



Designation: D 4066 – 96

AMERICAN SOCIETY FOR TESTING AND MATERIALS  
100 Barr Harbor Dr., West Conshohocken, PA 19428  
Reprinted from the Annual Book of ASTM Standards. Copyright ASTM  
If not listed in the current combined index, will appear in the next edition.

An American National Standard

## Standard Classification System for Nylon Injection and Extrusion Materials (PA)<sup>1</sup>

This standard is issued under the fixed designation D 4066; 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.

*This specification has been approved for use by agencies of the Department of Defense. Consult the DoD Index of Specifications and Standards for the specific year of issue which has been adopted by the Department of Defense.*

### 1. Scope

1.1 This classification system covers nylon materials suitable for injection molding and extrusion. Some of these compositions are also suitable for compression molding and application from solution.

1.2 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 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 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.

1.4 The values stated in SI units are to be regarded as the standard.

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 1874-1/-2 1993, although the technical content is significantly different.

NOTE 2—This classification system is being revised to include international 4-mm specimens and test procedures as the standard for compliance. The 3.2-mm specimens; test methods; and Tables PA, A, and B are included in Appendix X3 as a reference for those wishing to use them. It is recommended that the material manufacturer be consulted on all callouts against this classification system.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- D 149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies<sup>2</sup>
  - D 150 Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulating Materials<sup>2</sup>
  - D 256 Test Methods for Impact Resistance of Plastics and Electrical Insulating Materials<sup>3</sup>
  - D 257 Test Methods for DC Resistance or Conductance of Insulating Materials<sup>2</sup>
  - D 618 Practice for Conditioning Plastics and Electrical Insulating Materials for Testing<sup>3</sup>
  - D 638 Test Method for Tensile Properties of Plastics<sup>3</sup>
  - D 648 Test Method for Deflection Temperature of Plastics Under Flexural Load<sup>3</sup>
  - D 789 Test Methods for Determination of Relative Viscosity, Melting Point, and Moisture Content of Polyamide (PA)<sup>3</sup>
  - D 790 Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials<sup>3</sup>
  - D 792 Test Methods for Specific Gravity (Relative Density) and Density of Plastics by Displacement<sup>3</sup>
  - D 883 Terminology Relating to Plastics<sup>3</sup>
  - D 1600 Terminology for Abbreviated Terms Relating to Plastics<sup>3</sup>
  - D 1898 Practice for Sampling of Plastics<sup>3</sup>
  - D 1999 Guide for the Selection of Specimens and Test Parameters for International Commerce<sup>3</sup>
  - D 3418 Test Method for Transition Temperatures of Polymers by Thermal Analysis<sup>4</sup>
  - D 3641 Practice for Injection Molding Test Specimens of Thermoplastic Molding and Extrusion Materials<sup>4</sup>
  - D 3892 Practice for Packaging/Packing of Plastics<sup>4</sup>
  - D 4000 Classification System for Specifying Plastic Materials<sup>4</sup>
  - D 5630 Test Method for Ash Content in Thermoplastics<sup>5</sup>
  - E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications<sup>6</sup>
- #### 2.2 Military and Federal Specifications and Standards:<sup>7</sup>

<sup>1</sup> This classification system is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.15 on Thermoplastic Materials (Section D20.15.09).

Current edition approved July 10, 1996. Published September 1996. Originally published as D 4066 – 82. Last previous edition D 4066 – 94b.

This edition includes the addition of international test specimens and procedures, and additional grades to Table PA; the removal of melting point, specific gravity, elongation, and moisture content from Table PA; and the addition of melting point to the appendix.

<sup>2</sup> Annual Book of ASTM Standards, Vol 10.01.

<sup>3</sup> Annual Book of ASTM Standards, Vol 08.01.

<sup>4</sup> Annual Book of ASTM Standards, Vol 08.02.

<sup>5</sup> Annual Book of ASTM Standards, Vol 08.03.

<sup>6</sup> Annual Book of ASTM Standards, Vol 14.02.

