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Rubber hose and hose assemblies for oil suction and discharge service — Specification

Flexibles en caoutchouc pour chargement et déchargement des produits pétroliers — Spécification

Reference number
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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 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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies*.

This second edition of ISO 1823 cancels and replaces ISO 1823-1:1997 and ISO 1823-2:1997. Considering the actual market situations, two classes (the lowest and highest aromatics content) and one grade for maximum working pressure have been added in 4.3 and 4.4, respectively.

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Introduction

This International Standard specifies minimum requirements for the satisfactory performance of wire- or textile-reinforced rubber hose assemblies of both smooth and rough bore types for oil suction and discharge services. The hoses are commonly used for transferring crude oil and liquid petroleum products, other than liquefied petroleum gas and natural gas, to and from tanker and bunkering vessels or for similar duties ashore.

Specific details of the construction of hoses are not rigidly defined in this International Standard since it is felt that this could restrict the introduction of improved methods of construction. The hose assemblies have been classified and designated in terms of service pressure, which includes an allowance for surge pressure and which equates to the factory test pressure. To keep this specification in line with other documents, this factory test pressure is also defined as the maximum working pressure (see Table 1). It is the responsibility of the user to determine the appropriate working pressure, which will depend on the severity of the user's operating conditions and on the service life that is expected of the hose assembly.

It is necessary for the purchaser to provide certain information about the hose assembly and its intended use at the time of enquiry and/or order; this information is listed in Annex A (informative). Recommendations concerning packaging and transportation are given in Annex B (informative) and expected masses of hoses, in kilograms per metre of free length, are given in Annex C (informative).

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Rubber hose and hose assemblies for oil suction and discharge service — Specification

1 Scope

This International Standard specifies the characteristics of four types of oil suction and discharge hose assemblies used for the conveyance of petroleum, including crude oils and other liquid petroleum products. Each type being divided into three classes depend on the aromatic contents. It is not suitable for liquefied petroleum gas and natural gas.

Hose assemblies to this International Standard can be used in the temperature range –20 °C to 80 °C.

The hoses specified are in the range of nominal size 50 to 500 and can be types of smooth bore, rough bore, armoured rough bore, and light weight.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 228, *Pipe threads where pressure-tight joints are not made on the threads*

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

ISO 1431-1, *Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static and dynamic strain testing*

ISO 1460, *Metallic coatings — Hot dip galvanized coatings on ferrous materials — Gravimetric determination of the mass per unit area*

ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods*

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

ISO 2063, *Metallic and other inorganic coatings — Thermal spraying — Zinc, aluminium and their alloys*

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

ISO 7005-1, *Pipe flanges — Part 1: Steel flanges for industrial and general service piping systems*

ISO 7233, *Rubber and plastics hoses and hose assemblies — Determination of resistance to vacuum*

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

ISO 15614-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys*

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BS 3592-1, *Steel wire for hose reinforcement — Part 1: Specification for coated round and flat steel wire for rubber hose reinforcement*

3 Terms and definitions

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

3.1
electrically bonded hose assembly
hose assembly that uses a metallic wire connection to create a low-resistance electrical connection between the end connection

3.2
electrically discontinuous hose assembly
hose assembly that incorporates an electrical insulation between the end of the helical wire or/and wire cord reinforcement and on or both couplings

4 Classificaiton

4.1 General

WARNING — Careful consideration needs to be given before the use of electrically discontinuous hoses for transferring liquids known to generate static charges. In no circumstances should more than one length of electrically discontinuous hose be used in an individual transfer pipeline and effective electrical continuity to earth from both ends of the electrically discontinuous hose should be maintained.

4.2 Types

Hose assemblies for this application are classified according to end-use as follows:

— **Type R**, rough bore hose assemblies for dock operation and intended for situations where a relatively stiff, heavy, and robust assembly can be used. The lining of the rubberized fabric is supported and reinforced by an internal (hot-dipped) zinc coated steel wire helix. Type R assemblies are electrically continuous;

— **Type A**, armoured rough bore hose assemblies for dock operation. In addition to an internal zinc coated steel wire helix, there shall be external helical armour of a similar material. Type A hoses are electrically continuous and can be lighter and more flexible than type R;

— **Type S**, smooth bore hose assemblies for dock operation where flexibility and lightness are important. Type S hose assemblies can be electrically continuous or electrically discontinuous (see Warning);

— **Type L**, hose assemblies for dock and general discharge service where greater flexibility, lower weight, and ease of handling are of primary consideration. Type L hose assemblies can be electrically continuous or electrically discontinuous. They are only suitable for discharge applications (see Warning).

4.3 Classes

Each type of hose assemblies shall be designated according to three classes, depending on the conveyance of petroleum products containing the maximum aromatics content:

— **Class 25**: For oil and gasoline service (suitable for below 25 % aromatics content);

— **Class 50**: For oil and gasoline service (up to and including 50 % max. aromatics content);

— **Class 100**: For oil and gasoline service (suitable for up to 100 % aromatics content).

NOTE For the determination of aromatics content, see ISO 3837.

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