



Designation: ~~D2103~~—~~10~~ D2103 – 15

Standard Specification for Polyethylene Film and Sheeting¹

This standard is issued under the fixed designation D2103; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

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

1. Scope*

1.1 This specification covers the classification of polyethylene film and sheeting up to 0.3 mm (0.012 in.) in thickness, inclusive. The film or sheeting may contain additives for the improvement of the surface properties, pigments, or stabilizers, or combinations thereof.

NOTE 1—Film is defined in Terminology [D883](#) as an optional term for sheeting having a nominal thickness no greater than 0.254 mm (0.010 in.).

1.2 The values stated in SI units are to be regarded as standard. The values given in ~~brackets~~parentheses are for information only.

1.3 The following precautionary caveat pertains only to the test method portion, Section 8, of this specification: *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.*

1.4 This specification allows for the use of recycled polyethylene film or resin as feedstock, in whole or in part, as long as all the requirements as governed by the producer and end user are also met (see [Note 1](#)~~2~~).

NOTE 2—Guide [D7209](#) describes terminology and definitions related to recycled plastics.

NOTE 3—There is no known ISO equivalent to this ~~specification standard~~.

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¹ This specification 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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*A Summary of Changes section appears at the end of this standard

2. Referenced Documents

2.1 ASTM Standards:²

~~D374 Test Methods for Thickness of Solid Electrical Insulation (Withdrawn 2013)³~~

D618 Practice for Conditioning Plastics for Testing

D792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

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

D1434 Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting

D1505 Test Method for Density of Plastics by the Density-Gradient Technique

D1709 Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method

D1746 Test Method for Transparency of Plastic Sheeting

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 (Trouser Tear) of Plastic Film and Thin Sheeting by a Single-Tear Method

D2457 Test Method for Specular Gloss of Plastic Films and Solid Plastics

D2578 Test Method for Wetting Tension of Polyethylene and Polypropylene Films

D2839 Practice for Use of a Melt Index Strand for Determining Density of Polyethylene

D3892 Practice for Packaging/Packing of Plastics

D4321 Test Method for Package Yield of Plastic Film

D4703 Practice for Compression Molding Thermoplastic Materials into Test Specimens, Plaques, or Sheets

D4976 Specification for Polyethylene Plastics Molding and Extrusion Materials

D5947 Test Methods for Physical Dimensions of Solid Plastics Specimens

D6988 Guide for Determination of Thickness of Plastic Film Test Specimens

D7209 Guide for Waste Reduction, Resource Recovery, and Use of Recycled Polymeric Materials and Products (Withdrawn 2015)³

E96/E96M Test Methods for Water Vapor Transmission of Materials

F1249 Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor

3. Terminology

3.1 Definitions:

3.1.1 Unless otherwise specified, the definitions of plastics used in this specification are in accordance with Terminology **D883**.

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3.1.1 Unless otherwise specified, the definitions of plastics used in this specification are in accordance with Terminology **D883**.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *treated*—surface characteristics of the sheet or film have been modified by flame, corona discharge, or other means to promote the adhesion of inks, etc.

3.2.2 *yield*—the area provided by a given weight of film or sheeting of specified thickness.

4. Classification

4.1 The film and sheeting covered in this specification shall be designated by a type number, composed by listing the desired cell limit for each of the five properties, in the order shown in **Table 1**.

NOTE 4—Examples of this classification system are as follows:

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

TABLE 1 Type Numbers

Property Order Number	Property	0	1	2	3	4	5	Units
1	Density ^A	unspecified	0.910–<0.926	0.926–<0.941	0.941–0.965	<0.910	...	g/cm ³
2	Impact strength ^B	unspecified	<40	40–70	71–150	151–300	>300	g
2	Impact strength	unspecified	<40	40–70	71–150	151–300	>300	grams
3	Coefficient of friction ^C	unspecified	<0.20	0.20–0.40	0.41–0.70	>0.70
4	Haze	unspecified	<5.0	5.0–9.0	>9.0
5	Nominal thickness	unspecified	C	D	E	F	G	mm (in.)
5	Nominal thickness	unspecified	B	C	D	E	F	mm (in.)

^A Annealed density of molded plaques or Melt Index extrudates.

^B F50 (Results of a recent round robin have shown the equivalency of these two procedures.)

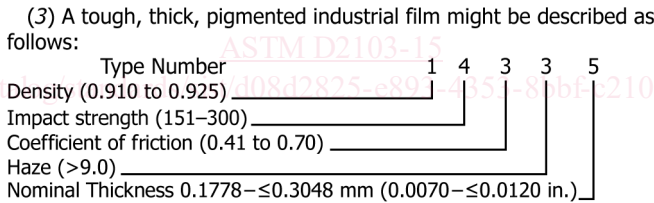
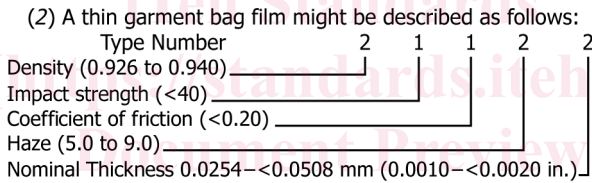
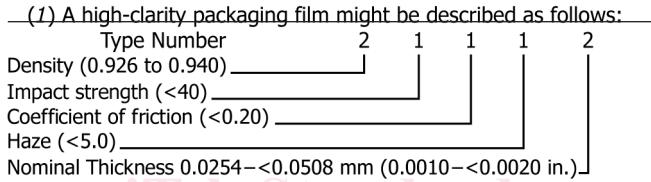
^C Coefficient of friction listed in this table is based on the kinetic coefficient of friction.

^D 0.0254–<0.0508 (0.0010–<0.0020) 0.0508–<0.1016 (0.0020–<0.0040)

^E 0.0508–<0.1016 (0.0020–<0.0040) 0.1016–<0.1778 (0.0040–<0.0070)

^F 0.1016–<0.1778 (0.0040–<0.0070) 0.1778–≤0.3048 (0.0070–≤0.0120)

^G 0.1778–≤0.3048 (0.0070–≤0.0120)



Examples of this classification system are as follows: