

INTERNATIONAL STANDARD

**ISO
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Plastics — Determination of viscosity number and limiting viscosity number —

Part 6: Methyl methacrylate polymers

*Plastiques — Détermination de l'indice de viscosité et de l'indice limite de
viscosité —*

Partie 6: Polymères de méthacrylate de méthyle



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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. 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 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 1628-6 was prepared by Technical Committee ISO/TC 61, *Plastics*.

It cancels and replaces International Standard ISO 1233 : 1975, of which it constitutes a technical revision.

ISO 1628 consists of the following parts, under the general title *Plastics — Determination of viscosity number and limiting viscosity number*¹⁾:

- *Part 1: General conditions*
- *Part 2: Poly(vinyl chloride) resins*
- *Part 3: Polyethylenes and polypropylenes*
- *Part 4: Polycarbonate (PC) moulding and extrusion materials*
- *Part 5: Poly(alkylene terephthalates)*
- *Part 6: Methyl methacrylate polymers*

Annexes A and B form an integral part of this part of ISO 1628. Annex C is for information only.

1) The general title of ISO 1628-1 is *Guidelines for the standardization of methods for the determination of viscosity number and limiting viscosity number of polymers in dilute solution*.

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Plastics — Determination of viscosity number and limiting viscosity number —

Part 6: Methyl methacrylate polymers

1 Scope

This part of ISO 1628 specifies the conditions to be used for the determination of the viscosity number of methyl methacrylate polymer moulding and extrusion materials in dilute solution.

It applies to methyl methacrylate (MMA) homopolymers and copolymers, and mixtures of the two with a minimum of 80 % (m/m) of MMA and up to 20 % (m/m) of other monomers, with and without additives, as defined in ISO 8257-1.

NOTE — The dilute-solution viscosity of polymers can be also expressed as a limiting viscosity number $[\eta]$ (see annex B).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 1628. 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 1628 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 1628-1:1984, *Guidelines for the standardization of methods for the determination of viscosity number and limiting viscosity number of polymers in dilute solution — Part 1: General conditions.*

ISO 3105:1976, *Glass capillary kinematic viscometers — Specification and operating instructions.*

ISO 4793:1980, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation.*

ISO 8257-1:1987, *Plastics — Poly(methyl methacrylate) (PMMA) moulding and extrusion materials — Part 1: Designation.*

3 Definitions and units

For the purposes of this part of ISO 1628, the following definition applies, in addition to those in clause 3 of ISO 1628-1 : 1984.

viscosity number, V.N.:

$$V.N. = \frac{1}{c} \left(\frac{\eta - \eta_0}{\eta_0} \right) \quad \dots (1)$$

where

V.N. is the viscosity number, in millilitres per gram;

η is the dynamic viscosity of the test solution, in millipascal seconds;

η_0 is the dynamic viscosity of the solvent, in millipascal seconds;

c is the concentration, in grams per millilitre, of polymer in the solution.

NOTE — If the solvent and solution densities ρ_0 and ρ are substantially equal, η in equation (1) may be replaced by ν and η_0 by ν_0 , where ν and ν_0 are the kinematic viscosities, in square millimetres per second, of the solution and the solvent, respectively (see clause 10).

4 Principle

Determination of the efflux time at $25\text{ }^\circ\text{C} \pm 0,05\text{ }^\circ\text{C}$ of a solvent and of a polymer solution, having a specified concentration, in that solvent.

Calculation of the viscosity number and the limiting viscosity number from the above measurements and the known concentration of the solution.

5 Measurements

The data needed to calculate the function defined in clause 3 are obtained by means of a capillary tube viscometer, as explained in clause 4 of ISO 1628-1 : 1984.