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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 960

PLASTICS

DETERMINATION OF THE WATER CONTENT IN POLYAMIDES

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BRIEF HISTORY

The ISO Recommendation R 960, *Plastics – Determination of the water content in polyamides*, 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 March 1967, this Draft ISO Recommendation (No. 1004) 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 :

Australia	Hungary	Romania
Belgium	India	South Africa, Rep. of
Brazil	Iran	Spain
Bulgaria	Ireland	Sweden
Canada	Israel	Switzerland
Chile	Italy	Turkey
Czechoslovakia	Japan	U.A.R.
Finland	Korea, Dem. P. Rep. of	United Kingdom
France	Netherlands	U.S.A.
Germany	New Zealand	U.S.S.R.
Greece	Poland	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in February 1969, to accept it as an ISO RECOMMENDATION.

PLASTICS

DETERMINATION OF THE WATER CONTENT IN POLYAMIDES

1. SCOPE

- 1.1 This ISO Recommendation describes three alternative methods for determining the water content in polyamides and polyamide copolymers.
- 1.2 The water content is of importance when evaluating results found with the following methods of test :
- (a) determination of the viscosity number of polyamide resins in dilute solution (see ISO Recommendation R 307);
 - (b) determination of the percentage of extractable materials in polyamides (see ISO Recommendation R 599);
 - (c) determination of the viscosity ratio of polyamide in concentrated solution (see ISO Recommendation R 600).
- The knowledge of the water content is also of importance when controlling processes and converting polyamides.
- 1.3 The three methods A, B and C differ according to the procedure for isolating water, which is determined in all cases by the Karl Fischer method.

2. FIELDS OF APPLICATION OF THE THREE METHODS

- 2.1 **Method A** is an extraction method using anhydrous methanol.
It is applicable to granules having a maximum size of 4 mm × 4 mm × 3 mm and can be used for all polyamides and copolymers of polyamides insoluble in methanol.
- 2.2 **Method B** is a method of extraction by melting under vacuum.
It may be applied to granules or pieces of mouldings but not to fine powders (particle size less than 400 µm).
For low water content (less than 0.1 %) and precise determinations, a correction for the water of polycondensation should be made.*
This method is not recommended when, during the determination, due to a variation of the molecular mass, additional water is formed or existing water is bound, except when appropriate correction can be made.
- 2.3 **Method C** is a method of extraction by dissolving in metacresol.
It yields results close to the results obtained by Method A. It has the advantage of not being connected with polyamide granulation.

* See KLINE, Analytical chemistry of polymers. Intersc. Pub., 1958, p. 282.