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Textile glass — Rovings — Basis for a specification

Verre textile — Stratifils — Base de spécification

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Contents

Page

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 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 61, *Products*, Subcommittee SC 13, *Composites and reinforcement fibres*.

This third edition cancels and replaces the second edition (ISO 2797:1986), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— the normative references in Clause 2 have been updated;

— the structure of the document has been improved and the text has been editorially revised.

Introduction

A basis for a specification is intended to serve as a guide for the establishment of technical specifications for products of given type.

It is designed to enumerate as completely as possible the points that should be considered at the time of writing the specifications that will apply to a particular product or a family of products whose characteristics are very much related. These specifications may be established by a producer, a supplier, a user or a standardization organization.

Textile glass — Rovings — Basis for a specification

1 Scope

This document establishes a basis for a specification for textile glass rovings, whether direct rovings or assembled rovings.

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 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 178, *Plastics – Determination of flexural properties*

ISO 291, *Plastics — Standard atmospheres for conditioning and testing*

ISO 1887, *Textile glass — Determination of combustible-matter content*

ISO 1888, *Textile glass — Staple fibres or filaments — Determination of average diameter*

ISO 1889, *Reinforcement yarns — Determination of linear density*

ISO 2078:1993, *Textile glass — Yarns — Designation*

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

ISO 3344, *Reinforcement products — Determination of moisture content*

ISO 3375, *Textile glass — Determination of stiffness of rovings*

ISO 3597-2, *Textile-glass-reinforced plastics — Determination of mechanical properties on rods made of roving-reinforced resin — Part 2: Determination of flexural strength*

ISO 3597-3, *Textile-glass-reinforced plastics — Determination of mechanical properties on rods made of roving-reinforced resin — Part 3: Determination of compressive strength*

ISO 3951-1, *Sampling procedures for inspection by variables — Part 1: Specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection for a single quality characteristic and a single AQL*

ISO 9163, *Textile glass — Rovings — Manufacture of test specimens and determination of tensile strength of impregnated rovings*

ISO 14130, *Fibre-reinforced plastic composites — Determination of apparent interlaminar shear strength by short-beam method*

3 Terms and definitions

No terms and definitions are listed in this document.

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 https://www.iso.org/obp

4 General

Rovings may be divided into two main groups, namely:

— rovings that are chopped during subsequent operations (for example rovings for spray-up, for preform, for continuous laminating, for preimpregnated SMC mat, etc.);

— rovings that are utilized without being chopped (for example rovings for winding, for weaving, for pultrusion, etc.).

Each technique has its particular requirements with regard to roving processing characteristics. Consequently, it is recommended that the anticipated use should be indicated at the time of ordering.

In addition to their division into two main groups, depending on usage, rovings differ in

— linear density (in tex) of the roving and also by the linear density (in tex) of the strands and the number of strands;

— the fabrication mode — rovings may be either of the assembled or direct type;

— the winding (packaging) of the rovings which may or may not have a tube support.

Rovings that have a tube support can only be unwound from the outside.

5 Designation

The roving or rovings covered by the specification shall be designated in accordance with ISO 2078:1993, 4.2.7 which gives an indication of the type of glass, the reference diameter of the filaments and the linear density. For certain rovings (in general for those to be chopped), this designation may be completed by including the linear density of strands.

6 Terminology

Any term that is not defined in one of the appropriate International Standards mentioned in Clause 2 shall be defined in this clause of the specification.

7 Sampling and batch acceptance

The specification shall state the conditions of application of ISO 2859-1 and ISO 3951-1 to the sampling of the roving under consideration. If the test method does not define the number of specimens and the procedure for taking them in each sampled unit, these requirements shall be given in this clause.

8 Conditioning

The specification shall include requirements for conditioning the rovings. In the absence of requirements particular to the roving under consideration, it shall refer to ISO 291 and ISO 139.

9 Properties and methods of test

9.1 General

Among those listed hereafter, the specification shall specify, for each particular roving, the specific requirements for relevant properties, which may be physical, mechanical or visual properties.

For those properties included in the specification, the conditions of accepting or rejecting a lot, on the basis of results obtained during inspection and testing, shall be defined.

9.2 Type of glass

The glass type shall be indicated in the designation. A list of current glass types is given in ISO 2078.

9.3 Filament diameter

The reference diameter of the filament shall be indicated in the designation. The mean value of the real diameter of the filaments is determined and expressed in accordance with ISO 1888.

9.4 Linear density

The linear density shall be determined and expressed in accordance with ISO 1889.

9.5 Moisture content

The moisture content shall be determined and expressed in accordance with ISO 3344.

9.6 Size

The filaments that make up a roving are coated with a size. An indication of the nature of this size shall form part of the supplier's code in the roving designation. The product specification may indicate the type of coupling agent (silane, chrome or chrome-silane) present in the size and shall state the use or uses that are compatible with the size.

9.7 Size content

The size content shall be determined and expressed in accordance with ISO 1887.

9.8 Catenary

In the absence of a standard test method, a supplier or purchaser may specify criteria that he uses for evaluation of the catenary. The corresponding method of test shall be appended to the specification.

9.9 Stiffness

The stiffness shall be determined and expressed in accordance with ISO 3375.

9.10 Abrasion resistance

In the absence of a standardized test method, a supplier or purchaser may specify the criteria that he uses for evaluation of abrasion resistance. The corresponding test method shall be appended to the specification.

9.11 Strand integrity

In the absence of a standardized test method, a supplier or purchaser may specify the criteria that he uses for evaluation of strand integrity. The corresponding test method shall be appended to the specification.

9.12 Mechanical properties

The specification shall indicate the admissible tolerances for relevant mechanical properties among those listed below for the roving. The corresponding values shall be determined and expressed in