



Designation: D 5895 – 01^{€1}

Standard Test Methods for Measuring Times of Drying or Curing During Film Formation of Organic Coatings Using Mechanical Recorders¹

This standard is issued under the fixed designation D 5895; 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} NOTE—Research Report was added editorially June 2001.

1. Scope

1.1 These test methods describe the determination of several stages and the rate of dry-film formation of organic coatings using straight line and circular mechanical drying-time recording devices.

1.2 The values stated in SI are to be regarded as the standard. The values given in parentheses are provided for information only.

1.3 *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 823 Practices for Producing Films of Uniform Thickness of Paint, Varnish and Related Products on Test Panels²

D 1005 Test Methods for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers²

D 3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquers, and Related Materials²

D 3925 Practice for Sampling Liquid Paints and Related Pigmented Coatings²

3. Terminology

3.1 Descriptions of Terms Specific to This Standard:

3.1.1 *dry-hard time, n*—The dry-hard condition is reached when the drying and curing, or both, reactions have proceeded sufficiently that the film is not displaced nor is any noticeable mark left by pinching the panels between the thumb on the film and forefinger with a relatively strong force. In these test methods, the dry-hard time is reached where the stylus stops tearing or cutting the film, but leaves only a visible trace on the

film (see Fig. 1 and Fig. 2).

3.1.2 *dry-through time, n*—The dry-through condition is reached when the film has solidified so completely that a large, twisting force can be applied without distorting the film. In these test methods, the dry-through time is reached when the stylus no longer left any visible track on the film (see Fig. 1 and Fig. 2).

3.1.3 *set-to-touch time, n*—The set-to-touch condition is reached when the film has solidified sufficiently, by solvent evaporation or chemical reaction, or both, that it not longer flows nor sticks to a finger that lightly touches it. In these test methods, the set-to-touch time is reached where a pear-shaped depression appears in the film when the film stops flowing over the path of the recorder's stylus and leaves a track in the film (see Fig. 1 and Fig. 2).

3.1.4 *tack-free time, n*—The tack-free condition is reached when the film surface has dried or cured (see set-to-touch time) so that the film does not adhere to very light objects placed on it. In these test methods, the tack-free time is reached where the continuous track in the film ceases and the stylus starts to tear the film or leave a discontinuous cutting of the film (see Fig. 1 and Fig. 2).

4. Summary of Test Methods

4.1 In Test Method A (Straight Line Recorder), the coating is applied to glass strips approximately 300 by 25 mm (12 by 1 in.). The drying time recorder is immediately placed on the wet film and the stylus lowered onto the wet coating. The stylus moves across the glass strip at a selected constant speed.

4.2 In Test Method B (Circular Recorder), the coating is applied to glass plates approximately 6 in. by 6 in. (150 by 150 mm). The drying time recorder is immediately placed on the wet film and a stylus is moved in a 360° arc at a selected constant speed.

5. Significance and Use

5.1 The drying times of a coating are significant in determining when a freshly painted room, floor or stair may be put back in use or a coated article handled or packaged. Slow drying may result in dirt pick-up or, on an exterior surface, moisture may cause a nonuniform appearance.

5.2 These test methods are used to determine the various

¹ These test methods are under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications, and are the direct responsibility of Subcommittee D01.23 on Physical Properties of Applied Paint Films.

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² *Annual Book of ASTM Standards*, Vol 06.01.