



Standard Practice for Preparation of Glass Panels for Testing Paint, Varnish, Lacquer, and Related Products¹

This standard is issued under the fixed designation D 3891; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

^{ε1} NOTE—Keywords were added editorially in July 2002.

1. Scope

1.1 This practice covers the preparation of glass panels for subsequent testing of paint, varnish, lacquer, and related products.²

1.2 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 364 Specification for Industrial Grade Xylene³

D 1152 Specification for Methanol (Methyl Alcohol)⁴

D 1193 Specification for Reagent Water⁵

3. Significance and Use

3.1 The procedures described in this practice are designed to provide uniform glass panels for testing of paint, varnish, lacquer, conversion coatings and related products.

4. Reagents and Materials

4.1 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water conforming to Type IV of Specification D 1193.

4.2 *Solvents*—Varnish Makers' and Painters (V M & P) naphtha, xylene, 2-methoxypropanol, and methanol complying with the appropriate specifications (see Specifications D 364 and D 1152).

4.3 Glass of the following types may be specified in the applicable test methods:

4.3.1 *Window Glass*, (float glass) the surface of which is

plain and free of irregularities.

NOTE 1—Float glass is the most common kind of glass used for windows. It is produced by floating a ribbon of red hot glass on a bath of molten tin. The sides of the float glass exposed to tin and to air have somewhat different characteristics. The tin side contains tin diffused into the glass structure. Paint generally releases more easily from the tin side, but it may be contaminated with tin, which could affect chemical analysis. Paint generally adheres better to the air side. The sides can be distinguished by exposing the glass to a UV-A light ("black light"): the air side will appear clear, and the tin side will appear frosted. Depending on the application, the user may want to choose which side is appropriate for that test, and make sure that the same side is coated on every panel. Note however, that if the window glass used is *not* float glass (for example, plate glass), both sides of the glass will be the same.

4.3.2 *Clear Plate Glass*, not less than 5 mm thick.

4.3.3 *Plate Glass* that has been ground uniformly on one side with 1F carborundum.

4.3.4 *Black Structural Glass*, one side of which has been polished to a smooth, high-gloss surface.

4.3.5 *White Structural Glass*, one side of which has been polished to a smooth, high gloss.

5. Method of Preparation

5.1 *New Panels*—Using a clean lintless cloth, wipe the panel with a solvent mixture consisting of equal volumes of V M & P naphtha and xylene or of 3 volumes of V M & P naphtha and 1 volume of 2-methoxypropanol or with water. When all soluble and loosely adhering soil has been washed off, flush with clean solvent. Allow panels to dry at room temperature or force dry at a temperature no higher than 300°F (150°C). After cooling to room temperature, rub with a clean lintless cloth if necessary.

5.1.1 The surface after cleaning shall be water-break free. This is determined by momentarily immersing in reagent water one panel of each twenty prepared. If a continuous water film is not retained (that is, the water film breaks), immerse the panel in methyl alcohol to obtain a water-break-free surface. After removal, dry at a temperature of 125 to 200°F (52 to 93°C) and allow to cool before coating or storing.

5.1.2 Other combinations or organic reagents that will produce a surface equal in cleanliness to the solvent mixtures mentioned in 5.1 may be used if agreed upon between the

¹ This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.27 on Accelerated Testing.

Current edition approved May 10, 1996. Published July 1996. Originally published as D 3891 – 80. Last previous edition D 3891 – 90.

² This practice is intended to be equivalent to Method 2021 of U.S. Federal Test Method Standard 141.

³ Discontinued, see 1982 *Annual Book of ASTM Standards*, Vol 06.03.

⁴ *Annual Book of ASTM Standards*, Vol 06.04.

⁵ *Annual Book of ASTM Standards*, Vol 11.01.

purchaser and the supplier.

5.2 *Used Panels*—Remove the old paint, using a paint and varnish remover of the organic solvent type or a suitable solvent mixture. Do not use a spatula, sandpaper, or other instrument of treatment that might scratch or etch the surface. After washing off the residues clean the panels as described in 5.1.

5.3 *Protection After Preparation*—Use panels immediately after preparation or store wrapped in clean, hard surfaced paper to minimize lint on the glass surface. To avoid contamination by fingerprints, do not touch the surface of the panels after preparation. Handle only by the edges.

5.4 Different glass types have different light absorbing properties, especially in the UV wavelength. For painted glass

specimens used for direct sunlight exposure or for laboratory simulations of direct sunlight, expose the glass specimens with the *painted* side toward the light source, so that the glass does not absorb some of the incident light. Painted glass specimens used for simulations of sunlight-through-glass may have the glass side towards the light source, but in that case, take care to match the transmission of the glass panels to the transmission of the glass in the end use application.

6. Keywords

6.1 conversion coatings; glass panels; lacquer; paint; preparation; testing

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).