STATUTORY INSTRUMENTS

1965 No. 1324

CUSTOMS AND EXCISE

The Export of Goods (Control) Order 1965

Made - - - -	*25th June* 1965
Coming into Operation	*2nd August* 1965

The Board of Trade, in exercise of the powers conferred upon them by section 1 of the Import, Export and Customs Powers (Defence) Act 1939(a) hereby order as follows:—

Prohibitions and restrictions on exportation

1. Subject to the provisions of this Order—

(i) goods of a description included in Schedule 1 hereto and therein indicated by the letter A are prohibited to be exported from the United Kingdom or shipped as ships' stores; and

(ii) goods of a description included in the said Schedule but not therein indicated by the letter A are prohibited to be exported from the United Kingdom to any port or destination other than a port or destination in the Commonwealth, the Republic of Ireland, the Republic of South Africa or the United States of America, or to be shipped as ships' stores.

Exceptions

2. Nothing in Article 1 of this Order shall be taken to prohibit the exportation of—

Licensed exports and permitted ships' stores

(*a*) any goods under the authority of a licence granted by the Board of Trade, or the shipment of any goods as ships' stores with the permission of the proper officer of Customs and Excise at the port of departure for use on board the ship provided that all conditions attaching to the said licence or the said permission are complied with;

Samples

(*b*) trade samples of any goods, if the samples have no saleable value and they are exported as sample packets in compliance with the provisions of the Post Office Acts, and of the Customs Acts, and of any Treasury Warrant or Post Office Regulations for the time being in force, and of any other rules or regulations respecting the transmission of articles by post which may for the time being be in force in the United Kingdom or in the countries or places to which such goods may be addressed;

Aircraft

(*c*) (i) any aircraft registered outside the United Kingdom which is being re-exported after temporary importation into the United Kingdom, provided that there has been no change of ownership or registration since such importation;

(a) 2 & 3 Geo. 6. c. 69.

(ii) any aircraft engaged on a scheduled journey as defined in section 24(2) of the Air Corporations Act 1949(a);

Firearms and Ammunition

(*d*) firearms and ammunition, not being goods of a description included in Group 9 of Schedule 1 hereto, authorised to be held by a valid firearm certificate granted under section 1(1) of the Firearms Act 1920(b) or section 2 of the Firearms Act 1937(c) and forming part of the personal effects of the holder, if the certificate is produced by the holder with the firearms and ammunition to the proper officer of Customs and Excise at the port of exportation;

Channel Islands

(*e*) any goods other than

(i) goods of a description included in Group 1 in Schedule 1 hereto; and

(ii) goods falling within the description of articles manufactured or produced more than 100 years before the date of exportation which is set out in Group 9 in the said Schedule;

to any port or destination in the Channel Islands:

Diamonds

(*f*) diamonds, unmounted, exported—

(i) by registered letter post, insured box post or air freight, to any destination; or

(ii) by insured parcel post to any destination in any territory which is for the time being one of the scheduled territories as defined in the Exchange Control Act 1947(d);

Diamond Jewellery

(*g*) articles mounted or set with diamonds, being personal jewellery owned by and in the baggage of or worn or carried by a person leaving the United Kingdom, but not including any article made more than 100 years before the date of exportation;

Strategic Goods

(*h*) any goods the re-exportation of which is authorised by a licence granted by the Board of Trade under the Control of Goods (Import Certificates) Order 1951(e) if the said licence is duly produced to the proper officer of Customs and Excise at the port of shipment or, if the goods are exported by post, to an officer of the Post Office at which they are posted;

Live Cattle, Sheep and Swine

(*j*) (i) any animal in respect of which there is duly produced to the proper officer of Customs and Excise at the place of export a licence granted under Article 9(1)(*a*) of the Exported Animals Protection Order 1964(f);

(ii) live cattle, sheep and swine from Northern Ireland to the Republic of Ireland;

(a) 12, 13 & 14 Geo. 6. c. 91.
(b) 10 & 11 Geo. 5. c. 43.
(c) 1 Edw. 8 & 1 Geo. 6. c. 12.
(d) 10 & 11 Geo. 6. c. 14.
(e) S.I. 1951/1016 (1951 III, p. 548).
(f) S.I. 1964/704 (1964 II, p. 1352).

Gifts

(*k*) any goods of a description included in Group 9 of Schedule 1 hereto or eggs, in shell, of domestic poultry, which are contained in a parcel:

Provided that—

(i) the parcel is exported by parcel post;

(ii) the goods are the bona fide gift of an individual, who is named and described on the outside of the parcel as the sender (hereinafter called the "donor") to an individual to whom the parcel is addressed for the benefit of that individual absolutely;

(iii) the value of all the goods in the parcel does not exceed £25;

(iv) the parcel does not contain any goods which are not a bona fide individual gift;

(v) any declaration required to be made in relation to the parcel contains a full and accurate description by the donor of all the goods contained therein and states that all those goods constitute unsolicited gifts.

In this paragraph "individual" does not include a body corporate or unincorporate or more than one natural person.

Customs powers to demand evidence of destination which goods reach

3. Any exporter or any shipper of goods which have been exported from the United Kingdom shall if so required by the Commissioners of Customs and Excise, furnish within such time as they may allow, proof to their satisfaction that the goods have reached either—

(i) a destination to which they were authorised to be exported by a licence granted for the purposes of this Order, or

(ii) a destination to which their exportation was not prohibited by this Order;

and, if he fails to do so, he shall incur a Customs penalty of five hundred pounds unless he proves that he did not consent to or connive at the goods reaching any destination other than such a destination as aforesaid.

Offences in connection with applications for licences etc.

4. If for the purpose of obtaining any licence or permission for the exportation or shipment as ships' stores of any goods any person makes any statement or furnishes any document or information which to his knowledge is false in a material particular or recklessly makes any statement which is false in a material particular he shall be guilty of an offence and liable on summary conviction to a fine not exceeding one hundred pounds, or to imprisonment for a term not exceeding six months, or to both; and any licence or permission which may have been granted for the exportation or shipment as ships' stores of any goods, in connection with the application for which the false statement was made or the false document or information furnished, shall be void as from the time it was granted.

Declaration as to goods: powers of search

5.—(1) Any person who, on any occasion, is about to leave the United Kingdom shall, if on that occasion he is required to do so by an officer of Customs and Excise—

(*a*) declare whether or not he has with him any goods the export of which from the United Kingdom is subject to any prohibition or restriction under this Order; and

(*b*) produce any such goods as aforesaid which he has with him; and such officer, and any person acting under his directions, may search that person for the purpose of ascertaining whether he has with him any such goods as aforesaid:

Provided that no female shall be searched in pursuance of this paragraph except by a female.

(2) Where at any place in the United Kingdom, any person is on any occasion found in circumstances in which it is reasonable to suppose that on that occasion he has communicated, or intends to communicate, with a person about to leave the United Kingdom, the provisions of paragraph (1) of this Article shall apply in relation to the person so found as they apply in relation to a person about to leave the United Kingdom; and where any person is on any occasion found travelling in the United Kingdom to or from any place in such circumstances as aforesaid, the said provisions shall apply in relation to him as they would apply if, when so found, he had been about to leave the United Kingdom.

(3) Any person who refuses to make a declaration, fails to produce any goods or refuses to allow himself to be searched in accordance with the foregoing provisions of this Article, or who makes a declaration which is false in a material particular, shall be guilty of an offence and liable on summary conviction to a Customs penalty of one hundred pounds, or to imprisonment for a term not exceeding six months, or to both.

Overlapping descriptions

6. Where any goods fall within a description included in Schedule 1 hereto and therein indicated by the letter A and also fall within a description included as aforesaid but not so indicated by that letter those goods shall be deemed to fall only within the first-mentioned description.

Modification and revocation of licences etc.

7.—(1) Any licence granted by the Board of Trade in pursuance of Article 2 (*a*) or having effect as if so granted may be modified or revoked by them at any time.

(2) Any permission granted by the proper officer of Customs and Excise for the shipment of any goods as ships' stores may be modified or revoked at any time by such officer.

Revocations, etc.

8. The Arms Export Prohibition Orders 1931-37(**a**) are hereby suspended and the Orders specified in Schedule 2 hereto are hereby revoked:

Provided that any licence or permission granted, or having effect under any Order hereby suspended or revoked and in force immediately before the commencement of this Order, shall have effect in like manner as if it had been granted under the corresponding provisions of this Order.

Interpretation

9.—(1) In this Order—

"cattle" means bulls, cows, oxen, heifers and calves;

"Commonwealth" means the Commonwealth preference area as defined in section 2 of the Import Duties Act 1958(**b**) but excluding Burma, the Republic of Ireland and the Republic of South Africa;

(**a**) S.R. & O. 1931/413 (Rev. V, p. 499: 1931, p. 252); 1937/525 (Rev. V, p. 501: 1937, p. 612).

(**b**) 6 & 7 Eliz. 2. c. 6.

" goods " unless otherwise specified, means both used and unused goods ;

" sheep " includes rams, ewes and lambs ;

" summary conviction " means, in the application of this Order to Northern Ireland, conviction subject to and in accordance with the Petty Sessions (Ireland) Act 1851(a) and any Act amending that Act whether past or future ;

" swine " includes pigs of all ages and either sex ;

" United Kingdom " includes the Isle of Man ;

numerical references in Schedule 1 hereto to British Standards are references to the standards so numbered published by the British Standards Institution in the year indicated after such references with such amendments (if any) thereto as may have been made before the making of this Order ;

references in Schedule 1 hereto to percentages of the contents of any goods are references to percentages by weight ; and

any other terms which are defined in Schedule 1 hereto have, when used in the context mentioned in the definition, the meaning so ascribed to them.

(2) The Interpretation Act 1889(b) shall apply to the interpretation of this Order as it applies to the interpretation of an Act of Parliament and as if this Order, the Orders hereinbefore mentioned and the Orders hereby revoked were Acts of Parliament.

Citation and Commencement

10. This Order may be cited as the Export of Goods (Control) Order 1965 and shall come into operation on 2nd August 1965.

25th June 1965.

H. Bailey,
An Under Secretary of the
Board of Trade.

SCHEDULE 1

GROUP 1

Aircraft, Arms and Military Stores and Appliances

Aircraft, assembled or dismantled	A
Aircraft engines	A
Apparatus and appliances specially designed for use in aircraft, the following:—	
Anti-g suits	A
Anti-g valves	A
Liquid oxygen converters	A
Partial pressure suits	A
Pressurised breathing apparatus	A
Appliances for use with arms and apparatus specially designed and intended for land, sea or aerial warfare	A
Appliances, mechanical, designed to produce smoke for military purposes...	A

(a) 14 & 15 Vict. c. 93. (b) 52 & 53 Vict. c. 63.

Arms and ammunition and component parts thereof, the following:—

(1) Small arms, machine guns and smooth bore guns, the following:—

(*a*) Carbines, pistols (including machine pistols), revolvers, rifles, smooth bore guns ... ... A

(*b*) Machine guns, interrupter gears and mountings for machine guns ... ... A

(2) Artillery and projectors, the following:—

(*a*) Cannon, guns, howitzers, military flame throwers, mortars, recoilless rifles, rocket launchers, rocket projectors, tank destroyers ... ... A

(*b*) Carriages and mountings and accessories for mountings for items mentioned in sub-head (*a*) ... ... A

(*c*) Military smoke, gas and pyrotechnic projectors ... ... A

(3) Ammunition, including projectiles, for any of the weapons mentioned in heads (1) or (2) of this entry ... ... A

(4) Component parts of any of the foregoing ... ... A

Bayonets and component parts thereof ... ... A

Bombs, mines, missiles guided or unguided, rockets, torpedoes, apparatus designed for use therewith, and component parts thereof, the following:—

(1) Bombs, torpedoes, grenades (including smoke grenades), smoke canisters, rockets, mines, missiles guided or unguided, depth charges, fire bombs, incendiary bombs, and component parts thereof ... A

(2) Apparatus and devices specially designed for the handling, control, activation, launching, laying, sweeping, clearing, discharging, detonation or detection of items mentioned in head (1) of this entry and component parts thereof ... ... A

Bullet-proof clothing ... ... A

Centrifugal equipment specially designed for the testing of any item included in Group 1 of this Order ... ... A

Computers, aircraft interception ... ... A

Construction equipment built to military specifications, specially designed for airborne transport ... ... A

Cryogenic equipment, the following:—

(1) Equipment designed for maintaining an ambient temperature below −130° Centigrade—

(*a*) Designed for use in marine, airborne or space applications ... A

(*b*) Ruggedised for mobile ground use ... ... A

(*c*) Designed to maintain operating temperatures for electrical, magnetic or electronic equipment or components ... ... A

(2) Electrical, magnetic or electronic equipment and electrical conductors designed for operation continuously or discontinuously at ambient temperatures below −130° Centigrade ... ... A

(3) Specially designed accessories, sub-assemblies, parts or components for (1) and (2) ... ... A

Devices designed for the detection of the noxious gases specified in this Group ... ... A

Devices for firing booby traps ... ... A

Diving and under-water swimming apparatus, self-contained, of the closed circuit or semi-closed (re-breathing) types, and articles specially designed for use therewith ... ... † ... ... A

Electronic equipment specially designed for military use and component parts thereof ... ... A

Environmental chambers capable of simulating temperature, or pressure, or humidity conditions equivalent to those existing at altitudes of 75,000 feet or above; and specially designed parts, controls and devices therefor ... ... A

Explosives, propellants and related substances, the following:—

(1) (*a*) Ammonium perchlorate ... ... A

(*b*) Cellulose nitrate (in dry or wetted form) ... ... A

(*c*) Dinitrophenol (in dry or wetted form) ... ... A

(*d*) Guanidinium nitrate ... ... A

(*e*) Hydrazine and its derivatives, the following:—

*asym*Dimethylhydrazine ... ... A

*sym*Dimethylhydrazine ... ... A

Hydrazine in concentrations of 70 per cent. or more ... A

Hydrazinium nitrate ... ... A

Methylhydrazine ... ... A

(*f*) Hydrogen peroxide in concentrations of 66 per cent. or more ... A

(*g*) Nitric acid, fuming, containing not more than 3 per cent. by weight of water ... ... A

(*h*) Picrates (in dry or wetted form) ... ... A

(*i*) Stabilisers for explosives, the following:—

*sym*Diethyldiphenylurea (centralite 1) ... ... A

*sym*Dimethyldiphenylurea (centralite 2) ... ... A

*asym*Diphenylurea ... ... A

Ethyldiphenylcarbamate ... ... A

Ethyl*asym*diphenylurea ... ... A

Ethyl di-*o*-tolylcarbamate... ... ... A

Ethyl N-ethylphenylcarbamate ... ... A

Methyl*asym*diphenylurea ... ... A

2-Nitrodiphenylamine ... ... A

N-Methyl-*p*-nitroaniline ... ... A

(2) Chemical base high energy solid or liquid fuels specially formulated for military purposes ... ... A

(3) Explosives, not elsewhere specified, as defined in Section 3 of the Explosives Act 1875 ... ... A

Fire control, range finding and sighting apparatus, the following:—

Fire control, gun laying, night sighting, missile tracking and guidance apparatus ... ... A

Range, position and height finders, and spotting instruments specially designed for military purposes ... ... A

Aiming devices, electronic, gyroscopic, acoustic and optical, specially designed for military purposes ... ... A

Bomb sights, bombing computers, gun sights and periscopes specially designed for military purposes ... ... A

Television sighting units specially designed for military purposes, and inertial platforms ... ... A

Component parts of any of the foregoing ... ... A

Telemetering and telecontrol apparatus suitable for use with aircraft (piloted or pilotless), missiles (guided or unguided) or space vehicles (guided or unguided) and specialised test equipment therefor ... ... A

Fuses and component parts thereof ... ... A

Gas masks, respirators and similar protective devices, and face-pieces and filter canisters therefor	A
Gilding metal clad steel	A
Gun forgings, rough	A
Gun turrets, including barbettes, and component parts thereof	A
Infra-red image-converter tubes	A
Instruments or devices capable of automatically measuring the speed of sound *in situ* in water and rated for differential sensitivity measurements in the proportion of 1 in 5,000 or higher and specialised parts therefor	A
Equipment containing such instruments or devices	A
Kine-theodolites	A
Machinery and machine tools and implements or accessories, the following:—	
Armour plate drilling machines, other than radial drilling machines ...	A
Armour plate planing machines	A
Armour plate quenching presses	A
Artillery casting machines	A
Bomb copy boring lathes	A
Bomb nose and tail boring machines	A
Bomb nose and tail forging machines	A
Bomb spinning lathes	A
Bullet assembling (multipunch) machines	A
Bullet canneluring machines	A
Bullet core filling machines	A
Bullet cutting and cupping machines	A
Bullet drawing machines	A
Bullet gauging machines	A
Bullet lead forming machines	A
Bullet pointing, forming and sizing machines	A
Bullet trimming machines	A
Bullet weighing machines	A
Cartridge automatic loading machines	A
Cartridge cap cutting and cupping machines	A
Cartridge cap varnishing machines	A
Cartridge case presses	A
Cartridge case flash-hole drilling machines	A
Cartridge case flash-hole piercing machines	A
Cartridge case head turning lathes	A
Cartridge case mouth boring lathes	A
Cartridge cordite reeling machines	A
Cartridge cup priming and pressing machines	A
Cartridge finishing and assembly machines	A
Cartridge gauging and weighing machines	A
Cartridge hand loading machines	A
Cartridge neck varnishing machines	A
Cartridge sizing or rectifying machines	A
Cartridge wadding machines	A
Centrifugal casting machines capable of casting tubes 6 feet or more in length, with a wall thickness of 2 inches and over	A
Gun barrel rifling and broaching machines	A
Gun barrel rifling machines	A
Gun barrel trepanning machines	A
Gun boring and turning machines	A
Gun honing machines of 6 foot stroke or more	A
Gun jump screw lathes	A
Gun rifling machines	A

Gun straightening presses	A
Induction hardening machines for tank turret rings and sprockets ...	A
Jigs and fixtures and other metal working implements or accessories of the kinds specially designed for use in the manufacture of ammunition, firearms, ordnance and other stores and appliances for land, sea or aerial warfare	A
Shell and shell case extrusion and draw presses	A
Shell banding presses	A
Shell cavity boring lathes	A
Shell copper band turning lathes	A
Shell forging presses	A
Shell groove, wave and undercutting lathes	A
Shell heading or nosing presses	A
Shell lathes	A
Shell loading or filling machines	A
Shell making rough turning lathes of the "inverted bed" type	A
Shell making special purpose capstan lathes	A
Shell shot automatic blasting machines	A
Shell tappers	A
Small arms chambering machines	A
Small arms deep hole drilling machines	A
Small arms machines for rifle groove or bore	A
Small arms rifling machines	A
Small arms spill boring machines	A
Tank turret bearing grinding machines	A
Metal cutting and working tools for machine operations, the following:—	
Gun barrel rifling broaches	A
Small arms deep hole drills or bars	A
Military equipment, the following:—	
Helmets, crash	A
Helmets, steel	A
Military infra-red equipment and specialised components thereof	A
Naval equipment, the following:—	
Accumulators (electric storage batteries) of a kind used in the propulsion of submarines, and parts thereof, the following:—	
Accumulators, lead acid	A
Containers	A
Covers	A
Plates and grids	A
Separators	A
Cables, buoyant or near buoyant	A
Catapults and other similar aircraft launching gear	A
Diesel engines of 1,500 brake horse power and over with rotary speed of 700 revolutions per minute or over, specially designed for submarines	A
Electric motors over 1,000 brake horse power, quick reversing type, liquid cooled and totally enclosed, specially designed for submarines	A
Gunmountings and component parts thereof	A
Marine boilers having either of the following characteristics:—	
(*a*) a heat release rate (at maximum rating) equal to or in excess of 180,000 British Thermal Units per hour per cubic foot of furnace volume	A
or	
(*b*) a ratio of steam generated in pounds per hour (at maximum rating) to the dry weight of the boiler in pounds equal to or in excess of 0·83	A

Nets, anti-submarine and anti-torpedo	A
Periscopes, submarine	A
Torpedo aiming, control or loading apparatus, torpedo tubes and other apparatus for discharging torpedoes	A
Noxious gases, the following:—	
Bromoacetone	A
Bromobenzyl cyanide	A
Bromo (ethyl methyl ketone)	A
*o*Chlorobenzylidenemalononitrile (*o*Chlorobenzalmalononitrile)	A
*mono*Chloromethyl chloroformate	A
2-Chlorotriethylamine	A
Cyanogen chloride	A
Dibromodimethyl ether	A
Dichlorodimethyl ether	A
2:2′-Dichlorotriethylamine	A
Diphenylaminechloroarsine	A
Diphenylchloroarsine	A
Diphenylcyanoarsine	A
Ethyl bromoacetate	A
Ethyl NN-dimethylphosphoramidocyanidate	A
Ethyl iodoacetate	A
Ethyldibromoarsine	A
Ethyldichloroarsine	A
Lewisite (chlorovinyldichloroarsine and dichlorodivinylchloroarsine)	A
Methyldichloroarsine	A
Mustard gas (dichlorodiethyl sulphide)	A
Phenylcarbylamine chloride (phenylaminocarbonyl chloride)	A
Phenacyl chloride (ω-Chloroacetophenone)	A
Phenyldibromoarsine	A
Phenyldichloroarsine	A
Pinacolyl methylphosphonofluoridate	A
Phosgene	A
*iso*Propyl methylphosphonofluoridate	A
Trichloromethyl chloroformate (diphosgene)	A
2:2′:2″ Trichlorotriethylamine	A
Parachutes	A
Photographic instruments and appliances, the following:—	
Cameras of the kinds specially designed for aerial survey or reconnaissance	A
Gun cameras, aircraft	A
Machines of the kinds specially designed for the continuous processing of photographic film or paper at speeds exceeding 10 feet per minute	A
Refuelling apparatus and appliances, aircraft, the following:—	
(1) Aircraft pressure refuellers and aircraft refuellers, open circuit, having a pumping capacity of over 100 Imperial gallons per minute	A
(2) Pressure refuelling hose-end couplings or units and pressure control or flow control valves of the kind specially designed for aircraft pressure refuelling	A
(3) Ring mains dispensers, aircraft servicers or other appliances incorporating any of the articles mentioned in head (2) of this entry	A
Refuelling apparatus and appliances for missiles, guided or unguided	A
Rocket assisted take off apparatus and component parts thereof	A
Rocket motors and component parts thereof	A
Searchlight control units	A

Searchlights, power controlled, of which the reflectors have a diameter of 50 centimetres or more ... ... A

Silencers and telescopic sights for firearms ... ... A

Supply dropping apparatus, aircraft ... ... A

Tanks, self-propelled guns and vehicles, the following:—

- Tanks and self-propelled guns ... ... A
- Military type armed or armoured vehicles and vehicles fitted with mountings for arms ... ... A
- Armoured railway trains ... ... A
- Military half tracks ... ... A
- Military type recovery vehicles ... ... A
- Gun carriers and tractors specially designed for towing artillery ... A
- Trailers specially designed to carry ammunition ... ... A
- Amphibious and deep water fording military vehicles ... ... A
- Military mobile repair shops specially designed to service military equipment ... ... A
- Component parts of any of the foregoing ... ... A

Training devices specially designed for military purposes, the following:—

- Flight and navigational synthetic training equipment and component parts thereof ... ... A
- Other training devices ... ... A

Tyres and tubes, the following:—

- Bullet-proof and run-flat tyres and double-chambered and self-sealing inner tubes ... ... A
- Outer covers and inner tubes for aircraft ... ... A

Vibration testing apparatus capable of providing a thrust greater than 2,000 pounds and specialised ancillary equipment therefor ... ... A

GROUP 2

Atomic Energy Materials and Appliances

Centrifuges, gas, capable of the enrichment or separation of isotopes ... A

Compressors and blowers (turbo, centrifugal and axial flow types), wholly made of, or lined with, aluminium, nickel or alloy containing 60 per cent. or more of nickel, having a capacity of 60 cubic feet per minute or greater ... ... A

Deuterium, heavy water, heavy paraffins and other compounds in which the ratio by number of deuterium atoms to hydrogen atoms exceeds 1 to 5,000; and mixtures and solutions of any of the foregoing ... A

Electrolytic cells for the production of fluorine, with a production capacity greater than 250 grammes of fluorine per hour ... ... A

Equipment specially designed for the separation of isotopes of uranium or lithium or of uranium and lithium ... ... A

Fissionable material, the following:—

- Plutonium ... ... A
- Uranium enriched in the isotope 235 ... ... A
- The isotope 233 of uranium ... ... A
- Alloys, compounds and mixtures of any of the foregoing ... ... A

Graphite, artificial, having a boron content of one part per million or less and a total thermal neutron absorption microscopic cross-section of 5 millibans or less per atom, in the form of blocks, bricks, plates, rods or electrodes, from which a cube of 2 inches side or greater can be cut ... ... A

