STATUTORY INSTRUMENTS

1978 No. 796

CUSTOMS AND EXCISE

The Export of Goods (Control) Order 1978

Made - - - -	1*st June* 1978
Coming into Operation	3*rd July* 1978

The Secretary of State, in exercise of powers conferred by section 1 of the Import, Export and Customs Powers (Defence) Act 1939**(a)** and now vested in him**(b)**, and of all other powers enabling him in that behalf, hereby makes the following Order:

Citation, operation, interpretation

1.—(1) This Order may be cited as the Export of Goods (Control) Order 1978 and shall come into operation on 3rd July 1978.

(2) In this Order, unless the context otherwise requires—

"Commissioners" means the Commissioners of Customs and Excise;

"country" includes territory, and references to a country include references to any area consisting of two or more countries;

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

"hovercraft" has the same meaning as in section 4(1) of the Hovercraft Act 1968**(c)**;

"international import certificate" means a certificate issued by the Secretary of State for the purposes of this Order or any Order revoked by this Order certifying that an importer has undertaken with the Secretary of State to import into the United Kingdom the goods specified in the certificate or to deal with them in such other manner as is authorised by a licence granted under this Order;

"importation" and "exportation" in relation to a ship or aircraft includes the taking into or out of the United Kingdom of the ship or aircraft notwithstanding that the ship or aircraft is conveying goods or passengers, and whether or not it is moving under its own power, and cognate expressions shall be construed accordingly;

"member State" means a member State of the European Communities;

"scheduled goods" means goods of a description included in Schedule 1 hereto and any reference to such goods being indicated by a letter shall be taken as a reference to the goods being so indicated in Schedule 1 hereto;

"scheduled journey" means one of a series of journeys which are undertaken between the same two places and which together amount to a systematic service operated in such a manner that the benefits thereof are available to members of the public from time to time seeking to take advantage of it;

"ship" includes the hull or part of the hull of a ship;

"United Kingdom" includes the Isle of Man;

(a) 1939 c. 69.
(b) *See* S.I. 1970/1537.
(c) 1968 c. 59.

a prohibition on exportation means a prohibition on exportation from the United Kingdom and shall include a prohibition on shipment as ships' stores;

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;

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

any description of goods in Group A of Part I of Schedule 1 hereto in relation to a Tariff heading number, other than one covering a whole heading, shall be taken to comprise all goods which would be classified under an entry in the same terms constituting a subheading in the relevant heading in the common customs tariff of the European Economic Community**(a)**.

(3) The Interpretation Act 1889**(b)** shall apply for the interpretation of this Order as it applies for the interpretation of an Act of Parliament and as if this Order, the Orders hereby revoked and any other Order mentioned in this Order were Acts of Parliament.

Prohibition and restrictions on exportation

2. Subject to the provisions of this Order—

(i) scheduled goods indicated by the letter "A" are prohibited to be exported to any destination;

(ii) scheduled goods indicated by the letter "T" are prohibited to be exported to any destination except that when in relation to such goods the provisions of Regulation (EEC) 223/77**(c)**, as amended by Regulation (EEC) 1601/77**(d)**, relating to the use of Community transit documents requiring anything to be done at or before the time of exportation have been complied with, the goods may be exported to a destination in another member State;

(iii) scheduled goods indicated by the letter "E" are prohibited to be exported to any destination except a destination in another member State;

(iv) scheduled goods indicated by the letter "C" are prohibited to be exported to any destination except a destination in any country named, or included in a country named, in Schedule 2 hereto;

(v) scheduled goods consisting of classes of ships indicated by the letter "S" are prohibited to be exported to any destination after delivery, or for the purpose of delivery, directly or indirectly, to a person in Albania, Bulgaria, China, Czechoslovakia, the German Democratic Republic, Hungary, Democratic Kampuchea, the Lao People's Democratic Republic, Mongolia, North Korea, Poland, Romania, the Union of Soviet Socialist Republics and the Socialist Republic of Vietnam;

(vi) all goods in relation to the export of which from any country an international import certificate has been issued and which have been imported into the United Kingdom are prohibited to be exported to any destination; and

(vii) goods of any description are prohibited to be exported to any destination in Southern Rhodesia.

(a) *See* Regulation (EEC) 2500/77 (O.J. No. L289, 14.11.76) amending Regulation (EEC) 950/68.