<sup>7</sup> Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094. Attention: Document



L-P-410 Plastic, Polyamide (Nylon) Rigid: Rods, Tubes, Flats, Molded and Cast Parts  
 VV-I-530 Insulating Oil, Electrical (for Transformers, Switches, and Circuit Breakers)

### 2.3 ISO Standards:<sup>8</sup>

ISO 75-1:1993 Plastics—Determination of Temperature of Deflection Under Load—Part 1: General Test Methods  
 ISO 75-2:1993 Plastics—Determination of Temperature of Deflection Under Load—Part 2: Plastic and Ebonite  
 ISO 178:1993 Plastics—Determination of Flexural Properties  
 ISO 180:1993 Plastics—Determination of Izod Impact Strength  
 ISO/DIS 294-1:1995 Plastics—Injection Moulding of Test Specimens of Thermoplastic Materials—Part 1: General Principles, Multipurpose-Test Specimens (ISO Mould Type A) and Bars (ISO Mould Type B)  
 ISO 307 Determination of Viscosity Number of Polyamides in Dilute Solutions  
 ISO 527-1:1993 Plastics—Determination of Tensile Properties—Part 1: General Principles  
 ISO 527-2:1993 Plastics—Determination of Tensile Properties—Part 2: Testing Conditions  
 ISO 960:1969 Plastics—Determination of the Water Content in Polyamides  
 ISO 1183:1987 Plastics—Methods for Determining the Density and Relative Density of Non-Cellular Plastics  
 ISO 1874-1:1992, Plastics—Polyamide (PA) Homopolymers and Copolymers for Moulding and Extrusion Part 1: Designation  
 ISO/DIS 1874-2.2:1995, Plastics—Polyamide (PA) Homopolymers for Moulding and Extrusion—Part 2: Preparation of Test Specimens and Determination of Properties  
 ISO 3146: Plastics—Determination of Melting Behaviour (Melting Temperature or Melting Range) of Semi-Crystalline Polymers  
 ISO 3451-4:1994 Plastics—Determination of Ash—Part 4: Polyamides

## 3. Terminology

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

## 4. Classification

4.1 Nylon materials are classified into groups according to their composition. These groups are subdivided into classes and grades as shown in the Basic Property Table (Table PA).

NOTE 3—An example of this classification system for unreinforced nylon is given as follows: The designation PA0123 indicates the following:

PA = polyamide (nylon) as found in Terminology D 1600,  
 01 (group) = 66 nylon,  
 2 (class) = heat stabilized, and  
 3 (grade) = with a minimum viscosity number of 210 and the requirements given in Table PA.

NOTE 4—An example of this classification system for reinforced nylon is given as follows: The designation PA012G35 indicates the

following:

PA = polyamide (nylon) as found in Terminology D 1600,  
 01 (group) = 66 nylon,  
 2 (class) = heat stabilized, and  
 G35 (grade) = nominal 35 % glass with the requirements given in Table PA.

4.1.1 Grades of reinforced or filled versions, or both, of the basic materials are identified by a single letter that indicates the reinforcement or filler used and two digits, in multiples of 5, that indicate the nominal quantity in percent by weight. Thus, a letter designation G for glass reinforced and 35 for percent or reinforcement, G35, specifies a material with a nominal glass level of 35 %. The reinforcement letter designations and associated tolerance levels are shown as follows:

| Symbol | Material                                                                | Tolerance<br>(Based on the Total Mass)             |
|--------|-------------------------------------------------------------------------|----------------------------------------------------|
| 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 %                                               |

NOTE 5—This part of the classification system uses 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 control of these reinforcements and additives can be accomplished by use of the suffix part of the system (see Section 5).

NOTE 6—Materials containing reinforcements or fillers, or both, at nominal levels not in multiples of 5 are included in the nearest PA grade designation. For example, a material with a nominal material level of 28 % is included with Grade M30.

NOTE 7—An example of this classification system for a 33 % glass-reinforced nylon is given as follows. The designation PA011G35 indicates the following:

PA = polyamide (nylon) as found in Terminology D 1600,  
 01 (group) = 66 nylon,  
 1 (class) = general purpose, and  
 G35 (grade) = with requirements given in Table PA.

