

# GROUP 4 – NUCLEAR NON-PROLIFERATION LIST

The definitions set out in pages 77 to 78 of this Guide apply in respect to Group 4 - Part II only.

## 4000. TECHNOLOGY

- (1) **PART I – Technical data including, but not limited to, technical drawings, models, photographic negatives and prints, recordings, design data and technical and operating manuals whether in written form or recorded on other media or devices such as disk, tape and read-only memories for the design, production, construction, operation or maintenance of any item in this Group, except data available to the public (e.g., in published books or periodicals, or that which has been made available without restrictions upon its further dissemination).**
- (2) **PART II – Technical data required for the "development", "production", or "use" of any item contained in the List, except data available to the public (e.g., in published books or periodicals, or that which has been made available without restrictions upon its further dissemination).**

## PART I - ATOMIC ENERGY MATERIALS AND EQUIPMENT

### 4001. Special and Other Fissionable Materials

1. In this item "previously separated", means the result of any process that is intended to increase the concentration of the controlled isotope therein; (*précédemment séparés*) "uranium enriched in the isotopes 235 or 233" means uranium that contains the isotopes 235 or 233, or both, in an amount such that the abundance ratio of the sum of those isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 in nature. (*uranium enrichi en isotopes 235 ou 233*)
2. Special and other fissionable materials, as follows:
  - a. plutonium and all isotopes, alloys and compounds and any material that contains any of the foregoing, other than plutonium 238 that is contained in heart pace-makers;
  - b. uranium 233, uranium enriched in the isotopes 235 or 233 and all alloys and compounds and any material that contains any of the foregoing; and
  - c. previously separated americium 242m, curium 245 and 247 and californium 249 and 251 and any material that contains the foregoing.

### 4002. Source Materials

Source materials that are in any form, including ore, concentrate, compound, metal or alloy, or that are incorporated in any substance other than medicinals, and in which the concentration of source material is greater than 0.05 weight per cent, as follows:

- a. uranium that contains the mixture of isotopes that occurs in nature;
- b. uranium that is depleted in the isotope 235; and
- c. thorium.

### 4003. Deuterium

Deuterium and compounds, mixtures and solutions that contain deuterium, including heavy water and heavy paraffins, and in which the ratio of deuterium atoms to hydrogen atoms is greater than 1 part to 5,000 parts by number.

### 4004. Zirconium

Zirconium metal, alloys and compounds in which the ratio of hafnium content to zirconium content is less than 1 part to 500 parts by weight, and manufactures wholly thereof.

### 4005. Nickel

1. In this item, "porous nickel metal" means porous nickel metal manufactured from nickel powder described in paragraph 4005.2.a. that has been compacted and sintered to form a metal material that has fine pores interconnected throughout its structure. (*nickel métal poreux*)
2. Nickel, as follows:
  - a. powder that has a nickel purity content of 99.9 weight per cent or more and a mean particle size of less than 10 m when measured using ASTM Standard B 330, Standard Test Method for Average Particle Size of Powders of Refractory Metal and their Compounds by the Fisher Sub-sieve Sizer; and
  - b. porous nickel metal that is produced from materials included in paragraph a., other than single porous nickel metal sheets not greater than 0.093 m<sup>2</sup> in size intended for use in batteries for civil applications.

### 4006. Nuclear-grade Graphite

Nuclear-grade graphite, that is, graphite that has

- a. a thermal neutron absorption cross-section equivalent to less than 5 ppm of boron; and
- b. a density greater than 1 500 kg/m<sup>3</sup>.

### 4012. Tritium

Tritium and compounds and mixtures that contain tritium in which the ratio of tritium to hydrogen by atoms is greater than 1 part in 1,000, and products that contain one or more of the foregoing.

### 4013. Materials for Nuclear Heat Sources

1. In this item, "previously separated" has the same meaning as in item 4001. (*précédemment séparé*)
2. Materials for nuclear heat sources, that is, previously separated neptunium 237 in any form.

### 4014. Specially Designed or Prepared Materials for Separation of Isotopes

Specially designed or prepared materials, including specially designed chemical exchange resins, for the separation of isotopes of special and other fissionable materials and for the separation of isotopes of natural and depleted uranium.

### 4100. Parts for specially designed equipment included in items 4101 to 4221.

### 4101. Plants for the separation of isotopes of special and other fissionable materials and source materials, and specially designed or prepared equipment and components therefor, including

- a. valves that are wholly made of or lined with UF<sub>6</sub>-resistant fully fluorinated hydrocarbon polymers, stainless steel, aluminum, aluminum alloys, aluminium oxide, nickel or alloys that contain 60 weight per cent or more nickel, and that are 40 mm or greater in diameter and have bellows seals;
- b. blowers and compressors, turbo, centrifugal axial and positive displacement types, that are wholly made of or lined with UF<sub>6</sub>-resistant fully fluorinated hydrocarbon polymers, stainless steel, aluminium, aluminium alloys, aluminium oxide, nickel or alloys that contain 60 weight per cent or more nickel and that have a capacity of 1.3 m<sup>3</sup>/minute or greater, including compressor seals;
- c. gaseous diffusion barriers;
- d. gaseous diffuser housings;
- e. heat exchangers that are made of or lined with UF<sub>6</sub>-resistant fully fluorinated hydrocarbon polymers, aluminium, aluminium alloys, aluminium oxide, copper, nickel or alloys that