SLOVENSKI STANDARD
kSIST-TP FprCEN/CLC/TR 17602-70-23:2021

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Zagotavljanje kakovosti proizvodov v vesoljski tehniki - Priročnik za upravljanje zastarelosti materialov, mehanskih delov in procesov

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

Produktsicherung in der Raumfahrt - Handbuch zum Obsoleszenzmanagement für Materialien, mechanische Teile und Prozesse

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

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

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

Produktsicherung in der Raumfahrt - Handbuch zum Obsoleszenzmanagement für Materialien, mechanische Teile und Prozesse

This draft Technical Report is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/CLC/JTC 5.

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European Foreword

This document (FprCEN/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 (FprCEN/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).

This document is currently submitted to the CEN CONSULTATION.

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

3 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
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

Abbreviation	Meaning
EHS	environment, health and safety
EU	European Union
GIFAS	Groupement des industries françaises aéronautiques et spatiales *(French Aerospace Industries Association)*
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

4 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.

c. Long MMPP qualification time (e.g. high performance requirements, high safety standards, complex interactions between systems, and multinational programmes).

d. Low production volumes.