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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1157

PLASTICS

**DETERMINATION OF VISCOSITY NUMBER AND VISCOSITY RATIO
OF CELLULOSE ACETATE IN DILUTE SOLUTION**

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 1157, *Plastics – Determination of viscosity number and viscosity ratio of cellulose acetate in dilute solution*, was drawn up by Technical Committee ISO/TC 61, *Plastics*, the Secretariat of which is held by the American National Standards Institute (ANSI).

Work on this question led to the adoption of a Draft ISO Recommendation.

In July 1965, this Draft ISO Recommendation (No. 825) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	Germany	Poland
Australia	Greece	Romania
Austria	Hungary	Spain
Belgium	India	Sweden
Canada	Ireland	Switzerland
Chile	Israel	Turkey
Colombia	Italy	U.A.R.
Czechoslovakia	Japan	United Kingdom
Finland	Netherlands	U.S.A.
France	New Zealand	U.S.S.R.

No Member Body opposed the approval of the Draft.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in January 1970, to accept it as an ISO RECOMMENDATION.

PLASTICS

**DETERMINATION OF VISCOSITY NUMBER AND VISCOSITY RATIO
OF CELLULOSE ACETATE IN DILUTE SOLUTION****1. SCOPE AND FIELD OF APPLICATION**

This ISO Recommendation describes a method for determining the viscosity number and viscosity ratio of cellulose acetate in dilute solution in a mixture of dichloromethane and methanol. It applies to cellulose acetate with not less than 50 % acetic acid yield.

NOTE. — For the definition of viscosity number, and for other terms, definitions and formulae, see ISO Recommendation R . . . *, *Plastics — Directives for the standardization of methods for the determination of the dilute solution viscosity of polymers*.

2. PRINCIPLE OF THE METHOD

The times of flow of the solvent and of a solution of cellulose acetate at a concentration of 0.005 g/ml are measured at 25 °C by conventional methods. The viscosity number and ratio are calculated from these measurements and from the known concentration of the solution. Density difference and kinetic energy corrections are small in this method and are not applied.

3. SOLVENTS

- 3.1 *Dichloromethane*, analytical reagent grade, with relative density (20 °C/20 °C) of 1.321 to 1.331. Not less than 95 % by volume is distilled between 39 and 40.5 °C at a pressure of 1013 mbar (760 mmHg).
- 3.2 *Methanol*, analytical reagent grade, with relative density (20 °C/20 °C) of 0.792 to 0.795 and distillation range of 64.5 to 65.5 °C at a pressure of 1013 mbar (760 mmHg).

4. APPARATUS

- 4.1 *Volumetric flask*, 100 ml, with ground glass stopper.
- 4.2 *Thermostatic bath*, maintained at 25 ± 0.05 °C.
- 4.3 *Viscometer*, suspended level Ubbelohde type, of which the essential dimensions are shown in the Figure on page 6, or any other viscometer which can be shown to give the same results.
- 4.4 *Desiccator*, with a suitable drying agent such as anhydrous calcium chloride.
- 4.5 *Analytical balance*, to weigh to an accuracy of 0.0001 g.
- 4.6 *Stop-watch*, reading to the nearest 0.1 s.

* At present, Draft ISO Recommendation No. 1628.