



Designation: D 5021 – 00

Standard Specification for Thermoplastic Elastomer–Chlorinated Ethylene Alloy (TECEA)¹

This standard is issued under the fixed designation D 5021; 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.

INTRODUCTION

This specification is intended to be a means of calling out 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 plastics 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 inherent properties of the materials other than those covered by this specification, and the economics.

1. Scope*

1.1 This specification covers alloys of chlorinated ethylene elastomers suitable for injection molding, extrusion, blow molding, thermoforming, and other plastics processing methods.

1.2 This specification allows for the use of those TECEA materials that can be recycled, regrounded, and reprocessed, provided that the requirements as stated in this specification 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 specification are those required to identify the compositions covered. There may be other requirements necessary to identify particular characteristics important to specialized application. These shall be agreed upon between the user and the supplier, by using the suffixes given in Section 5.

1.4 The values stated in SI units are to be regarded as the standard. The practices, as detailed in Practice IEEE/ASTM SI 10, are incorporated herein.

1.5 The following precautionary caveat pertains only to the test methods portion, Section 10, 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.*

NOTE 1—There is no similar or equivalent ISO standard.

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

Current edition approved Nov. 10, 2000. Published February 2001. Originally published as D 5021 – 89. Last previous edition D 5021 – 95.

2. Referenced Documents

2.1 *ASTM Standards:*²

D 412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

D 618 Practice for Conditioning Plastics for Testing

D 883 Terminology Relating to Plastics

D 2240 Test Method for Rubber Property—Durometer Hardness

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

D 3892 Practice for Packaging/Packing of Plastics

D 4000 Classification System for Specifying Plastic Materials

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance With Specifications

IEEE/ASTM SI 10 Standard for Use of the International System of Units (SI): The Modern Metric System

3. Terminology

3.1 *Definitions*—For definitions of technical terms pertaining to plastics used in this specification, see Terminology D 883.

4. Classification

4.1 Alloys of chlorinated ethylene elastomers are classified into groups according to processing method. These groups are subdivided into classes by hardness and are further subdivided into grades by purpose as shown in the basic property table (Table TECEA).

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.

*A Summary of Changes section appears at the end of this standard.

TABLE TECEA Requirements for Thermoplastic Elastomers of Chlorinated Ethylene Alloys

Group	Description	Class	Description	Grade	Description	Hardness Shore A, min	Tensile Strength Test Method D 412, MPa, min	Elongation, %, min	Tensile Strength Test Method D 412 at 100°C, MPa, min	Tensile Stress Test Method D 412 at 100 % Elongation, MPa, min			
1	extrusion	1	low hardness	1	black	50	9.0	250	2.0	2.8			
				2	neutral	50	7.2	325	1.2	2.3			
				0	other								
		2	medium hardness	1	black	60	11.6	200	2.4	4.3			
				2	neutral	60	8.3	300	1.3	3.4			
				0	other								
		3	high hardness	1	black	70	12.1	130	2.9	6.2			
				2	neutral	70	9.0	200	1.5	4.8			
				0	other								
		2	molding and extrusion	1	low hardness	1	black	50	6.2	350	1.0	2.4	
2	neutral					50	6.6	325	1.0	2.4			
3	translucent					45	5.0	335	1.8	1.8			
2	medium hardness			1	black	60	6.9	275	1.4	3.4			
				2	neutral	60	7.2	330	1.2	3.4			
				3	translucent	60	8.6	425	1.6	2.9			
3	high hardness			1	black	70	10.4	250	1.8	5.5			
				2	neutral	70	8.6	350	1.6	4.7			
				0	other								
0	other			0	other	0	other						
						0	other						
						0	other						

NOTE 2—An example of this classification system is as follows; the designation TECEA 112 would indicate:

- TECEA = thermoplastic elastomer–chlorinated ethylene alloy,
- 1 (group) = extrusion grade,
- 1 (class) = low hardness, and
- 2 (grade) = general purpose–neutral.

4.1.1 To facilitate the incorporation of future or special materials not covered by the basic property table, the “other/unspecified” category (0) for group, class, and grade is shown in Table TECEA. The basic properties can be obtained from Table A.

4.2 Specific requirements shall be shown by a six-character designation. The designation will consist of the letter A and the five digits comprising the cell numbers for the property requirements in the order as they appear in Table A.

4.2.1 Although the values listed are necessary to include the range of properties available in existing materials, users should not infer that every possible combination of the properties exists or can be obtained.

4.2.2 An example of this classification system is as follows; the designation TECEA 110 A22400 would indicate the following with the material requirements from Table A:

- TECEA 110 = thermoplastic elastomer chlorinated ethylene alloy from Table TECEA.
- A = Table A property requirements,
- 2 = 50 Durometer A hardness, min,
- 2 = 5.0 MPa tensile, min,
- 4 = 1.5 MPa tensile, min at 100°C,
- 0 = unspecified, and
- 0 = unspecified.

TABLE A Detail Requirements

Designation Order Number	Property										
		0	1	2	3	4	5	6	7	8	9
1	Hardness, Test Method D 2240, A/D Durometer, min	unspecified	45A	50A	55A	60A	65A	70A	75A	80A	specify value
2	Tensile Strength, Test Method D 412, MPa, min	unspecified	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	specify value
3	Tensile Strength, Test Method D 412, MPa, min at 100°C	unspecified	0.7	1.0	1.2	1.5	1.7	2.0	2.5	3.0	specify value
4	Tensile Modulus, Test Method D 412, at 100 % elongation, MPa	unspecified	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	specify value
5	Elongation, Test Method D 412, %, min	unspecified	100	150	200	250	300	350	400	450	specify value