Designation: D 5010 – 01

Standard Guide for Testing Printing Inks and Related Materials[1]

This standard is issued under the fixed designation D 5010; 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 guide covers a list of test methods, practices, and specifications that can be used for the testing and evaluation of printing inks, printed ink films, and substrates used in their production (see Table 1).

1.2 This guide includes methods that were developed to test paints, paint films, and substrates, but may be adapted for use in testing printing inks and printed matter. Tests on raw materials and analytical methods in general have not been included.

NOTE 1—For the purpose of this guide, clear coatings such as overprint varnishes are classed as printing inks.

1.3 Other ASTM standards not specified here may also be applicable.

2. Terminology

2.1 *Definitions:*

2.1.1 *printing ink*—a colored or pigmented liquid or paste composition that dries to a solid film after application as a thin layer by printing machinery.

2.1.1.1 *Discussion*—Printing inks may contain vehicles, colorants, waxes, solvents, and other additives. Bulk inks are tested for dispersion, tinting strength, density, heat and storage stability, rheology, and printing properties.

2.1.2 *printed ink film*—thin layer of a printing ink deposited onto a substrate by means of a laboratory or production printing press, occasionally by a drawdown or roll-out technique. Printed matter is the usual medium by which inks are tested for appearance properties, drying, and resistance to various agents.

2.1.3 *printing substrate*—material onto which ink is deposited in the production of printed matter. Printing substrates include paper, paperboard, plastic film, glass, and metallic surfaces. In this guide, standards relating to substrates are largely restricted to properties associated with appearance and printability.

3. Test Categories

3.1 For convenience in selection, the test methods, practices, and specifications, listed in this guide are classified into three groups by type of printing process and in subgroups indicating whether the test is conducted on a bulk ink, a printed ink film, or a substrate (see Table 2). The group is given in the left column preceding the test method reference. The classification are a follows:

3.1.1 *Group 1—Applicable in General*:
Class A—Bulk inks.
Class B—Printed ink films.
Class C—Substrates.

3.1.2 *Group 2—Applicable to Low Viscosity or Liquid Inks Associated With Flexography or Gravure*:
Class A—Bulk inks.
Class B—Printed ink films.
Class C—Substrates.

3.1.3 *Group 3—Applicable to High Viscosity or Paste Inks Associated With Letterpress, Lithography, or Silk Screen*:
Class A—Bulk inks.
Class B—Printed ink films.
Class C—Substrates.

4. Precision and Bias

4.1 If available, precision for each test method listed can be found in the latest revision of that test method.

5. Keywords

5.1 printed matter; printing inks; printing substrates; test methods and practices (tabulation of)

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TABLE 1 Numerical Listing of Ink-Related Standards

