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**Plastics — PVC resins for general use  
— Determination of hot plasticizer  
absorption**

*Plastiques — Résines de polychlorure de vinyle à usages généraux —  
Détermination de la prise de plastifiant à chaud*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 9, *Thermoplastic materials*.

This second edition cancels and replaces the first edition (ISO 4574:1978), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

- [Clause 2](#) has been updated;
- [Clause 3](#) has been added and the subsequent clauses have been renumbered;
- the document has been editorially revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

A need exists to evaluate the amount of plasticizer absorbed by a PVC polymer which is to be used in dry blending operations. This document specifies a standardized technique under set conditions and is intended to supplement the results obtained using ISO 4608.

Since these tests do not correspond in detail to particular industrial processes used for the manufacture of dry blends from PVC polymer and plasticizer, the test results are empirical and need interpretation in the light of experience.

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# Plastics — PVC resins for general use — Determination of hot plasticizer absorption

## 1 Scope

This document specifies a method for determining the hot plasticizer absorption of PVC polymers intended for general use (designated “G” in ISO 1060-1) by hot mixing in a planetary mixer and measuring the amount of plasticizer absorbed.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4608:1998, *Plastics — PVC resins for general use — Determination of hot plasticizer absorption*

## 3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 4 Principle

Conditioning of 200 parts of plasticizer in the bowl of a planetary mixer at a temperature of  $75 \pm 0,2$  °C. Addition of 100 parts of the resin to be tested and mixing with the plasticizer. Taking of samples of this mixture at various times (systematically from 1 min to 30 min), removal of excess plasticizer by centrifuging, and determining the quantity of plasticizer absorbed by the polymer. Plotting of a graph of quantity of plasticizer absorbed versus time, from which can be determined, for the polymer under test,

- the mean rate of plasticizer absorption (RPA);
- the hot plasticizer absorption (HPA) at 75 °C and 30 min (see [Annex A](#)).

## 5 Reagent

### 5.2.1 Di-(2-ethylhexyl) phthalate (DOP).

## 6 Apparatus

**6.1 Planetary mixer**, having the shape and general dimensions shown in [Figures 1](#) and [2](#), and comprising the following items:

### 6.1.1 Jacketed stainless-steel bowl.

**6.1.2 Thermostat and pump**, for circulating demineralized water in the jacket (see note 1) to regulate the temperature in the bowl at  $75 \pm 0,2$  °C.

**6.1.3 Beater.**

**6.1.4 Motor**, sufficiently strong to produce the required frequency of rotation and to maintain it throughout the mixing procedure.

**6.1.5 Rotating wiper or scraper**, for cleaning the inside of the bowl.

If the test is carried out at a temperature other than that specified and in particular at a temperature exceeding 85 °C, it is necessary to use oil in the jacket instead of demineralized water.

NOTE It might be of interest to record the resistance to torque during the preparation of the mixture. A suitable mixer for this purpose is obtainable commercially. Details can be obtained from the Secretariat of ISO/TC 61 or from the ISO Central Secretariat.

**6.2 Centrifuge**, the rotor of which turns in a horizontal plane, having an acceleration under the conditions of test of  $2,5 \times 10^4$  ms<sup>-2</sup> to  $3,0 \times 10^4$  ms<sup>-2</sup> measured at the level of the bottom of the tube, and equipped, if necessary, with a cooling system to prevent the temperature of the mixture at the end of centrifuging from exceeding 30 °C.

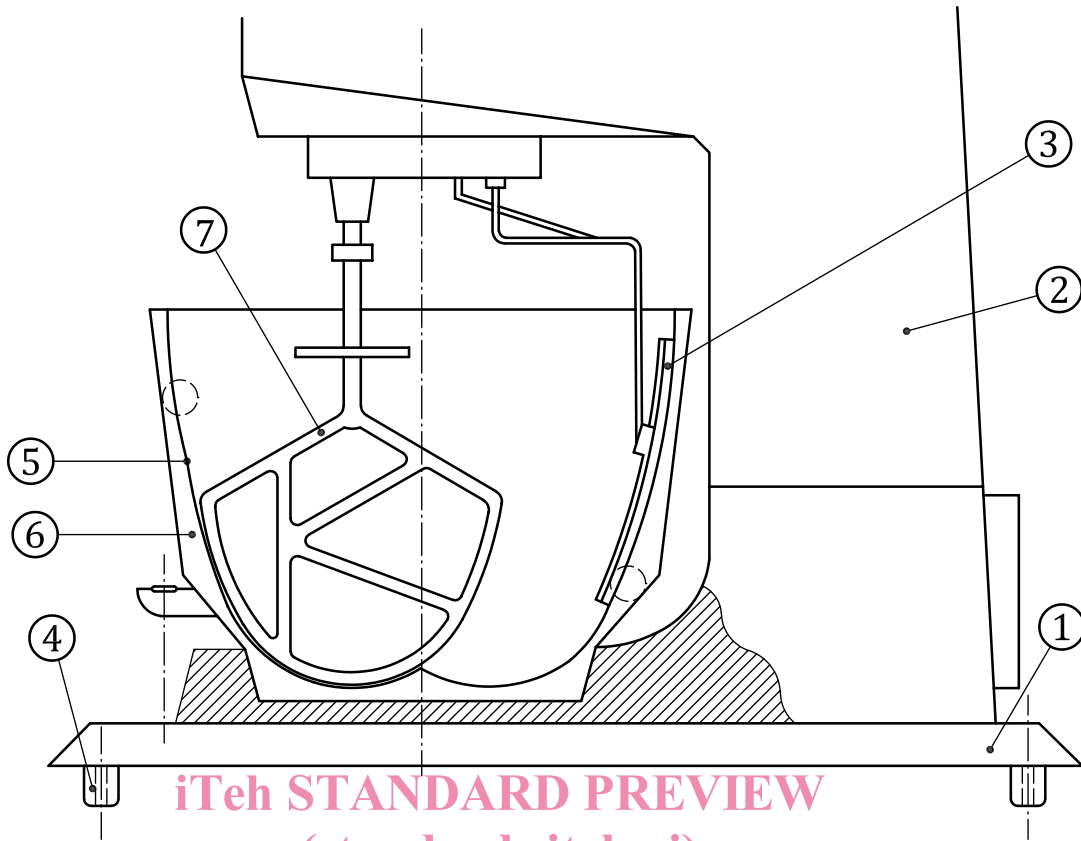
It is permissible to use a higher acceleration to reduce the centrifuging time, for example  $3,5 \times 10^4$  ms<sup>-2</sup> and 30 min, provided that it has been proved that the results obtained are equivalent.

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**Key**

- 1 base
- 2 planetary type mixer
- 3 wiper or scraper (rotating to clean inside of bowl)
- 4 feet
- 5 stainless steel bowl
- 6 jacket (for temperature control)
- 7 special beater

**Figure 1 — General sketch of the modified planetary mixer**