Heat exchangers, designed for use in gaseous diffusion plants, designed to operate at sub-atmospheric pressure, with a leak rate of less than 10^{-4} atmospheres per hour under a pressure differential of 1 atmosphere, the following:—

Types wholly made of aluminium, copper or nickel or alloys containing more than 60 per cent. of nickel, separately or together ... A

Types incorporating tubing clad with aluminium, copper or nickel or alloys containing more than 60 per cent. of nickel separately or together and in which the other parts are made wholly of the foregoing metals, separately or together ... ... A

Mass spectrographs and mass spectrometers, the following:—

All multi-focus types (including double focus, tandem and cycloidal) A

Single focus types possessing a radius of curvature of 5 inches or more and sub-assemblies, components and parts specially designed therefor A

Neutron generator tubes designed for operation without an external vacuum system, and utilising electrostatic acceleration to induce a tritium-deuterium nuclear reaction ... ... A

Nuclear reactors and associated equipment, the following:—

(1) Nuclear reactors capable of operation so as to maintain a controlled self-sustaining fission chain reaction ... ... A

(2) Sub-assemblies, components and parts specially designed therefor A

(3) Power generating or propulsion equipment specially designed or adapted for use with the nuclear reactors specified in head (1) of this entry ... ... A

Process control equipment specially designed or modified for monitoring or controlling the processing of irradiated fissionable or fertile materials, or irradiated lithium ... ... A

Radiation monitoring instruments for personal use, which permit direct reading on a graduated scale, other than instruments designed specially for use with medical radiation equipment, the following:—

(*a*) Dosimeters, where more than one fourth of the total single exposure range falls between 15 and 500 roentgens ... ... A

(*b*) Dose rate meters, where more than one fourth of the total range falls between 1 and 80 roentgens per hour ... ... A

Thorium and its compounds and mixtures containing such substances ... A

Tritium and compounds containing tritium in which the ratio by number of tritium atoms to hydrogen atoms exceeds 1 to 1,000; and mixtures, preparations and solutions containing one or more of the foregoing ... A

Uranium and its compounds and mixtures containing such substances ... A

Valves, with bellows seal, wholly made of or lined with aluminium, nickel or alloy containing 60 per cent. or more of nickel ... ... A

GROUP 3

Electrical, Electronic and Scientific Appliances

Amplifiers or oscillator devices, the following:—

(1) Amplifiers designed to operate at frequencies in excess of 500 megacycles per second ... ... A

(2) Tuned amplifiers, having a bandwidth which exceeds 10 megacycles per second or 10 per cent. of the mean frequency, whichever is less, except those specially designed for use in community television distribution systems ... ... A

(3) Untuned amplifiers, having a bandwidth which exceeds 10 megacycles per second ... ... A

(4) Direct current amplifiers, amplifying by whatever means, having a noise level (referred to the input circuit) of 10^{-16} watts or less, or a zero-drift in one hour corresponding to a change in input of 10^{-16} watts or less, or both these characteristics ... ... A

(5) Parametric amplifiers with a noise figure of merit of 5 decibels or less measured at a temperature of 17° Centigrade ... ... A

(6) Paramagnetic amplifiers ... ... A

(7) Other amplifier or oscillator devices which amplify or oscillate by means of a stimulated electro-magnetic radiation ... ... A

and specialised parts (including semi-fabricated active components of stimulated emission radiation devices) for the equipment mentioned in heads (5), (6) and (7) of this entry ... ... A

In this entry—

"bandwidth" means the band of frequencies over which the power amplification does not drop to less than one-half of its maximum value; and

"mean frequency" means the arithmetic mean between the frequencies at which the power amplification is one-half of its maximum value.

Apparatus designed to jam or otherwise interfere with radio reception and specialised parts of such apparatus ... ... A

Apparatus for automatically sorting electronic components in respect of their electrical characteristics.

Apparatus of a kind used for detecting or locating objects under water by magnetic or acoustic or ultrasonic methods other than marine depth-sounders of a kind used solely for measuring the depth of water or the distance of submerged objects vertically below the apparatus, and specialised components of such apparatus.

Capacitors, tantalum or niobium electrolytic, the following:—

All types designed to operate continuously at temperatures exceeding 85° Centigrade.

Sintered electrolytic capacitors.

Electrolytic capacitors constructed with foils.

Centrifugal testing apparatus possessing any of the following characteristics:—

driven by a motor or motors having a total rated horse power greater than 400 horse power;

capable of carrying a load of 250 pounds or more;

capable of exerting a centrifugal acceleration of 8 **g** or more on a load of 200 pounds or more.

Communication, detection and tracking equipment of a kind using ultra-violet radiation, infra-red radiation or ultrasonic waves, and specialised parts therefor ... ... A

other than—

(1) equipment of a kind using ultrasonic waves which operates in contact with a controlled material to be inspected; and

(2) equipment employing cells not specified in the entries relating to Photo-electric cells and Thermal detecting cells in Group 3 of this Order.

Communication equipment employing tropospheric, ionospheric or meteoric scatter phenomena and specially designed sub-assemblies, parts and test equipment therefor.

Communication, navigation, direction finding and radar equipment, the following:—

(1) Airborne communication equipment and specialised parts and components therefor.

(2) Airborne navigation equipment and direction finding equipment, the following:—

(*a*) Altimeters—
(i) pulse modulated,
(ii) frequency modulated and having an accuracy better than ± 3 feet over the whole range between 0 to 100 feet or ± 3 per cent. above 100 feet,
(iii) frequency modulated using other than conventional techniques.

(*b*) Equipment designed to make use of the Doppler frequency phenomena.

(*c*) Equipment utilising—
(i) the constant velocity, or
(ii) the rectilinear propagation characteristics
of electromagnetic waves having frequency less than 4×10^{14} cycles per second (0·75 microns).

(*d*) Equipment, direction finding, operating at frequencies greater than 5 megacycles per second, other than equipment designed for search and rescue purposes provided that the receiver operates on a crystal controlled fixed frequency of 121·5 megacycles per second and that the determination of the direction finding bearing is not independent of the heading of the aircraft and provided that the direction finding antenna array is designed for operation at a fixed frequency of 121·5 megacycles per second.

(*e*) Equipment pressurised throughout.

(*f*) Equipment rated for continuous operation over a range of ambient temperatures extending from below −55° Centigrade to above 55° Centigrade.

(3) Airborne radar equipment.

(4) Ground and marine radar equipment, the following:—

(*a*) Radar equipment, other than commercial equipment designed for pulse operation at frequencies between 1,300 megacycles per second and 1,660 megacycles per second, 2,700 megacycles per second and 3,900 megacycles per second, or 8,500 megacycles per second and 10,000 megacycles per second ... ... A

(*b*) Radar equipment having a peak output power to the aerial system greater than 100 kilowatts and a maximum usable range exceeding 50 nautical miles against an aircraft having an equivalent echoing area of 20 square metres ... ... A

(*c*) Radar equipment utilising other than conventional pulse modulation with a constant pulse repetition frequency ... ... A

(*d*) Radar equipment utilising a Doppler technique for any purpose, other than moving target indicator systems using a conventional double pulse delay line technique ... ... A

(*e*) Radar equipment utilising other than conventional signal processing techniques ... ... A

(5) Ground and marine equipment for use with airborne navigation equipment utilising—

(*a*) the constant velocity, or

(*b*) the rectilinear propagation characteristics

of electromagnetic waves having frequency less than 4×10^{14} cycles per second (0·75 microns).

(6) Ground and marine direction finding equipment operating at frequencies greater than 5 megacycles per second.

(7) Specialised parts, specialised accessories, specialised testing or calibrating equipment and training or simulating equipment for the apparatus mentioned in heads (2), (3), (4), (5) or (6) of this entry.

Communication transmission equipment, the following:—

(1) Terminal and intermediate repeater or amplifier equipment designed to deliver, carry or receive frequencies higher than 150 kilocycles per second into, or in, a communication system, other than carrier communication terminals specially designed for power lines and operating at frequencies below 1,500 kilocycles per second.

(2) Single and multi-channel telegraph terminal transmitting and receiving equipment other than the following types designed or rated for operation at a rate applicable to single channels or to each sub-channel in a multi-channel system in bits per second (bauds) not numerically in excess of 60 per cent. of the channel or sub-channel bandwidth in cycles per second—

(*a*) Types designed to International Telegraph and Telephone Consultative Committee (C.C.I.T.T.) standards and having a bandwidth per channel of not more than 240 cycles per second and a rated speed of not more than 100 bauds (or 134 words per minute) per channel.

(*b*) Equipment for use with telemetering, telecommand and telesignalling equipment designed for industrial purposes in which the operational aggregate speed of the telegraph equipment is less than 1,200 bits per second (bauds).

(*c*) Time-division multiplex systems up to 6 channels with a maximum aggregate speed of 300 bauds or 72 words per minute per channel not containing an automatic error detection and correction system using a multiple check.

(3) Specialised components, accessories and sub-assemblies for the foregoing.

Compasses and gyroscopic apparatus, the following:—

(1) Automatic pilots, except marine types for surface vessels.

(2) Gyro compasses, North-seeking only, possessing one or more of the following characteristics:—

(*a*) automatic correction for the effects on compass accuracy of changes in ship's speed, acceleration or latitude;

(*b*) provision for accepting ship's data as an electrical input;

(*c*) provision for setting in corrections for current set and drift;

(*d*) utilisation of accelerometer, rate gyro, rate integrating gyros or electrolytic levels as sensing devices;

(*e*) provision for determining and electrically transmitting ship's level reference data (roll, pitch) in addition to own ship's course data.

(3) Gyro-astro compasses and other devices which derive position or orientation by means of automatically tracking celestial bodies.

(4) Gyro-magnetic compasses.

(5) Gyro-stabilisers other than the kinds used for stabilising an entire surface vessel.

(6) Gyroscopes and accelerometers, high precision or miniaturised, of the kind designed for use in ship inertia navigation systems, or in the guidance systems of weapons or aircraft ... ... A

(7) Gyroscopes and gyro compasses with a minimum rated free directional drift rate of one degree per hour or less.

(8) Pressure proof ship's course indicators.

(9) Transmitting magnetic compasses specially designed for submarines.

Components and parts thereof (including but not limited to resistors, rheostats, potentiometers, capacitors, transformers, chokes and relays) of a kind used as resistive, inductive and capacitive elements in electronic circuits, capable of reliable performance in relation to their electrical and mechanical characteristics and maintaining their design service life-time while operating—

(*a*) over the whole range of ambient temperatures from below −45° Centigrade to above 100° Centigrade; or

(*b*) at ambient temperatures of 200° Centigrade or higher.

Computers, electronic, the following:—

(1) Analogue computers designed or modified for use in aircraft (piloted or pilotless), missiles (guided or unguided) or space vehicles (guided or unguided) and rated for continuous operation at temperatures from below −45° Centigrade to above 55° Centigrade, and equipment or systems incorporating such computers ... ... A

(2) Specialised components, parts, sub-assemblies and accessories for equipment mentioned in head (1) ... ... A

(3) Other electronic computers, and specialised components, parts, sub-assemblies and accessories therefor.