ASTM Designation	Volume	Title
D 16	06.01	Terminology Relating to Paint, Varnish, Lacquer, and Related Products
D 56	05.03	Test Method for Flash Point by Tag Closed Tester
	06.04	
D 93	04.09	Test Method for Flash Point by Pensky-Martin Closed Tester
	05.01	
	06.04	
D 185	06.03	Test Methods for Coarse Particles in Pigments, Pastes, and Paints
D 344	06.01	Test Method for Relative Dry Hiding Power of Paints by the Visual Evaluation of Brushouts
D 523	06.01	Test Method for Specular Gloss
D 528	15.09	Test Method for Machine Direction of Paper and Paperboard
D 562	06.01	Test Method for Consistency of Paints Using the Stormer Viscometer
D 644	15.09	Test Method for Moisture Content of Paper and Paperboard by Oven Drying
D 685	15.09	Method for Conditioning Paper and Paperboard Products for Testing
D 724	15.09	Test Method for Surface Wettability of Paper (Angle-of-Contact Method)
D 780	15.09	Test Method for Printing Ink Permeation of Paper (Castor Oil Test)
D 869	06.02	Test Method for Evaluating the Degree of Settling of Paint
D 918	15.09	Test Method for Blocking Resistance of Paper and Paperboard
D 971	05.01	Test Method for Interfacial Tension of Oil Against Water by the Ring Method
D 1200	06.01	Test Method for Viscosity by Ford Viscosity Cup
D 1210	06.01	Test Method for Fineness of Dispersion of Pigment-Vehicle Systems
D 1259	06.01	Test Methods for Nonvolatile Content of Resin Solutions
D 1308	06.01	Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
D 1310	05.01	Test Method for Flash Point and Fire Point of Liquids by Tag Open-Cup Apparatus
	06.04	
D 1316	06.02	Test Method for Fineness of Grind of Printing Inks by the NPIRI Grindometer
D 1331	15.04	Test Methods for Surface and Interfacial Tension of Solutions of Surface-Active Agents
D 1353	06.04	Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products
D 1474	06.01	Test Methods for Indentation Hardness of Organic Coatings
D 1475	06.01	Test Method for Density of Paint, Varnish, Lacquer, and Related Products
D 1535	06.01	Test Method for Specifying Color by the Munsell System
D 1544	06.01	Test Method for Color of Transparent Liquids (Gardner Color Scale)
D 1545	06.03	Test Method for Viscosity of Transparent Liquids by Bubble Time Method
D 1590	11.01	Test Methods for Surface Tension of Water and Waste Water
D 1640	06.03	Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
D 1644	06.01	Test Methods for Nonvolatile Content of Varnishes
D 1647	06.03	Test Methods for Resistance of Dried Films of Varnishes to Water and Alkali
D 1653	06.01	Test Methods for Water Vapor Permeability of Organic Coating Films
D 1725	06.03	Test Method for Viscosity of Resin Solutions
D 1729	06.01	Practice for Visual Evaluation of Color Differences of Opaque Materials
D 1849	06.02	Test Method for Package Stability of Paint
D 1963	06.03	Test Method for Specific Gravity of Drying Oils, Varnishes, Resins, and Related Materials at 25/25°C
D 2066	06.02	Test Methods for Relative Tinting Strength of Printing Ink Dispersions
D 2067	06.02	Test Method for Coarse Particles in Printing Ink Dispersions
D 2091	06.02	Test Method for Print Resistance of Lacquers
D 2196	06.01	Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield) Viscometer
D 2243	06.02	Test Method for Freeze-Thaw Resistance of Water-Borne Coatings
D 2244	06.01	Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates
D 2248	06.01	Practice for Detergent Resistance of Organic Finishes
D 2337	06.02	Test Method for Freeze-Thaw Stability of Multicolor Lacquers
D 2369	06.01	Test Method for Volatile Content of Coatings
D 2482	15.09	Method for Wax Pick Test for Surface Strength of Paper
D 2574	06.01	Test Method for Resistance of Emulsion Paints in the Container to Attack by Microorganisms
D 2578	08.02	Test Method for Wetting Tension of Polyethylene and Polypropylene Films
D 2616	06.01	Test Method for Evaluation of Visual Color Difference with a Gray Scale
D 2620	06.02	Test Method for Light Stability of Clear Coatings
D 2794	06.01	Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
D 2805	06.01	Test Method for Hiding Power of Paints by Reflectometry
D 3134	06.01	Practice for Establishing Color and Gloss Tolerances
D 3258	06.02	Test Method for Porosity of Paint Films
D 3278	06.01	Test Methods for Flash Point of Liquids by Setaflash Closed-Cup Apparatus
D 3359	06.01	Test Methods for Measuring Adhesion by Tape Test
D 3363	06.01	Test Method for Film Hardness by Pencil Test
D 3424	06.02	Test Methods for Evaluating the Relative Lightfastness and Weatherability of Printed Matter
D 3732	06.02	Practice for Reporting Cure Times of Ultraviolet-Cured Coatings
D 3792	06.01	Test Method for Water Content of Water-Reducible Paints by Direct Injection into a Gas Chromatograph
D 3825	05.03	Test Method for Dynamic Surface Tension by the Fast Bubble Technique
D 3828	05.03	Test Method for Flash Point by Setaflash Closed Tester
D 3924	06.01	Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquers, and Related Materials
D 3925	06.01	Practice for Sampling Liquid Paints and Related Pigmented Coatings
D 3928	06.02	Test Method for Evaluation of Gloss or Sheen Uniformity

