des procédés

Raumfahrtproduktsicherung - Handbuch für
Obsoleszenzmanagement von Materialien,
mechanischen Bauteilen und Prozessen

This Technical Report was approved by CEN on 16 August 2021. It has been drawn up by the Technical Committee CEN/CLC/JTC 5.

CEN and CENELEC members are the national standards bodies and national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



**CEN-CENELEC Management Centre:
Rue de la Science 23, B-1040 Brussels**

Table of contents

European Foreword	4
1 Scope	5
2 References	6
3 Terms, definitions and abbreviated terms	7
3.1 Terms from other standards	7
3.2 Terms specific to the present handbook	7
3.3 Abbreviated terms	8
4 Causes of obsolescence and purpose of obsolescence management	10
4.1 Introduction	10
4.2 Causes	10
4.3 Purpose	10
5 Overview of obsolescence management process	12
5.1 Obsolescence management team	12
5.2 Obsolescence management approach	13
5.2.1 Proactive approach	13
5.2.2 Reactive approach	13
5.2.3 Obsolescence management in space programmes	13
5.2.4 Obsolescence management plan	14
5.3 Obsolescence management database	14
6 Relevant practices for obsolescence management	15
6.1 Proactive approach	15
6.1.1 Overview	15
6.1.2 Establishment of an obsolescence-awareness culture	16
6.1.3 Knowledge of the MMPP	16
6.1.4 Supply chain management	17
6.1.5 Watch	18
6.1.6 Obsolescence risk analysis for MMPP, programme risk analysis and risk mitigation actions	19
6.2 Reactive approach	22
6.2.1 Overview	22
6.2.2 Verify obsolescence information	22
6.2.3 Communication	23

6.2.4	Application case analysis	23
6.2.5	Obsolescence treatment	23
7	Obsolescence data management	25
7.1	In-house data management	25
7.2	Network communication	25
	Annex A Obsolescence information template	26
	Annex B Example of content of obsolescence management database	27
	Annex C Example of obsolescence management plan	28
	Annex D Information about the REACH regulation	29
D.1	Background	29
D.1.1	Overview	29
D.1.2	Definition of terms	29
D.1.3	Relationship between substances, mixtures, and articles	30
D.2	Technical consequences of REACH	31
D.3	Additional information	36
 Figures		
	Figure 5-1: Obsolescence management versus space programme phases	14
	Figure 6-1: Proactive approach best practices scheme	15
	Figure 6-2: Reactive approach best practices scheme	22
 Tables		
	Table D-1 : Summary of legal obligations of industry, possible associated actions, schedules as a function of regulatory step - Possibly long-term	33
	Table D-2 : Summary of legal obligations of industry, possible associated actions, schedules as a function of regulatory step - Possibly mid-term	34
	Table D-3 : Summary of legal obligations of industry, possible associated actions, schedules as a function of regulatory step - Imminent	35

European Foreword

This document (CEN/CLC/TR 17602-70-23:2021) has been prepared by Technical Committee CEN/CLC/JTC 5 "Space", the secretariat of which is held by DIN.

It is highlighted that this technical report does not contain any requirement but only collection of data or descriptions and guidelines about how to organize and perform the work in support of EN 16602-70-23.

This Technical report (CEN/CLC/TR 17602-70-23:2021) originates from ECSS-Q-HB-70-23A.

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 TR covering the same scope but with a wider domain of applicability (e.g.: aerospace).

1

Scope

This Handbook provides guidelines to manage obsolescence of Materials, Mechanical Parts and Processes (in-house and sub-contracted).

It is useful for any actor of the European Space sector.

It covers Materials, Mechanical Parts and Processes (MMPP) used in flight hardware as well as ground support equipment (including test systems) and materials or tools used during process (not in the final product) and skills (know-how).

It is not within the scope of this Handbook to address EEE components and software.

This document describes the general causes of obsolescences and introduces the concepts of proactive and reactive obsolescence management, depending of the programme phase.

2 References

EN Reference	Reference in text	Title
EN 16601-00-01	ECSS-S-ST-00-01	ECSS system – Glossary of terms
EN 16602-70	ECSS-Q-ST-70	Space product assurance – Materials, mechanical parts and processes
EN 16602-70-71	ECSS-Q-ST-70-71	Space product assurance – Material, processes and their data selection
EN 16601-10	ECSS-M-ST-10	Space project management – Project planning and implementation
EN 16601-80	ECSS-M-ST-80	Space project management – Risk management
	EN 62402:2007	Obsolescence management - Application guide
	T. Rohr et al., ISMSE-12 ESTEC Noordwijk, The Netherlands, 2012	Impact of REACH Legislation on European Space Programs
	M. Chevalier et al., ISMSE-13 Pau, France, 2015	A method to customize qualification of substitutes in case of material or process obsolescence

Terms, definitions and abbreviated terms

3.1 Terms from other standards

- a. For the purpose of this document, the terms and definitions from ECSS-S-ST-00-01 apply, in particular the following terms:
 1. design
 2. development
 3. life cycle
 4. lifetime
 5. material
- b. For the purpose of this document, the terms and definitions from ECSS-Q-ST-70 apply, in particular the following term:
 1. mechanical part
 2. process

3.2 Terms specific to the present handbook

3.2.1 bill of MMPP

list of materials, processes or mechanical parts that are needed to manufacture or repair an end product

NOTE This is reported in Declared Materials List (DML), Declared Processes List (DPL) and Declared Mechanical Parts List (DMPL).