NOTE 8—Ash content of filled or reinforced materials may be determined using Test Method D 5630.

4.2 Variations of nylon materials that are not in Table PA are classified in accordance with Tables PA and A or B. Table PA is used to specify the group of nylon and Table A or B is used to specify property requirements.

4.2.1 Specific requirements for variations of nylon materials shall be shown by a six-character designator. The designation will consist of the letter "A" or "B" and the five digits comprising the cell numbers for the property requirements in the order as they appear in Tables A and B.

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

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

NOTE 9—An example of this classification system for a reinforced nylon material is given as follows. The designation PA0110G30A22450 would indicate the following material requirements:

<sup>8</sup> Available from American National Standards Institute, 11 West 42nd St., 13th Floor, New York, NY 10036.

 D 4066
TABLE PA Requirements for Nylons Dry-as-Molded<sup>A</sup>

| Group                                                                  | Description                      | Class | Description     | Grade | Description <sup>A</sup> | Viscosity<br>Number,<br>ISO 307,<br>min, mL/g | Density,<br>ISO 1183,<br>g/cm <sup>3</sup> | Tensile<br>Strength, <sup>C</sup><br>ISO 527-1 and<br>ISO 527-2,<br>min, MPa | Flexural<br>Modulus, <sup>D</sup><br>ISO 178,<br>min, MPa | Izod<br>Impact<br>Resistance, <sup>E</sup><br>ISO 180,<br>min, kJ/m <sup>2</sup> | Deflection<br>Temperature<br>at 1.82 MPa, <sup>F</sup><br>ISO 75-1 and<br>ISO 75-2<br>min, °C |
|------------------------------------------------------------------------|----------------------------------|-------|-----------------|-------|--------------------------|-----------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 01                                                                     | 66 Nylon                         | 1     | General-purpose | 1     |                          | 135                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.3                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 2     |                          | 165                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.3                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 3     |                          | 210                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.3                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 4     |                          | 270                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.3                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 5     | recycled                 | 115                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.3                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 6     | recycled                 | 135                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.3                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 0     | other                    |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  |       |                 | G15   | 15 % glass               | ...                                           | 1.20–1.26                                  | 100                                                                          | 4 000                                                     | 3.0                                                                              | 215                                                                                           |
|                                                                        |                                  |       |                 | G20   | 20 % glass               | ...                                           | 1.25–1.33                                  | 115                                                                          | 5 000                                                     | 4.0                                                                              | 220                                                                                           |
|                                                                        |                                  |       |                 | G25   | 25 % glass               | ...                                           | 1.29–1.37                                  | 140                                                                          | 6 000                                                     | 5.0                                                                              | 225                                                                                           |
|                                                                        |                                  |       |                 | G35   | 35 % glass               | ...                                           | 1.35–1.45                                  | 170                                                                          | 8 000                                                     | 7.0                                                                              | 235                                                                                           |
|                                                                        |                                  |       |                 | G40   | 40 % glass               | ...                                           | 1.42–1.52                                  | 175                                                                          | 9 000                                                     | 8.0                                                                              | 235                                                                                           |
|                                                                        |                                  |       |                 | G45   | 45 % glass               | ...                                           | 1.45–1.55                                  | 180                                                                          | 10 000                                                    | 9.0                                                                              | 240                                                                                           |
|                                                                        |                                  |       |                 | G00   | other                    | ...                                           |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  |       |                 | M40   | 40 % mineral             | ...                                           | 1.45–1.55                                  | 80                                                                           | 5 000                                                     | 2.0                                                                              | 150                                                                                           |
|                                                                        |                                  |       |                 | M00   | 40 % other               | ...                                           |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | 2     | Heat-stabilized | 1     |                          | 135                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.0                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 2     |                          | 165                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.0                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 3     |                          | 210                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.0                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 4     |                          | 270                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.0                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 5     | recycled                 | 115                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.0                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 6     | recycled                 | 135                                           | 1.13–1.15                                  | 70                                                                           | 2 300                                                     | 3.0                                                                              | 60                                                                                            |
|                                                                        |                                  |       |                 | 0     | other                    |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  |       |                 | G15   | 15 % glass               | ...                                           | 1.20–1.26                                  | 100                                                                          | 4 000                                                     | 3.0                                                                              | 220                                                                                           |
|                                                                        |                                  |       |                 | G25   | 25 % glass               | ...                                           | 1.29–1.37                                  | 140                                                                          | 6 000                                                     | 5.0                                                                              | 225                                                                                           |
|                                                                        |                                  |       |                 | G30   | 30 % glass               | ...                                           | 1.32–1.42                                  | 160                                                                          | 7 000                                                     | 6.0                                                                              | 230                                                                                           |
|                                                                        |                                  |       |                 | G35   | 35 % glass               | ...                                           | 1.35–1.45                                  | 170                                                                          | 8 000                                                     | 7.0                                                                              | 235                                                                                           |
|                                                                        |                                  |       |                 | G40   | 40 % glass               | ...                                           | 1.43–1.53                                  | 175                                                                          | 9 000                                                     | 8.0                                                                              | 235                                                                                           |