TABLE 1 *Continued*

ASTM Designation	Volume	Title
D 3934	06.01	Test Method for Flash/No Flash Test—Equilibrium Method by a Closed-Cup Apparatus
D 3960	06.01	Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
D 4017	06.01	Test Method for Water in Paints and Paint Materials by Karl Fischer Method
D 4040	06.02	Test Method for Viscosity of Printing Inks and Vehicles by the Falling-Rod Viscometer
D 4060	06.01	Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
D 4086	06.01	Practice for Visual Evaluation of Metamerism
D 4141	06.01	Practice for Conducting Accelerated Outdoor Exposure Tests of Coatings
D 4144	06.02	Method for Estimating Package Stability of Coatings for Ultraviolet Curing
D 4212	06.01	Test Method for Viscosity by Dip-Type Viscosity Cups
D 4287	06.01	Test Method for High-Shear Viscosity Using the ICI Cone/Plate Viscometer
D 4302	06.02	Specification for Artists' Oil, Resin-Oil, and Alkyd Paints
D 4303	06.02	Test Methods for Lightfastness of Pigments Used in Artists' Paints
D 4359	06.01	Test Method for Determining Whether a Material is a Liquid or a Solid
D 4361	06.01	Test Method for Apparent Tack of Printing Inks and Vehicles by a Three-Roller Tackmeter
D 4366	06.01	Test Methods for Hardness of Organic Coatings by Pendulum Damping Tests
D 4449	06.01	Test Method for Visual Evaluation of Gloss Differences Between Surfaces of Similar Appearance
D 4459	08.03	Practice for Operating an Accelerated Lightfastness Xenon-Arc-Type (Water Cooled) Light-Exposure Apparatus for the Exposure of Plastics for Indoor Applications
D 4518	06.01	Test Methods for Measuring Static Friction of Coating Surfaces
D 4541	06.02	Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
D 4674	08.03	Test Method for Accelerated Testing for Color Stability of Plastics Exposed to Indoor Fluorescent Light and Window-Filtered Daylight
D 4713	06.02	Test Methods for Nonvolatile Content of Printing Inks, Resin Solutions, and Vehicles
D 4758	06.03	Test Method for Nonvolatile Content of Latexes
D 4942	06.02	Test Methods for Water Pickup of Lithographic Printing Inks and Vehicles in a Laboratory Mixer
D 5039	15.09	Methods for Identification of Wire Side of Paper
D 5067	06.02	Specification for Artists' Watercolor Paints
D 5098	06.02	Specification for Artists' Acrylic Emulsion Paints
D 5181	06.02	Test Method for Abrasion Resistance of Printed Matter by the GA-CAT Comprehensive Abrasion Tester
D 5383	06.02	Practice for Visual Determination of the Lightfastness of Art Materials by Art Technologists
D 5398	06.02	Practice for Visual Evaluation of the Lightfastness of Art Materials by the User
D 5403	06.02	Test Method for Volatile Content of Radiation Curable Materials
D 5717	06.02	Test Method for Determining Extractability of Metals from Art Materials
D 5724	06.02	Specification for Gouache Paints
D 5909	06.02	Test Method for Drying Time of Oxidative-Drying Printing Inks by Squalene Resistance