(b) 1889 c. 63.

(c) O.J. No. L38, 9.2.77, p.1.

(d) O.J. No. L182 22.7.77, p.1.

Exceptions

3.—(1) Subject to paragraph (2) of this Article, nothing in Article 2 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 Secretary of State, or, in the case of diamonds, by the Commissioners, 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;

Channel Islands

(*b*) any goods other than goods of a description included in Group B of Part I of Schedule 1 hereto or in Group 1 of Part II of the said Schedule, to any destination in the Channel Islands;

Samples

(*c*) trade samples of any goods, except goods of a description included in Group 1 of Part II of Schedule 1 hereto, if the samples have no saleable value;

Aircraft

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

(ii) any aircraft engaged on a scheduled journey;

Cocoa

(*e*) cocoa beans, whole or broken, raw or roasted, and the following cocoa products namely cocoa paste (in bulk or in block) whether or not defatted, cocoa butter (fat or oil) and unsweetened cocoa powder

(i) to any destination in another member State of the European Economic Community,

(ii) to any destination if imported into the United Kingdom for transhipment or

(iii) to any destination if there is produced to the proper officer of Customs and Excise at the place of export the certificate prescribed for this purpose by the economic and control rules of the International Cocoa Agreement 1975 which were adopted by the International Cocoa Council on 26th July 1976 and are set out in the annex to Regulation (EEC) 2762/76**(a)**;

Diamonds

(*f*) (i) diamonds exported to any destination in the Republic of Ireland or the Channel Islands;

(ii) diamonds exported by registered letter post, insured parcel post or air freight, to any destination in any other territory which is for the time being one of the scheduled territories as defined in the Exchange Control Act 1947**(b)**;

Firearms and Ammunition

(*g*) firearms and ammunition to any destination other than a destination in South Africa or in Namibia (South West Africa), not being goods of a

(a) O.J. No. L321, 20.11.76. **(b)** 1947 c. 14.

description included in Group B of Part I of Schedule 1 hereto, authorised to be held by a valid firearm certificate or shot gun certificate granted or having effect as if granted under the Firearms Act 1968**(a)** or by a valid firearm certificate granted in Northern Ireland under the Firearms Act (Northern Ireland) 1969**(b)** or granted in the Isle of Man under the Firearms Act 1947 (an Act of Tynwald)**(c)** and forming part of the personal effects of the holder, if the certificate is produced by the holder, or his duly authorised agent, with the firearms and ammunition to the proper officer of Customs and Excise at the place of export;

Hovercraft

(*h*) hovercraft engaged on a scheduled journey;

Live Animals of the Bovine Species, Swine and Sheep

(*i*) (i) any animal in respect of which there is 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**(d)** if the place of export is in Great Britain;

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

Ships

(*j*) (i) any ship registered, or constructed, outside the United Kingdom which is being exported after temporary importation into the United Kingdom;

(ii) any ship which is departing from the United Kingdom on trials.

(2) Nothing in paragraph (1) of this Article shall be taken to permit the exportation from the United Kingdom to any destination in Southern Rhodesia of any goods the exportation of which is prohibited by the Southern Rhodesia (United Nations Sanctions) (No. 2) Order 1968**(e)** or by the Southern Rhodesia (United Nations Sanctions) (Isle of Man) Order 1969**(f)**, as amended**(g)**.

Customs powers to demand evidence of destination which goods reach

4. Any exporter or any shipper of goods which have been exported from the United Kingdom shall, if so required by the Commissioners, 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 be liable to a customs penalty not exceeding one thousand 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.

5. If for the purpose of obtaining any international import certificate or of obtaining any licence or permission under this Order for the exportation or

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(a) 1968 c. 27.
(b) 1969 c. 12 (NI).
(c) Acts of Tynwald 1947 p. 586.
(d) S.I. 1964/704.
(e) S.I. 1968/1020.
(f) S.I. 1969/861.
(g) The amendment is not relevant to the subject matter of this Order.

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 or furnishes any document or information which is false in a material particular he shall be guilty of an offence and liable on summary conviction to a customs penalty not exceeding one thousand pounds and on conviction on indictment to a fine or imprisonment for a term not exceeding 2 years, 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

6.—(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 person shall be searched in pursuance of this paragraph except by a person of the same sex.

