

INTERNATIONAL STANDARD

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Plastics — Unplasticized poly(vinyl chloride) (PVC-U) moulding and extrusion materials —

Part 2:

Preparation of test specimens and
determination of properties

*Plastiques — Poly(chlorure de vinyle) non plastifié (PVC-U) pour moulage
et extrusion —*

Partie 2: Préparation des éprouvettes et détermination des propriétés



Reference number
ISO 1163-2:1995(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 1163-2 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 9, *Thermoplastic materials*.

This second edition cancels and replaces the first edition (ISO 1163-2:1980), in which the table of test methods has been revised in accordance with ISO 10350.

ISO 1163 consists of the following parts, under the general title *Plastics — Unplasticized poly(vinyl chloride) (PVC-U) moulding and extrusion materials*:

- *Part 1: Designation system and basis for specifications*
- *Part 2: Preparation of test specimens and determination of properties*

Plastics — Unplasticized poly(vinyl chloride) (PVC-U) moulding and extrusion materials —

Part 2:

Preparation of test specimens and determination of properties

1 Scope

This part of ISO 1163 specifies procedures and conditions for the preparation of test specimens of PVC-U materials in a specified state, and methods for measuring their properties. Any property listed in this part and referred to in combination with part 1 shall be determined by the method referred to in this part.

No figures are quoted for these properties. Those required for the designation of PVC-U thermoplastics are given in part 1 of this International Standard. All properties shall be determined by the appropriate methods referred to in this part of ISO 1163 and values obtained shall be presented as laid down in ISO 10350.

The values determined in accordance with this part of ISO 1163 will not necessarily be identical to those obtained using specimens of different dimensions and/or prepared by different procedures. The values obtained for the properties of a moulding depend on the moulding compound, the shape, the test method and the state of anisotropy. The last-mentioned depends on the gating of the mould and the moulding conditions, for example temperature, pressure and injection rate. Any subsequent treatment must also be considered, for example conditioning or annealing.

The thermal history and the internal stresses of the specimens may strongly influence the thermal and mechanical properties and the resistance to environmental stress cracking, but exert less effect on the

electrical properties, which depend mainly on the chemical composition of the moulding compound.

In order to obtain reproducible test results, the following two conditions shall be met:

- use test specimens with the specified dimensions and conditioning;
- use test procedures as specified in this part of ISO 1163.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 1163. 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 1163 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 62:1980, *Plastics — Determination of water absorption*.

ISO 75-1:1993, *Plastics — Determination of temperature of deflection under load — Part 1: General test method*.

ISO 75-2:1993, *Plastics — Determination of temperature of deflection under load — Part 2: Plastics and ebonite*.

ISO 178:1993, *Plastics — Determination of flexural properties.*

ISO 179:1993, *Plastics — Determination of Charpy impact strength.*

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

ISO 293:1986, *Plastics — Compression moulding test specimens of thermoplastic materials.*

ISO 306:1994, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature (VST).*

ISO 527-1:1993, *Plastics — Determination of tensile properties — Part 1: General principles.*

ISO 527-2:1993, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics.*

ISO 527-4:—¹⁾, *Plastics — Determination of tensile properties — Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites.*

ISO 899-1:1993, *Plastics — Determination of creep behaviour — Part 1: Tensile creep.*

ISO 1163-1:—²⁾, *Plastics — Unplasticized poly(vinyl chloride) (PVC-U) moulding and extrusion materials — Part 1: Designation system and basis for specifications.*

ISO 1183:1987, *Plastics — Methods for determining the density and relative density of non-cellular plastics.*

ISO 1210:1992, *Plastics — Determination of the burning behaviour of horizontal and vertical specimens in contact with a small-flame ignition source.*

ISO 2818:1994, *Plastics — Preparation of test specimens by machining.*

ISO 3167:1993, *Plastics — Multipurpose test specimens.*

ISO 4589-2:—¹⁾, *Plastics — Determination of burning behaviour by oxygen index — Part 2: Ambient-temperature test.*

ISO 4589-3:—¹⁾, *Plastics — Determination of burning behaviour by oxygen index — Part 3: Elevated-temperature test.*

ISO 8256:1990, *Plastics — Determination of tensile-impact strength.*

ISO 10350:1993, *Plastics — Acquisition and presentation of comparable single-point data.*

IEC 93:1980, *Methods of test for volume resistivity and surface resistivity of solid electrical insulating materials.*

IEC 112:1979, *Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions.*

IEC 243-1:1988, *Methods of test for electric strength of solid insulating materials — Part 1: Tests at power frequencies.*

IEC 250:1969, *Recommended methods for the determination of the permittivity and dielectric dissipation factor of electrical insulating materials at power, audio and radio frequencies including metre wavelengths.*

IEC 296:1982, *Specification for unused mineral insulating oils for transformers and switchgear.*

3 Preparation of test specimens

Test specimens shall be prepared by compression moulding.

The method applied shall be indicated in the list of properties for every test specimen, using "Q" as the code-letter for compression moulding.

It is essential that all specimens prepared by a particular method are prepared using the same processing conditions given in tables 1 and 2.

3.1 Treatment of the material before moulding

Before compression moulding, the material shall be preplasticized in a two-roll mill using the conditions specified in table 1.

3.2 Compression moulding

Place the required number of milled sheets, preferably crosslayered, in the preheated mould and prepare compression-moulded sheets in accordance with ISO 293, using the conditions specified in table 2.

1) To be published.

2) To be published. (Revision of ISO 1163-1:1985)