

1013.10.e. con't.

2. Made from organic or carbon "fibrous or filamentary materials":
  - a) With a specific tensile strength exceeding  $17.7 \times 10^4$  m;
  - b) With a specific modulus exceeding  $10.15 \times 10^6$  m;
  - c) Not controlled by 1013.10.a. or 1013.10.b.; and
  - d) When impregnated with materials controlled by 1013.8. or 1013.9.b., having a glass transition temperature ( $T_g$ ) exceeding 383 K (110°C) or with phenolic or epoxy resins, having a glass transition temperature ( $T_g$ ) exceeding 418 K (145°C).

**Note:**

1013.10.e. does not control:

1. Epoxy resin "matrix" impregnated carbon "fibrous or filamentary materials" (prepregs) for the repair of aircraft structures or laminates, in which the size of individual sheets of prepreg does not exceed 50 cm x 90 cm;
2. Prepregs when impregnated with phenolic or epoxy resins having a glass transition temperature ( $T_g$ ) less than 433 K (160°C) and a cure temperature lower than the glass transition temperature.

**Technical Note:**

The glass transition temperature ( $T_g$ ) for 1013.10.e materials is determined using the method described in ASTM D 3418 using the dry method. The glass transition temperature for phenolic and epoxy resins is determined using the method described in ASTM D 4065 at a frequency of 1 Hz and a heating rate of 2 K (2°C) per minute using the dry method.

**Technical Notes:**

1. "Specific modulus": Young's modulus in pascals, equivalent to  $N/m^2$  divided by specific weight in  $N/m^3$ , measured at a temperature of  $(296 \pm 2)$  K ( $(23 \pm 2)^\circ\text{C}$ ) and a relative humidity of  $(50 \pm 5)\%$ .
2. "Specific tensile strength": ultimate tensile strength in pascals, equivalent to  $N/m^2$  divided by specific weight in  $N/m^3$ , measured at a temperature of  $(296 \pm 2)$  K ( $(23 \pm 2)^\circ\text{C}$ ) and a relative humidity of  $(50 \pm 5)\%$ .

11. Metals and compounds, as follows:

- a. Metals in particle sizes of less than 60  $\mu\text{m}$  whether spherical, atomised, spheroidal, flaked or ground, manufactured from material consisting of 99% or more of zirconium, magnesium and alloys of these;

**N.B.:**

The metals or alloys listed in 1013.11.a. are controlled whether or not the metals or alloys are encapsulated in aluminium, magnesium, zirconium or beryllium.

- b. Boron or boron carbide of 85% purity or higher and a particle size of 60  $\mu\text{m}$  or less;

**N.B.:**

The metals or alloys listed in 1013.11.b. are controlled whether or not the metals or alloys are encapsulated in aluminium, magnesium, zirconium or beryllium.

- c. Guanidine nitrate.

12. Materials for nuclear heat sources, as follows:

- a. Plutonium in any form with a plutonium isotopic assay of plutonium-238 of more than 50 % by weight;

**Note:**

1013.12.a. does not control:

1. Shipments with a plutonium content of one 1 g or less;
2. Shipments of 3 "effective grammes" or less when contained in a sensing component in instruments.

- b. "Previously separated" neptunium-237 in any form.

**Note:**

1013.12.b. does not control shipments with a neptunium-237 content of 1 g or less.

1014. Software

1. "Software" specially designed or modified for the "development", "production" or "use" of equipment controlled by 1012.
2. "Software" for the "development" of organic "matrix", metal "matrix" or carbon "matrix" laminates or "composites".

1015. Technology

1. "Technology" according to the General Technology Note for the "development" or "production" of equipment or materials controlled by 1011.1.b., 1011.1.c., 1011.2. to 1011.5., 1012. or 1013.
2. Other "technology", as follows:
  - a. "Technology" for the "development" or "production" of polybenzothiazoles or polybenzoxazoles;
  - b. "Technology" for the "development" or "production" of fluoroelastomer compounds containing at least one vinyl ether monomer;
  - c. "Technology" for the design or "production" of the following base materials or non-"composite" ceramic materials:
    1. Base materials having all of the following characteristics:
      - a) Any of the following compositions:
        - (1) Single or complex oxides of zirconium and complex oxides of silicon or aluminium;
        - (2) Single nitrides of boron (cubic crystalline forms);
        - (3) Single or complex carbides of silicon or boron; or
        - (4) Single or complex nitrides of silicon;
      - b) Total metallic impurities, excluding intentional additions, of less than:
        - (1) 1,000 ppm for single oxides or carbides; or
        - (2) 5,000 ppm for complex compounds or single nitrides;
    - and
    - c) Having any of the following:
      - (1) Average particle size equal to or less than 5  $\mu\text{m}$  and no more than 10% of the particles larger than 10  $\mu\text{m}$ ; or

**Note:**

For zirconia, these limits are 1  $\mu\text{m}$  and 5  $\mu\text{m}$  respectively;

- (2) Having all of the following:

- (a) Platelets with a length to thickness ratio exceeding 5;
- (b) Whiskers with a length to diameter ratio exceeding 10 for diameters less than 2  $\mu\text{m}$ ;
- and
- (c) Continuous or chopped fibres less than 10  $\mu\text{m}$  in diameter;

2. c. 2. Non-"composite" ceramic materials composed of the materials described in 1015.2.c.1.;

**Note:**

1015.2.c.2. does not control technology for the design or production of abrasives.