



Designation: D 6835 – 02

Standard Classification System for Thermoplastic Elastomer-Ether-Ester Molding and Extrusion Materials (TEEE)¹

This standard is issued under the fixed designation D 6835; 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 classification system covers segmented block copolyether-ester elastomers suitable for molding and extrusion.

1.2 This classification system allows for the use of segmented block copolyether-ester elastomers that are recycled provided that the requirements as stated in this classification system are met. The proportions of recycled material used, as well as the nature and amount of any contaminant, however, cannot be covered practically in this specification.

1.3 The properties included in this classification system are those required to identify the compositions covered. There may be other requirements necessary to identify particular characteristics important to specialized applications. These may be specified using the suffixes as given in Section 5.

1.4 This classification system and subsequent line callout (specification) are intended to provide a means of calling out plastic materials used in the fabrication of end items or parts. It is not intended for the selection of materials. Material selection should be made by those having expertise in the plastic field after careful consideration of the design and the performance required of the part, the environment to which it will be exposed, the fabrication process to be employed, the costs involved, and the inherent properties of the material other than those covered by this classification system.

1.5 The following precautionary caveat pertains only to the test methods portion, Section 11, of this classification system. *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 1—This classification system is similar to ISO 14910-1/-2 1997, although the technical content is significantly different.

¹ This classification system is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.15 on Thermoplastic Materials.

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2. Referenced Documents

2.1 ASTM Standards:

D 618 Practice for Conditioning Plastics for Testing²

D 883 Terminology Relating to Plastics²

D 1600 Terminology for Abbreviated Terms Relating to Plastics²

D 2240 Test Method for Rubber Property-Durometer Hardness³

D 3418 Test Method for Transition Temperatures of Polymers by Thermal Analysis⁴

D 3641 Practice for Injection Molding Test Specimens of Thermoplastic Molding and Extrusion Materials⁴

D 3892 Practice for Packaging/Packing of Plastics⁴

D 4000 Classification System for Specifying Plastic Materials⁴

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specification⁵

2.2 ISO Standards:⁶

ISO 178:2001 Plastics-Determination of Flexural Properties

ISO 294-1:1996 Plastics-Injection Moulding of Test Specimens of Thermoplastic Materials-Part 1: General Principles, Multipurpose-Test Specimens (ISO Mount Type A) and Bars (ISO Mould Type B)

ISO 527-1:1993 Plastics-Determination of Tensile Properties-Part 1: General Principles

ISO 527-2:1993 Plastics-Determination of Tensile Properties-Part 2: Test Conditions for Moulding and Extrusion Materials

ISO 868:1985 Plastics and Ebonite-Determination of Indentation Hardness by Means of a Durometer

ISO 1133:1997 Plastics-Determination of the Melt Mass-Flow Rate (MFR) and the Melt Volume Flow Rate (MVR) of Thermoplastics

² Annual Book of ASTM Standards, Vol 08.01.

³ Annual Book of ASTM Standards, Vol 09.01.

⁴ Annual Book of ASTM Standards, Vol 08.02.

⁵ Annual Book of ASTM Standards, Vol 14.02.

⁶ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

ISO 11357-3:1997 Plastics-Differential Scanning Calorimetry-Part 3: Determination of Temperature and Enthalpy of Melting and Crystallization

ISO 14910-1:1997 Plastics-Thermoplastic Polyester/ester and Polyether/ester Elastomers for Molding and Extrusion-Part 1: Designation System and Basis for Specification

ISO 14910-2:1997 Plastics-Thermoplastic Polyester/ester and Polyether/ester Elastomers for Molding and Extrusion-Part 2: Preparation of Test Specimens and Determination of Properties

3. Terminology

3.1 *Definitions*—The terminology used in this classification system is in accordance with Terminologies **D 883** and **D 1600**.