(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 without reasonable excuse 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 shall be liable to a customs penalty not exceeding five hundred pounds.

(4) Any person who under the provisions of this Article makes a declaration which to his knowledge is false in a material particular or recklessly makes any declaration which is false in a material particular shall be guilty of an offence and liable on summary conviction to a customs penalty not exceeding one thousand pounds and on conviction on indictment to a fine or imprisonment for a term not exceeding two years, or to both.

Overlapping descriptions

7. Where any goods fall within more than one description included in Schedule 1 hereto and at least one description is included in Group B of Part I or in Part II and the goods are indicated in that Schedule by more than one of the letters specified in Article 2 those goods shall be deemed to fall only within the prohibition in the paragraph first-mentioned in Article 2 relating to the goods.

Modification and revocation of licences, etc.

8.—(1) Any international import certificate or licence granted by the Secretary of State in pursuance of Article 2(vi) or 3(1)(*a*) or having effect as if so granted may be modified or revoked by him at any time.

(2) Any licence granted by the Commissioners under Article 3(1)(*a*) or 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 the Commissioners or such officer as the case may be.

Revocation etc.

9. The Arms Export Prohibition Orders 1931-37**(a)** are hereby suspended and the Orders specified in Schedule 3 hereto are hereby revoked:

Provided that any licence or permission granted or having effect under any Order hereby 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.

Alan Dunning,
An Assistant Secretary,
Department of Trade.

1st June 1978.

(a) S.R. & O. 1931/413, 1937/525.

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SCHEDULE 1

PART I

GROUP A

GOODS SPECIFIED BY REFERENCE TO HEADINGS IN THE COMMON CUSTOMS TARIFF OF THE EUROPEAN ECONOMIC COMMUNITY

Note (A). Goods of any description falling within Chapter 73 of the said tariff and expressed in this Group to be subject to rule (1), rule (2) or rule (3) are excluded from the scope of the description in question if they have all four of the characteristics respectively specified below in relation to those rules, as follows:

Rule (1)

(i) They are in a straightened state.

(ii) They are free from attachments (including bolts and rivets).

(iii) They have one dimension not less than 1·50 m.

(iv) Their value, as required by the Commissioners to be declared, exceeds £52·50 per tonne.

Rule (2)

The characteristics specified in rule (1) above, but with the substitution of "2·50 m" for "1·50 m" in characteristic (iii).

Rule (3)

The characteristics specified in rule (1) above, but with the substitution of "£200" for "£52·50" in characteristic (iv).

Note (B). Goods of any such description as aforesaid and therein indicated by the letter "T" which have all of the first three of the characteristics respectively specified above but not the fourth (relating to value) shall be treated as if they were indicated in the description in question by the letter "E" instead of by the letter "T".

Tariff Heading No.	*Description of Goods*	
01.02	Live animals of the bovine species	A
01.03	Live swine	A
ex 01.04	Live sheep	A
18.01	Cocoa beans, whole or broken, raw or roasted	E
18.03	Cocoa paste (in bulk or in block), whether or not defatted	E
18.04	Cocoa butter (fat or oil)	E
18.05	Cocoa powder, unsweetened, otherwise than in retail packs each of less than 3·5 kg	E
26.03	Ash and residues (other than from the manufacture of iron or steel), containing metals or metallic compounds, the following:—	
	Ash and residues, containing copper	T
	Other	E
ex 71.02 and ex 71.03	Diamonds (including synthetic or reconstructed diamonds), unworked, cut or otherwise worked, but not mounted, set or strung (except ungraded stones temporarily strung for convenience of transport)	A
71.11	Goldsmiths', silversmiths' and jewellers' sweepings, residues, lemels, and other waste and scrap, of precious metal	E
ex 72.01	Coin, the following:—	
	Coins of silver alloy of the United Kingdom minted before 1947, but not more than 100 years old at the date of exportation, exported in a quantity exceeding 10 in number	A