Control equipment, the following:—

(1) Synchros and resolvers possessing any of the following characteristics:—

(*a*) a rated electrical error of 10 minutes or less or of 0·5 per cent. or less of maximum output voltage ... ... A

(*b*) a rated dynamic accuracy for receiver types of 1° or less, except that for units of size 30 (3 inches in diameter) or larger a rated dynamic accuracy of less than 1° ... ... A

(*c*) multi-speed from single-shaft types ... ... A

(*d*) of size 11 (1·1 inches in diameter) and smaller ... ... A

(*e*) types employing solid state Hall effect ... ... A

(*f*) types designed for gimbal mounting ... ... A

(*g*) types designed to operate below −55° Centigrade or above 125° Centigrade ... ... A

and special instruments (including microsyns, synchro-tels and inductosyns) rated to have any of the characteristics specified in (*a*), (*b*) and (*g*) of this sub-head ... ... A

(2) Amplifiers, electronic or magnetic, specially designed for use with resolvers, the following:—

(*a*) Isolation types having a variation of gain constant (linearity of gain) of 0·5 per cent. or better ... ... A

(*b*) Summing types having a variation of gain constant (linearity of gain) or an accuracy of summation of 0·5 per cent. or better A

(*c*) Types employing solid state Hall effect ... ... A

(*d*) Types designed to operate below −55° Centigrade or above 125° Centigrade ... ... A

(3) Induction potentiometers (including function generators and linear synchros), linear and non-linear, possessing any of the following characteristics:—

(*a*) a rated conformity of 0·5 per cent. or less, or of 18 minutes or less ... ... A

(*b*) of size 11 (1·1 inches in diameter) or smaller ... ... A

(*c*) types employing solid state Hall effect ... ... A

(*d*) types designed for gimbal mounting ... ... A

(*e*) types designed to operate below −55° Centigrade or above 125° Centigrade ... ... A

(4) Induction rate (tachometer) generators, synchronous and asynchronous, the following:—

(*a*) Types with a rated linearity of 0·5 per cent. or less ... ... A

(*b*) All temperature-compensated or temperature-corrected types A

(*c*) Types of size 11 (1·1 inches in diameter) and smaller ... ... A

(*d*) Types employing solid state Hall effect ... ... A

(*e*) Types designed to operate below −55° Centigrade or above 125° Centigrade ... ... A

(5) Servo-motors (gear-head or plain), the following:—

(*a*) Types designed to operate from power sources of more than 300 cycles per second (other than those designed to operate from power sources of over 300 cycles per second up to but not exceeding 400 cycles per second with a temperature range of from −10° Centigrade to 55° Centigrade) ... ... A

(*b*) Types designed to have a torque-to-inertia ratio of 10,000 radians per second per second or greater ... ... A

(*c*) Types incorporating special features to secure internal damping ... ... A

(*d*) Types of size 11 (1·1 inches in diameter) and smaller ... A

(*e*) Types employing solid state Hall effect ... ... A

(*f*) Types designed to operate below −55° Centigrade or above 125° Centigrade ... ... A

(6) Potentiometers, other than potentiometers using only switched elements, the following:—

(*a*) Linear potentiometers having a constant resolution and a rated linearity of 0·1 per cent. or less ... ... A

(*b*) Non-linear potentiometers having a variable resolution and a rated conformity of—

(i) 1 per cent. or less when the resolution is inferior to that obtained with a linear potentiometer of the same type and of the same track length ... ... A

or

(ii) 0·5 per cent. or less when the resolution is better than or equal to that obtained with a linear potentiometer of the same type and of the same track length ... ... A

(*c*) Types designed for gimbal mounting ... ... A

(*d*) Types designed to operate below −55° Centigrade or above 125° Centigrade ... ... A

and special instruments (including Vernistats) rated to have any of the characteristics specified in (*a*), (*b*) or (*d*) of this sub-head ... A

(7) Direct current and alternating current torquers (torque motors specially designed for gyros and stabilised platforms) ... ... A

(8) Electrical-optical devices designed to monitor relative rotation of remote surfaces ... ... A

(9) Synchronous motors, the following:—

(*a*) Types of size 11 (1·1 inches in diameter) or smaller ... ... A

(*b*) Types in excess of size 11 (1·1 inches in diameter) but not exceeding size 30 (3·0 inches in diameter) having synchronous speeds in excess of 3,000 revolutions per minute ... ... A

(*c*) Types designed to operate from power sources of more than 400 cycles per second ... ... A

(*d*) Types designed to operate below −10° Centigrade or above 55° Centigrade ... ... A

(10) Ball-and-disc or cylinder-and-ball mechanical integrators, and mechanical ball resolvers ... ... A

(11) Analogue-to-digital and digital-to-analogue converters, the following:—

(*a*) Electrical-input types possessing—

(i) a peak conversion rate capability in excess of 50,000 complete conversions per second ... ... A

or

(ii) an accuracy in excess of 1 part in more than 10,000 of full scale ... ... A

or

(iii) a figure of merit of 5×10^6 (derived from the number of complete conversions per second divided by the accuracy) A

(*b*) Mechanical input types, including shaft position encoders and linear displacement encoders, but excluding Complex servo-follower systems, the following:—

(i) rotary types having an accuracy of maximum incremental accuracy better than ± 1 part in 10,000 of full scale, or of size 11 (1·1 inches in diameter) and smaller ... ... A

(ii) linear displacement types having an accuracy better than ±5 microns ... ... A

(*c*) Types employing solid state Hall effect ... ... A

(*d*) Types designed to operate below −55° Centigrade or above 125° Centigrade ... ... A

(12) Specially designed components, parts, sub-assemblies and test equipment (including adaptors and couplers) for the equipment specified in sub-heads (1), (2), (3), (4), (5), (6), (7), (8), (9), (10) and (11) ... ... A

Cypher machines and associated equipment including key generators and tape mixers designed to provide a secrecy capability for analogue or digital transmissions or a combination of the two other than— A

equipment, excluding those using digital techniques, for systems for voice transmission making use of fixed frequency inversions or fixed band scrambling techniques in which the transposition changes occur not more frequently than once every 10 seconds.

Electro-chemical, semi-conductor and radio-active devices for the direct conversion of chemical, solar or nuclear energy to electrical energy, the following:—

(1) Electro-chemical devices of the following types:—

(*a*) Fuel cells, including regenerative cells, which generate electric power from consumable components all of which are supplied from outside the cell.

(*b*) Electrically rechargeable cells, hermetically sealed, designed to have a leakage rate of 10^{-5} cubic centimetres per second of gas or less when tested under a pressure differential of two atmospheres.

(*c*) Primary cells having any of the following characteristics:—

(i) possessing a means of activation and having an open circuit storage life in the unactivated condition, at a temperature of 21° Centigrade, of ten years or more;

(ii) capable of operating at temperatures from below −25° Centigrade to above 55° Centigrade, including cells and cell assemblies, other than dry cells, possessing self-contained heaters.

(2) Photo-voltaic cells of the following types :—

(*a*) Types with a power output of 8 milliwatts or more per square centimetre under 100 milliwatts per square centimetre tungsten (2,800° Kelvin) illumination.

(*b*) Gallium arsenide type cells, other than those having a power output of less than 4 milliwatts per square centimetre under 100 milliwatts per square centimetre tungsten (2,800° Kelvin) illumination.

(3) Power sources, based on radioactive materials systems, having a power output of 0·5 watts or more, or a power weight ratio of not less than 0·5 watts per pound.

(4) Specialised parts, components and sub-assemblies of the devices mentioned in heads (1), (2) and (3).

Electromagnetic waveguides and components therefor, the following:—

(1) Rigid and flexible waveguides and components designed for use at frequencies in excess of 12,500 megacycles per second.

(2) Waveguides having a bandwidth ratio greater than 1·5:1.

(3) Pressurised waveguides and specialised components therefor.

(4) Electromagnetic waveguide components, the following :—

(*a*) Directional couplers having a bandwidth ratio greater than 1·5:1 and a directivity over the band of 15 decibels or more.

(*b*) Rotary joints capable of transmitting more than one isolated channel or having a bandwidth greater than 5 per cent. of the centre mean frequency.

(*c*) Magnetic, including gyro-magnetic, waveguide components.

(5) TEM mode devices using magnetic, including gyro-magnetic, properties.

(6) TR and anti-TR tubes and components therefor, except those designed for use in waveguides operating at a peak power not exceeding 100 kilowatts and in frequency bands between 1,300 and 1,660 megacycles per second, between 2,700 and 3,900 megacycles per second or between 8,500 and 10,000 megacycles per second provided those tubes do not include a control electrode permitting the control of the ionization by means of an external voltage.

Electronic and precision instruments and apparatus, the following:—

(1) Electronic measuring, testing or calibrating instruments having one or more of the following characteristics:—

(*a*) designed for use at frequencies in excess of 1,000 megacycles per second, other than the radio spectrum analysers specified elsewhere in this Group ... ... A

(*b*) testing instruments rated to maintain their specified operating data when operating over a range of ambient temperatures extending from below −25° Centigrade to above 55° Centigrade.

(2) Cathode-ray oscilloscopes and specialised parts and accessories therefor, the following :—

(*a*) Cathode-ray oscilloscopes of the kinds having any of the following characteristics :—

(i) an amplifier bandwidth greater than 20 megacycles per second for DC-coupled scopes or greater than 30 megacycles per second for AC-coupled scopes ... ... A

(ii) a time base shorter than 40 nanoseconds per centimetre, including calibrated magnified sweep factor ... ... A

(iii) employing accelerating potentials in excess of 5 kilovolts A

(iv) incorporating, or designed to use, one or more cathode-ray tubes having three or more electron guns ... ... A

(v) incorporating, or designed to use, cathode-ray memory tubes ... ... A

(vi) incorporating, or designed to use, cathode-ray tubes with travelling wave or distributed deflection structure; or incorporating other techniques to minimise mismatch of fast phenomena signals to the deflection structure ... A

(vii) ruggedised to meet a military specification ... ... A

(viii) being rated for operation over an ambient temperature range of from below −25° Centigrade to above 55° Centigrade ... ... A

(ix) incorporating a calibrated variable sweep delay with an incremental accuracy measured at the 90 per cent. delay point of better than 3 per cent. ... ... A

(x) a rise time of less than 12 nanoseconds ... ... A

other than oscilloscopes affected only by the characteristics described in (ii) or (iii) above, provided that—

(A) the oscilloscope sensitivity in millivolts per centimetre divided by the bandwidth in megacycles per second results in a figure of not less than 3 for DC oscilloscopes and not less than 2 for AC oscilloscopes, except that in no case shall the rated sensitivity be less than 10 millivolts per centimetre for DC oscilloscopes or less than 5 millivolts per centimetre for AC oscilloscopes;

(B) the unit does not have a time base, including calibrated magnified sweep factor, shorter than 20 nanoseconds per centimetre or a time base accuracy of better than 3 per cent.;

(C) the unit does not utilise an accelerating potential greater than 10 kilovolts.

(*b*) Plug-in units and external amplifiers and pre-amplifiers which are specialised accessories or sub-assemblies of cathode-ray oscilloscopes as specified in (*a*) (i) above, or have an oscilloscope sensitivity in millivolts per centimetre which, when divided by bandwidth (in megacycles per second), results in a figure of less than 3 for DC oscilloscopes and less than 2 for AC oscilloscopes ... ... A

(*c*) Electronic devices (sampling devices) for stroboscopic analysis of a signal, whether sub-assemblies or separate units, designed to be used in conjunction with cathode-ray oscilloscopes to permit the analysis of recurring phenomena, which increase the capabilities of a cathode-ray oscilloscope to permit measurements within the limits of the apparatus mentioned under item (2)(*a*)(i) of this entry, or to achieve its operation within the limits of item (2)(*a*)(ii) of this entry ... ... A

In this entry "bandwidth" means the band of frequencies over which the deflection on the cathode-ray tube does not fall below 70·7 per cent. of that at the maximum point, measured with a constant input voltage to the amplifier.

Electronic cathode-ray tubes, vacuum tubes or valves, the following:—

(1) Cathode-ray tubes—

(*a*) with a resolving power of 500 lines or more per inch, using the shrinking raster method of measurement;

(*b*) with writing speeds of more than 3,000 kilometres per second;

(*c*) with three or more electron guns, other than 3-gun colour television tubes designed for entertainment use;

(*d*) alpha-numeric and similar data or information display tubes (display being obtained by scanning or other means), other than those tubes in which the displayed position of each character is fixed.

(2) Image converter tubes, image intensifier tubes and electronic storage tubes including memory transformers of radar pictures and ruggedised vidicon-type tubes but excluding other television camera tubes and X-ray intensifier tubes ... ... A

(3) Thyratron and modulator gas-discharge tubes, rated for continuous operation with peak current and peak voltage exceeding 100 amperes and 9,000 volts at a pulse repetition frequency of 200 or more pulses per second.

(4) Hydrogen thyratron tubes of any rating.

(5) Valves, the following:—

(*a*) constructed with ceramic envelopes and rated for operation above 300 megacycles per second;

(*b*) constructed with beryllium oxide ceramic;

and specialised parts therefor.

(6) Valves designed for operation in ambient temperatures exceeding 100° Centigrade, and specialised parts therefor.

(7) Valves designed to withstand acceleration of short duration (shock) greater than 1,000g and specialised parts therefor ... ... A

(8) Valves indirectly heated, of a kind that can be passed through a circular hole 7·2 millimetres in diameter, and specialised parts therefor.

(9) Valves, the following:—

(*a*) Klystrons, travelling wave tubes and magnetrons other than fixed frequency pulsed magnetrons designed to operate at a frequency of $9{\cdot}375 \pm 0{\cdot}03$ kilomegacycles per second with a maximum peak output power not greater than 25 kilowatts;

(*b*) All other valves of the kind in which the velocity of the electrons is utilised as one of the functional parameters other than diodes, diode-triodes, heptodes, hexodes, pentodes, tetrodes, triodes and triode-pentodes;

and specialised parts therefor.

