

3102. Plants for the reprocessing of irradiated nuclear reactor fuel elements, and specially designed or prepared equipment and components therefor, including:

3102. a. Fuel element chopping or shredding machines, i.e., remotely operated equipment to cut, chop, shred or shear irradiated nuclear reactor fuel assemblies, bundles or rods;
- b. Criticality safe tanks (e.g., small diameter, annular or slab tanks) specially designed or prepared for the dissolution of irradiated nuclear reactor fuel, which are capable of withstanding hot, highly corrosive liquids, and which can be remotely loaded and maintained;
- c. Counter-current solvent extractors and ion-exchange processing equipment specially designed or prepared for use in a plant for the reprocessing of irradiated natural uranium, depleted uranium or "special fissile materials" and other fissile materials;
- d. Process control instrumentation specially designed or prepared for monitoring or controlling the reprocessing of irradiated source and "special fissile materials" and other fissile materials.

Technical Note:

A plant for the reprocessing of irradiated nuclear reactor fuel elements includes equipment and components which normally come into direct contact with and directly control the irradiated fuel and the major nuclear material and fission product processing streams.

3103. Nuclear reactors, i.e., reactors capable of operation so as to maintain a controlled, self-sustaining fission chain reaction, and equipment and components specially designed or prepared for use in connection with a nuclear reactor, including:

3103. a. Pressure vessels, i.e., metal vessels as complete units or as major shop-fabricated parts therefor, which are specially designed or prepared to contain the core of a nuclear reactor and are capable of withstanding the operating pressure of the primary coolant, including the top plate for a reactor pressure vessel;
- b. Fuel element handling equipment, including reactor fuel charging and discharging machines;
- c. Control rods, i.e., rods specially designed or prepared for the control of the reaction rate in a nuclear reactor, including the neutron absorbing part and the support or suspension structures therefor, and control rod guide tubes;
- d. Electronic controls for controlling the power levels in nuclear reactors, including reactor control rod drive mechanisms and radiation detection and measuring instruments to determine neutron flux levels;
- e. Pressure tubes, i.e., tubes specially designed or prepared to contain fuel elements and the primary coolant in a nuclear reactor at an operating pressure in excess of 50 bars (atmospheres);
- f. Coolant pumps, i.e., pumps specially designed or prepared for circulating the primary coolant of nuclear reactors;
- g. Internal components specially designed or prepared for the operation of a nuclear reactor, including core support structures, thermal shields, baffles, core grid plates and diffuser plates;
- h. Heat exchangers.

NOTES:

1. Each Government will use its discretion in determining whether or not a component is specially designed or prepared for use in connection with a nuclear reactor.
2. Governments may permit, as administrative exceptions, the shipment of water-cooled and moderated civil nuclear power reactors, components therefor and initial shipments of fuel and moderators therefor, provided:
- a. The reactor is designed to use uranium fuel of 20 weight percent (o/w) or less enrichment;
- b. Fuel to be provided shall be uranium of 20 weight percent (o/w) or less enrichment; and
- c. The reactor is not designed for marine propulsion.
3. Governments may permit, as administrative exceptions, the shipment of electronic components embargoed by 3103.d. for water-cooled, graphite-moderated civil nuclear power reactors.

(For "software", see 3301.)

3104. Plants specially designed for the fabrication of nuclear reactor fuel elements and specially designed equipment therefor.

Technical Note:

A plant for the fabrication of nuclear reactor fuel elements includes equipment which:

- a. Normally comes into direct contact with or directly processes or controls the production flow of nuclear materials;
- b. Seals the nuclear material within the cladding;
- c. Checks the integrity of the cladding or the seal; and
- d. Checks the finish treatment of the solid fuel.

NOTE:

The Committee will favourably consider the export of items embargoed by 3104. to the Czech Republic, Slovak Republic and Poland. The Committee will approve the case if no member country has raised an objection within four weeks of the receipt of complete information on the application.

3105. Plants for the production of heavy water, deuterium or deuterium compounds, and specially designed or prepared equipment and components therefor, as follows:

3105. a. Plants for the production of heavy water, deuterium or deuterium compounds, as follows:
1. Hydrogen sulphide-water exchange plants;
2. Ammonia-hydrogen exchange plants;
3. Hydrogen distillation plants;
- b. Equipment and components, as follows, specially designed or prepared for:
1. Hydrogen sulphide-water exchange process:
- a. Tray exchange towers;
- b. Hydrogen sulphide gas compressors;
2. Ammonia-hydrogen exchange process:
- a. High-pressure ammonia-hydrogen exchange towers;
- b. High-efficiency stage contactors;
- c. Submersible stage recirculation pumps;
- d. Ammonia crackers designed for pressures of more than 3×10^6 pascal (30 bar);
3. Hydrogen distillation process:
- a. Hydrogen cryogenic distillation towers and cold boxes designed for operation below 35 K;
- b. Turboexpanders or turboexpander-compressor sets designed for operation below 35 K;
4. Concentration of heavy water to reactor grade (99.75 weight percent (o/w) deuterium oxide):
- a. Water distillation towers containing specially designed packings;
- b. Ammonia distillation towers containing specially designed packings;
- c. Catalytic burners for conversion of fully enriched deuterium to heavy water;
- d. Infrared absorption analysers capable of on-line hydrogen-deuterium ratio analysis where deuterium concentrations are equal to or more than 90 weight percent (o/w).

3106. Plants for the production of uranium hexafluoride (UF₆) and specially designed or prepared equipment and components therefor, as follows:

3106. a. Plants for the production of UF₆;
- b. Equipment and components, as follows, specially designed or prepared for UF₆ production:
1. Fluorination and hydrofluorination screw and fluid bed reactors and flame towers;
2. Distillation equipment for the purification of UF₆.