|                                                                        |                                  |       |                 | G45   | 45 % glass               | ...                                           | 1.45–1.55                                  | 180                                                                          | 10 000                                                    | 9.0                                                                              | 240                                                                                           |
|                                                                        |                                  |       |                 | G00   | other                    | ...                                           |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  |       |                 | M40   | 40 % mineral             | ...                                           | 1.45–1.55                                  | 80                                                                           | 5 000                                                     | 2.0                                                                              | 150                                                                                           |
|                                                                        |                                  |       |                 | M00   | other                    | ...                                           |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  |       |                 | R20   | 20 % filler              | ...                                           | 1.23–1.31                                  | 70                                                                           | 3 200                                                     | 1.5                                                                              | ...                                                                                           |
|                                                                        |                                  |       |                 | R40   | 40 % filler              | ...                                           | 1.43–1.53                                  | 100                                                                          | 5 500                                                     | 2.5                                                                              | 200                                                                                           |
|                                                                        |                                  |       |                 | R00   | other                    | ...                                           |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
| 3                                                                      | Nucleated                        | 1     |                 | 135   | 1.13–1.15                | 80                                            | 2 500                                      | 2.8                                                                          | 60                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 2     |                 | 165   | 1.13–1.15                | 80                                            | 2 500                                      | 2.8                                                                          | 60                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 3     |                 | 210   | 1.13–1.15                | 80                                            | 2 500                                      | 2.8                                                                          | 60                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 4     |                 | 270   | 1.13–1.15                | 80                                            | 2 500                                      | 2.8                                                                          | 60                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 5     | recycled        | 115   | 1.13–1.15                | 80                                            | 2 500                                      | 2.8                                                                          | 60                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 6     | recycled        | 135   | 1.13–1.15                | 80                                            | 2 500                                      | 2.8                                                                          | 60                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 0     | other           |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
| 4                                                                      | Nucleated, heat-stabilized       | 1     |                 |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | 2     |                 |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | 3     |                 |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | 4     |                 |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | 0     | other           |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
| Requirements the same as corresponding grades under Group 01, Class 3. |                                  |       |                 |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
| 5                                                                      | Impact-modified                  | 1     |                 | ...   | 1.06–1.12                | 52                                            | 1 700                                      | 9.0                                                                          | 50                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 2     | recycled        | ...   | 1.06–1.12                | 50                                            | 1 600                                      | 8.0                                                                          | 50                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 0     | other           |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | G15   | 15 % glass      | ...   | 1.15–1.23                | 85                                            | 3 000                                      | 6.0                                                                          | 210                                                       |                                                                                  |                                                                                               |
|                                                                        |                                  | G35   | 35 % glass      | ...   | 1.31–1.41                | 110                                           | 5 500                                      | 6.0                                                                          | 225                                                       |                                                                                  |                                                                                               |
| 6                                                                      | Impact-modified, heat-stabilized | G00   | other           |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | 1     |                 | ...   | 1.08–1.12                | 52                                            | 1 700                                      | 9.0                                                                          | 50                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 2     | recycled        | ...   | 1.08–1.12                | 50                                            | 1 600                                      | 8.0                                                                          | 50                                                        |                                                                                  |                                                                                               |
|                                                                        |                                  | 0     | other           |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | G15   | 15 % glass      | ...   | 1.15–1.23                | 85                                            | 3 000                                      | 6.0                                                                          | 210                                                       |                                                                                  |                                                                                               |
|                                                                        |                                  | G35   | 35 % glass      | ...   | 1.31–1.41                | 110                                           | 5 500                                      | 6.0                                                                          | 225                                                       |                                                                                  |                                                                                               |
|                                                                        |                                  | G00   | other           |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | M40   | 40 % mineral    | ...   | 1.45–1.55                | 75                                            | 4 500                                      | 4.0                                                                          | ...                                                       |                                                                                  |                                                                                               |
|                                                                        |                                  | M00   | other           |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |
|                                                                        |                                  | R35   | 35 % filler     | ...   | 1.38–1.48                | 80                                            | 5 500                                      | 3.0                                                                          | 200                                                       |                                                                                  |                                                                                               |
| R00                                                                    | other                            |       |                 |       |                          |                                               |                                            |                                                                              |                                                           |                                                                                  |                                                                                               |