Tariff Heading No.	*Description of Goods*	
	Pennies and halfpennies of the United Kingdom dated before 1968, but not more than 100 years old at the date of exportation, exported in a quantity exceeding 10 kg by weight	E
73.03	Waste and scrap metal of iron or steel (ECSC)	T
ex 73.09	Used universal plates, of iron or steel (ECSC), subject to rule (1) above	T
ex 73.10	Unused bars and rods (including wire rod), of iron or steel, less than 0·9 m in length	E
ex 73.10	Used bars and rods (including wire rod), of iron or steel; used hollow mining drill steel; subject to rule (1) above	T
ex 73.11	Unused angles, shapes, sections and sheet piling, of iron or steel, less than 0·9 m in length	E
ex 73.11	Used angles, shapes, sections and sheet piling, of iron or steel, subject to rule (1) above	T
ex 73.12	Unused hoop and strip (other than in coiled form), of iron or steel, of which any dimension of the surface area is less than 0·45 m ...	E
ex 73.12	Used hoop and strip, of iron or steel, subject to rule (1) above ...	T
ex 73.13	Unused sheets and plates, of iron or steel, of which any dimension of the surface area is less than 0·45 m	E
ex 73.13	Used sheet and plates, of iron or steel, subject to rule (1) above ...	T
ex 73.14	Used wire, whether or not coated, but not insulated, of iron or steel, subject to rule (1) above	T
ex 73.15	Unused alloy steel and high carbon steel products in the forms mentioned in headings Nos. 73.10 and 73.11, less than 0·9m in length	E
ex 73.15	Unused alloy steel and high carbon steel products in the forms mentioned in headings Nos. 73.12 (other than in coiled form) and 73.13, of which any dimension of the surface area is less than 0·45 m	E
ex 73.15	Alloy steel waste or scrap in ingot form	T
ex 73.15	Used alloy steel and high carbon steel products in the forms mentioned in headings Nos. 73.09 to 73.14 (inclusive), subject to rule (3) above	T
ex 73.16	Used railway and tramway track construction material, of iron or steel, the following:—	
	Switch blades, crossings (or frogs), crossing pieces, point rods, rack rails, sleepers, fish-plates, chairs, chair wedges, sole plates (base plates), rail clips, bedplates, ties and other material specialised for joining or fixing rails, subject to rule (1) above	T
ex 73.16	Used steel rails and check-rails, subject to rule (2) above	T
ex 73.18	Used tubes and pipes, of iron or steel, and blanks therefor (other than of cast iron), excluding high-pressure hydro-electric conduits, subject to rule (1) above	T
ex 73.19	Used high-pressure hydro-electric conduits, of steel, whether or not reinforced, subject to rule (1) above	T

Tariff Heading No.	*Description of Goods*	
ex 74.01	Copper, the following:—	
	Unwrought copper, refined or not (other than copper complying with the requirements of British Standards Nos. 1035, 1036, 1038, 1039, 1040, 1172, 1173, 1174, 1861 or 1954, all dated 1964)	E
	Copper waste and scrap	T
ex 75.01	Nickel waste and scrap	E
ex 76.01	Aluminium, the following:—	
	Unwrought aluminium, secondary and secondary based	E
	Aluminium waste and scrap	T
ex 76.02	Wrought bars, rods, angles, shapes, sections and wire, of aluminium, the value of which, as required by the Commissioners to be declared, does not exceed £700 per tonne	E
ex 76.03	Wrought plates, sheets and strip, of aluminium, the value of which, as required by the Commissioners to be declared, does not exceed £700 per tonne	E
ex 76.04	Aluminium foil (whether or not embossed, cut to shape, perforated, coated, printed or backed with paper or other reinforcing material), of a thickness (excluding any backing) not exceeding 0·20 mm, the value of which, as required by the Commissioners to be declared, does not exceed £500 per tonne	E
ex 76.06	Tubes and pipes and blanks therefor and hollow bars, of aluminium, the value of which, as required by the Commissioners to be declared, does not exceed £700 per tonne	E
ex 77.01	Magnesium waste (excluding shavings of uniform size) and scrap ...	E
ex 78.01	Lead waste and scrap	T
ex 79.01	Zinc waste and scrap	E
ex 80.01	Tin waste and scrap	E
ex 81.04	Antimony waste and scrap	E

GROUP B

DOCUMENTS, PHOTOGRAPHIC MATERIAL AND ANTIQUES

Documents, manuscripts and archives, produced more than 70 years but not more than 100 years before the date of exportation ... ... A

except

(i) printed books, printed pamphlets and similar printed matter;

(ii) newspapers, periodicals and magazines;

(iii) postage stamps and other articles of philatelic interest;

(iv) birth, marriage or death certificates or other documents relating to the personal affairs of the exporter or the spouse of the exporter; and

(v) letters or other writings written by or to the exporter or the spouse of the exporter.

