

1081. 2. j. 3. a. Devices or enclosures specially designed for underwater noise reduction in frequencies below 10 kHz or special mounting devices for shock mitigation; *or*
- b. Systems specially designed:
1. To pressurize the products of reaction or for fuel reformation;
  2. To store the products of the reaction; and
  3. To discharge the products of the reaction against a pressure of 100 kPa or more;
- k. Skirts, seals and fingers, as follows:
1. Designed for cushion pressures of 3,830 Pa or more, operating in a significant wave height of 1.25 m (Sea State 3) or more and specially designed for surface effect vehicles (fully skirted variety) embargoed by 1081.1.f.;
  2. Designed for cushion pressures of 6,224 Pa or more, operating in a significant wave height of 3.25 m (Sea State 5) or more and specially designed for surface effect vehicles (rigid sidewalls) embargoed by 1081.1.g.;
- l. Lift fans rated at more than 400 kW specially designed for surface effect vehicles embargoed by 1081.1.f. or 1081.1.g.;
- m. Fully submerged subcavitating or supercavitating hydrofoils specially designed for vessels embargoed by 1081.1.h.;
- n. Active systems specially designed or modified to control automatically the sea-induced motion of vehicles or vessels embargoed by 1081.1.f., g., h. or i.;
- o. 1. Water-screw propeller or power transmission systems, as follows, specially designed for surface effect vehicles (fully skirted or rigid sidewall variety), hydrofoils or small waterplane area vessels embargoed by 1081.1.f., g., h. or i.:
- a. Supercavitating, super-ventilated, partially-submerged or surface piercing propellers rated at more than 7.5 MW;
  - b. Contrarotating propeller systems rated at more than 15 MW;
  - c. Systems employing pre-swirl or post-swirl techniques for smoothing the flow into a propeller;
  - d. Light-weight, high capacity (K factor exceeding 300) reduction gearing;
  - e. Power transmission shaft systems, incorporating "composite" material components, capable of transmitting more than 1 MW;
2. Water-screw propeller, power generation or transmission systems for use on vessels, as follows:
- a. Controllable-pitch propellers and hub assemblies rated at more than 30 MW;
  - b. Internally liquid-cooled electric propulsion engines with a power output exceeding 2.5 MW;
  - c. "Superconductive" propulsion engines, or permanent magnet electric propulsion engines, with a power output exceeding 0.1 MW;
  - d. Power transmission shaft systems, incorporating "composite" material components, capable of transmitting more than 2 MW;
  - e. Ventilated or base-ventilated propeller systems rated at more than 2.5 MW;
3. Noise reduction systems for use on vessels of 1,000 tonnes displacement or more, as follows:
- a. Noise reduction systems that attenuate at frequencies below 500 Hz and consist of compound acoustic mounts for the acoustic isolation of diesel engines, diesel generator sets, gas turbines, gas turbine generator sets, propulsion motors or propulsion reduction gears, specially designed for sound or vibration isolation, having an intermediate mass exceeding 30% of the equipment to be mounted;
  - b. Active noise reduction or cancellation systems, or magnetic bearings, specially designed for power transmission systems, and incorporating electronic control systems capable of actively reducing equipment vibration by the generation of anti-noise or anti-vibration signals directly to the source;

- p. Pumpjet propulsion systems with a power output exceeding 2.5 MW using divergent nozzle and flow conditioning vane techniques to improve propulsive efficiency or reduce propulsion-generated underwater-radiated noise;

(For underwater communications systems, see Category 1050. (Telecommunications)).

## 1082. Test, Inspection and Production Equipment

Water tunnels, having a background noise of less than 100 dB (reference 1 micropascal, 1 Hz) in the frequency range from 0 to 500 Hz, designed for measuring acoustic fields generated by a hydro-flow around propulsion system models;

## 1083. Materials

1083. Syntactic foam for underwater use:

1. Designed for marine depths exceeding 1,000 m; and
2. With a density less than 561 kg/m<sup>3</sup>;

### Technical Note:

Syntactic foam consists of hollow spheres of plastic or glass embedded in a resin matrix.

## 1084. Software

1084. 1. "Software" specially designed or modified for the "development", "production" or "use" of equipment or materials embargoed by 1081., 1082. or 1083.;
2. Specific "software" specially designed or modified for the "development", "production", repair, overhaul or refurbishing (re-machining) of propellers specially designed for underwater noise reduction;

## 1085. Technology

1085. 1. Technology according to the General Technology Note for the "development" or "production" of equipment or materials embargoed by 1081., 1082. or 1083.;
2. Other technology, as follows:
- a. Technology for the "development", "production", repair, overhaul or refurbishing (re-machining) of propellers specially designed for underwater noise reduction;
  - b. Technology for the overhaul or refurbishing of equipment embargoed by 1081.1., 1081.2.b., j., o. or p.

### NOTE:

Governments may permit, as administrative exceptions, the shipment for civil end-uses (e.g., underwater oil, gas or mining operations) of manipulators embargoed by 1081.2.i.2. having 5 degrees of freedom of movement.

## 1090. PROPULSION

### 1091. Equipment, Assemblies and Components

(For propulsion systems designed or rated against neutron or transient ionizing radiation, see Group 2.)

1091. 1. Aero gas turbine engines incorporating any of the technologies embargoed by 1095.3.a., as follows:
- a. Not certified for the specific "civil aircraft" for which they are intended;
- NOTE:**
- For the purpose of the "civil aircraft" certification process, a limited number of civil certified engines, assemblies or components may be exported as determined by Member Governments. This limited number is defined as the minimum required (up to 16, including spares) for civil certification.
- b. Not certified for civil use by the aviation authorities in a member country;
  - c. Designed to cruise at speeds exceeding Mach 1.2 for more than thirty minutes;
1091. 2. Marine gas turbine engines with an ISO standard continuous power rating of 13,795 kW or more and a specific fuel consumption of less than 0.243 kg/kWh, and specially designed assemblies and components therefor;
1091. 3. Specially designed assemblies and components, incorporating any of the technologies embargoed by 1095.3.a., for the following gas turbine engine propulsion systems:
- a. Embargoed by 1091.1.; *or*