SLOVENSKI STANDARD
SIST EN 9146:2019

01-januar-2019

Aeronavtika - Program za preprečevanje poškodb zaradi tujkov - Zahteve za letalske, vesoljske in obrambne organizacije

Aerospace series - Foreign Object Damage (FOD) Prevention Program - Requirements for Aviation, Space, and Defence Organizations

Luft- und Raumfahrt - Programm zur Verhinderung von Schäden durch Fremdkörper (FOD) - Anforderungen an Organisationen der Luftfahrt, Raumfahrt und Verteidigung

Série aérospatiale - Programme de prévention des dommages causés par un corps étranger (FOD) - Exigences pour les Organismes de l'Aéronautique, l'Espace et la Défense

Ta slovenski standard je istoveten z: **EN 9146:2018**

ICS:

49.020	Letala in vesoljska vozila na splošno	Aircraft and space vehicles in general

SIST EN 9146:2019 **en,fr,de**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 9146

October 2018

ICS 49.020

English Version

Aerospace series - Foreign Object Damage (FOD) Prevention Program - Requirements for Aviation, Space, and Defence Organizations

Série aérospatiale - Programme de prévention des
dommages causés par un corps étranger (FOD) -
Exigences pour les Organismes de l'Aéronautique,
l'Espace et la Défense

Luft- und Raumfahrt - Programm zur Verhinderung
von Schäden durch Fremdkörper (FOD) -
Anforderungen an Organisationen der Luftfahrt,
Raumfahrt und Verteidigung

This European Standard was approved by CEN on 22 January 2018.

CEN 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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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

SIST EN 9146:2019
https://standards.iteh.ai/catalog/standards/sist/da4bc2e1a-f7e0-410f-83fc-
CEN members are the national standards bodies 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Ref. No. EN 9146:2018 E

EN 9146:2018 (E)

Contents

iTeh STANDARD PREVIEW
(standards.iteh.ai)

European foreword

This document (EN 9146:2018) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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 April 2019, and conflicting national standards shall be withdrawn at the latest by April 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Rationale

Foreign Object Damage (FOD) is a major concern in the aviation, space, and defence industry. While there is a large amount of information and guidance available about the prevention of FOD, no requirements standard exists. This European standard identifies FOD Prevention Program requirements that can be flowed down in contractual agreements.

Foreword

To assure customer satisfaction, the aviation, space, and defence industry organizations must produce and continually improve safe, reliable products that meet or exceed customer and regulatory authority requirements. The globalization of the industry and the complexity of resulting organizations' supply chains have complicated this objective. End-product organizations face the challenge of assuring the quality of, and integrating, product purchased from suppliers throughout the world and at all levels within the supply chain. Furthermore, suppliers and processors, within the industry, face the challenge of delivering product to multiple customers having varying quality expectations and requirements.

The aviation, space, and defence industry established the International Aerospace Quality Group (IAQG) for the purpose of achieving significant improvements in quality and safety, and reductions in cost, throughout the value stream. This organization includes representation from aviation, space, and defence companies in the Americas, Asia/Pacific, and Europe.

The IAQG benchmarked industry best practices and guidance to develop the requirements of this FOD Prevention Program standard. This document standardizes FOD Prevention Program requirements to the greatest extent possible and can be used at all levels of the supply chain by organizations around the world to mitigate FOD risk to aviation, space, and defence products and services.

1 Scope

This European standard defines FOD Prevention Program requirements for organizations that design, develop, and provide aviation, space, and defence products and services; and by organizations providing post-delivery support, including the provision of maintenance, spare parts, or materials for their own products and services.

It is emphasized that the requirements specified in this European standard are complementary (not alternative) to customer, and applicable statutory and regulatory requirements. Should there be a conflict between the requirements of this standard and applicable statutory or regulatory requirements, the latter shall take precedence.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 9100, *Quality Management Systems — Requirements for Aviation, Space and Defence Organizations*

EN 9110, *Quality Management Systems — Requirements for Aviation Maintenance Organizations*

EN 9120, *Quality Management Systems — Requirements for Aviation, Space and Defence Distributors*

NOTE   Equivalent versions (e.g., AS, EN, JISQ, SJAC, NBR) of the IAQG standards listed above are published internationally in each sector.

