

1013. 5. b. 2. With a cross-section area less than $0.28 \times 10^{-4} \text{ mm}^2$; *and*
3. Which remain in the "superconductive" state at a temperature of 4.2 K (-268.96°C) when exposed to a magnetic field corresponding to a magnetic induction of 12 T;
1013. 6. Fluids and lubricating materials, as follows:
- a. Hydraulic fluids containing, as their principal ingredients, any of the following compounds or materials:
1. Synthetic hydrocarbon oils or silahydrocarbon oils with:
NOTE:
For the purpose of 1013.6.a.1., silahydrocarbon oils contain exclusively silicon, hydrogen and carbon.
 - a. A flash point exceeding 477 K (204°C);
 - b. A pour point at 239 K (-34°C) or less;
 - c. A viscosity index of 75 or more; *and*
 - d. A thermal stability at 616 K (343°C); *or*
 2. Chlorofluorocarbons with:
NOTE:
For the purpose of 1013.6.a.2., chlorofluorocarbons contain exclusively carbon, fluorine and chlorine.
 - a. No flash point;
 - b. An autogenous ignition temperature exceeding 977 K (704°C);
 - c. A pour point at 219 K (-54°C) or less;
 - d. A viscosity index of 80 or more; *and*
 - e. A boiling point at 473 K (200°C) or higher;
- b. Lubricating materials containing, as their principal ingredients, any of the following compounds or materials:
1. Phenylene or alkylphenylene ethers or thio-ethers, or their mixtures, containing more than two ether or thio-ether functions or mixtures thereof; *or*
 2. Fluorinated silicone fluids with a kinematic viscosity of less than $5,000 \text{ mm}^2/\text{s}$ (5,000 centistokes) measured at 298 K (25°C);

1013. 6. c. Damping or flotation fluids with a purity exceeding 99.8%, containing less than 25 particles of 200 micrometre or larger in size per 100 ml and made from at least 85% of any of the following compounds or materials:
1. Dibromotetrafluoroethane;
 2. Polychlorotrifluoroethylene (oily and waxy modifications only); *or*
 3. Polybromotrifluoroethylene;

Technical Note:

For the purpose of 1013.6.:

- a. Flash point is determined using the Cleveland Open Cup Method described in ASTM D-92 or national equivalents.
- b. Pour point is determined using the method described in ASTM D-97 or national equivalents.
- c. Viscosity index is determined using the method described in ASTM D-2270 or national equivalents.
- d. Thermal stability is determined by the following test procedure or national equivalents:
Twenty ml of the fluid under test is placed in a 46 ml type 317 stainless steel chamber containing one each of 12.5 mm (nominal) diameter balls of M-10 tool steel, 52100 steel and naval bronze (60% Cu, 39% Zn, 0.75% Sn).
The chamber is purged with nitrogen, sealed at atmospheric pressure and the temperature raised to and maintained at $644 \pm 6 \text{ K}$ ($371 \pm 6^\circ\text{C}$) for six hours.
The specimen will be considered thermally stable if, on completion of the above procedure, all of the following conditions are met:
 1. The loss in weight of each ball is less than $10 \text{ mg}/\text{mm}^2$ of ball surface;
 2. The change in original viscosity as determined at 311 K (38°C) is less than 25%; *and*
 3. The total acid or base number is less than 0.40.
- e. Autogenous ignition temperature is determined using the method described in ASTM E-659 or national equivalents.

1013. 7. Ceramic base materials, non-"composite" ceramic materials, ceramic-"matrix" "composite" materials and precursor materials, as follows:
- a. Base materials of single or complex borides of titanium having total metallic impurities, excluding intentional additions, of less than 5,000 ppm, an average particle size

equal to or less than 5 micrometre and no more than 10% of the particles larger than 10 micrometre;

- b. Non-"composite" ceramic materials in crude or semi-fabricated form, except abrasives, composed of borides of titanium with a density of 98% or more of the theoretical density;
- c. Ceramic-ceramic "composite" materials with a glass or oxide-"matrix" and reinforced with fibres from any of the following systems:
 1. Si-N;
 2. Si-C;
 3. Si-Al-O-N; *or*
 4. Si-O-N;
- d. Ceramic-ceramic "composite" materials, with or without a continuous metallic phase, containing finely dispersed particles or phases of any fibrous or whisker-like material, where carbides or nitrides of silicon, zirconium or boron form the "matrix";
- e. Precursor materials (i.e., special purpose polymeric or metallo-organic materials) for producing any phase or phases of the materials embargoed by 1013.7.c., as follows:
 1. Polydiorganosilanes (for producing silicon carbide);
 2. Polysilazanes (for producing silicon nitride);
 3. Polycarbosilazanes (for producing ceramics with silicon, carbon and nitrogen components);
1013. 8. Non-fluorinated polymeric substances, as follows:
- a.
 1. Bismaleimides;
 2. Aromatic polyamide-imides;
 3. Aromatic polyimides;
 4. Aromatic polyetherimides having a glass transition temperature (T_g) exceeding 503 K (230°C) as measured by the wet method;
NOTE:
1013.8.a. does not embargo non-fusible compression moulding powders or moulded forms.
1013. 8. b. Thermoplastic liquid crystal copolymers having a heat distortion temperature exceeding 523 K (250°C) measured according to ASTM D-648, method A, or national equivalents, with a load of $1.82 \text{ N}/\text{mm}^2$ and composed of:
 1. Either of the following:
 - a. Phenylene, biphenylene or naphthalene; *or*
 - b. Methyl, tertiary-butyl or phenyl substituted phenylene, biphenylene or naphthalene; *and*
 2. Any of the following acids:
 - a. Terephthalic acid;
 - b. 6-hydroxy-2 naphthoic acid; *or*
 - c. 4-hydroxybenzoic acid;
1013. 8. c. Polyarylene ether ketones, as follows:
 1. Polyether ether ketone (PEEK);
 2. Polyether ketone ketone (PEKK);
 3. Polyether ketone (PEK);
 4. Polyether ketone ether ketone ketone (PEKEKK);
1013. 8. d. Polyarylene ketones;
1013. 8. e. Polyarylene sulphides, where the arylene group is biphenylene, triphenylene or combinations thereof;
1013. 8. f. Polybiphenylenethersulphone;
1013. 9. Unprocessed fluorinated compounds, as follows:
 - a. Copolymers of vinylidene fluoride having 75% or more beta crystalline structure without stretching;
 - b. Fluorinated polyimides containing 30% or more of combined fluorine;
 - c. Fluorinated phosphazene elastomers containing 30% or more of combined fluorine;
1013. 10. "Fibrous and filamentary materials" which may be used in organic "matrix", metallic "matrix" or carbon "matrix" "composite" structures or laminates, as follows:
 - a. Organic "fibrous or filamentary materials" (except polyethylene) with:
 1. A "specific modulus" exceeding $12.7 \times 10^6 \text{ m}$; *and*
 2. A "specific tensile strength" exceeding $23.5 \times 10^4 \text{ m}$;
 - b. Carbon "fibrous or filamentary materials" with:
 1. A "specific modulus" exceeding $12.7 \times 10^6 \text{ m}$; *and*
 2. A "specific tensile strength" exceeding $23.5 \times 10^4 \text{ m}$;
- Technical Note:**
Properties for materials described in 1013.10.b. should be determined using SACMA recommended methods SRM 12 to 17, or national equivalent tow tests, such as Japanese