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General purpose rubber thread — Specification

Fils de caoutchouc pour usages généraux — Spécification

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Foreword

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 4, *Products (other than hoses)*.

General purpose rubber thread — Specification

1 Scope

This document specifies physical and mechanical requirements for rubber threads. It does not apply to rubber threads for food contact, furniture, high heat resistance and high ozone resistance applications.

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 2321:2017, *Rubber threads — Methods of test*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 2321 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

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

3.1
tension set
elongation remaining in a test piece in the relaxed condition after it has been subjected to a constant elongation at a specified time, expressed as a percentage of the elongation

4 Rubber thread classification

Rubber threads are classified according to cross-sectional shape into three types:

— Type 1: a round thread;

— Type 2: a square thread;

— Type 3: a rectangular thread.

The types of rubber threads as mentioned above are further sub-divided into three classes depending on the properties:

— Class 1;

— Class 2;

— Class 3.

5 Requirements

5.1 General

The rubber threads shall be uniform in dimension, free from any visual substances and free from other defects that may cause deleterious effects on performance.

5.2 Conventional count

Conventional count (size number) should be agreed between the purchaser and the manufacturer.

When tested in accordance with ISO 2321:2017, Clause 5, the tolerance of thread diameter (round thread) or cross-sectional length (square or rectangular thread) shall be less than ± 3 %, unless otherwise specified.

5.3 Metric yield or density

Metric yield when tested according to ISO 2321:2017, Clause 6, shall be within ± 6 % of the declared value. The specified value for metric yield is dependent on count and density.

If density is required by agreement between the purchaser and the manufacturer, it can be tested according to ISO 2321:2017, Clause 8. It shall be as follows:

Density < 1,10 g/cm^3 marked as low density;

Density = 1,10 g/cm^3 to 1,20 g/cm^3 marked as medium density;

Density > 1,20 g/cm^3 marked as high density.

5.4 Physical and mechanical properties

Physical and mechanical properties of rubber threads shall comply with the requirements given in Table 1.

The age of test pieces shall not exceed 6 months from the date of manufacture.

Table 1 — Required physical and mechanical properties

Physical and mechanical properties	Requirements			Test method
	Class 1	Class 2	Class 3	
Modulus at 300 %, N/mm^2	2,0 to 4,0	3,0 to 4,5	4,0 to 5,5	ISO 2321:2017, Clause 9
Tensile strength, N/mm^2, min.	25	20	15	ISO 2321:2017, Clause 9
Elongation at break, %, min.	700	600	500	ISO 2321:2017, Clause 9
Tension set, %, max.	8	10	12	ISO 2321:2017, Clause 13
After accelerated-ageing test				
Tensile strength, N/mm^2, min.	20	16	12	ISO 2321:2017, Clause 14
Elongation at break, %, min.	560	480	400	ISO 2321:2017, Clause 14

5.5 Schwartz value

If the Schwartz value is required, the value given in Annex A should be used.

6 Packaging

6.1 Packing

The material shall be packed to facilitate safe transport and storage.

6.2 Marking

The packages shall be clearly marked with at least by the following items:

a) material used;

b) conventional count (size number), colour, and the number of threads in ribbon;

c) class;

d) weight, in kilograms;

e) date of manufacture and/or manufacturer's identifying lot number.

Annex A
(informative)

Schwartz value

A.1 General

Schwartz value is the average of the stresses, in megapascals, calculated with respect to the original cross-sectional area at a specified elongation measured on extension and retraction of a previously massaged (mechanically conditioned) thread.

The preferred values of the elongation at which the readings are 300 % and 500 %, depending on the type of thread under test. However, the recommended reading of Schwartz value is at 300 % elongation.

A.2 Recommended Schwartz value

When tested in accordance with ISO 2321:2017, Clause 10, using Schwartz value at 300 % elongation, the Schwartz value shall be 1,3 MPa ± 25 %.