



Designation: D7734/D7734M – 13

Standard Test Method for Determination of Open Time of Oxidative Printing Inks and Overprint Varnishes by a Manual Method¹

This standard is issued under the fixed designation D7734/D7734M; 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.

1. Scope

1.1 This test method covers a manual procedure for determining the stay open time of oxidative drying printing inks and overprint varnishes by a finger transfer method. Open is defined as a wet ink/varnish film.

1.2 The amount of time required to reach the endpoint is recorded in hours.

1.3 Typical inks and overprint varnishes that dry by oxidation are oil based sheetfed offset, letterpress, and screen inks.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.5 *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. Summary of Test Method

2.1 Inks and overprint varnishes are applied to a glass surface using a wet film applicator and checked at time intervals using a finger transfer method to determine the time that the ink/varnish are no longer open.

3. Significance and Use

3.1 When formulating printing inks and overprint varnishes that dry primarily by oxidation it is important to know the stay open time so that premature drying does not occur on the printing press rollers and other components.

3.2 The applied ink or OPV film used for testing is thicker than the film printed on the substrate and nominally represents the film on the printing press rollers.

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.56 on Printing Inks.

Current edition approved Nov. 1, 2013. Published December 2013. DOI: 10.1520/D7734_D7734M-13.

4. Apparatus

4.1 *Clean Dry Uniform Glass Plate* approximately 20 cm wide by 25 cm long [8 by 10 in.].

4.2 *Machined Wet Film Applicator* with the appropriate clearance gap typically in a range of 12 to 75 μm [0.5 to 3.0 mils] which provides a wet film thickness of 6 to 35 μm [0.25 to 1.5 mils].

4.3 *Stop Watch or Timer* with alarm.

4.4 *Ink Knife(s)*.

5. Reagents and Materials

5.1 *Clean up Solvent*.

5.2 *Clean up Rags*.

6. Preparation of Apparatus

6.1 Ensure that the wet film applicator is clean and free of nicks or other defects.

6.2 Ensure that the glass plate surface is clean, uniformly level and free of any dust, solvent or residue.

7. Conditioning

7.1 Nominal laboratory standard conditions of $23 \pm 2^\circ\text{C}$ [$73 \pm 3.5^\circ\text{F}$] temperature and $50 \pm 5\%$ relative humidity level are recommended for this test. Deviations from these conditions will affect results.

7.2 Glass plate should be located free from drafts or excessive air movement.

8. Procedure

8.1 Select the appropriate clearance gap that will provide a wet film thickness in the range of 12 to 75 μm [0.5 to 3.0 mils] or as agreed upon by seller and purchaser.

8.2 Place the applicator on the glass and apply approximately an 8 cm [3 in.] wide sample of the ink or overprint varnish in front of gap in the pulling direction. The amount of ink needs to be sufficient to produce a wet film about 15 to 20 cm [6 to 8 in.] long.

8.3 Grasp the sides of the applicator with the fingers and draw down at a uniform speed (approximately 25 mm/s) with