INTERNATIONAL STANDARD

ISO 3994

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Plastics hoses — Helical-thermoplastic-reinforced thermoplastics hoses for suction and discharge of aqueous materials — Specification

Tuyaux en plastiques — Tuyaux thermoplastiques à renforcement thermoplastique en spirale pour aspiration et refoulement de matières aqueuses — Spécifications

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Contents

Page

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 3994 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

This third edition cancels and replaces the second edition (ISO 3994:1998), which has been technically revised.

Introduction

This International Standard has been prepared to provide minimum acceptable requirements for the satisfactory performance of polymer-reinforced thermoplastics hoses for suction and discharge applications, conveying water, weak aqueous chemical solutions and abrasive solids and slurries.

If there is a special requirement for resistance to deleterious chemicals, this shall be a matter for agreement between the supplier and the purchaser.

Plastics hoses — Helical-thermoplastic-reinforced thermoplastics hoses for suction and discharge of aqueous materials — Specification

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This 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 the requirements for three types of helical-thermoplastic-reinforced thermoplastics hoses for suction and discharge of water, weak aqueous chemical solutions and abrasive solids and slurries, for use in the ambient temperature range from − 10 °C to + 55 °C.

The three types of hose are for light-, medium- and heavy-duty applications.

The types of hoses covered in this International Standard are not intended for use with flammable or combustible materials, nor with aromatic solvents.

NOTE Hoses of a similar construction for suction and discharge for fire-fighting are specified in ISO 14557, *Fire-fighting hoses — Rubber and plastics suction hoses and hose assemblies*.

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

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

ISO 1307, *Rubber and plastics hoses — Hose sizes, minimum and maximum inside diameters, and tolerances on cut-to-length hoses*

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

ISO 1746, *Rubber or plastics hoses and tubing — Bending tests*

ISO 4672, *Rubber and plastics hoses — Sub-ambient temperature flexibility tests*

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

ISO 8331, *Rubber and plastics hoses and hose assemblies — Guidelines for selection, storage, use and maintenance*

ISO 11758:1995, *Rubber and plastics hoses — Exposure to a xenon arc lamp — Determination of changes in colour and appearance*

ISO 23529, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

3 Terms and definitions

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

4 Classification

Three types of hoses are specified, related to the maximum working pressure and suction pressure (see Tables 4 and 5):

— type 1: light-duty service;

— type 2: medium-duty service;

— type 3: heavy-duty service.

All types are designed to operate in the ambient temperature range − 10 °C to + 55 °C.

5 Materials and construction

The hoses shall be as uniform as commercially practicable in colour and other physical properties. They shall consist of a flexible thermoplastics material supported within the material by a helix of thermoplastic material of a similar molecular structure. The reinforcing and flexible components of the wall shall be fused together and free from visible cracks, porosity, foreign inclusions or other defects such as are liable to cause failure of the hose in service.

6 Dimensions and tolerances

6.1 Nominal bores, internal diameters and tolerances

The internal diameters and tolerances of hoses of different nominal bores shall meet the requirements given in Table 1.

6.2 Length tolerances

The tolerances on cut lengths shall be in accordance with ISO 1307.