SLOVENSKI STANDARD
oSIST prEN ISO 1825:2025

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Gumene cevi in cevni priključki za pretakanje in praznjenje goriv letal na tleh - Specifikacija (ISO/DIS 1825:2025)

Rubber hoses and hose assemblies for aircraft ground fuelling and defuelling - Specification (ISO/DIS 1825:2025)

Gummischläuche und -schlauchleitungen für die Bodenbetankung und Entleerung von Flugzeugen - Anforderungen (ISO/DIS 1825:2025)

Tuyaux et flexibles en caoutchouc pour le ravitaillement carburant et la vidange des avions au sol - Spécifications (ISO/DIS 1825:2025)

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ICS:

49.100	Oprema za servis in vzdrževanje na tleh	Ground service and maintenance equipment
83.140.40	Gumene cevi	Hoses

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Rubber hoses and hose assemblies for aircraft ground fuelling and defuelling — Specification

Tuyaux et flexibles en caoutchouc pour le ravitaillement carburant et la vidange des avions au sol — Spécifications

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies.*

This fifth edition cancels and replaces the fourth edition (ISO 1825:2017), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the normative references have been updated;

— 2 temperatures classes have been added (to bring the document in line with EI 1529)

— nominal sizes 51 and 75 have been added

— the possibility to deliver hose to assembler has been added (surplus of the bonding wires for Types E and F)

— working pressure test has been removed (Table 5 and Annexe J to bring the document in line with EI 1529)

— the ozone testing has been modified at 1 ppm instead of 0,5 ppm to align with EI1529

— frequency testings recommended tests for production acceptance test have been removed

— Annexes F and G (to bring the document in line with EI 1529) have been rewritted

— fuel discoloration test has been added to bring the document in line with EI 1529.

Rubber hoses and hose assemblies for aircraft ground fuelling and defuelling — Specification

1 Scope

This document specifies the dimensions and construction of, and requirements for, four types of hose and hose assembly for use in all operations associated with the ground fuelling and defuelling of aircraft.

All four types are designed for:

a) use with petroleum fuels having an aromatic-hydrocarbon content not exceeding 30 % by volume;

b) operation within the temperature range of −30 °C to +65 °C and such that they will be undamaged by climatic conditions of −40 °C to +70 °C when stored in static conditions; For LT hose, the temperature range of −40 °C to +65 °C and such that they will be undamaged by climatic conditions of −48 °C to +70 °C when stored in static conditions

c) operation at up to 2,0 MPa (20 bar) maximum working pressure, including surges of pressure which the hose can be subjected to in service.

NOTE 1 Type C hoses are intended for general pressure applications on all vehicles used for plane fuelling. They can also be used for vehicle/rail car loading and discharge where excessive vacuum does not occur.

NOTE 2 Type F hoses can be used for plane delivery applications on vehicles that are also used for defuelling at high flow rates where type C hoses are not suitable.

NOTE 3 Type E and F hoses can also be used for vehicle/rail car loading and discharge, for trailer to fueller transfer and for elevation platform supply (riser) to provide greater kink resistance.

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.

ISO 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 188, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 1382, *Rubber — Vocabulary*

ISO 1402, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing*

ISO 1817:2024, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

ISO 4649:2017, *Rubber, vulcanized or thermoplastic — Determination of abrasion resistance using a rotating cylindrical drum device*

ISO 4671, *Rubber and plastics hoses and hose assemblies — Methods of measurement of the dimensions of hoses and the lengths of hose assemblies*

ISO 6246, *Petroleum products — Gum content of fuels — Jet evaporation method*

ISO 7326, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 7989-1, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 1: General principles*

ISO 7989-2, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 2: Zinc or zinc-alloy coating*

ISO 8031, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance and conductivity*

ISO 8033, *Rubber and plastics hoses — Determination of adhesion between components*

ISO 8330, *Rubber and plastics hoses and hose assemblies — Vocabulary*

ISO 10619-1:2017, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 1: Bending tests at ambient temperature*

ISO 10619-2:2021, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 2: Bending tests at sub-ambient temperatures*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1382 and ISO 8330 and the following apply.

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

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

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

3.1
hose assembly
hose with either permanent or reusable end fittings attached

3.2
electrically bonded hose/hose assembly
hose/*hose assembly* (3.1) that uses a metallic wire connection to conduct static electricity

3.3
electrically conductive hose/hose assembly
hose/*hose assembly* (3.1) that is capable of conducting static electrical charges, using a conductive rubber layer, without the use of a metallic wire

4 Classification

Hoses for this application are classified into four types and two grades according to their construction and electrical properties. Each type of hose shall be divided into two temperature classes :

— Normal temperature class with an ambient working temperature of -30 °C to + 65 °C

— Low temperature class (LT) with an ambient working temperature of -40 °C to + 65 °C

Type	Grade	Construction
B	M	Electrically bonded, incorporating at least two low-resistance electrically conductive wires and a conductive cover compound
C	Ω	Electrically conductive, incorporating a conductive cover compound
E	M	Electrically bonded, incorporating at least one metallic wire helix, at least two low-resistance electrically conductive wires and a conductive cover compound. Has an enhanced defuelling capability
F	Ω	Electrically conductive, incorporating at least one non-electrically conductive non-metallic helix and a conductive cover compound

5 Service reeling diameter

Hoses shall be designed for operation on equipment fitted with hose reels of the diameters given in Table 1.

These hoses remain substantially circular in cross-section when reeled on drums and should not be confused with hoses of the collapsible type that are intended to be reeled flat.

Table 1 — Service reeling diameters

Nominal size of hose	Minimum outside diameter of reeling drum used in service mm
19	225
25	300
31,5	375
38	450
50	550
51	550
63	600
75	600
76	600
100	900
101,5	900

6 Material and construction

6.1 Hoses

If the hose is mandrel-built and vulcanized on a mandrel, particulate-type release agents shall not be used. The hose shall be uniform in quality and be free from porosity, air holes, foreign inclusions and other defects when inspected visually.

The hose shall comprise the following components:

— a lining of synthetic rubber resistant to petroleum fuel;

— a reinforcement consisting of layers of woven, braided or spirally wound textile material;

— an outer cover made of synthetic rubber which shall be conductive and resistant to abrasion, outdoor exposure and petroleum fuel.

For types E and F hoses only, an embedded helix reinforcement shall be included in the construction. For type E hoses, the wire reinforcement used shall be a hard steel and shall have a galvanized finish in accordance with ISO 7989-1 and ISO 7989-2.