D 6073	06.02	Test Method for the Relative Setting of Heatset Printing Inks by the Sinvatrol Tester
D 6419	06.02	Test Method for Volatile Content of Non-Heatset Web Offset Printing Inks
D 6487	06.02	Practice for Preparing Prints of Paste Printing Inks with the Little Joe Offset Color Proofing Press
D 6488	06.02	Terminology Relating to Print Problems
D 6606	06.03	Test Method for Viscosity and Yield of Vehicles and Varnishes by the Duke Viscometer
D 6688	06.02	Test Method for Relative Resistance of Printed Matter to Liquid Chemicals by a Sandwich Method
E 97	06.01	Test Method for Directional Reflectance Factor, 45-deg 0-deg, of Opaque Specimens by Broad-Band Filter Reflectometry (Withdrawn 1992: Replaced by Test Method E 1347)
E 284	06.01	Terminology of Appearance
E 308	06.01	Test Method for Computing the Colors of Objects by Using the CIE System
E 313	06.01	Test Method for Indexes of Whiteness and Yellowness of Near-White, Opaque Materials
E 429	06.01	Method for Measurement and Calculation of Reflecting Characteristics of Metallic Surfaces Using Integrating Sphere Instruments
E 430	06.01	Method for Measurement of Gloss of High-Gloss Surfaces by Goniophotometry
E 691	06.04	Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method
E 805	06.01	Practice for Identification of Instrumental Methods of Color and Color-Difference Measurement of Materials
E 991	06.01	Practice for Color Measurement of Fluorescent Specimens
E 1331	06.01	Test Method for Reflectance Factor and Color by Spectrophotometry Using Hemispherical Geometry
E 1347	06.01	Test Method for Color and Color Difference Measurement of Object-Color Specimens by Tristimulus (Filter) Colorimetry
E 1349	06.01	Test Method for Reflectance Factor and Color by Spectrophotometry Using Bidirectional Geometry
F 34	15.09	Test Method for Liquid Extraction of Flexible Barrier Materials
F 149	15.09	Definitions of Terms Relating to Optical Character Recognition
F 151	15.09	Test Method for Residual Solvents in Flexible Barrier Materials
F 372	15.09	Test Method for Water Vapor Transmission of Flexible Barrier Materials Using an Infrared Detector Technique
F 413	15.09	Practice for Preparation of an Offset Duplicator for Use in Functional Testing of Lithographic Copy Products
F 425	15.09	Definitions of Terms Relating to Lithographic Copy Products
F 909	15.09	Definitions of Terms Relating to Printers
F 1125	15.09	Terminology of Image Quality in Impact Printing Systems
G 7	14.02	Practice for Atmospheric Environmental Exposure Testing of Nonmetallic Materials
G 23	14.02	Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials
G 24	14.02	Practice for Conducting Exposures to Daylight Filtered Through Glass
G 26	14.02	Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials
G 151	14.02	Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources
G 153	14.02	Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
G 155	14.02	Practice for Operating Xenon-Arc Light Apparatus for Exposure of Nonmetallic Materials

