



Standard Test Methods for Determination of Transfer Efficiency Under General Production Conditions for Spray Application of Paints¹

This standard is issued under the fixed designation D 5286; 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 These test methods cover the determination of the transfer efficiency of spray-applied coatings under general plant conditions. Transfer efficiency is the ratio of paint solids deposited to the total paint solids used during the application process, expressed as a percent.

1.2 The transfer efficiency is calculated from the weight or volume of the paint solids sprayed and that of the paint solids deposited on the painted part.

1.3 Limitations include the ability to accurately determine the amount of paint solids deposited on the part and the capability of accurate measurement of the amount of paint sprayed.

1.4 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

NOTE 1—These test methods apply to general plant production equipment and procedures. A method specific to automotive plants is defined in Test Method D 5066.

NOTE 2—The relationship between volatile organic compound emission rates and transfer efficiency in automobile and light duty truck topcoat operations, EPA 450/3-88-018, referenced in Test Method D 5066 does not apply to general production facilities.

NOTE 3—A single-point transfer efficiency measurement may not represent the entire process.

NOTE 4—The operator and the spray-application equipment-operating conditions during the transfer efficiency measurement should be representative of normal operating conditions.

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.* For specific hazard statements see Section 7, and Note 6.

NOTE 5—These test methods have not been adopted by federal regulatory agencies for demonstration of compliance with air pollution regulations such as VOC, HAPS, etc.

2. Referenced Documents

2.1 ASTM Standards:

- D 1005 Test Method for Measurement of Dry-Film Thickness of Organic Coatings using Micrometers²
- D 1186 Test Method for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base²
- D 1200 Test Method for Viscosity by Ford Viscosity Cup²
- D 1400 Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base²
- D 1475 Test Method for Density of Paint, Varnish, Lacquer and Related Products²
- D 2369 Test Method for Volatile Content of Coatings²
- D 2697 Test Method for Volume Nonvolatile Content in Clear or Pigmented Coatings²
- D 3925 Practice for Sampling Liquid Paints and Related Pigmented Coatings²
- D 5066 Test Method for Determination of the Transfer Efficiency Under Production Conditions for Spray Application of Automotive Paints—Weight Basis²

2.2 U.S. Government Standards:

- EPA 450/3-88-018, U.S. Environmental Protection Agency Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light Duty Truck Topcoat Operations³
- EPA Federal Reference Method 24—Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings. 40 Code of Federal Regulations, Part 60, Appendix A.³

2.3 National Fire Protection Documents:

- NFPA 33 Spray Application Using Flammable and Combustible Materials⁴
- NFPA 86 Standard for Ovens and Furnaces⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

¹ These test methods are under the jurisdiction of ASTM Committee D-1 on Paint 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 *Annual Book of ASTM Standards*, Vol 06.01.

³ Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

⁴ Available from National Fire Protection Assn., Battery March, Quincy, MA 02269.