
International Standard



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Textile glass — Rovings — Basis for a specification

Verre textile — Stratifils — Base de spécification

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 2797 was prepared by Technical Committee ISO/TC 61, *Plastics*.

This second edition cancels and replaces the first edition (ISO 2797-1974), clause 3 and sub-clauses 6.2, 6.4.2 and 6.4.12 of which have been technically revised.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Textile glass — Rovings — Basis for a specification

0 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 should 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 organisation.

1 Scope and field of application

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

2 References

- ISO 139, *Textiles — Standard atmospheres for conditioning and testing.*
- ISO 178, *Plastics — Determination of flexural properties of rigid plastics.*
- ISO 291, *Plastics — Standard atmospheres for conditioning and testing.*
- ISO 472, *Plastics — Vocabulary.*
- ISO 1144, *Textiles — Universal system for designating linear density (Tex system).*
- ISO 1886, *Textile glass — Method of sampling applicable to batches.*
- ISO 1887, *Textile glass — Determination of combustible matter content.*

ISO 1888, *Textile glass — Determination of the average diameter of staple fibres or continuous filaments constituting a textile glass yarn — Cross-section method.*¹⁾

ISO 1889, *Textile glass products — Continuous filament yarns, fibre yarns and rovings in the form of packages — Determination of the linear density.*

ISO 2078, *Textile glass yarns — Designation.*

ISO 3344, *Textile glass products — Determination of moisture content.*

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

ISO 3597, *Textile glass reinforced plastics — Composites in the form of rods made from textile glass rovings — Determination of flexural (cross-breaking) strength.*

ISO 3605, *Textile glass reinforced plastics — Composites in the form of rods made from textile glass rovings — Determination of compressive strength.*

ISO 4585, *Textile glass reinforced laminates and other laminates — Determination of interlaminar shear properties by short-beam test.*²⁾

ISO 6355, *Textile glass — Vocabulary.*

3 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.).

1) This standard is now under revision. New version will also include the longitudinal projection method.

2) At present at the stage of draft.

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.

4 Designation

The roving or rovings covered by the specification shall be designated in conformity with sub-clause 4.2.7 of ISO 2078, 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.

5 Terms and definitions

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.

6 Sampling and batch acceptance

The specification shall state the conditions of application of ISO 1886 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.

7 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.

8 Properties and methods of test

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.

For the properties marked with an asterisk, the specification shall indicate the tolerances allowed on the individual values and on the mean values of the results of measurements made on a lot.

8.1 Type of glass

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

8.2 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.

8.3 Linear density *

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

8.4 Moisture content *

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

8.5 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.

8.6 Size content *

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

8.7 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.

8.8 Stiffness *

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

8.9 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.

8.10 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.

8.11 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 accordance with International Standards when they exist. If they do not exist, a supplier or purchaser may specify the criteria that he uses for evaluation of these properties. The corresponding test methods shall be appended to the specification:

- compression strength of rods: ISO 3605;
- flexural strength of rods (dry and after boiling water treatment): ISO 3597;
- flexural strength of sheets: ISO 178 (method under study for preparing the sheets);
- shear strength: ISO 4585;
- tensile strength of impregnated cured roving (method under study).

The specification may include other properties in so far as they are necessary for the product under consideration in relation to its final usage.

8.12 Visual properties

The specification shall define the normal appearance of the applicable roving (cleanliness, colour, uniformity of colour, geometrical characteristics of the packages, etc.).

It shall also specify the different types of visible defect that can be encountered, as well as their limits and acceptable amount. These defects shall be classified as:

- visible defects of the rovings;
- visible defects of the packages.

8.13 Mass and dimensions of the packages

The specification shall include requirements for the mean net mass, the internal and external diameters and the height of the packages, and the applicable tolerances.

9 Delivery

9.1 Winding and packaging

The specification shall provide all necessary information concerning winding and packaging requirements.

9.2 Labelling

The specification shall require that the packaging container shall be provided with an external label carrying the following information:

- a) name of the supplier;
- b) designation of the roving (ISO 2078, sub-clause 4.2.7 + supplier's code);
- c) type or code number of the winding;
- d) type or code number of the packaging system;
- e) net mass of the roving package;
- f) date of manufacture.

10 Storage

The specification shall include all information concerning storage conditions (temperature, relative humidity, time) necessary to preserve all the qualities of the product.

The rovings shall be stored in their own unopened packaging and the recommended height of stacking shall be defined in relation to the nature of the packaging and the product.

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