TABLE 2 Index of Standards by Property

Group	Topic	ASTM Designation	ASTM Volume No.
	Testing in General		
1ABC	Terminology Relating to Paint, Varnish, Lacquer, and Related Products	D 16	06.01
1C	Conditioning Paper and Paperboard Products for Testing	D 685	15.09
1ABC	Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials, Standard Environment for	D 3924	06.01
1A	Determining Whether a Material is a Liquid or a Solid	D 4359	06.01
1ABC	Interlaboratory Study to Determine the Precision of a Test Method	E 691	06.04 08.03 06.01
1A	Sampling Liquid Paints and Related Pigmented Coatings	D 3925	06.01
	Appearance Properties		
1ABC	Terminology Relating to Appearance of Materials	E 284	06.01
	Color and Reflectance		
1ABC	Calculation of Color Differences From Instrumentally Measured Coordinates	D 2244	06.01
1ABC	Color and Color-Difference by Tristimulus (Filter) Colorimetry	E 1347	06.01
1ABC	Color of Fluorescent Specimens	E 991	06.01
1A	Color of Transparent Liquids (Gardner Color Scale)	D 1544	06.01
1ABC	Computing the Color of Objects by the CIE System	E 308	06.01
1ABC	Directional Reflectance Factor, 45-deg 0-deg, of Opaque Specimens by Broad-Band Filter Reflectometry (Withdrawn 1992: Replaced by Test Method E 1347)	E 97	06.01
1ABC	Establishing Color and Gloss Tolerances	D 3134	06.01
1ABC	Identification of Instrumental Methods of Color or Color-Difference Measurement of Materials	E 805	06.01
1ABC	Reflectance Factor and Color by Spectrophotometry Using Bidirectional Geometry	E 1349	06.01
1ABC	Reflectance Factor and Color by Spectrophotometry Using Hemispherical Geometry	E 1331	06.01
1C	Reflecting Characteristics of Metallic Surfaces Using Integrating-Sphere Instruments	E 429	06.01
1ABC	Specifying Color by the Munsell System	D 1535	06.01
1ABC	Visual Color Difference With a Gray Scale	D 2616	06.01
1ABC	Visual Evaluation of Color Differences of Opaque Materials	D 1729	06.01
1ABC	Visual Evaluation of Metamerism	D 4086	06.01
1C	Whiteness and Yellowness of Near-White Opaque Materials	E 313	06.01
	Gloss		
1ABC	Gloss of High-Gloss Surfaces by Goniophotometry	E 430	06.01
1ABC	Specular Gloss (20°, 60°, 85°)	D 523	06.01
1ABC	Visual Evaluation of Gloss Differences Between Surfaces of Similar Appearance	D 4449	06.01
1ABC	Visual Evaluation of Gloss or Sheen Uniformity	D 3928	06.02
	Opacity and Strength		
1B	Hiding Power of Paints by Reflectometry	D 2805	06.01
1B	Relative Hiding Power of Paints by the Visual Evaluation of Brushouts	D 344	06.01
3A	Relative Tinting Strength of Printing Ink Dispersions	D 2066	06.02
	Other Optical Properties		
1A	Clarity and Cleaness of Paint and Ink Liquids	D 5010	06.02
1B	Definitions of Terms Relating to Optical Character Recognition	F 149	15.09
1B	Terminology of Image Quality in Impact Printing Systems	F 1125	15.09
	Chemical Resistance		
1B	Detergent Resistance of Organic Finishes	D 2248	06.01
1B	Extractability of Metals from Art Materials, Determining	D 5517	06.02
1B	Household Chemicals on Clear and Pigmented Organic Finishes, Effect of	D 1308	06.01
1B	Resistance of Dried Films of Varnishes to Water and Alkali	D 1647	06.03
1B	Resistance to Liquid Chemicals by a Sandwich Method	D 6688	06.02
	Density		
1A	Density of Paint, Varnish, Lacquer, and Related Products	D 1475	06.01
1A	Specific Gravity of Drying Oils, Varnishes, Resins, and Related Materials at 25/25°C	D 1963	06.03
	Dispersion		

