

# INTERNATIONAL STANDARD

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## **Plastics — Determination of thermal stability of poly(vinyl chloride), related chlorine-containing homopolymers and copolymers and their compounds — Discoloration method**

*Plastiques — Détermination de la stabilité thermique du poly(chlorure  
de vinyle), des homopolymères et copolymères chlorés apparentés et de  
leurs compositions — Méthode du changement de couleur*



Reference number  
ISO 305:1990(E)

## Foreword

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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 305 was prepared by Technical Committee ISO/TC 61, *Plastics*.

This second edition cancels and replaces the first edition (ISO 305:1976), of which it constitutes a technical revision.

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# Plastics — Determination of thermal stability of poly(vinyl chloride), related chlorine-containing homopolymers and copolymers and their compounds — Discoloration method

## 1 Scope

1.1 This International Standard specifies two methods for the determination of the thermal stability of products and compounds based on vinyl chloride homopolymers and copolymers (referred to simply as PVC in the following text) by the extent of the discoloration that occurs when they are exposed, in the form of sheet, to elevated temperatures.

- Method A: Oil-bath method
- Method B: Oven method

1.2 These methods are particularly applicable to the determination of the resistance of PVC to degradation by heat, as assessed by the change in colour after different times of heating under standardized conditions. The results are comparative only, and may be unsatisfactory when coloured PVC materials are tested.

1.3 Method A is a simple method, which requires little expenditure on apparatus and permits materials to be tested almost in the absence of air.

Method B requires a forced-air oven, in which the air flow is adjusted to provide a sufficiently uniform temperature throughout the entire test area. This method is not applicable to materials that will cross-contaminate during oven exposure.

The stability times given by the two methods may not be similar and cannot be used for direct-comparison purposes.

## 2 Principle

### 2.1 Method A: Oil-bath method

A series of test specimens is heated at an elevated temperature for different lengths of time in a temperature-controlled oil bath. The test specimens are placed between an aluminium block and an aluminium cylinder to promote heat transfer and restrict air access.

### 2.2 Method B: Oven method

A series of test specimens is heated at an elevated temperature for different lengths of time in a forced-air-circulation oven. The test specimens are supported by new, clean aluminium foil laid on removable racks.

## 3 Preparation and number of test specimens

### 3.1 The test specimens shall consist of

- discs of diameter 14 mm and thickness approximately 1 mm, for method A;
- squares of side 15 mm and thickness approximately 1 mm, for method B.

They shall be punched out from the sheets to be tested.

3.2 The number of test specimens required is the expected time of the test in minutes divided by 5. If the stability of the compound is very high, remove the test specimens every 10 to 15 minutes instead of every 5 minutes during the first stage of heating, before the appearance of discoloration. Thus, the number of test specimens used can be less than that specified above.