(10) Valves—

(*a*) rated for CW operation over the frequency range of 300 to 1,000 megacycles per second and for which (at any part of this frequency range and under any condition of cooling) the product of frequency of operation in megacycles per second squared and the power output in watts from the anode or anodes of a single envelope at this frequency exceeds 10^8 when the valve is operating in Class C telegraphy key down conditions or in Class C FM telephony conditions or, if performance under those conditions is not known, the product of declared maximum frequency of full ratings in megacycles per second squared and the maximum rated anode dissipation per valve in watts exceeds 5×10^7;

(*b*) rated for operation above 1,000 megacycles per second;

(*c*) rated for pulse operation above 300 megacycles per second;

(*d*) having external anode or anodes rated for operation above 300 megacycles per second;

and specialised parts therefor.

(11) X-ray tubes, flash discharge types.

(12) Cold cathode, gas-filled, arc-discharge tubes, containing three or more electrodes and having all of the following characteristics:—

(*a*) rated for an anode peak voltage of 2,500 volts or more;

(*b*) rated for peak currents of 300 amperes or more;

(*c*) an anode delay time of 10 microseconds or less; and

(*d*) an envelope diameter of less than 1 inch (25·4 millimetres).

(13) Vacuum tubes specially designed for use as pulse modulators for radar or for similar applications, having a peak anode voltage rating of 100 kilovolts or more or rated for a peak pulse power of 2 megawatts or more, and specialised parts therefor.

Electronic equipment and components, the following:—

(1) Assemblies and sub-assemblies constituting one or more functional circuits with a component density greater than 75 parts per cubic inch, and equipment containing such assemblies or sub-assemblies.

(2) Modular insulating panels (including plates and wafers) mounting single or multiple electronic elements, and specialised parts therefor, other than panels the following:—

(*a*) constructed of paper base phenolics, glass cloth melamine, glass cloth epoxy resin, or

(*b*) constructed of any other insulating materials with an operating temperature not exceeding 180° Centigrade,

which do not contain any components specified in Group 3 of this Order or which do not have any of the characteristics described in sub-head (1) above.

Gravity meters (gravimeters) designed or modified for airborne or marine use and specialised parts therefor.

Magnetometers of the following types:—

(1) Fluxgate.

(2) Electron beam sensing.

(3) Paramagnetic.

(4) Nucleonic.

(5) Hall effect, other than magnetometers which use general purpose Hall field probes to measure magnetic fields greater than one oersted using control current between 100 and 400 milliamperes.

(6) Parts specially designed for any of the foregoing.

Materials specially designed and manufactured for use as absorbers of electro-magnetic waves having frequencies greater than 2×10^8 cycles per second, and less than 3×10^{12} cycles per second.

Materials composed of crystals having spinel, hexagonal or garnet crystal structures, and thin film devices, the following:—

(1) Monocrystals of ferrites and garnets (synthetic only).

(2) Single aperture forms possessing any of the following characteristics:—

(*a*) switching speed of 0·5 microsecond or less at the minimum field strength required for switching at 40° Centigrade;

(*b*) a maximum dimension less than 45 mils (1·14 millimetres).

(3) Multi-aperture forms with fewer than 10 apertures possessing any of the following characteristics:—

(*a*) switching speed of 1 microsecond or less at the minimum field strength required for switching at 40° Centigrade;

(*b*) a maximum dimension less than 100 mils (2·54 millimetres).

(4) Multi-aperature forms having 10 or more apertures.

(5) Thin film memory storage or switching devices.

(6) Electrical filters in which the coupling element makes use of the electro-mechanical properties of ferrites.

(7) Materials suitable for application in electromagnetic devices making use of the gyro-magnetic resonance phenomenon.

(8) Assemblies of and devices incorporating any of the foregoing.

Measuring, calibrating, counting and time interval measuring apparatus (whether or not incorporating frequency standards), having one or more of the following characteristics:—

(1) (*a*) consisting of, or containing, frequency measuring equipment or frequency standards designed for other than ground laboratory use with an accuracy better than 1 part in 10^7 ... A

(*b*) consisting of, or containing, ground laboratory frequency standards or frequency measuring equipment incorporating frequency standards with a stability over 24 hours of 1 part in 10^9 or better ... ... A

(2) designed for use at frequencies in excess of 1,000 megacycles per second ... ... A

(3) designed to provide a multiplicity of alternative output frequencies controlled by a lesser number of piezo-electric crystals or an internal or external frequency standard other than equipment in which the output frequency is selected only by manual operation either on the equipment or on a remote control unit, and in which—

(*a*) the output frequency is a multiple of a common control frequency ... ... A

or

(*b*) the output frequency is a multiple of a common frequency which is not less than 1:1,000 part of the oscillator frequency and is in steps of 1 kilocycle per second or greater ... ... A

(4) counting equipment capable of resolving at normal input levels successive input signals with less than 0·1 microsecond time difference ... ... A

(5) time interval measuring equipment containing the counting equipment specified in (4) ... ... A

Microscopes, ion, having a resolving power better than 10 Ångström units.

Photo-electric cells (other than germanium photo cells with a peak response less than 17,500 Ångström units), the following:—

(1) Photo-electric cells, photo-conductive cells (including photo-transistors and similar cells) with a peak sensitivity at a wavelength longer than 12,000 Ångström units or shorter than 3,000 Ångström units ... ... A

(2) Photo-transistors (photo-conductive cells including photo-diodes) with a response time constant of one millisecond or less measured at the operating temperature of the cell for which the time constant reaches a minimum ... ... A

Photographic apparatus, the following:—

(1) High speed cinematograph recording cameras employing—

(*a*) film widths 35 millimetres or narrower and recording at rates exceeding 3,000 frames per second in the case of equipment using as the lighting source a steady light flow, and 10,000 frames per second in the case of equipment using as the lighting source flash equipment connected to the unwinding system ... ... A

(*b*) film widths greater than 35 millimetres and recording at rates exceeding 64 frames per second ... ... A

(2) High speed cameras capable of recording at rates in excess of 250,000 frames per second ... ... A

(3) Microflash apparatus capable of giving a flash of 10 microseconds or shorter duration at a minimum recurrence frequency of 200 flashes per second ... ... A

(4) Photographic systems specially designed for use in space vehicles ... A

(5) Streak cameras having writing speeds of 8 millimetres per microsecond and above capable of recording events which are not initiated by the camera mechanism ... ... A

In this entry "streak cameras" means cameras designed to record the intensity of a light source as a function of time by moving the image of the source along the film in a single direction.

Photomultiplier tubes of all types for which the maximum sensitivity occurs at wavelengths longer than 7,500 Ångström units or shorter than 3,000 Ångström units.

Piezo-electric quartz crystals, blanks, plates, bars, rods and toroids, worked or unworked, mounted or unmounted.

Pulse modulators of a kind used for providing electric impulses of peak power exceeding 200 kilowatts or of a duration of less than 0·1 microsecond, or with a duty cycle in excess of 0·002, and pulse transformer and pulse-forming equipment and delay lines being parts specially designed for such pulse modulators.

Radio receivers, panoramic, being receivers which search automatically a part of the radio-frequency spectrum and indicate the signals received, and specialised parts therefor.

Radio relay communications equipment designed for use at frequencies in excess of 300 megacycles per second, and specialised components and sub-assemblies therefor.

Radio spectrum analysers (being apparatus capable of indicating the single-frequency components of multi-frequency oscillations), the following :—

(1) designed to operate at frequencies over 1,000 megacycles per second ;

(2) designed to operate at frequencies over 300 megacycles per second and using interchangeable heads (radio-electric frequency tuning systems) and incorporating integral sweep facilities ;

(3) having a display bandwidth in excess of 12 megacycles per second ;

(4) specialised components, parts and accessories for (1), (2) and (3).

Radio transmitters and components, the following :—

(1) Transmitters or transmitter amplifiers designed to operate—

(*a*) at output carrier frequencies between 108 megacycles per second and 156 megacycles per second, other than equipment designed for search and rescue purposes where such equipment comprises an omni-directional beacon and operates on a single crystal-controlled fixed frequency of 121·5 megacycles per second ; or

(*b*) at output frequencies greater than 235 megacycles per second other than—

(i) television broadcasting transmitters and amplifiers therefor operating between 470 megacycles per second and 960 megacycles per second ;

(ii) frequency-modulated and amplitude-modulated ground communications equipment, required for use in a land mobile service and operating in the 420 to 470 megacycles per second band, with a power output of not more than 25 watts for mobile units and 100 watts for fixed units ;

(iii) amplitude-modulated radio-telephone equipment used for search and rescue work operating on a frequency of 243 megacycles per second with a carrier power not exceeding 100 milliwatts.

(2) Transmitters or transmitter amplifiers designed to provide any of the following features:—

(*a*) any system of pulse modulation other than amplitude-, frequency- or phase-modulated television or telegraphic transmitters;

(*b*) rated for operation over a range of ambient temperatures extending from below −40° Centigrade to above 55° Centigrade;

(*c*) facilities providing a multiplicity of alternative output frequencies controlled by a lesser number of piezo-electric crystals, other than equipment in which the output frequency is selected only by manual operation either on the equipment or on a remote control unit and in which—

(i) the output frequency is a multiple of a common control frequency, or

(ii) the output frequency is a multiple of a common frequency, which is not less than 1:1,000 part of the oscillator frequency and is in steps of 1 kilocycle per second or greater.

(3) Components and sub-assemblies, including modulators and modulation amplifiers, specially designed for use in the transmitters specified in heads (1) and (2) of this entry.

Recording or reproducing equipment, the following:—

(1) Equipment using magnetic techniques (other than equipment specially designed for voice or music including such equipment containing one control channel).

(2) Equipment using electrothermal or electrostatic recording techniques employing electron beams or operating in a vacuum or employing other means to provide a charge pattern directly on to the recording surface, other than—

(*a*) document copying equipment which employs electrothermal or electrostatic techniques to reproduce documents on or by way of sensitized or sensitive media, with which the documents are in physical contact at the time of reproduction;

(*b*) document copying equipment which employs electrothermal or electrostatic techniques to reproduce documents by utilising a system wherein an image of the document is projected optically to modify the electrical charge distribution on a surface, whether this is the final copying material or an intermediate medium.

(3) Specialised equipment for the read-out of material recorded by the equipment specified in (2).

(4) Specialised recording media (tapes, drums, discs and matrices) for use with the equipment specified in (1), (2) and (3).

(5) Specialised components and parts for the equipment specified in (1), (2), (3) and (4).

Semi-conductor diodes, including rectifier diodes and switching diodes, but excluding photo-diodes, the following:—

(1) Any semi-conductor diode in which the bulk material is other than silicon, germanium, selenium or copper oxide ... ... A

(2) Signal diodes, including mixer diodes, frequency-changing diodes and switching diodes, the following:—

(*a*) Point-contact type diodes in which the bulk material is silicon or germanium and which are designed for use at input frequencies greater than 1,000 megacycles per second ... ... A

(*b*) Junction type diodes including switching type diodes, in which the bulk material is silicon or germanium and which are designed—

(i) for use at input frequencies greater than 300 megacycles per second ... ... A

or

(ii) for switching rates (repetition frequency) greater than one megacycle per second ... ... A

(3) (*a*) Power diodes in which the rated peak inverse voltage taken as a recurrent voltage exceeds 1,000 volts per junction at 25° Centigrade and under any conditions of cooling ... ... A

(*b*) Controlled diodes, the following:—

Semi-conductor multiple junction devices for applications similar to those of grid-controlled gas-filled tubes, designed for use at switching rates (repetition frequency) greater than 100 kilocycles per second ... ... A

(4) Tunnel diodes ... ... A

Semi-conductor Hall field probes, the following:—

(1) Types made of indium-arsenide-phosphide ... ... A

(2) Types coated with ceramic or ferritic materials (including tangential field probes, multipliers, modulators and recorder probes)... A

(3) Types with an open circuit sensitivity greater than

$$\frac{0{\cdot}12 \text{ Volt}}{\text{Amperes} \times \text{Kilogauss}}$$ ... ... A

In this entry—

"open circuit sensitivity" is calculated by dividing the open circuit Hall voltage by the product of the control current in amperes and the nominal value of the control field.

Telegraph apparatus, the following:—

(1) Apparatus designed for the transmission or reception of messages at a speed exceeding 500 words per minute or 375 bauds, whichever is the less,

other than—

telemetering, telecommand and telesignalling equipment, including data transmission equipment, designed for industrial purposes but not designed for the transmission of written or printed text.

(2) Terminal equipment capable of transmitting or receiving digital data at a rate in excess of 2,000 bits per second (bauds) or at a rate (applicable to single channels or to each sub-channel in a multi-channel system) in bits per second (bauds) numerically in excess of 75 per cent. of the channel (or sub-channel) bandwidth in cycles per second.