TABLE 2 *Continued*

Group	Topic	ASTM Designation	ASTM Volume No.
1A	Coarse Particles in Pigments, Pastes, and Paints	D 185	06.03
1A	Coarse Particles in Printing Ink Dispersions	D 2067	06.02
1A	Fineness of Dispersion of Pigment-Vehicle Systems	D 1210	06.01
1A	Fineness of Grind of Printing Inks by the NPIRI Grindometer	D 1316	06.02
	Drying		
1B	Drying, Curing, or Film Formation of Organic Coatings at Room Temperature	D 1640	06.03
3B	Drying Time of Oxidative-Drying Printing Inks by Squalene Resistance	D 5909	06.02
3B	Relative Setting of Heatset Printing Inks by the Sinvatrol Tester	D 6073	06.02
1B	Reporting Cure Times of Ultraviolet-Cured Coatings	D 3732	06.02
	Heat Stability		
1A	Flash/No Flash Test—Equilibrium Method by a Closed-Cup Apparatus	D 3934	06.01
1A	Flash Point by Pensky-Martin Closed Tester	D 93	04.09 05.01 06.04
1A	Flash Point of Liquids by Setaflash Closed-Cup Apparatus	D 3278	06.01
1A	Flash Point by Setaflash Closed Tester	D 3828	05.03
1A	Flash Point by Tag Closed Tester	D 56	05.01 06.04
1C	Moisture Content of Paper and Paperboard by Oven Drying	D 644	15.09
1A	Flash Point and Fire Point by Tag Open-Cup Apparatus	D 1310	05.01 06.04
2A	Nonvolatile Content of Latexes	D 4758	06.03
1A	Nonvolatile Content of Heatset and Liquid Printing Ink Systems	D 4713	06.02
1A	Nonvolatile Content of Resin Solutions	D 1259	06.01
1A	Nonvolatile Content of Varnishes	D 1644	06.01
1A	Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products	D 1353	06.03
1A	Volatile Content of Coatings	D 2369	06.01
3A	Volatile Content of Non-Heatset Web Offset Printing Inks	D 6419	06.02
1A	Volatile Content of Radiation Curable Materials	D 5403	06.02
1A	Volatile Organic Compound (VOC) Content of Paints and Related Coatings	D 3960	06.01
3A	Volatile Organic Compound (VOC40) Content of Non-Heatset Paste Printing Ink Systems at 40°C	D 5328	06.02
	Light and Weather Fastness		
1B	Accelerated Outdoor Exposure Test of Coatings	D 4141	06.01
1B	Accelerated Testing for Color Stability of Plastics Exposed to Indoor Fluorescent Lighting and Window-Filtered Daylight	D 4674	08.03
1B	Atmospheric Environmental Exposure Testing of Nonmetallic Materials	G 7	14.02
1B	Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources	G 151	14.02
1B	Gouache Paints	D 5724	06.02
1B	Light Stability of Clear Coatings	D 2620	06.02
1B	Lightfastness and Weatherability of Printed Matter	D 3424	06.02
1B	Lightfastness of Art Materials, Visual Determination by Art Technologists	D 5383	06.02
1B	Lightfastness of Art Materials, Visual Evaluation by the User	D 5398	06.02
1B	Lightfastness of Artists' Acrylic Emulsion Paints	D 5098	06.02
1B	Lightfastness of Artists' Oil, Resin-Oil, and Alkyd Paints	D 4302	06.02
1B	Lightfastness of Artists' Watercolor Paints	D 5067	06.02
1B	Natural Light Exposures Under Glass	G 24	14.02
1B	Operating an Accelerated Lightfastness Xenon-Arc-Type (Water Cooled) Light-Exposure Apparatus for the Exposure of Plastics for Indoor Applications	D 4459	08.03
1B	Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials	G 153	14.02
1B	Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials	G 23	14.02
1B	Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials	G 26	14.02
1B	Operating Xenon-Arc Light Apparatus for Exposure of Nonmetallic Materials	G 155	14.02
	Physical Strength and Resistance (Nonchemical)		
1B	Abrasion Resistance of Organic Coatings by Taber Abraser	D 4060	06.01
1B	Abrasion Resistance of Printed Materials by the Sutherland Rub Tester	D 5264	15.09
1B	Abrasion Resistance of Printed Matter by the GA CAT Comprehensive Abrasion Tester	D 5181	06.02
1B	Adhesion by Tape Test	D 3359	06.01
1B	Film Hardness (of Organic Coatings) by Pencil Test	D 3363	06.01
1B	Hardness of Organic Coatings by Pendulum Damping Test	D 4366	06.01
1B	Indentation Hardness of Organic Coatings	D 1474	06.01

