



Standard Practice for Testing Plasticizer Compatibility in Poly(Vinyl Chloride) (PVC) Compounds Under Humid Conditions¹

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1. Scope *

1.1 This practice defines the conditions for the exposure and qualitative evaluation of poly(vinyl chloride) (PVC) compounds for plasticizer compatibility under humid conditions. Change in appearance is used for judging compatibility.

1.2 The text of this practice references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of this practice.

1.3 The values stated in SI units are to be regarded as the standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—There are no ISO standards covering the primary subject of this practice.

2. Referenced Documents

2.1 ASTM Standards:

- D 883 Terminology Relating to Plastics²
- D 1249 Specification for Octyl Ortho-Phthalate Ester Plasticizers²
- D 1600 Terminology for Abbreviated Terms Relating to Plastics²
- D 1755 Specification for Poly(Vinyl Chloride) Resins²
- E 145 Specification for Gravity-Convection and Forced-Ventilation Ovens³

3. Terminology

3.1 *General*—Definitions are in accordance with Terminology D 883 and abbreviations with Terminology D 1600, unless otherwise indicated.

4. Summary of Practice

4.1 Specimens are suspended over water in closed contain-

ers and aged at either 60°C (140°F) or 80°C (176°F). The specimens are removed from the containers at specified intervals and their appearance is rated in accordance with 9.1 and recorded.

5. Significance and Use

5.1 This practice provides an accelerated method for determining the stability of PVC compounds with respect to plasticizer compatibility under humid conditions.

5.2 The temperatures and humidity employed in this test can represent actual use conditions, but are intended primarily for rating materials.

6. Apparatus

6.1 *Screw-Cap Glass Jars or Capped Metal Containers*, large enough to avoid contact between specimens. The covers shall be provided on the inside with hooks of a corrosion-resistant metal such as stainless steel, nichrome or nickel.

6.2 *Forced-Ventilation Laboratory Oven*, Type II, Grade A, in accordance with Specification E 145.

7. Specimen Preparation (Note 2)

7.1 Cut test specimens with one side having a surface area of 25 cm² from a 0.75-mm (0.029-in.) thick smooth surface plastic sheet (± 0.05 mm (0.002-in.)) Punch a small hole near the edge for hanging the specimen.

NOTE 2—For use as a control in testing the relative performance of plasticizers, the following clear formulation may be employed.

	Parts
<i>General-Purpose PVC Resin:</i>	
Type GP 40000 as defined in Specification D 1755.	100
<i>Plasticizer:</i>	
Di-2-ethylhexyl phthalate (Specification D 1249)	50
<i>Stabilizer:</i>	
Coprecipitated solid barium-cadmium laurate (barium: cadmium 2:1)	1

7.2 Process the test compound in the usual manner on a two-roll mill for 5 min at the appropriate temperature for the plasticizer used (170°C (338°F) for Di-2-ethylhexyl phthalate). Cut test specimens from the compound sheeting prepared by pressing the milled sheet in a suitable mold at 10.3 MPa (1500 psi) for 5 min at 5 to 10°C (9 to 18°F) higher than the milling temperature.

¹ This practice is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D 20.15 on Thermoplastic Materials (Section D20.15.11).

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² *Annual Book of ASTM Standards*, Vol 08.01.

³ *Annual Book of ASTM Standards*, Vol 14.02.