(3) Specialised parts and accessories for such apparatus.

Thermal detecting cells, the following:—

Bolometers and thermocouple detectors, radiant energy types, with a response time constant of less than 10 milliseconds measured at the operating temperature of the cell for which the time constant reaches a minimum ... ... A

Thermoelectric materials and devices, the following:—

(1) Thermoelectric materials with a maximum product of the figure of merit (Z) and the temperature (T in °Kelvin) in excess of 0·75.

(2) Junctions and combinations of junctions using any of the materials specified in (1).

(3) Heat absorbing or electric power generating devices incorporating any of the junctions specified in (2).

(4) Other power generating devices which generate in excess of 10 watts per pound or of 500 watts per cubic foot of the device's basic thermoelectric components.

(5) Specialised parts, components and sub-assemblies for (1), (2), (3) and (4).

In this entry—

"The figure of merit (Z)" equals Seebeck coefficient squared divided by the product of electrical resistivity and thermal conductivity; and

The weight and cubic measurement in (4) are not intended to encompass the complete device but to include only the thermoelectric elements and assembly and the components for pumping calories. Other components, such as heating or cooling sources or containers, device frames or stands and control equipment are not to be included in the calculations.

Transistors and related devices (or related semi-conductor amplifying devices such as fieldistors, spacistors and technetrons), the following:—

(1) Any type using any semi-conductor material having four or more active junctions within any single block of semi-conductor material.

(2) Any type using a bulk semi-conductor material other than germanium.

(3) Any type using germanium as the bulk semi-conductor material and having either of the following characteristics:—

(*a*) an average f alpha of 50 to 150 megacycles per second and designed to have a maximum collector dissipation greater than 150 milliwatts;

(*b*) an average f alpha greater than 150 megacycles per second.

(4) Specialised parts for (1), (2) and (3).

This entry covers all devices incorporating a semi-conducting crystal of any material with three or more electrical connections or with only two such connections where four or more active junctions exist within a single block of semi-conductor material, which are used as amplifiers, oscillators or trigger devices, or in combinations thereof in electronic circuits.

In this entry—

"Maximum collector dissipation" means the continuous dissipation measured at an ambient temperature of 25° Centigrade, under any cooling conditions; and

"f alpha" means the frequency at which the modulus of the current gain in the common base connection has decreased to 0·707 of its low frequency value. Where f_1 (the frequency at which the modulus of the current gain in the common emitter connection is equal to 1) is quoted instead of f alpha, f_1 may be regarded as 0·8 times f alpha; and

"average f alpha" means the f alpha at which the major production of a particular type of transistor occurs, and where the average of f alpha is not quoted or known, this value shall be taken as 1·5 times the minimum f alpha.

Triggered spark gaps having an anode delay time of 15 microseconds or less and rated for a peak current of 3,000 amperes or more and parts specially designed therefor ... ... A

GROUP 4

Chemicals

The following goods, mixtures thereof or mixtures of any one or more of them with an inert material, either in dry form or in solution:—

Beryllium compounds ... ... A

Boron compounds and mixtures, excluding pharmaceutical preparations packaged for retail sale, the following:—

(1) Boric acids and the esters and ammonium, calcium, magnesium, potassium and sodium salts of boric acids, not including perborates.

(2) Boric oxide.

(3) Boron trichloride and its complexes;
boron trifluoride and its complexes.

(4) Fluoroboric acids, ammonium fluoroborate, potassium fluoroborate and sodium fluoroborate.

(5) Boron carbide, boron hydrides and boron nitride.

(6) Other boron compounds and mixtures containing 5 per cent. or more of boron, free or combined, but excluding—

(*a*) Inorganic borates other than those specified in head (1) of this entry.

(*b*) Perborates.

(*c*) Fluoroborates other than those specified in head (4) of this entry.

(*d*) Enamel and glass-making compositions or mixtures containing the equivalent of 30 per cent. or less of boric oxide.

(7) Compounds in which the boron-10 isotope comprises more than 20 per cent. of the total boron content.

Chlorine trifluoride.

Dichlorotetrafluoroethane.

Diethylenetriamine.

Fluorine.

Gallium compounds, monocrystalline.

Hafnium compounds ... ... A

Indium compounds, monocrystalline.

Lithium compounds ... ... A

Niobium compounds ... ... A

Pentaerythritol tetranitrate ... ... A

Primary explosives and priming compositions, the following:—

(1) (*a*) Diazodinitrophenol.

(*b*) Lead azide ... ... A

(*c*) Lead thiocyanate.

(*d*) Lead trinitroresorcinoxide (lead styphnate) ... ... A

(*e*) Mercury fulminate ... ... A

(*f*) Tetrazene ... ... A

(2) Mixtures containing one or more of the materials specified in head (1) of this entry.

(3) Sodium azide.

Tantalum compounds.

Trichlorotrifluoroethane.

Zirconium compounds, other than zirconium oxide thermally stabilised with calcium oxide or magnesium oxide or both ... ... A

GROUP 5

Minerals and Metals

In this Group—

"form I" means anodes, balls, bars (including notched bars, wire bars and bar ends), billets, blocks, blooms, briquettes, cathodes, cakes, crystals, cubes, dice, grains, granules, ingots (including ingot bars and ingot discards), lumps, pellets, pigs, powder, rondelles, shot, slabs, slugs, sponge and sticks;

"form II" means wrought or worked material (whether or not coated, plated, drilled or punched) in the form of angles and channels and other sectional material (including crop ends), circles, discs, dust, flakes, foil and leaf, forgings, plates and plate cuttings, powder, pressings and stampings, raspings, ribbons, rings, rods (including bare welding rods, wire rods and rod ends), sections, shapes, shavings, sheet and sheet cuttings, strip, pipes and tubes (including tube rounds, squares and hollows) and wire;

"form III" means cast material (whether or not coated, plated, drilled or punched); and

"metallic residues and metallic wastes" and "scrap and old metal" refer to all metals whether or not specified in this Order.

Aluminium, the following:—

(1) Aluminium and alloys containing 45 per cent. or more of aluminium (other than virgin aluminium of a purity of not less than 98 per cent.) in form I (other than powder) ... ... A

(2) Goods (subjected to any process of manufacture) wholly or mainly by weight of aluminium (other than virgin aluminium in form I excluded in head (1) of this entry) or of alloy (or alloys) mainly of aluminium, not elsewhere specified, the value of which, as required by the Commissioners of Customs and Excise to be declared, does not exceed the value of the aluminium or alloy (or alloys) mainly of aluminium contained therein calculated at £200 per ton ... ... A

(3) Aluminium and alloys containing 45 per cent. or more of aluminium, in the form of foil (coated, printed or backed with paper or other reinforcing material), the value of which, as required by the Commissioners of Customs and Excise to be declared, does not exceed £100 per ton ... ... A

Beryllium, the following:—

Ores and concentrates ... ... A

Beryllium and alloys containing more than 50 per cent. of beryllium, in form I, II or III ... ... A

Manufactures wholly or mainly by weight of beryllium, other than windows for medical X-ray machines ... ... A

Boron, the following:—

Boron minerals, crude and refined.

Ferro-boron, whether briquetted or not.

Boron and alloys containing 5 per cent. or more of boron, in form I, II or III.

Boron, alloys and mixtures containing boron in which the boron-10 isotope comprises more than 20 per cent. of the total boron content.

Calcium containing less than 100 parts per million by weight of impurities other than magnesium and less than 10 parts per million by weight of boron ... ... A

Copper, the following:—

(1) Copper and alloys containing 50 per cent. or more of copper (other than copper complying with the requirements of British Standards Nos. 1035, 1036, 1037, 1038, 1039, 1040, 1172, 1173, 1174 and 1861, all dated 1952) in form I (other than powder) ... ... A

(2) Goods (subjected to any process of manufacture) wholly or mainly by weight of copper or of alloy (or alloys) mainly of copper, not elsewhere specified ... ... A

other than—

(*a*) copper in form I (other than bar ends) complying with the requirements of the British Standards referred to in head (1) of this entry;

(*b*) goods in form II (other than plate cuttings, sheet cuttings, crop ends, rod ends and shavings), unused;

(*c*) bolts, nails, rivets, screws, staples, tacks and washers, unused;

(*d*) (i) goods wholly or mainly of copper, the value of which as required by the Commissioners of Customs and Excise to be declared, exceeds the value of the copper contained therein calculated at £300 per ton;

(ii) goods wholly or mainly of alloy (or alloys) mainly of copper, the value of which as required by the Commissioners of Customs and Excise to be declared, exceeds the value of the alloy (or alloys) mainly of copper contained therein calculated at £200 per ton.

Gallium and alloys and amalgams containing any percentage of gallium, in form I, II or III or in liquid form.

Germanium, in ribbon form, 2 inches or more in length, whether or not processed.

Hafnium and alloys containing more than 15 per cent. of hafnium, in form I, II or III ... ... A

Iron and steel, the following:—

(1) Iron, steel and alloys of iron or steel, being iron, steel and alloys containing 50 per cent. or more of iron if—

(*a*) (i) armour plate ... ... A

(ii) precipitation hardening steels containing 4 per cent. or more of nickel, or

(*b*) containing one or more of the following constituents in the proportions stated:—

(i) 10 per cent. or more of molybdenum;

(ii) more than 5 per cent. of molybdenum together with more than 14 per cent. of chromium;

(iii) 1·5 per cent. or more, separately or combined, of niobium or tantalum;

(iv) 35 per cent. or more of alloying elements (other than iron) one of which is nickel, together with 0·4 per cent. or more of titanium or 0·8 per cent. or more, separately or combined, of niobium or tantalum,

in form I, II or III.

(2) Goods (subjected to any process of manufacture) wholly or mainly by weight of iron or wholly or mainly by weight of steel, not elsewhere specified, the value of which as required by the Commissioners of Customs and Excise to be declared, does not exceed the value of the iron or steel contained therein calculated at £25 per ton A

other than—

(*a*) ships and ships' hulls ;

(*b*) pig iron not specified in head (1)(*b*) of this entry.

Lead, the following:—

Ores and concentrates ... ... A

Lead and alloys containing 50 per cent. or more of lead, in form I (other than powder) and shavings ... ... A

Lithium, the following:—

Ores and concentrates ... ... A

Lithium and alloys containing 50 per cent. or more of lithium, in form I, II, or III ... ... A

Magnesium alloys containing 50 per cent. or more of magnesium and one or more of the following constituents in the proportions stated:—

(*a*) 0·4 per cent. or more of zirconium ;

(*b*) 1·5 per cent. or more of thorium ;

(*c*) 1·0 per cent. or more of rare earth metals,

in form I, II or III.

Magnetic materials, the following:—

(1) Magnetic materials in all forms (including specialised forms such as core assemblies, laminations, stampings, tapes and wound cores) having any of the following characteristics:—

(*a*) initial permeability 50,000 or over ;

(*b*) remanence 98 per cent. or over of maximum flux for materials having magnetic permeability ;

(*c*) a composition capable of an energy product greater than 6 megagauss-oersteds.

(2) Grain oriented sheet or strip (and core assemblies, laminations, stampings, tapes and wound cores composed of such sheet or strip) having a thickness of 0·004 inch or less.

Metallic residues and metallic wastes, other than pyrites ash ... ... A

Minerals, raw and treated (including residues and tailings), containing more than 0·05 per cent. of uranium or thorium, singly or together, including but not limited to, the following ... ... A

Ores containing uranium including pitchblende ... ... A

Monazite and monazite sands ... ... A

Ores containing thorium including uranothorianite ... ... A

Molybdenum, the following:—

Ferro-molybdenum, whether briquetted or not.

Molybdenum and alloys containing 50 per cent. or more of molybdenum in form I, II or III.

Molybdenum pipes and tubing, platinum clad.

Nickel, the following:—

(1) Ferro-nickel (fonte) and nickel melting base ... ... A

(2) Alloys containing 35 per cent. or more of nickel, together with 12 per cent. or more of chromium and 1·5 per cent. or more, separately or combined, of aluminium, niobium or titanium, and in which nickel predominates by weight over each of the other metals, in form I, II or III.

(3) Nickel powder with a particle size less than 200 microns, whether compacted or not ... ... A

Niobium, the following:—

Ores, concentrates, matte and regulus ... ... A

Ferro-niobium and ferro-niobium-tantalum, whether briquetted or not ... ... A

Niobium and alloys (i) containing 50 per cent. or more of niobium or (ii) having a combined content of 60 per cent. or more of niobium-tantalum, in form I, II or III ... ... A

Platinum clad molybdenum pipes and tubing.

