Designation: D 3732 – 82 (Reapproved 2001)

Standard Practice for Reporting Cure Times of Ultraviolet-Cured Coatings[1]

This standard is issued under the fixed designation D 3732; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice applies to all coatings cured by ultraviolet energy.

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 658 Test Method for Abrasion Resistance of Organic Coatings by Air Blast Abrasive[2]

D 968 Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive[3]

D 1474 Test Methods for Indentation Hardness of Organic Coatings[3]

D 2197 Test Methods for Adhesion of Organic Coatings by Scrape Adhesion[3]

D 2336 Guide for Specifying Factory Applied Wood Coatings[4]

D 2793 Test Method for Block Resistance of Organic Coatings on Wood Substrates[4]

D 2794 Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)[3]

D 3023 Practice for Determination of Resistance of Factory-Applied Coatings on Wood Products to Stains and Reagents[4]

D 3281 Test Method for Formability of Attached Organic Coatings with Impact-Wedge Bend Apparatus[4]

D 3359 Test Methods for Measuring Adhesion by Tape Test[3]

D 3363 Test Method for Film Hardness by Pencil Test[3]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *cure*—the condition of a coating after conversion to the final state of cure as measured by tests generally related to end-use performance and mutually agreeable to supplier and purchaser.

3.1.2 *ultraviolet curing*—conversion of a coating from its application state to its final use state by means of a mechanism initiated by ultraviolet radiation generated by equipment designed for that purpose.

4. Significance and Use

4.1 This practice provides a guide whereby all pertinent variables relating to the ultraviolet cure of a coating are described.

5. Procedure

5.1 Apply the coating to be cured to the desired substrate at a film thickness typical to that normally used. After approximately the time delay encountered in production pass the coated substrate through the curing equipment and subsequently test for cure, as defined in 3.1.1, using the appropriate methods listed in 5.1.1 through 5.1.11. The most commonly used test methods are listed in 5.1.1 through 5.1.4.

5.1.1 *Impact Resistance*—Test Method D 2794.

5.1.2 *Film Hardness*—Test Method D 3363.

5.1.3 *Solvent Rub Test*—Hold a pad of cheesecloth or other cloth saturated with an agreed-upon solvent, usually methyl ethyl ketone, over two adjacent fingers using a protective covering. Rub the wet pad back and forth across a 100-mm portion of the cured film using vigorous pressure, one forward and one backward movement constituting one double rub. Take the end point as the number of double rubs required to soften or penetrate the film. Fully cured films are normally required to resist a specified number of rubs and the result of the test is given as exceeding the limit or failing the test.

5.1.4 *Sandability*—Ultraviolet cured fillers are usually judged by their sandability with an agreed-upon grit of paper. This test is often made immediately after the material leaves the ultraviolet processor.

5.1.5 *Specifying Properties*—Guide D 2336.

5.1.6 *Abrasion Resistance*—Test Methods D 658 and D 968.

5.1.7 *Indentation Hardness*—Test Methods D 1474.

5.1.8 *Adhesion*—Test Methods D 2197 and D 3359.

5.1.9 *Block Resistance*—Test Method D 2793.

[1] This practice is under the jurisdiction of ASTM Committee D01 on Paint and and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.55 on Factory-Applied Coatings on Preformed Products.

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[2] Discontinued 1996; see *1995 Annual Book of ASTM Standards*, Vol 06.01.

[3] *Annual Book of ASTM Standards*, Vol 06.01.

[4] *Annual Book of ASTM Standards*, Vol 06.02.

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