

**Aerospace —
Lightweight
polytetrafluoroethylene
(PTFE) hose assemblies,
classification
400 °F/3 000 psi
(204 °C/20 684 kPa) and
204 °C/21 000 kPa
(400 °F/3 046 psi) —
Procurement
specification**

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National foreword

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This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 8913 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 10, *Aerospace fluid systems and components*.

This third edition cancels and replaces the second edition (ISO 8913:1994). Criteria for imperial dimension (inch-based) hose assemblies as used for commercial aviation are being introduced.

Introduction

This International Standard establishes the basic performance and quality requirements for lightweight polytetrafluoroethylene (PTFE) hose assemblies for use in aerospace fluid systems.

The procurement requirements are intended to ensure that hose assemblies which are procured in accordance with this specification are of the same quality as the hose assemblies used during the original qualification testing. Compliance with these test and procurement requirements is necessary for hose assemblies that are used in fluid systems where a malfunction would affect the safety of flight.

Aerospace — Lightweight polytetrafluoroethylene (PTFE) hose assemblies, classification 400 °F/3 000 psi (204 °C/20 684 kPa) and 204 °C/21 000 kPa (400 °F/3 046 psi) — Procurement specification

1 Scope

This International Standard specifies requirements for lightweight polytetrafluoroethylene (PTFE) hose assemblies for use in aircraft hydraulic systems at temperatures between – 55 °C and 204 °C (– 65 °F and 400 °F), and at a nominal pressure up to 3 000 psi (20 684 kPa) or 21 000 kPa (3 046 psi). The hose assemblies are also suitable for use within the same temperature and pressure limitations in aircraft pneumatic systems where some gaseous diffusion through the wall on the PTFE liner may be tolerated.

The use of these hose assemblies in high-pressure pneumatic storage systems is not recommended. In addition, installations in which the limits specified in this International Standard are exceeded, or in which the application is not covered specifically by this International Standard, for example for oxygen, are subject to the approval of the purchaser.

Annex A is a listing of hose assembly procurement standards conforming to this International Standard.

2 Normative references

The following referenced documents are indispensable for the application 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 2685:1998, *Aircraft — Environmental test procedure for airborne equipment — Resistance to fire in designated fire zones*

ISO 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 3161:1999, *Aerospace — UNJ threads — General requirements and limit dimensions*

ISO 5855-3:1999, *Aerospace — MJ threads — Part 3: Limit dimensions for fittings for fluid systems*

ISO 6772:1988, *Aerospace — Fluid systems — Impulse testing of hydraulic hose, tubing and fitting assemblies*

ISO 7258:1984, *Polytetrafluoroethylene (PTFE) tubing for aerospace applications — Methods for the determination of the density and relative density*

ISO 8829:1990, *Aerospace — Polytetrafluoroethylene (PTFE) hose assemblies — Test methods*

ISO 8829-2, *Aerospace — Test methods for polytetrafluoroethylene (PTFE) inner-tube hose assemblies — Part 2: Non-metallic braid*

EN 9100, *Aerospace series — Quality management systems — Requirements (based on ISO 9001:2000) and Quality systems — Model for quality assurance in design, development, production, installation and servicing (based on ISO 9001:1994)*

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standard parts*

SAE AS150, *Hose assembly, type classifications of, basic performance and fire resistance*

SAE AS1055, *Fire testing of flexible hose, tube assemblies, coils, fittings and similar system components*

SAE AS7003, *Nadcap program requirements*

SAE AS7112, *National aerospace and defense contractors accreditation program (Nadcap) requirements for fluid system components*

ASTM A262, *Standard practices for detecting susceptibility to intergranular attack in austenitic stainless steels*

PRI PD2101, *Aerospace quality assurance, product standards, qualification procedure, fluid systems*

3 Classification

Hose assemblies furnished under this International Standard shall be classified as follows:

- Type A — 3 000 psi (20 684 kPa) pressure system,
- Type B — 21 000 kPa (3 046 psi) pressure system.

When no classification is specified by reference to this International Standard, type B shall apply.

4 Requirements

4.1 Qualification

4.1.1 General

Hose assemblies supplied in accordance with this International Standard shall be representative of products which have been subjected to and which have successfully passed the requirements and tests specified in this International Standard.

4.1.2 Manufacturer qualification

Manufacturer approval shall be granted by outside agency procedure as specified in Table B.1, procedure no. 1).

4.1.3 Product qualification

Product approval shall be granted by outside agency procedure as specified in Table B.1, procedure no. 2.

4.2 Materials

4.2.1 General

The hose assembly materials shall be as described in this International Standard (see, in particular, Table C.1). All materials not specifically described in this International Standard shall be of the highest quality and suitable for the purpose intended.

4.2.2 Metals

Metals used in the hose and fittings shall be corrosion-resistant steel, nickel alloy or titanium, and shall conform to the applicable specifications given in Table 1 (or equivalent specifications; see Annex C).

4.3 Construction

4.3.1 General

The hose assembly shall consist of:

- a seamless PTFE inner tube (see 4.3.2),
- corrosion-resistant steel wire reinforcement (see 4.3.3), and
- corrosion-resistant steel, nickel alloy and/or titanium end fittings (see 4.3.4),

as required to meet the construction and performance requirements laid down in this International Standard and as required for its intended use.

4.3.2 Inner tube

The inner tube shall be of a seamless construction of PTFE resin of uniform gauge; it shall have a smooth bore and shall be free from pitting and projections on the inner surface. Additives may be included in the compound from which the tube is extruded with no more than 2 % of such additives being retained in the mixture.

4.3.3 Reinforcement

The reinforcement shall consist of corrosion-resistant steel wire conforming to the applicable specifications given in 4.2.2. The wires shall be arranged over the inner tube so as to provide sufficient strength to ensure compliance with the requirements laid down in this International Standard.

Broken or missing reinforcing wires shall be cause for rejection; crossed-over reinforcing wires shall not be cause for rejection of the flexible hose assembly.

4.3.4 Fittings

4.3.4.1 General

It shall be proven that all fittings comply with the requirements laid down in this International Standard.

4.3.4.2 Insert fittings

Insert fittings shall be manufactured in one piece wherever possible; those made of other than one-piece construction shall be butt-welded, fabricated unless otherwise agreed by the purchaser, from corrosion-resistant steel or nickel alloy tubing, or titanium. Welded and redrawn tubing (materials 8 and 9; see Annex C) may be used.