Quartz, common or rock crystal, other than quartz all of which will pass through a sieve having a nominal width of aperture of 3·18 millimetres and conforming to British Standard 410:1962.

Scrap and old metal ... ... A

Silicon, the following:—

(*a*) of a purity of 99·9 per cent. or more;

(*b*) in ribbon form, 2 inches or more in length, whether or not processed.

Tantalum, the following:—

Ores, concentrates, matte and regulus.

Ferro-tantalum, whether briquetted or not.

Ferro-tantalum-niobium, whether briquetted or not ... ... A

Tantalum and alloys—

(*a*) containing 60 per cent. or more of tantalum;

(*b*) having a combined content of 60 per cent. or more of tantalum-niobium ... ... A

in form I, II or III.

Thorium and alloys containing 1·5 per cent. or more of thorium, in form I, II or III ... ... A

Titanium and alloys containing 70 per cent. or more of titanium, in form I, II or III, other than ferro-titanium.

Tungsten, the following:—

(1) Tungsten and alloys containing 50 per cent. or more of tungsten, in form I, II or III (except wire and filament), other than—

(*a*) Ferro-tungsten.

(*b*) Tungsten carbide.

(*c*) Tungsten powder.

(*d*) Press-sintered forms, other than sheet and strip, weighing less than 20 lbs.

(*e*) Press-sintered sheet and strip less than 12 inches in width.

(2) Tungsten wire in any form made from press-sintered tungsten, other than wire and filament in the following forms:—

(*a*) cut coil filaments;

(*b*) wire, not coated or covered, of a diameter of 600 microns or less, the tensile strength of which is 35 grammes per milligramme per 200 millimetres (140 kilogrammes per square millimetre) or less when measured on the wire drawn down to a diameter of 180 microns after heating for a period of 10 minutes in a hydrogen atmosphere at 2,100° Centigrade;

(*c*) wire of a diameter of 50 microns or less and containing 1 per cent. or less of thorium oxide;

(*d*) wire of a diameter of 1 millimetre or more and a length of 30 centimetres or less and containing 2 per cent. or less of thorium oxide.

Uranium, the following:—

Ferro-uranium, whether briquetted or not ... ... A

Uranium and alloys containing any percentage of uranium, in form I, II or III ... ... A

Zinc and alloys containing 50 per cent. or more of zinc in form I (other than powder) and shavings ... ... A

Zirconium, the following:—

Ferro-zirconium, whether briquetted or not ... ... A

Zirconium and alloys containing more than 50 per cent. of zirconium in form I, II or III ... ... A

Manufactures wholly of zirconium or of alloys containing more than 50 per cent. of zirconium ... ... A

GROUP 6

Engineering Products

Bearings, ball and roller (and plummer blocks, brackets, hangers and pedestals incorporating such bearings), the following:—

(1) Ball bearings.

(2) Cylindrical roller bearings, but not including needle roller bearings or thrust roller bearings.

(3) Inner rings, outer rings, retainers and sub-assemblies for the foregoing.

(4) Balls and cylindrical rollers, other than needle rollers.

Cables, the following:—

(1) Cable (including coaxial cable) and wire coated or insulated with, or otherwise incorporating, any of the following:—

(*a*) Tetrafluoroethylene and polytetrafluoroethylene.

(*b*) Chlorotrifluoroethylene and polychlorotrifluoroethylene.

(*c*) Polyvinylfluoride.

(*d*) Polyvinylidenefluoride.

(*e*) Polyperfluorobut-2-ene.

(*f*) Polychloropentafluorobutadiene.

(*g*) Co-polymer of tetrafluoroethylene and hexafluoropropylene.

(*h*) Co-polymer of tetrafluoroethylene and chlorotrifluoroethylene.

(*i*) Co-polymer of chlorotrifluoroethylene and vinylidenefluoride.

(*j*) Co-polymer of chlorotrifluoroethylene and vinylfluoride.

(*k*) Co-polymer of chlorotrifluoroethylene and chloropentafluorobutadiene.

(*l*) Co-polymer of hexafluoropropylene and vinylidenefluoride.

(*m*) Polybromotrifluoroethylene.

(*n*) Co-polymer of bromotrifluoroethylene and chlorotrifluoroethylene.

(*o*) Dibromotetrafluoroethane.

(2) Coaxial cable having any of the following features:—

(*a*) using a mineral insulator dielectric;

(*b*) using a dielectric aired by discs, beads, spiral, screw, or any other means;

(*c*) designed for pressurisation or use with a gas dielectric;

(*d*) designed for submarine use.

(3) Communication cable containing more than one pair of conductors and containing any conductor, single or stranded, exceeding 0·9 millimetre in diameter, the following:—

(*a*) Submarine cable.

(*b*) Cable, other than paper and air dielectric types, in which the nominal mutual capacitance of paired circuits is less than 53 nanofarads per mile.

Chemical plant and equipment, the following:—

(1) Containers, jacketed only, including mobile types, for the storage or transportation of liquid gases, the following:—

(*a*) of 250 gallons (946·5 litres) capacity or over, designed for liquid fluorine;

(*b*) of 500 gallons (1,893 litres) capacity or over, designed for liquid argon, helium, hydrogen, nitrogen, oxygen or ozone.

(2) Counter-current solvent extractors, made of stainless steel, specially designed for the extraction of radio-active substances.

(3) Equipment for the production or concentration of deuterium oxide.

(4) Gas liquefying equipment, the following:—

(*a*) Equipment specially designed for the production in liquid form of air, oxygen, nitrogen, argon or hydrogen and producing one ton or more per day of gas in liquid form, other than plants not capable of producing more than 25 per cent. of their total daily product as extractable gas in liquid form.

(*b*) Liquid fluorine producing equipment.

(*c*) Equipment for the separation of helium from natural gas.

(5) Plant for the production of military explosives and solid propellants, and parts specially designed therefor, including nitrators, continuous types ... ... A

Compressors, blowers and fans (whether incorporated in other machinery and plant or not), the following:—

Compressors, blowers and fans, multistage, capable of either—

(*a*) an overall compression ratio of 2 to 1 or more, coupled with a capacity of over 372,000 cubic feet per minute at intake conditions, or

(*b*) an overall compression ratio of 3 to 1 or more coupled with a capacity of over 106,000 cubic feet per minute at intake conditions.

Electron beam equipment, the following:—

(1) Welding and machining equipment ... ... A

(2) Equipment for the deposition of thin film, the coating of thin film, or the working of both of these ... ... A

(3) Specialised parts for the above equipment ... ... A

Equipment, other than equipment for the zone purification of germanium, specially designed for the manufacture of semi-conductor materials of

a kind used in the manufacture of transistors and similar devices, including equipment capable of one or more of the following operations:—

(*a*) purifying beyond 99·9 per cent.;

(*b*) equalising distribution of residual impurities;

(*c*) achieving controlled introduction of impurities;

(*d*) producing monocrystalline material, including forming on substrates;

(*e*) producing or processing semi-conductor material in the form of ribbon two inches or more in length.

Specialised controls, parts and accessories for the above.

Furnaces, electric vacuum, including those capable of operating with protective atmospheres such as argon and helium, the following:—

(1) Consumable electrode vacuum arc furnaces with a capacity in excess of 5 tons.

(2) Skull type vacuum arc furnaces.

(3) Electron beam vacuum furnaces ... ... A

(4) Cold crucible vacuum induction furnaces designed to operate at pressures lower than 0·1 millimetre of mercury and at temperatures from 1,100° Centigrade to 1,650° Centigrade.

(5) Vacuum induction furnaces designed to operate at temperatures higher than 1,650° Centigrade.

(6) Resistance vacuum furnaces designed to operate at temperatures higher than 1,650° Centigrade.

(7) Specialised parts and controls for the furnaces specified in sub-heads (1) to (6).

Machines and apparatus for the manufacture or testing of electronic valves, the following:—

(1) Machines and apparatus specially designed for the manufacture or testing of the kinds of electronic valves, transistors and crystal diodes (including components and sub-assemblies therefor) specified in Group 3.

(2) Machines and apparatus specially designed for the automatic or semi-automatic assembly of electronic valves, transistors and crystal diodes (including components and sub-assemblies therefor), other than machines and apparatus designed for automatic or semi-automatic exhaust sealing and gettering of standard entertainment type 7-pin miniature and 9-pin Noval valves.

(3) Specialised testing equipment for use with the machines and apparatus mentioned in sub-head (2).

Machines and apparatus for the working of synthetic film of a kind used as magnetic recording tape or as a dielectric (condenser tissue) and parts thereof, the following:—

(1) Stenters specially designed for stretching film of the kind used for the recording media described in the entry relating to recording or reproducing equipment in Group 3 of this Schedule.

(2) Equipment specially designed for the continuous coating of polyester base magnetic tape of the kind used with the equipment described in the entry relating to recording or reproducing equipment in Group 3 of this Schedule.

(3) Stenters specially designed for stretching film of the kind used in dielectric (condenser tissue) described in the entry relating to dielectric materials in Group 8 of this Schedule.

(4) Vacuum metallising machines and specialised parts therefor, specially designed for the continuous coating with metallised sheathing of polyester dielectric film for condensers.

Machines and apparatus of the kind used for making telecommunications cables, the following:—

(1) Machines of the kind specially designed for the manufacture of multi-pair electric cables for telecommunications purposes, containing any conductor, single or stranded, exceeding 0·66 millimetre in diameter, the following:—

(*a*) Machines of the kind used for applying insulating material to conductors.

(*b*) Machines of the kind used for laying conductors together or for applying an insulating, separating, binding or identifying material thereto.

(2) Machines of the kind specially designed for the manufacture of coaxial electric cables, the following:—

(*a*) Machines of the kind used for applying insulating separators to the inner conductor of air-spaced coaxial electric cables.

(*b*) Machines of the kind used for applying metal strip or sheet to form the outer conductor of coaxial electric cables.

(3) Machines of the kind used for laying up or stranding conductors, pairs, quads, multiple units thereof, or coaxial tubes, to form complete cable cores or parts thereof.

(4) Automatic apparatus for controlling the diameter or the eccentricity of extruded dielectric on wires and cables.

Machines, apparatus and tools of the kinds used for the production of aircraft and aircraft engines, the following:—

(1) Machines, apparatus and tools for the manufacture and testing of gas turbines, the following:—

(*a*) Compressor case boring machines.

(*b*) Compressor and turbine disc turning machines.

(*c*) Machines and apparatus for making or measuring gas turbine blades.

(*d*) Rotor grinding machines.

(2) Machines for milling aircraft skin.

(3) Machines for the working or forming of aircraft sheet, aircraft plate or aircraft extrusions.

Machines, metal working, the following:—

(1) Gear-making or gear finishing machines, the following:—

(*a*) Gear grinding machines, generating type, of 36 inches work diameter and over.

(*b*) Machines designed for the quantity production of gears having a pitch finer than 0·5 module.

(2) Grinding machines, the following:—

Internal grinding machines of the kind incorporating or specially designed for the utilisation of grinding heads designed or rated for operation at speeds in excess of 120,000 revolutions per minute.

(3) Machines designed for or equipped with electronic closed loop feed back systems capable of controlling and of continuously correcting continuous path metal cutting and metal forming contour operations, including any such continuous path operations, straight or curved, whether in one or more planes.

(4) Presses, the following:—

(*a*) Presses (stabilised equipment using rams) for applying high impact energy work forces through use of explosives or compressed gases including air.

(*b*) Presses designed or re-designed for the working or forming of metals or alloys with a melting point exceeding 1,900° Centigrade.

(*c*) Presses, hydraulic or mechancial, of an effective operating pressure of over 10,000 tons.

(*d*) Control equipment and component parts specially designed for the presses in sub-heads (*a*), (*b*) and (*c*).

(5) Spin-forming machines designed for use with, or equipped with, spindle drive motor of 50 horse-power or more.

Machine tool parts, accessories and associated apparatus, the following:—

Electronic closed loop feed back systems capable of controlling, and of continuously correcting, continuous path metal cutting and metal forming contour operations, including any such continuous path operations, straight or curved, whether in one or more planes.

Grinding heads and spindle assemblies for internal grinding machines designed or rated for operation at speeds in excess of 120,000 revolutions per minute.

Pipe and tubing (metal) lined with or covered with polytetrafluoroethylene or polychlorotrifluoroethylene.

Pipe valves, cocks and pressure regulators, either—

(1) designed to operate at temperatures below −170° Centigrade; or

(2) having all flow contact parts made of or lined with any of the following materials:—

(*a*) metals and alloys containing—

(i) 90 per cent. or more, separately or combined, of tantalum, titanium or zirconium;

(ii) 50 per cent. or more, separately or combined, of cobalt or molybdenum.

