



Designation: D6865-04

## Standard Classification System for Designation: D6865 – 11

# Standard Classification System and Basis for Specifications for Acrylonitrile–Styrene–Acrylate (ASA) and Acrylonitrile–EPDM–Styrene (AES) Plastics and Alloys Molding and Extrusion Materials<sup>1</sup>

This standard is issued under the fixed designation D6865; 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 classification system covers ASA and AES materials, and ASA and AES alloys suitable for injection molding and extrusion. This classification system does not cover recycled ASA and AES materials, and recycled ASA and AES alloys.

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

1.3 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~~ can be made by those having expertise in the plastic field only 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 standard.

~~NOTE 1—This classification system and ISO 6402 cover the same subject matter but are not technically equivalent.~~

1.4 The following precautionary caveat pertains only to the test method 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 requirements prior to use.*

~~NOTE 1—This classification system and ISO 6402 cover the same subject matter but are not technically equivalent.~~

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>2</sup>

D618 Practice for Conditioning Plastics for Testing

D883 Terminology Relating to Plastics

D1600 Terminology for Abbreviated Terms Relating to Plastics

~~D1999 Guide for Selection of Specimens and Test Parameters from ISO/IEC Standards~~

D3892 Practice for Packaging/Packing of Plastics

D4000 Classification System for Specifying Plastic Materials

~~D5630 Test Method for Ash Content in Plastics~~

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

#### 2.2 ISO Standards:<sup>3</sup>

ISO 179-1 Plastics—Determination of Charpy Impact Strength—Part 1: Non-Instrumented Impact Test

ISO 291 Plastics—Standard Atmospheres for Conditioning and Testing

<sup>1</sup> This classification 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 March 1, 2004. Published April 2004. DOI: 10.1520/D6865-04.

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<sup>2</sup> 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.

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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

- ISO 294-1 Plastics—Injection Moulding Test Specimens of Thermoplastics Materials—Part 1: General Principles, and Moulding of Multipurpose and Bar Test Specimens
- ISO 306 Plastics—Thermoplastic Materials— Determination of Vicat Softening Temperature (VST)
- ISO 527 Plastics—Determination of Tensile Properties—Part 1: General Principles and —Part 2: Test Conditions for Moulding and Extrusion Materials
- ISO 1133 Plastics—Determination of the Melt Mass Flow Rate (MFR) and the Melt Volume Flow Rate (MVR) of Thermoplastics
- ISO 3451-1 Plastics—Determination of Ash—Part 1: General Methods
- ISO 6402 Plastics—Impact-Resistant Acrylonitrile/Styrene (ASA, AES, ACS) Moulding and Extrusion materials, Excluding Butadiene-Modified Materials—Part 1: Designation System and Basis for Specification and —Part 2: Preparation of Test Specimens and Determination of Properties

### 3. Terminology

3.1 Except for the terms defined below, the terminology used in this classification system is in accordance with Terminologies 3.1 The terminology used in this classification system is in accordance with Terminologies D883 and D1600.

### 4. Classification

4.1 ASA and AES materials, and ASA and AES alloys are classified into groups according to their composition. These groups are subdivided into classes and grades as shown in Table ASA/AES.

NOTE 2—An example of this classification system is given as follows:  
The designation ASA0111 indicates the following:

ASA = acrylonitrile–styrene–acrylate, as found in Terminology  
D1600,  
01 = injection molding resin (group),  
1 = medium impact (class), and  
1 = requirements given in Table ASA/AES (grade).

4.1.1 To facilitate incorporation of future or special materials, the “other” category for class (0), and grade (0) is shown in Table ASA/AES. The basic properties of these materials can be obtained from Table A, B, or C as they apply.

4.2 Reinforced, filled, and lubricated versions of ASA and AES materials, and ASA and AES alloys that are not in Table ASA/AES are classified in accordance with Table A, B, or C. Table ASA/AES is used to specify the group of the material and Table A, B, or C is used to specify the property requirements after the addition of reinforcements, pigments, fillers, or lubricants at the nominal level indicated (see 4.2.1).

4.2.1 Reinforced versions of the basic materials are identified by a single letter that indicates the reinforcement used and two digits that indicate the nominal quantity in percent by weight. Thus, a letter designation G for glass-reinforced for percent of reinforcement, G33, specifies a filled material with a nominal glass level of 33 %. The reinforcement letter designations and associated tolerance levels are shown in the following table:

Symbol	Material	Tolerance
C	carbon and graphite fiber reinforced	±2%
G	glass-reinforced	±2%
L	lubricants (such as PTFE, graphite, silicone, and molybdenum disulfide)	depends upon material and process—to be specified
M	mineral-reinforced	±2%
R	combinations of reinforcements or fillers, or both	±3% for total reinforcement level

NOTE 3—This part of the classification system uses the percent of reinforcements or additives, or both, in the callout of the modified basic material. The types and percentages of reinforcements and additives should be shown on the supplier’s technical data sheet unless they are proprietary in nature. If necessary, additional callout of these reinforcements and additives can be accomplished by use of the suffix part of the system (see Section 5).

4.2.2 Specific requirements for reinforced, filled, or lubricated ASA and AES materials, and ASA and AES alloys shall be shown by a six-character designation. The designation will consist of the letter “A,” “B,” or “C” and the five digits comprising the cell numbers for the property requirements in the order as they appear in Tables A, B, or C. 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.

4.2.3 When the grade of the basic material is not known, or is not important, the use of the “0” grade classification shall be used for the reinforced materials in this system.

NOTE 4—An example of this classification for a reinforced ASA/AES material is given as follows. The designation ASA 0120G30A55130 would indicate the following material requirements:

ASA 0120 = Acrylonitrile-styrene-acrylate, molding resin,  
high impact, from Table ASA/AES,  
G30 = Glass reinforced at 30 % nominal level,  
A = Cell Table A property requirements,