EN ISO 9000:2015, *Quality management systems — Fundamentals and vocabulary (ISO 9000:2015*

IAQG, *Supply Chain Management Handbook (SCMH) — Foreign Object Prevention Program Guidance Material* (http://www.sae.org/iaqg/)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 9100 and EN ISO 9000 apply. The following terms and definitions are included to support the understanding of this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
clean-as-you-go
practice of cleaning the immediate work area of the product at appropriate intervals to eliminate the accumulation or migration of Foreign Objects (FOs) that may potentially become entrapped within the product [i.e., Foreign Object Debris (FOd)] or cause damage (i.e., FOD)

3.2
consumables
supplies, materials, and miscellaneous items required for product and operations processes that are expected to be consumed during work performed or discarded after useful function

3.3
Foreign Object
FO
alien substance or article (e.g., tools, consumables, hardware, product protective devices, personal items, product process debris, operations debris, environmental debris) that could potentially enter and/or migrate into/on the product or system becoming FOd and potentially cause FOD, if not removed and controlled

3.4
Foreign Object Damage
FOD
any damage attributed to FOd that can be expressed in physical or economic terms, which could potentially degrade the product or system's required safety and/or performance characteristics

3.5
Foreign Object debris
FOd
any FO that has entered and/or migrated into/on the product or system, and could potentially cause FOD, if not removed and controlled

3.6
hardware
Bill of Materials (BOM) parts used in operations (e.g., standards, fasteners, nuts, rivets, washers, screws, bolts, spacers, cotter keys, wire terminals, wire terminal connectors)

iTeh STANDARD PREVIEW

(standards.iteh.ai)

3.7
housekeeping
process to maintain general cleanliness and ensure all work areas are orderly and free of potential FOs at appropriate intervals

3.8
operations
product related activities and services through all stages of production, maintenance, and service execution (e.g., design and development, manufacturing, assembly, test, packaging, shipping)

3.9
personal items
items owned by individuals or distributed by the organization for personal use (e.g., badge, stamps, keys, cell phones, wallets, personal protective equipment, food, drink, tobacco products)

4   Foreign object damage prevention program requirements

4.1   Program management

4.1.1   The organization's top management shall demonstrate leadership and commitment to the FOD Prevention Program.

4.1.2   The organization shall designate a FOD Prevention Program management representative with the responsibility and authority for establishment, implementation, and maintenance of the program.

4.1.3 The organization shall establish, implement, and maintain documented information of a FOD Prevention Program commensurate with a FOD risk assessment for product characteristics and operations. The FOD Prevention Program shall include consideration of the following elements for applicability:

a) operations (see 4.2);

b) area designation (see 4.3);

c) training and personnel access (see 4.4);

d) product protection (see 4.5);

e) housekeeping and clean-as-you-go (see 4.6);

f) consumables, hardware, personal items accountability, and control (see 4.7);

g) tool accountability and control (see 4.8).

4.1.4 The organization shall maintain documented information of FOD Prevention Program nonconformities and FOd/FOD product nonconformities in accordance with its "control of nonconforming outputs" processes.

4.1.5 The organization shall report FOD Prevention Program nonconformities and FOd/FOD product nonconformities in accordance with its management review process.

4.1.6 The organization shall evaluate effectiveness of the FOD Prevention Program based on internal, customer, statutory, and regulatory requirements.

4.1.7 The organization shall communicate results and effectiveness of the FOD Prevention Program to relevant internal and external interested parties.

4.1.8 The organization shall maintain documented information of a FOD risk assessment for procured product and flow down FOD prevention requirements commensurate with that risk.

4.2 Operations

4.2.1 The organization shall establish, implement, and maintain FOd/FOD prevention processes for operations.

4.2.2 The processes shall establish requirements for:

a) product design considerations for the prevention, inspection/detection, and removal of FOs;

b) selection, application, and control of protective devices/measures for products, processes, and personnel;

c) plan and sequence operations to reduce FO/FOd/FOD risk to product;

d) identification of product/characteristics (e.g., openings, compartments, cavities) requiring protection from FO/FOd;

e) capabilities for cleaning and FO/FOd inspection/detection;

f) inspection/detection methods at appropriate steps or intervals to prevent contamination, damage, and deterioration.