International Standard

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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

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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 document 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).

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This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 218, *Rubber and plastics hoses and hose assemblies,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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:

— addition of two temperature classes (to bring the document in line with EI 1529);

— addition of nominal sizes 51 and 75;

— removal of the working pressure test in Table 6 and Annex J (to bring the document in line with EI 1529);

— modification of the ozone resistance at 1 ppm instead of 0,5 ppm to align with EI 1529;

— removal of tests for production acceptance;

— revision of Annexes F and G (to bring the document in line with EI 1529);

— revision of the method specified in Annex L.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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.

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 4649:2024, *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 10619-2:2021, *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 terminology databases for use in standardization at the following addresses:

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

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

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

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

3.3
electrically conductive
hose or *hose assembly* (3.1) that is capable of conducting static electrical charges, using a conductive rubber layer

4 Classification

Hoses for this application are classified into four types and two grades according to their construction and electrical properties given in Table 1. 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.

Table 1 — Classification

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.

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.