 D 4066

TABLE PA Continued

| Group | Description | Class | Description                     | Grade | Description <sup>B</sup> | Viscosity<br>Number,<br>ISO 307,<br>min, mL/g | Density,<br>ISO 1183,<br>g/cm <sup>3</sup> | Tensile<br>Strength, <sup>C</sup><br>ISO 527-1<br>and<br>ISO 527-2,<br>min, MPa | Flexural<br>Modulus, <sup>D</sup><br>ISO 178,<br>min, MPa | Izod<br>Impact<br>Resistance, <sup>E</sup><br>ISO 180,<br>min, kJ/m <sup>2</sup> | Deflection<br>Temperature<br>at 1.82 MPa, <sup>F</sup><br>ISO 75-1 and<br>ISO 75-2<br>min, °C |
|-------|-------------|-------|---------------------------------|-------|--------------------------|-----------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|       |             | 7     | Toughened                       | 1     |                          | ...                                           | 1.06–1.10                                  | 42                                                                              | 1 500                                                     | 40                                                                               | 45                                                                                            |
|       |             |       |                                 | 2     | recycled                 | ...                                           | 1.05–1.11                                  | 40                                                                              | 1 300                                                     | 35                                                                               | 45                                                                                            |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | G15   | 15 % glass               | ...                                           | 1.15–1.23                                  | 70                                                                              | 2 800                                                     | 9.0                                                                              | 180                                                                                           |
|       |             |       |                                 | G35   | 35 % glass               | ...                                           | 1.28–1.38                                  | 110                                                                             | 5 500                                                     | 11                                                                               | 220                                                                                           |
|       |             | 8     | Toughened,<br>heat-stabilized   | G00   | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 1     |                          | ...                                           | 1.06–1.10                                  | 42                                                                              | 1 500                                                     | 40                                                                               | 45                                                                                            |
|       |             |       |                                 | 2     | recycled                 | ...                                           | 1.05–1.11                                  | 40                                                                              | 1 300                                                     | 35                                                                               | 45                                                                                            |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | G15   | 15 % glass               | ...                                           | 1.15–1.23                                  | 70                                                                              | 2 800                                                     | 9.0                                                                              | 180                                                                                           |
|       |             |       |                                 | G35   | 35 % glass               | ...                                           | 1.28–1.38                                  | 110                                                                             | 5 500                                                     | 11                                                                               | 220                                                                                           |
|       |             |       |                                 | G45   | 45 % glass               | ...                                           | 1.39–1.49                                  | 130                                                                             | 8 000                                                     | 10                                                                               | 230                                                                                           |
|       |             | 9     | Weather-stabilized <sup>A</sup> | G00   | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | M35   | 35 % mineral             | ...                                           | 1.37–1.47                                  | 70                                                                              | 3 800                                                     | 6.0                                                                              | ...                                                                                           |
|       |             |       |                                 | M00   | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 1     |                          | 135                                           | 1.13–1.17                                  | 80                                                                              | 2 400                                                     | 2.5                                                                              | 60                                                                                            |
|       |             |       |                                 | 2     | recycled                 | 115                                           | 1.13–1.17                                  | 65                                                                              | 2 200                                                     | 2.0                                                                              | 60                                                                                            |
|       |             | 0     | Other                           | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
| 02    | 6 Nylon     | 1     | General-purpose                 | 1     |                          | ...                                           | ...                                        | ...                                                                             | ...                                                       | ...                                                                              | ...                                                                                           |
|       |             |       |                                 | 2     |                          | ...                                           | 1.12–1.14                                  | 75                                                                              | 2 400                                                     | 4.8                                                                              | 55                                                                                            |
|       |             |       |                                 | 3     |                          |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 4     |                          |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 5     |                          |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 6     | recycled                 |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 7     | recycled                 |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 8     | recycled                 |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 2     | Heat-stabilized                 | 1     |                          |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 2     |                          |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 3     |                          |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 4     |                          |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 5     |                          |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 6     | recycled                 |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 7     | recycled                 |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 8     | recycled                 |                                               | 1.12–1.14                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | G10   | 10 % glass               |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | G15   | 15 % glass               |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | G30   | 30 % glass               |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | G45   | 45 % glass               |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | G00   | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | M35   | 35 % mineral             |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | M40   | 40 % mineral             |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | M00   | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 3     | Nucleated                       | R20   | 20 % filler              |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | R40   | 40 % filler              |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | R00   | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 1     |                          |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 2     |                          |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 3     |                          |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 4     |                          |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 5     |                          |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 4     | Nucleated,<br>heat-stabilized   | 6     | recycled                 |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 7     | recycled                 |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 8     | recycled                 |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 1     |                          |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 2     |                          |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 3     |                          |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 4     |                          |                                               | 1.12–1.15                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |

 **D 4066**
**TABLE PA** *Continued*

| Group | Description | Class | Description                                   | Grade | Description <sup>B</sup> | Viscosity<br>Number,<br>ISO 307,<br>min, mL/g | Density,<br>ISO 1183,<br>g/cm <sup>3</sup> | Tensile<br>Strength, <sup>C</sup><br>ISO 527-1<br>and<br>ISO 527-2,<br>min, MPa | Flexural<br>Modulus, <sup>D</sup><br>ISO 178,<br>min, MPa | Izod<br>Impact<br>Resistance, <sup>E</sup><br>ISO 180,<br>min, kJ/m <sup>2</sup> | Deflection<br>Temperature<br>at 1.82 MPa, <sup>F</sup><br>ISO 75-1 and<br>ISO 75-2<br>min, °C |
|-------|-------------|-------|-----------------------------------------------|-------|--------------------------|-----------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 03    | 11 Nylon    | 5     | Flexural-modified                             | 1     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 2     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 6     | Flexural-modified,<br>heat-stabilized         | 1     |                          | ...                                           | 1.05–1.16                                  | 30                                                                              | 950 max                                                   | 10.5                                                                             | 30                                                                                            |
|       |             |       |                                               | 2     |                          | ...                                           | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     |                          |                                               | 1.05–1.16                                  | 55                                                                              | 2 030 max                                                 | 10.5                                                                             | 45                                                                                            |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 7     | Impact-modified                               | 1     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 2     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 5     | recycled                 |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 8     | Impact-modified,<br>heat-stabilized           | 1     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 2     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     |                          |                                               | 1.05–1.16                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 0     | Other                                         | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 1     | General purpose                               | 1     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 2     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 5     | hydrolysis-<br>resistant |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 2     | Heat-stabilized                               | 1     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 2     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     | hydrolysis-<br>resistant |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 3     | Highly plasticized                            | 1     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 2     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 4     | Highly plasticized,<br>heat stabilized        | 1     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 2     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 5     | Moderately<br>plasticized                     | 1     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 2     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 5     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 6     | Moderately<br>plasticized,<br>heat-stabilized | 1     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 2     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 3     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 4     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 5     |                          |                                               | 1.03–1.06                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 0     | Other                                         | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
| 04    | 12 Nylon    | 1     | General purpose                               | 1     |                          | 100–210                                       | 1.00–1.06                                  | 30                                                                              | 800                                                       | 2.5                                                                              | 35                                                                                            |
|       |             |       |                                               | 2     |                          | 100–210                                       | 1.00–1.06                                  | 35                                                                              | 1 000                                                     | 2.5                                                                              | 35                                                                                            |
|       |             |       |                                               | 3     |                          | 211–270                                       | 1.00–1.06                                  | 35                                                                              | 1 000                                                     | 2.5                                                                              | 35                                                                                            |
|       |             |       |                                               | 4     |                          | 271–340                                       | 1.00–1.06                                  | 35                                                                              | 1 000                                                     | 2.5                                                                              | 35                                                                                            |
|       |             |       |                                               | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |

 D 4066

TABLE PA Continued

| Group | Description | Class | Description                     | Grade | Description <sup>a</sup> | Viscosity<br>Number,<br>ISO 307,<br>min, mL/g | Density,<br>ISO 1183,<br>g/cm <sup>3</sup> | Tensile<br>Strength, <sup>c</sup><br>ISO 527-1<br>and<br>ISO 527-2,<br>min, MPa | Flexural<br>Modulus, <sup>d</sup><br>ISO 178,<br>min, MPa | Izod<br>Impact<br>Resistance, <sup>e</sup><br>ISO 180,<br>min, kJ/m <sup>2</sup> | Deflection<br>Temperature<br>at 1.82 MPa, <sup>f</sup><br>ISO 75-1 and<br>ISO 75-2<br>min, °C |
|-------|-------------|-------|---------------------------------|-------|--------------------------|-----------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|       |             | 2     | Heat-stabilized                 | 1     |                          | 100–150                                       | 1.00–1.06                                  | 35                                                                              | 800                                                       | 2.5                                                                              | 35                                                                                            |
|       |             |       |                                 | 2     |                          | 151–210                                       | 1.00–1.06                                  | 35                                                                              | 800                                                       | 2.5                                                                              | 35                                                                                            |
|       |             |       |                                 | 3     |                          | 211–280                                       | 1.00–1.06                                  | 35                                                                              | 1 000                                                     | 2.5                                                                              | 35                                                                                            |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | G15   | 15 % glass               |                                               | 1.10–1.20                                  | 75                                                                              | 3 000                                                     | 10                                                                               | 160                                                                                           |
|       |             |       |                                 | G25   | 25 % glass               |                                               | 1.10–1.25                                  | 90                                                                              | 3 000                                                     | 15                                                                               | 160                                                                                           |
|       |             |       |                                 | G30   | 30 % glass               |                                               | 1.15–1.30                                  | 95                                                                              | 4 000                                                     | 15                                                                               | 160                                                                                           |
|       |             |       |                                 | G40   | 40 % glass               |                                               | 1.30–1.45                                  | 100                                                                             | 4 500                                                     | 15                                                                               | 160                                                                                           |
|       |             |       |                                 | G00   | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | R30   | 30 % filler              |                                               | 1.22–1.28                                  | 55                                                                              | 3 500                                                     | 5.0                                                                              | 100                                                                                           |
|       |             | 3     | Nucleated                       | 1     |                          | 100–180                                       | 1.00–1.06                                  | 35                                                                              | 800                                                       | 1.0                                                                              | 35                                                                                            |
|       |             |       |                                 | 2     |                          | 181–250                                       | 1.00–1.06                                  | 35                                                                              | 800                                                       | 1.0                                                                              | 35                                                                                            |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 4     | Plasticized                     | 1     |                          | 100–280                                       | 1.00–1.06                                  | 30                                                                              | 300–550                                                   | 15                                                                               | ...                                                                                           |
|       |             |       |                                 | 2     |                          | 100–280                                       | 1.00–1.06                                  | 30                                                                              | 450–750                                                   | 10                                                                               | ...                                                                                           |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 5     | Plasticized,<br>heat-stabilized | 1     |                          | 100–280                                       | 1.00–1.06                                  | 20                                                                              | 200–350                                                   | 20                                                                               | ...                                                                                           |
|       |             |       |                                 | 2     |                          | 100–280                                       | 1.00–1.06                                  | 30                                                                              | 300–550                                                   | 15                                                                               | ...                                                                                           |
|       |             |       |                                 | 3     |                          | 100–280                                       | 1.00–1.06                                  | 30                                                                              | 450–750                                                   | 10                                                                               | ...                                                                                           |
|       |             |       |                                 | 4     |                          | 100–280                                       | 1.00–1.06                                  | 35                                                                              | 550–950                                                   | 5.0                                                                              | ...                                                                                           |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