(*b*) polytetrafluoroethylene or polychlorotrifluoroethylene.

Plasma arc equipment, the following:—

(1) Electric arc devices generating a flow of ionised gas in which the arc column is constricted.

(2) Accessories, parts and control or test equipment specially designed for arc devices as specified in (1) above.

(3) Cutting, profiling, welding and metal spraying equipment incorporating arc devices as specified in (1) above.

Presses, hydraulic or mechanical, for the working of ceramics, with an effective operating pressure of over 10,000 tons, and control equipment and component parts specially designed therefor.

Printed circuit equipment, the following:—

Equipment specially designed to produce electronic assemblies—

(1) by depositing or printing on insulating panels, including plates or wafers, or otherwise forming in situ, component parts other than basic wiring;

(2) by automatically inserting or soldering components on insulating panels, including plates or wafers, to which wiring is applied by printing or other means;

(3) by automatically or semi-automatically assembling, wiring or packaging the mounted insulating panels, including plates and wafers, mentioned in sub-heads (1) and (2).

Pumps, the following:—

(1) Pumps capable of delivering liquids separately or in combination with solids, gases, or solids and gases, and having any of the following characteristics:—

(*a*) designed to move molten metals by electromagnetic forces ... A

(*b*) designed to operate—

(i) at a flow rate above 100 gallons per minute and at temperatures below −170° Centigrade ... ... A

(ii) at a flow rate of 100 gallons per minute or less and at temperatures below −200° Centigrade ... ... A

(*c*) all flow contact surfaces made of any of the following materials:—

(i) metals and alloys containing—

(A) 90 per cent. or more, separately or combined, of tantalum, titanium or zirconium;

(B) 50 per cent. or more, separately or combined, of cobalt or molybdenum;

(ii) polytetrafluoroethylene or polychlorotrifluoroethylene ... A

(2) Vacuum pumps, the following:—

(*a*) Ion vacuum pumps with pumping speeds of 800 or more litres of hydrogen per second at a pressure of 10^{-6} millimetre of mercury or more.

(*b*) Turbo-molecular pumps having a capacity higher than 2,000 litres of nitrogen per second.

(*c*) Diffusion pumps rated for unbaffled pumping speeds of more than 50,000 litres of nitrogen per second at pressures of 10^{-4} millimetre of mercury or less.

(*d*) Cryopump systems in which the circulation of liquefied gas is used to achieve a vacuum by lowering the temperature of the environment.

(*e*) Parts, controls and accessories specially designed for the equipment specified in sub-heads (*a*), (*b*), (*c*) and (*d*) above.

Rolling mills of the kind used for the reduction of metal by rolling, the following:—

(1) Sheet and strip mills—

(*a*) having automatic work roll adjustment controls for tapering or contouring along the length of the sheet or strip; or

(*b*) more than 3-high.

(2) Mills specially designed or re-designed for the rolling of metals or alloys with a melting point exceeding 1,900° Centigrade.

(3) Specialised controls and component parts (other than rolls and ancillary equipment) for the mills mentioned in sub-heads (1) and (2).

GROUP 7

Transport Equipment

Compression ignition (diesel) engines capable of developing 50 brake horse power and over and having a non-magnetic content exceeding 50 per cent. of their total weight.

Fork and other lift trucks possessing or built to current military specifications differing materially from normal commercial specifications.

Mechanically propelled road vehicles or chassis (including wheeled tractors and automotive units of trailers and semi-trailers) in which motive power may be applied to two or more axles, other than—

(1) wheeled tractors and automotive units of trailers and semi-trailers powered with engines of a power capability of less than 100 brake horse power; and

(2) vehicles and tractors fitted with dozer equipment, concrete mixers, cranes, dumpers, excavators, graders, power shovels or scrapers, and fork and other lift trucks, constructed to civilian specifications.

Trailers and semi-trailers of a carrying capacity of 25 tons or over.

GROUP 8

Miscellaneous

Cattle, sheep and swine, live ... ... A

Continuous yarns, rovings and tapes suitable for making filament wound structures which possess all the following characteristics, after having been on a roll and when measured at a temperature of 20° Centigrade and at 65 per cent. relative humidity—

(*a*) consisting of monofilaments of 12 microns or less in diameter;

(*b*) having a modulus of elasticity greater than $10{\cdot}5 \times 10^6$ pounds per square inch;

(*c*) having a tensile strength to density ratio of tensile strength $\times \frac{2{\cdot}55}{\text{specific gravity}}$ greater than 300,000 pounds per square inch.

Dielectric materials (condenser tissue) coated or uncoated, other than paper, of a kind used in the manufacture of condensers capable of operating over the whole range of ambient temperatures extending from below −45° Centigrade to above 100° Centigrade, or at ambient temperatures of 200° Centigrade or higher, the following:—

(1) Polyester material of a thickness of ·001 inch or less;

(2) Other material of a thickness of ·0015 inch or less;

in the form of films, sheets or strips.

Eggs, in shell, of domestic poultry ... ... A

Fluorinated silicone rubbers and other fluorinated elastomeric materials and such organic intermediates for their manufacture as contain 10 per cent. or more of combined fluorine.

Fluoro carbon compounds, the following:—

(1) Monomers, homopolymers and co-polymers, the following:—

(*a*) Tetrafluoroethylene and polytetrafluoroethylene.

(*b*) Chlorotrifluoroethylene and polychlorotrifluoroethylene.

(*c*) Polyvinylfluoride.

(*d*) Polyvinylidenefluoride.

(*e*) Polyperfluorobut-2-ene.

(*f*) Polychloropentafluorobutadiene.

(*g*) Co-polymer of tetrafluoroethylene and hexafluoropropylene.

(*h*) Co-polymer of tetrafluoroethylene and chlorotrifluoroethylene.

(*i*) Co-polymer of chlorotrifluoroethylene and vinylidenefluoride.

(*j*) Co-polymer of chlorotrifluoroethylene and vinylfluoride.

(*k*) Co-polymer of chlorotrifluoroethylene and chloropentafluorobutadiene.

(*l*) Co-polymer of hexafluoropropylene and vinylidenefluoride.

(*m*) Polybromotrifluoroethylene.

(*n*) Co-polymer of bromotrifluoroethylene and chlorotrifluoroethylene.

(*o*) Dibromotetrafluoroethane.

(2) Manufactures of one or more of the materials specified in sub-head (1) being—

(*a*) manufactures wholly thereof;

(*b*) mixtures thereof; solutions thereof;

(*c*) dispersions and emulsions thereof, whether or not containing a dispersing agent.

Fuels for aircraft engines, the following :—

Any liquid fuel, including petroleum products, which contain high energy components or compounds thereof, having a gross calorific value of not less than 23,400 British Thermal Units per pound.

Graphite, artificial, whether or not containing trace amounts of other elements or compounds, having an apparent relative density of not less than 1·90 when compared with water at 15·5° Centigrade, other than non-pyrolytic graphite having an apparent relative density not exceeding 1·95 in forms capable of passing through a two-inch square hole.

Horses, live, the value of which, as required by the Commissioners for Customs and Excise to be declared, is less than £120 each ... ... A

Hydraulic fluids, the following:—

(*a*) Synthetic, having a viscosity of not more than 4,000 centistokes at −54° Centigrade and not less than 1·5 centistokes at 150° Centigrade.

(*b*) Consisting wholly or mainly of petroleum (mineral) oils and which have a pour point of −34° Centigrade or lower and which are thermally stable at 371° Centigrade.

Lubricating oils and greases, synthetic, being wholly or mainly—

(1) esters of saturated aliphatic monohydric alcohols containing more than six carbon atoms with adipic or azeleic or sebacic acids ; or

(2) esters of trimethylol propane or trimethylol ethane or pentaerythritol with saturated monobasic acids containing more than six carbon atoms ; or

(3) fluoro-alcohol esters ; or

(4) polyphenyl ethers containing more than 3 phenyl groups.

Plastics materials and manufactures thereof, the following:—

(*a*) Polypyromellitimide.

(*b*) Polybenzimidazole.

(*c*) manufactures wholly of either of the substances specified in sub-heads (*a*) and (*b*).

(*d*) Laminated or reinforced forms of either of the substances specified in sub-heads (*a*) and (*b*).

Poly(alkyl polysulphide) liquid polymers, not including water dispersions.

Polymeric products of butadiene, the following:—

(*a*) Carboxyl terminated polybutadiene.

(*b*) Mouldable co-polymers of butadiene and acrylic acid.

(*c*) Moudable ter-polymers of butadiene, acrylonitrile and acrylic acid or any of the homologues of acrylic acid.

Silicone fluids and greases, the following:—

Halogenated silicone fluids.

Lubricating greases capable of operating at temperatures of 180° Centigrade or higher and having a drop point of 220° Centigrade or higher.

GROUP 9

Valuables

Articles, not elsewhere specified, manufactured or produced more than 100 years before the date of exportation, including works of art but not including postage stamps of philatelic interest and similar articles ... A

Diamonds of all kinds (but not including diamond powder) and articles mounted or set with diamonds other than dies, tools and tool parts ... A

SCHEDULE 2

ORDERS REVOKED

The Export of Goods (Control) Order 1963 (S.I. 1963/3 ; 1963 I, p. 9).

The Export of Goods (Control) (Amendment) Order 1964 (S.I. 1964/784 ; 1964 II, p. 1668).

The Export of Goods (Control) (Amendment No. 2) Order 1964 (S.I. 1964/974 ; 1964 II, p. 2219).

The Export of Goods (Control) (Amendment) Order 1965 (S.I. 1965/348 ; 1965 I, p. 1076).

EXPLANATORY NOTE

(This Note is not part of the Order.)

This Order revokes and replaces the Export of Goods (Control) Order 1963 and the amendments thereto. It effects the following changes :—

1. Export control is removed from some positive ion sources, some types of electric generators, cobalt and cobalt alloys, nickel ores and concentrates and some nickel wire and wire mesh, ferro-titanium, plant for the production of titanium or zirconium metal, some types of pipe valves, cocks and pressure regulators, irrespective of destination.

2. The scope of export control is reduced in the case of electrolytic cells for the production of fluorine, communication transmission equipment, measuring, calibrating, counting and time interval measuring apparatus, radio transmitters and components, iron and steel, quartz, cables, machines and apparatus for the automatic or semi-automatic assembly of electronic valves, transistors and crystal diodes and presses.

3. Control is imposed on the export of electrical conductors designed for operation at ambient temperatures below −130° Centigrade, specially designed parts for environmental chambers, test equipment specially designed for controlled telemetering equipment, specified instruments for measuring the speed of sound in water, neutron generator tubes, power generating equipment for use with nuclear reactors, process control equipment for monitoring the processing of irradiated fissionable materials, streak cameras, certain types of triggered spark gaps, mercury fulminate, tetrazene and specified aluminium foil to all countries, and on the export of diazodinitrophenol, machinery for the working of some kinds of synthetic film, continuous yarns for making filament wound structures, some artificial graphite, specified plastics materials and specified polymeric products of butadiene to countries other than Commonwealth countries, the Irish Republic, the Republic of South Africa and the United States of America. The scope of export control is extended in the case of amplifiers, capacitors, compasses and gyroscopic apparatus and hydraulic fluids.

4. Control is extended to the export to all destinations of specified construction equipment (transferred from Group 7 to Group 1) ; guanidinium nitrate, hydrazine, certain hydrazine derivatives, and hydrogen peroxide (transferred from Group 4 to Group 1) ; some kinds of marine boilers (transferred from Group 6 to Group 1) ; cypher equipment ; specified gyroscopes and accelerometers ; some ground and marine radar equipment ; communication, detection or tracking equipment and " jamming " apparatus ; specified amplifiers and oscillators, electronic measuring, testing or

calibrating instruments, semi-conductor diodes, photo-cells, thermal detecting cells and image intensifiers; some kinds of valves and analogue computers; specialised electronic control equipment; specified oscilloscopes, photographic equipment, measuring equipment and pumps; electron beam vacuum furnaces and equipment.

5. The descriptions of goods to which export control applies have been amended in the case of training devices specially designed for military purposes, radiation monitoring equipment, communication, navigation, direction finding and radar equipment, specified electronic components, cypher equipment, electro-chemical semi-conductor and radio-active devices, cathode-ray oscilloscopes, electronic cathode-ray tubes, telegraph equipment, boron, tungsten, gas liquefying equipment, electron beam welding and machining equipment, equipment for the manufacture of semiconductor materials, electric furnaces, machines for the production of gears, pulse modulators, pumps and fluoro carbon compounds.