3.2.2 criticality

<CONTEXT: Material obsolescence>

measure of severity of the consequences of MMPP obsolescence with regard to its use

3.2.3 obsolescence

transition from availability to unavailability of a material, mechanical part or process from the manufacturer or supplier

NOTE The unavailability can be permanent or temporary.

3.2.4 obsolescence management network

network of persons in charge of collecting, transmitting and recording all the information concerning obsolescence issues and responsible to implement risk mitigation actions and obsolescence treatment actions

NOTE Members of the obsolescence network can represent different functions (e.g. procurement, quality, production, and design office)

3.2.5 obsolescence manager

person in charge of coordinating and supervising obsolescence management at company level and following up obsolescence treatment projects progress

3.2.6 obsolescence risk analysis

assessment of the probability and severity of the risk of obsolescence and prioritization of the obsolescence risk

3.2.7 proactive obsolescence management

actions to anticipate obsolescence and to mitigate the risks linked to obsolescence issues

3.2.8 reactive obsolescence management

reactive strategy consists in reacting only when the obsolescence is proven

NOTE 1 Obsolescence is considered as proven when a discontinuance date is known.

NOTE 2 The discontinuance date can be transmitted through a formal document by the supplier or related to date of ban determined by a regulation.

3.3 Abbreviated terms

For the purpose of this document, the following abbreviated terms apply:

Abbreviation	Meaning
AfA	application for authorization
AIT	assembly, integration and test
ASD	Aerospace and Defense Industries Association of Europe
BOM	bill of material
CAS Number	Chemical Abstract Service Number
C&L	classification and labelling
CLP	classification, labelling and packaging
CMR	carcinogenic, mutagenic, reprotoxic
CoRAP	community rolling action plan
COTS	commercial off-the-shelf
DML	declared materials list
DMPL	declared mechanical parts list

Abbreviation	Meaning
DPL	declared processes list
EAR	Export Administration Regulations
ECHA	European Chemical Agency
EC Number	European Community number
EEA	European Economic Area
EEE	electrical, electronic and electromechanical
EHS	environment, health and safety
EU	European Union
GIFAS	Groupement des industries françaises aéronautiques et spatiales (<i>French Aerospace Industries Association</i>)
HB	handbook
HCL	harmonised classification and labelling
ITAR	International Traffic in Arms Regulations
MMPP	materials, mechanical parts and processes
M&P	materials and processes
MPCB	Materials, Mechanical Parts and Processes Control Board
MPTB	Materials and Processes Technology Board
MS	member state
ODS	ozone depleting substance
OM	obsolescence management
OMP	obsolescence management plan
PACT	Public Activities Coordination Tool
PBT	persistent, bioaccumulative and toxic
POP	persistent organic pollutants
R&D	research and development
REACH	Registration, Evaluation and Authorization of Chemicals (European regulation)
RMOA	risk management option analysis
RoHS	restriction of hazardous substances
SDS	safety data sheet
SIN List	substitute it now list
SVHC	substance of very high concern
TRL	technology readiness level
vPvB	very persistent and very bioaccumulative

Causes of obsolescence and purpose of obsolescence management

4.1 Introduction

Obsolescence can affect all space products throughout their lifecycle. Through obsolescence management appropriate actions are put in place to minimise detrimental impact and costs throughout the product life.

4.2 Causes

The main causes of obsolescence are:

- a. Regulations and their evolution: Environmental regulations such as REACH, health and safety.
- b. Import – export constraints: export control (e.g. ITAR), export licence, embargo.
- c. Changes from suppliers such as
 - 1. product evolution (formulation, raw material supply chain, packaging, product properties, deviation from original specification),
 - 2. manufacturing processes and means, streamlining of product ranges, manufacturing stop, change of manufacturing location,
 - 3. product designation, industrial re-organization.
- d. Supplier force major circumstances: bankruptcies, industrial accidents (e.g. fire, explosion), loss of know-how, natural disasters (e.g. flooding, storm, earthquake).
- e. Market competitiveness such as too low volume of production, outdated technology, indirect impact of environmental regulations.

NOTE Indirect impact of environmental regulations means that even if the space sector is out of the scope (e.g. RoHS), the market availability is driven by much larger actors that need to comply and drive alternative product development.

- f. Loss of employee specific skills and company know-how.

4.3 Purpose

The increasing number of obsolescence issues affects the space sector particularly due to the specific characteristics of space programmes:

- a. Long life cycles (especially for space transportation).
- b. Low purchase volumes.