| 05    | 69 Nylon    | 1     | General purpose                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 1     |                          |                                               | 1.07–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 2     |                          |                                               | 1.07–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 3     |                          |                                               | 1.07–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 2     | Heat-stabilized                 | 1     |                          |                                               | 1.07–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 2     |                          |                                               | 1.07–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 3     |                          |                                               | 1.07–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
| 06    | 612 Nylon   | 1     | General-purpose                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 1     |                          | 100–139                                       | 1.05–1.07                                  | 50                                                                              | 1 800                                                     | 2.0                                                                              | 45                                                                                            |
|       |             |       |                                 | 2     |                          | 140–199                                       | 1.05–1.07                                  | 50                                                                              | 1 800                                                     | 2.5                                                                              | 45                                                                                            |
|       |             |       |                                 | 3     |                          | 200                                           | 1.05–1.07                                  | 50                                                                              | 1 800                                                     | 3.0                                                                              | 45                                                                                            |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | G35   | 35 % glass               | ...                                           | 1.28–1.38                                  | 140                                                                             | 7 000                                                     | 9.0                                                                              | 175                                                                                           |
|       |             |       |                                 | G45   | 45 % glass               | ...                                           | 1.38–1.48                                  | 150                                                                             | 8 500                                                     | 11                                                                               | 180                                                                                           |
|       |             |       |                                 | G00   | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 2     |                          | 140                                           | 1.05–1.07                                  | 50                                                                              | 1 800                                                     | 2.0                                                                              | 45                                                                                            |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 2     | Heat-stabilized                 | G30   | 30 % glass               | ...                                           | 1.25–1.33                                  | 120                                                                             | 5 500                                                     | 5.0                                                                              | 170                                                                                           |
|       |             |       |                                 | G35   | 35 % glass               | ...                                           | 1.28–1.38                                  | 140                                                                             | 7 000                                                     | 9.0                                                                              | 175                                                                                           |
|       |             |       |                                 | G00   | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 3     |                          | 140                                           | 1.05–1.07                                  | 50                                                                              | 1 800                                                     | 1.5                                                                              | 45                                                                                            |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 0     | Other                           | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
| 07    | 610 Nylon   | 1     | General purpose                 | 1     |                          |                                               | 1.05–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 2     |                          |                                               | 1.05–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 3     |                          |                                               | 1.05–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             | 2     | Heat-stabilized                 | 1     |                          |                                               | 1.05–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 2     |                          |                                               | 1.05–1.09                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
| 08    | Special     | 1     | n-alkoxy-alkyl 6:6              | 1     |                          |                                               | 1.09–1.12                                  |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
| 09    | 46 Nylon    | 1     | General-purpose                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 1     |                          |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |
|       |             |       |                                 | 2     |                          | 170                                           | 1.16–1.20                                  | 90                                                                              | 2 600                                                     | 7.0                                                                              | 140                                                                                           |
|       |             |       |                                 | 3     |                          | 195                                           | 1.16–1.20                                  | 90                                                                              | 2 600                                                     | 7.5                                                                              | 140                                                                                           |
|       |             |       |                                 | 0     | other                    |                                               |                                            |                                                                                 |                                                           |                                                                                  |                                                                                               |