4. Classification

4.1 Polyether-ester elastomers are classified into groups in accordance with flexural modulus. These groups are subdivided into classes by viscosity range and are further subdivided into grades by tensile properties, as shown in the basic property table (Table TEEE).

TABLE TEEE Requirements for Polyether-Ester Elastomers

Group	Class	Grade	Description ^A	Flexural Modulus ^B ISO 178 MPa	Flow Rate ^C ISO 1133 g/10 min	Flow Rate Condition °C/kg	Tensile Strength ^D ISO 527-1, -2 MPa, min	Elongation at Break ^D ISO 527-1, -2, % min
01	1	1	Blow Molding	25 to 150	0.5 to 5	230/2.16	20	150
		0	Other	25 to 150	0.5 to 5	...	...	...
	2	1		25 to 150	2 to 12	220/2.16	5	300
		2		25 to 150	2 to 12	220/2.16	15	300
		3		25 to 150	2 to 12	190/2.16	15	250
		0	Other	25 to 150	2 to 12	...	...	...
	3	1		25 to 150	<55	190/2.16	15	400
		0	Other	25 to 150	<55	...	...	...
	0	0	Other	25 to 150	...	...	...	...
		0	Other	25 to 150	...	...	...	...
02	1	1	Blow Molding	75 to 225	0.5 to 5	230/2.16	25	250
		2	Blow Molding	75 to 225	0.5 to 5	230/2.16	20	200
		0	Other	75 to 225	0.5 to 5	...	...	...
	2	1		75 to 225	2 to 12	190/2.16	10	300
		0	Other	75 to 225	2 to 12	...	...	...
	3	1		75 to 225	5 to 24	220/2.16	30	400
		2		75 to 225	5 to 24	220/2.16	15	50
		3		75 to 225	5 to 24	230/2.16	20	400
		4		75 to 225	5 to 24	230/2.16	15	100
		0	Other	75 to 225	5 to 24	...	...	...
	0	0	Other	75 to 225	...	...	...	...
		0	Other	75 to 225	...	...	...	...
03	1	1		125 to 325	2 to 12	220/2.16	30	300
		2	Heat Stabilized	125 to 325	2 to 12	220/2.16	30	300
		0	Other	125 to 325	2 to 12	...	...	...
	2	1		125 to 325	5 to 24	220/2.16	35	400
		2		125 to 325	5 to 24	220/2.16	15	150
		3		125 to 325	5 to 24	230/2.16	25	300
		0	Other	125 to 325	5 to 24	...	...	...
	0	0	Other	125 to 325	...	...	...	...
		0	Other	125 to 325	...	...	...	...
04	1	1		225 to 525	2 to 12	230/2.16	30	250
		0	Other	225 to 525	2 to 12	...	...	...
	2	1		225 to 525	5 to 24	240/2.16	30	400
		2		225 to 525	5 to 24	240/2.16	20	50
	0	0	Other	225 to 525	5 to 24	...	...	...
		0	Other	225 to 525	...	...	...	...
05	1	1		325 to 925	5 to 24	240/2.16	40	200
		2		325 to 925	5 to 24	240/2.16	30	400
		0	Other	325 to 925	5 to 24	...	...	...
	2	1		325 to 925	<55	240/2.16	15	50
		0	Other	325 to 925	5 to 24	...	...	...
	0	0	Other	325 to 925	...	...	...	...
06	1	1		525 to 1725	5 to 24	240/2.16	35	50
		2		525 to 1725	5 to 24	240/2.16	25	200
		0	Other	525 to 1725	5 to 24	...	...	...
	0	0	Other	525 to 1725	...	...	...	...
00	0	0	Other	...	...	...	...	...

^ANo descriptions unless needed to describe a special grade under the class. All other grades are listed by requirement.

^BTest specimen—80 × 10 × 4 mm. Test speed—2 mm/min.

^CDry samples 3 h at 100°C in dehumidifying oven prior to running test.

^DISO 527-2 Type 1BA specimen. Test speed—50 mm/min.