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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 305

PLASTICS

DETERMINATION OF THE THERMAL STABILITY OF POLYVINYL CHLORIDE AND RELATED COPOLYMERS AND THEIR COMPOUNDS BY THE DISCOLORATION METHOD

1st EDITION

May 1963

For each individual country the only valid standard is the national standard of that country.

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BRIEF HISTORY

The ISO Recommendation R 305, *Determination of the Thermal Stability of Polyvinyl Chloride and Related Copolymers and their Compounds by the Discoloration Method*, was drawn up by Technical Committee ISO/TC 61, *Plastics*, the Secretariat of which is held by the American Standards Association Inc. (ASA).

Work on this question by the Technical Committee began in 1955 and led, in 1957, to the adoption of a Draft ISO Recommendation.

This first Draft ISO Recommendation (No. 217) was circulated to all the ISO Member Bodies for enquiry in May 1959. As the results of this consultation were not considered satisfactory, the Technical Committee presented a second Draft ISO Recommendation, which was circulated to all the Member Bodies in October 1960, and which was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Argentina	Hungary	Romania
Australia	India	Spain
Austria	Israel	Sweden
Belgium	Japan	Turkey
Chile	Netherlands	United Kingdom
Czechoslovakia	New Zealand	U.S.A.
		U.S.S.R.

Five Member Bodies opposed the approval of the Draft:

France, Germany, Italy, Poland, Switzerland.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in May 1963, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 305 May 1963

PLASTICS

DETERMINATION OF THE THERMAL STABILITY OF POLYVINYL CHLORIDE AND RELATED COPOLYMERS AND THEIR COMPOUNDS BY THE DISCOLORATION METHOD

1. SCOPE

This method of test is designed to determine the thermal stability of polyvinyl chloride and of chlorinated polymers and copolymers and their compounds by the extent of the discoloration that occurs when, in the form of sheet or film, they are exposed to elevated temperatures.

2. SIGNIFICANCE OF TEST

2.1 The polymers and copolymers of vinyl chloride or related monomers and their compounds tend to decompose at elevated temperature. The rate of decomposition is rather high at the processing temperature range (from 120 to 200 °C) but, in practice, can be prevented or at least reduced by the inclusion of suitable stabilizers.

The decomposition of the polymers causes a change in colour. The stabilizers may act as acceptors of hydrochloric acid or as inhibitors of the subsequent discoloration.

2.2 The thermal decomposition of polyvinyl chloride is influenced by oxygen.

2.3 This method is suitable for evaluating the resistance of polyvinyl chloride compounds to degradation by heat, as assessed by the change in colour after specified times of heating under standardized conditions.

2.4 The results obtained are comparative only. For possible correlation of values, the temperature selected for testing should be near to that of the specific processing conditions.

A quantitative evaluation may if needed be obtained by comparison with a colour scale or by a photometric method.

3. TEST SPECIMENS

3.1 The test specimens consist of disks with a diameter of 14 mm and a thickness of about 1 mm. They are punched from the sheets which are to be tested.

3.2 If comparative tests between different polymers or different stabilizers in standard compounds are to be carried out, it is necessary to mix the different ingredients, to process the compound into a sheet on a roll mill at a given temperature and then to cut the test specimens from the sheet thus obtained.

3.3 If the material to be tested is in the form of a paste (plastisol), this is gelatinized to a well fused sheet; the test specimens are then punched from the sheet thus obtained.

NOTE.—The conditions of preparation of sheets according to clauses 3.2 and 3.3 depend upon the formulation and should be agreed upon by the buyer and seller.