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Rubber and plastics hoses for marine-engine wet-exhaust systems — Specification

Tuyaux d'échappement en caoutchouc et en plastique pour moteurs de bateaux de plaisance — 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 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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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 cancels and replaces the first edition (ISO 13363:2004), which has been technically revised with the following changes:

— class B hoses to be of rubber materials only;

— the abrasion test has been removed until a new abrasion test standard has been developed and the corresponding International Standard published.

It also incorporates the Technical Corrigendum ISO 13363:2004/Cor.1:2008.

Rubber and plastics hoses for marine-engine wet-exhaust systems — Specification

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This International Standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate health and safety practices and to ensure compliance with any national regulatory conditions.

1 Scope

This International Standard specifies requirements for three types and two classes of hose. The hoses are intended for use in marine-engine wet-exhaust systems (where the exhaust gases are mixed with the discharge of cooling water). It does not apply to outboard motor/personal water craft.

The three types are the following:

— type 1: a softwall hose, made of oil-resistant material, with a synthetic-fabric reinforcement;

— type 2: a hardwall hose, made of oil-resistant material, with a synthetic-fabric reinforcement with a helical wire embedded in it;

— type 3: a hose or tube (flexible connector), made of oil-resistant material, with or without a reinforcement or cover, intended for use in short lengths in locations where the connector is protected from mechanical damage.

The two classes are the following:

— class A: intended for diesel engines;

— class B: intended for petrol engines and for diesel engines with a very high exhaust temperature.

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

ISO 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 176:2005, *Plastics — Determination of loss of plasticizers — Activated carbon method*

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

ISO 815, *Rubber, vulcanized or thermoplastic — Determination of compression set at ambient*

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

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

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

ISO 7326:2006, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

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

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

ISO 10619-1:2011, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 1: Bending tests at ambient temperature*

ISO 30013:2011, *Rubber and plastics hoses — Methods of exposure to laboratory light sources — Determination of changes in colour, appearance and other physical properties*

3 Terms and definitions

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

4 Classification

Hoses shall be one of the types and classes specified in Table 1.

Table 1 — Types and classes of hose

Type	Class	Description
1	A	A softwall hose, made of oil-resistant material, with a synthetic-fabric reinforcement. When tested in accordance with Annex A, the hose shall withstand 2 min of exhaust gas at 370 °C.
	B	A softwall hose, made of oil-resistant rubber material, with a synthetic-fabric reinforcement. When tested in accordance with Annex A, the hose shall withstand 2 min of exhaust gas at 580 °C.
2	A	A hardwall hose, made of oil-resistant material, with a synthetic-fabric reinforcement with a helical wire embedded in it. When tested in accordance with Annex A, the hose shall withstand 2 min of exhaust gas at 370 °C.
	B	A hardwall hose, made of oil-resistant rubber material, with a synthetic-fabric reinforcement with a helical wire embedded in it. When tested in accordance with Annex A, the hose shall withstand 2 min of exhaust gas at 580 °C.
3	A	A hose or tube (flexible connector), made of oil-resistant material, with or without a reinforcement or cover, intended for use in short lengths in locations where the connector is protected from mechanical damage. When tested in accordance with Annex A, the hose or tube shall withstand 2 min of exhaust gas at 370 °C.
	B	A hose or tube (flexible connector), made of oil-resistant rubber material, with or without a reinforcement or cover, intended for use in short lengths in locations where the connector is protected from mechanical damage. When tested in accordance with Annex A, the hose or tube shall withstand 2 min of exhaust gas at 580 °C.

5 Materials and construction

The hose shall consist of the following:

— a smooth-bore water- and heat-resistant rubber or plastics tube (plastics are not suitable for class B hoses);

— an oil- and fuel-resistant rubber or plastics tube (plastics are not suitable for class B hoses; oil and fuel resistance are not necessary for class B hoses);

— one or more layers of synthetic-fabric reinforcement (not necessary for type 3 hoses);

— one or more helical wires embedded within the rubber or plastics material (for type 2 hoses only);

— an ozone-, heat-, and abrasion-resistant rubber or plastics cover (not necessary for type 3 hoses; plastics are not suitable for class B hoses).