INTERNATIONAL STANDARD

ISO 3597-3

First edition
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Textile-glass-reinforced plastics — Determination of mechanical properties on rods made of roving-reinforced resin —

Part 3:
Determination of compressive strength

Plastiques renforcés verre textile — Détermination des propriétés mécaniques sur joncs de stratifils —

Partie 3: Détermination de la résistance en compression

Reference number
ISO 3597-3:1993(E)

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.

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.

International Standard ISO 3597-3 was prepared by Technical Committee ISO/TC 61, *Plastics*, Sub-Committee SC 13, *Composites and reinforcement fibres*.

This first edition, together with the other parts of ISO 3597, cancels and replaces ISO 3597:1977, which has been technically revised.

ISO 3597 consists of the following parts, under the general title *Textile-glass-reinforced plastics — Determination of mechanical properties on rods made of roving-reinforced resin*:

— *Part 1: General considerations and preparation of rods*

— *Part 2: Determination of flexural strength*

— *Part 3: Determination of compressive strength*

— *Part 4: Determination of apparent interlaminar shear strength*

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Textile-glass-reinforced plastics — Determination of mechanical properties on rods made of roving-reinforced resin —

Part 3:
Determination of compressive strength

1 Scope

This part of ISO 3597 specifies a test method for determining the compressive strength of composite rods of circular cross-section made of roving-reinforced resin.

This test may be carried out on as-made rods, or on rods that have been pretreated by immersion in boiling water for a specified time.

This test is intended for inspection and quality control of rovings. The results obtained are not intended for the generation of design data.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3597. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3597 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 291:1977, *Plastics — Standard atmospheres for conditioning and testing.*

ISO 1172:1975, *Textile glass reinforced plastics — Determination of loss on ignition.*

ISO 3597-1:1993, *Textile-glass-reinforced plastics — Determination of mechanical properties on rods made of roving-reinforced resin — Part 1: General considerations and preparation of rods.*

3 Apparatus

3.1 Compression testing machine, capable of maintaining a constant compression speed of 1 mm/min.

3.2 Two test jigs, as for example in figure 1, each consisting of:

a) a base plate X;

b) an elastic compressive pad Y (for example of polyamide);

c) a support ring Z.

Parts X and Z of the top jig can be bolted together (see figure 2 for example).

The use of an aligning sleeve is recommended to align correctly the test jigs while the specimen is inserted. The inside diameter of such a sleeve shall be chosen so that the sleeve does not alter the force measured.

3.3 Micrometer.

Dimensions in millimetres

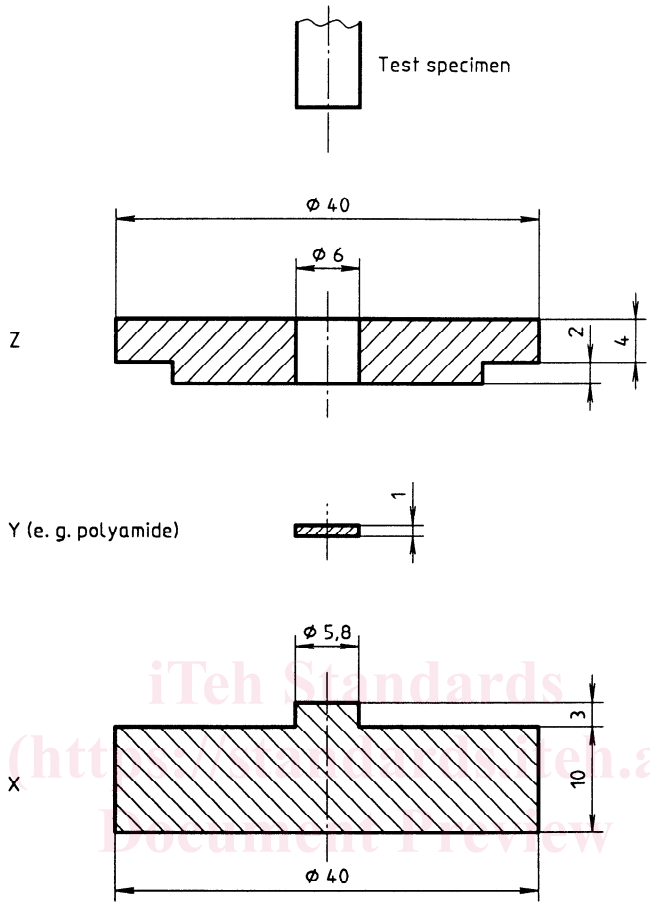

Figure 1 — Example of a jig for testing textile-glass-reinforced plastic rods of 6 mm diameter

4 Preparation and conditioning of specimens

The procedure specified hereafter is suitable for rods of 6 mm diameter to be tested as-made and, if required, pretreated. For each test condition (as-made or pretreated), the required number of specimens is 15. When the test is required in both conditions, three rods shall be prepared as specified in ISO 3597-1 and cut into specimens whose locations are designated as in figure 3. The set A of 15 specimens is intended for the as-made (dry) test, set B of 15 specimens for the test after pretreatment. The C specimens are tested for glass content (see 5.1).

Care shall be taken to assure the cut ends of the specimens are parallel.

When rods of diameter other than 6 mm are chosen, the ratio of rod length to rod diameter shall satisfy the following equation:

$$L = 0{,}625d^2$$