



Designation: D8065/D8065M – 16

## Standard Classification System and Basis for Specification for Specifying Plastic Films<sup>1</sup>

This standard is issued under the fixed designation D8065/D8065M; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This standard provides a classification system for tabulating the properties of unfilled, single-layer plastic films.

NOTE 1—The classification system serves many of the needs of industries using plastic films. The standard is subject to revision as the need requires; therefore, the latest revision should always be used.

NOTE 2—Film is defined in Terminology D883 as an optional term for sheeting having a nominal thickness no greater than 0.25 mm [0.010 in.].

1.2 The classification system and subsequent line call-out (specification) is intended to be a means of identifying plastic films used for applications including industrial, packaging, construction, and agriculture. It is not intended for the selection of materials to be used in films. This selection should be made by those having expertise in the plastics field after careful consideration of the end-use requirements, the environment to which the films will be exposed, the fabrication process to be employed, the inherent properties of the material not covered in this document, and the economic factors.

1.3 This classification system is based on the premise that plastic films can be arranged into broad generic families based on materials with similar composition using basic film properties. A system is thus established which, together with values describing additional requirements, permits as complete a description as desired of the selected film.

1.4 In all cases where the provisions of this classification system would conflict with the referenced ASTM specification for a particular film product, the latter shall take precedence.

NOTE 3—It is strongly recommended that this classification system be used for all new applications and specifications and that the specification of films using existing standards be expeditiously withdrawn or converted to this classification system.

1.5 This classification system applies to commercial products and, as such, there is no control over the manufacturing parameters employed in producing the film. It shall be the responsibility of those developing the specification documents utilizing this classification system to identify the critical parameters and values to be used for the cell classifications and suffix requirements.

<sup>1</sup> This standard is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.19 on Film, Sheeting, and Molded Products.

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1.6 *Units*—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.

1.7 *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.*

NOTE 4—There is no known ISO equivalent to this standard.

1.8 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
- D150 Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulation
- D257 Test Methods for DC Resistance or Conductance of Insulating Materials
- D774/D774M Test Method for Bursting Strength of Paper (Withdrawn 2010)<sup>2</sup>
- D882 Test Method for Tensile Properties of Thin Plastic Sheeting
- D883 Terminology Relating to Plastics
- D1003 Test Method for Haze and Luminous Transmittance of Transparent Plastics
- D1004 Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting
- D1203 Test Methods for Volatile Loss From Plastics Using Activated Carbon Methods

<sup>2</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

- D1204 Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature
- D1239 Test Method for Resistance of Plastic Films to Extraction by Chemicals
- D1434 Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting
- D1709 Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method
- D1746 Test Method for Transparency of Plastic Sheeting
- D1790 Test Method for Brittleness Temperature of Plastic Sheeting by Impact
- D1894 Test Method for Static and Kinetic Coefficients of Friction of Plastic Film and Sheeting
- D1922 Test Method for Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Method
- D1938 Test Method for Tear-Propagation Resistance (Trousers Tear) of Plastic Film and Thin Sheeting by a Single-Tear Method
- D2176 Test Method for Folding Endurance of Paper and Plastics Film by the M.I.T. Tester
- D2275 Test Method for Voltage Endurance of Solid Electrical Insulating Materials Subjected to Partial Discharges (Corona) on the Surface
- D2305 Test Methods for Polymeric Films Used for Electrical Insulation
- D2457 Test Method for Specular Gloss of Plastic Films and Solid Plastics
- D2578 Test Method for Wetting Tension of Polyethylene and Polypropylene Films
- D2582 Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting
- D2732 Test Method for Unrestrained Linear Thermal Shrinkage of Plastic Film and Sheeting
- D2838 Test Method for Shrink Tension and Orientation Release Stress of Plastic Film and Thin Sheeting
- D2923 Test Method for Rigidity of Polyolefin Film and Sheeting (Withdrawn 2015)<sup>2</sup>
- D3354 Test Method for Blocking Load of Plastic Film by the Parallel Plate Method
- D3417 Test Method for Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry (DSC) (Withdrawn 2004)<sup>2</sup>
- D3420 Test Method for Pendulum Impact Resistance of Plastic Film
- D3801 Test Method for Measuring the Comparative Burning Characteristics of Solid Plastics in a Vertical Position
- D3892 Practice for Packaging/Packing of Plastics
- D3985 Test Method for Oxygen Gas Transmission Rate Through Plastic Film and Sheeting Using a Coulometric Sensor
- D4272/D4272M Test Method for Total Energy Impact of Plastic Films by Dart Drop
- D5946 Test Method for Corona-Treated Polymer Films Using Water Contact Angle Measurements
- D6988 Guide for Determination of Thickness of Plastic Film Test Specimens

- D7192 Test Method for High Speed Puncture Properties of Plastic Films Using Load and Displacement Sensors
- D7209 Guide for Waste Reduction, Resource Recovery, and Use of Recycled Polymeric Materials and Products (Withdrawn 2015)<sup>2</sup>
- E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E96/E96M Test Methods for Water Vapor Transmission of Materials
- F88 Test Method for Seal Strength of Flexible Barrier Materials

### 3. Terminology

3.1 *Definitions*—The definitions used in this classification system are in accordance with Terminology D883.

### 4. Significance and Use

4.1 The purpose of this classification system is to provide a method of adequately identifying plastic films using a system that applies universally for plastic films. It further provides a means for specifying these films by the use of a simple line call-out designation.

4.2 This classification system was developed to permit the addition of additional film products and property values.

4.3 It is intended that the classification of plastic sheeting, >0.25 mm [0.010 in.] thickness, multi-layer structures, blends, and other variants will be addressed in related standards.

### 5. Classification

5.1 Films shall be classified by their generic polymer composition, specific sub-group, type, and other defining characteristics as shown in the following examples.

NOTE 5—It should be emphasized that the scope of the following examples and tables are not limited to the information shown and can be supplemented to include additional materials, descriptors, properties, etc. as needed.

5.2 Generic classification shall follow the examples shown in Table 1 or, in accordance with D883, followed by the letter “F” for film.

5.3 If applicable, the film is further classified by sub-groups and types identified by a single-digit numerical codes as shown by the examples described in Tables 2-4.

5.4 The film shall be further classified with two single digits to describe the process used to manufacture the film and the film gauge as shown by the examples shown in Table 5.

NOTE 6—Example (1), a Low density Polyethylene blown film, nominal gauge of 15 μ –PEF3011.

NOTE 7—Example (2), a Polypropylene random propylene copolymer biaxially-oriented stretch film, nominal gauge of 40 μ - PPF2042.

**TABLE 1 Examples of Generic Classifications (Based on Existing Standards)**

Generic Classifications	
PE	Polyethylene
PP	Polypropylene
PET	Poly(ethylene terephthalate)
PVC	Poly(vinyl chloride)