

**Non-fluorinated Polymeric Substances and Fibrous or Filamentary Materials**  
**Subject to Control under the Import and Export (Strategic Commodities) Regulations**  
**(from 1 November 2023)**

**Category**    **Description**

1C008    Non-fluorinated polymeric substances, as follows:

(a)    Imides as follows:

- (1)    Bismaleimides;
- (2)    Aromatic polyamide-imides (PAI) having a ‘glass transition temperature ( $T_g$ )’ exceeding 563 K (290°C);
- (3)    Aromatic polyimides having a ‘glass transition temperature ( $T_g$ )’ exceeding 505 K (232°C);
- (4)    Aromatic polyetherimides having a ‘glass transition temperature ( $T_g$ )’ exceeding 563 K (290°C);

*Note:*

1C008(a) controls substances in liquid or solid “fusible” form, including resin, powder, pellet, film, sheet, tape or ribbon.

*N.B.:*

For non-“fusible” aromatic polyimides in film, sheet, tape or ribbon form, see 1A003.

- (b)    *(Repealed)*
- (c)    *(Repealed)*
- (d)    Polyarylene ketones;
- (e)    Polyarylene sulphides, where the arylene group is biphenylene, triphenylene or combinations thereof;
- (f)    Polybiphenylenethersulphone having a ‘glass transition temperature ( $T_g$ )’ exceeding 563 K (290°C);

*Technical Notes:*

1.    The ‘glass transition temperature ( $T_g$ )’ for 1C008(a)(2) thermoplastic materials, 1C008(a)(4) materials and 1C008(f) materials is determined using the method described in ISO 11357/2 (1999) or national equivalents.
2.    The ‘glass transition temperature ( $T_g$ )’ for 1C008(a)(2) thermosetting materials and 1C008(a)(3) materials is determined using the 3-point bend method described in ASTM D 7028-07 or equivalent national standard. The test is to be performed using a dry test specimen that has attained a minimum of 90% degree of cure as defined by ASTM E 2160-04 or equivalent national

standard, and was cured using the combination of standard and post-cure processes that yield the highest  $T_g$ .

1C010 “Fibrous or filamentary materials” as follows:

*N.B.:*

See also 1C210 and 9C110.

*Technical Notes:*

1. In calculating the “specific modulus”, “specific tensile strength” or specific weight of “fibrous or filamentary materials” for the purposes of 1C010(a), 1C010(b), 1C010(c) or 1C010(e)(1)(b), the modulus or tensile strength is to be determined using Method A described in ISO 10618 (2004) or national equivalents.
2. The assessment of “specific modulus”, “specific tensile strength” or specific weight of non-unidirectional “fibrous or filamentary materials” (for example, fabrics, random mats or braids) under 1C010 is to be based on the mechanical properties of the constituent unidirectional monofilaments (for example, monofilaments, yarns, rovings or tows) prior to processing into the non-unidirectional “fibrous or filamentary materials”.
  - (a) Organic “fibrous or filamentary materials”, having all of the following:
    - (1) “Specific modulus” exceeding  $12.7 \times 10^6$  m; *and*
    - (2) “Specific tensile strength” exceeding  $23.5 \times 10^4$  m;

*Note:*  
1C010(a) does not apply to polyethylene.
  - (b) Carbon “fibrous or filamentary materials”, having all of the following:
    - (1) “Specific modulus” exceeding  $14.65 \times 10^6$  m; *and*
    - (2) “Specific tensile strength” exceeding  $26.82 \times 10^4$  m;

*Technical Note:*

*(Repealed)*

*Note:*

1C010(b) does not apply to:

1. “Fibrous or filamentary materials”, for the repair of “civil aircraft” structures or laminates, having all of the following:
  - (a) An area not exceeding  $1 \text{ m}^2$ ;
  - (b) A length not exceeding 2.5 m; *and*
  - (c) A width exceeding 15 mm.
2. Mechanically chopped, milled or cut carbon “fibrous or filamentary materials” 25.0 mm or less in length.

(c) Inorganic “fibrous or filamentary materials”, having all of the following characteristics:

(1) Either—

(a) Composed of 50% or more by weight silicon dioxide and having a “specific modulus” exceeding  $2.54 \times 10^6$  m; *or*

(b) Not specified in 1C010(c)(1)(a) and having a “specific modulus” exceeding  $5.6 \times 10^6$  m;

(2) Melting, softening, decomposition or sublimation point exceeding 1 922 K (1 649°C) in an inert environment;

*Note:*

1C010(c) does not apply to:

1. Discontinuous, multiphase, polycrystalline alumina fibres in chopped fibre or random mat form, containing 3% by weight or more silica, with a “specific modulus” of less than  $10 \times 10^6$  m.

2. Molybdenum and molybdenum alloy fibres.

3. Boron fibres.

4. Discontinuous ceramic fibres with a melting, softening, decomposition or sublimation point lower than 2 043 K (1 770°C) in an inert environment.

(d) “Fibrous or filamentary materials”:

(1) Composed of any of the following:

(a) Polyetherimides specified by 1C008(a); *or*

(b) Materials specified by 1C008(d), 1C008(e) and 1C008(f); *or*

(2) Composed of materials specified by 1C010(d)(1)(a) or 1C010(d)(1)(b) and “commingled” with other fibres specified by 1C010(a), 1C010(b) or 1C010(c);

(e) Fully or partially resin-impregnated or pitch-impregnated “fibrous or filamentary materials” (prepregs), metal or carbon-coated “fibrous or filamentary materials” (preforms) or “carbon fibre preforms”, having all of the following:

(1) Any of the following:

(a) Inorganic “fibrous or filamentary materials” specified by 1C010(c);

(b) Organic or carbon “fibrous or filamentary materials”, having all of the following:

(1) “Specific modulus” exceeding  $10.15 \times 10^6$  m; *and*

(2) “Specific tensile strength” exceeding  $17.7 \times 10^4$  m; *and*

(2) Any of the following:

(a) Resin or pitch specified by 1C008 or 1C009(b);

- (b) 'Dynamic Mechanical Analysis glass transition temperature (DMA  $T_g$ )' equal to or exceeding 453 K (180°C) and having a phenolic resin;
- (c) 'Dynamic Mechanical Analysis glass transition temperature (DMA  $T_g$ )' equal to or exceeding 505 K (232°C) and having a resin or pitch, not specified by 1C008 or 1C009(b), and not being a phenolic resin;

*Notes:*

1. Metal or carbon-coated "fibrous or filamentary materials" (preforms) or "carbon fibre preforms", not impregnated with resin or pitch, are specified by "fibrous or filamentary materials" in 1C010(a), 1C010(b) or 1C010(c).
2. 1C010(e) does not apply to:
  - (a) Epoxy resin "matrix" impregnated carbon "fibrous or filamentary materials" (prepregs) for the repair of "civil aircraft" structures or laminates, having all of the following:
    1. An area not exceeding 1 m<sup>2</sup>;
    2. A length not exceeding 2.5 m;
    3. A width exceeding 15 mm;
  - (b) Fully or partially resin-impregnated or pitch-impregnated mechanically chopped, milled or cut carbon "fibrous or filamentary materials" 25.0 mm or less in length when using a resin or pitch other than those specified by 1C008 or 1C009(b).

*Technical Note:*

The 'Dynamic Mechanical Analysis glass transition temperature (DMA  $T_g$ )' for materials specified by 1C010(e) is determined using the method described in ASTM D 7028-07, or equivalent national standard, on a dry test specimen. In the case of thermoset materials, degree of cure of a dry test specimen shall be a minimum of 90% as defined by ASTM E 2160-04 or equivalent national standard.