TABLE 2 *Continued*

Group	Topic	ASTM Designation	ASTM Volume No.
1B	Print (Imprint) Resistance of Lacquers	D 2091	06.02
1B	Pull-off Strength of Coatings Using Portable Adhesion Tester	D 4541	06.02
1B	Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)	D 2794	06.01
1B	Static Friction of Coating Surfaces	D 4518	06.01
	Porosity and Permeability		
1B	Porosity of Paint Films	D 3258	06.02
1B	Water Vapor Permeability of Organic Coating Films	D 1653	06.01
2C	Water Vapor Transmission Rate of Flexible Barrier Materials Using an Infrared Detection Technique	F 372	15.09
	Printing Properties		
3A	Definitions of Terms Relating to Lithographic Copy Products	F 425	15.09
1B	Definitions of Terms Relating to Printers	F 909	15.09
1C	Blocking Resistance of Paper and Paperboard	D 918	15.09
1C	Machine Direction of Paper and Paperboard	D 528	15.09
3AC	Preparation of an Offset Duplicator for Use in Functional Testing of Lithographic Copy Products	F 413	15.09
3A	Preparing Prints of Paste Printing Inks with the Little Joe Offset Color Proofing Press	D 6487	06.02
1C	Printing Ink Permeation of Paper (Castor Oil Test)	D 780	15.09
1B	Terminology Relating to Print Problems	D 6488	06.02
3A	Water Pickup of Lithographic Printing Inks and Vehicles in a Laboratory Mixer	D 4942	06.02
3C	Wax Pick Test for Surface Strength of Paper	D 2482	15.09
1C	Wire Side of Paper	D 5039	15.09
	Rheology		
3A	Apparent Tack of Printing Inks and Vehicles by a Three-Roller Tackmeter	D 4361	06.02
1A	Consistency of Paints Using the Stormer Viscometer	D 562	06.01
1A	High-Shear Viscosity Using the ICI Cone/Plate Viscometer	D 4287	06.01
1A	Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield) Viscometer	D 2196	06.01
3A	Viscosity and Yield of Vehicles and Varnishes by the Duke Viscometer	D 6606	06.03
2A	Viscosity by Dip-Type Viscosity Cups	D 4212	06.01
1A	Viscosity by Ford Viscosity Cup	D 1200	06.01
3A	Viscosity of Printing Inks and Vehicles by the Falling-Rod Viscometer	D 4040	06.02
1A	Viscosity of Resin Solutions	D 1725	06.03
1A	Viscosity of Transparent Liquids by Bubble Time Method	D 1545	06.03
	Storage Stability		
1A	Degree of Settling of Paint	D 869	06.02
2A	Freeze-Thaw Resistance of Water-Borne Paints	D 2243	06.02
1A	Freeze-Thaw Stability of Multicolor Lacquers	D 2337	06.02
1A	Package Stability of Coatings for Ultraviolet Curing	D 4144	06.02
1A	Package Stability of Paint	D 1849	06.02
2A	Resistance of Emulsion Paints in the Container to Attack by Microorganisms	D 2574	06.01
	Surface Chemistry		
1A	Dynamic Surface Tension by the Fast Bubble Technique	D 3825	05.03
1A	Interfacial Tension of Oil Against Water by the Ring Method	D 971	05.01
1A	Surface and Interfacial Tension of Solutions of Surface-Active Agents	D 1331	15.04
1A	Surface Tension of Water and Waste Water	D 1590	11.01
1C	Surface Wettability of Paper (Angle-of-Contact Method)	D 724	15.09
2C	Wetting Tension of Polyethylene and Polypropylene Films	D 2578	08.02
	Special Analytical Tests		
2C	Liquid Extraction of Flexible Barrier Materials	F 34	15.09
2C	Residual Solvents in Flexible Barrier Materials	F 151	15.09
1A	Water Content of Water-Reducible Paints by Direct Injection into a Gas Chromatograph	D 3792	06.01
1A	Water in Paints and Paint Materials by Karl Fischer Method	D 4017	06.01