Photographic positives and negatives produced more than 70 years but not more than 100 years before the date of exportation ... ... A

Any goods manufactured or produced more than 100 years before the date of exportation ... ... A

except the goods described in exceptions (iii), (iv) and (v) to the first entry in this Group.

PART II

GROUP 1

Note. Goods specified in the heads of this Group may also be specified in Groups 3F and 3G of this Part of this Schedule.

Aircraft, Arms and related materiel, Ammunition, Military Stores and Appliances, and Para-military Police Equipment

Acoustic devices represented by the manufacturers or suppliers thereof as suitable for riot control purposes, and specialised parts and components therefor ... A

Aircraft, assembled or dismantled, aircraft engines and parts and components of aircraft and aircraft engines, the following:—

(1) Aircraft and helicopters, of the piloted or pilotless type, specially designed or adapted for military purposes; ... ... A

(2) Other helicopters over 4530 kg empty weight ... ... A

(3) Aircraft and helicopters, not specified in (1) and (2) above, and having a maximum all-up weight of 680 kg or more, incorporating or equipped with equipment specified in Group 1 or in the entries in Group 3 relating to communication, navigation, direction-finding and radar equipment, or to compasses and gyroscopic apparatus ... ... A

(4) Aircraft engines and helicopter engines, specially designed for military purposes ... ... A

(5) Aircraft engines and helicopter engines, not specified in (4) above ... A

(6) Specialised parts and components of aircraft, helicopters, or aircraft engines and helicopter engines, specified in (1) (2) (3) (4) and (5) above ... A

Anti-riot shields and parts and components therefor ... ... A

Apparatus and appliances specially designed for use in aircraft, the following:—

Anti-g suits ... ... A

Anti-g valves ... ... A

Crash helmets ... ... A

Ejection seats and catapults and cartridges therefor ... ... 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

Armour, the following:—

Armour plate made wholly or mainly of metal ... ... A

Panels, whether or not of metal, specially designed to be bullet resistant ... A

Arms and ammunition and parts and components therefor, 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, projectile launchers, 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) Parts and components of any of the foregoing ... ... A

Bayonets and parts and components therefor ... ... A

Bombs, mines, missiles, guided or unguided, rockets, torpedoes, demolition charges, pyrotechnic flare signals, apparatus designed for use therewith, and parts and components therefor, the following:—

(1) Bombs, torpedoes, grenades (including smoke grenades), smoke canisters, rockets, mines, missiles (guided or unguided) depth charges, fire bombs, incendiary bombs; military demolition charges and kits; and pyrotechnic flare signals for military use, cartridges therefor and simulators 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 ... ... A

(3) Parts and components of any of the foregoing ... ... A

Bullet-proof clothing ... ... A

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

Charcoal impregnated bonded fibre clothing specially designed to protect personnel against radioactive biological or chemical agents in the atmosphere ... ... A

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

Decontamination kits for use following contamination of personnel or objects by any of the noxious chemicals specified in this Group ... ... A

Devices designed for the detection of the noxious chemicals 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

Electrically triggered shutters of the carbon injection or photochromic function type having a shutter speed of less than 100 microseconds, other than shutters specially designed for high speed cameras ... ... A

Electronic, chemical and other timer delay devices designed for the detonation of explosive charges and munitions ... ... A

Electronic equipment specially designed for military use and parts and components therefor ... ... A

Equipment specially designed for ground functional testing of the hydraulic systems of military aircraft ... ... 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% or more	A
Hydrazinium nitrate	A
Hydrazinium perchlorates	A
Methylhydrazine	A
(*f*) Hydrogen peroxide in concentrations of 85% or more	A
(*g*) Nitric acid, red fuming, containing dissolved nitrogen dioxide	A
(*h*) Perfluoroguanidines	A
(*i*) Picrates (in dry or wetted form)	A
(*j*) 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, including aircraft 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	A
Parts and components 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 parts and components therefor	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 parts and components therefor	A

Hovercraft, the following:—
(1) Hovercraft, assembled or dismantled ... ... A
(2) Specialised parts and components for use in or on hovercraft ... ... A
(3) Engines for hovercraft ... ... A
(4) Specialised parts and components of engines for hovercraft ... ... A

Kine-theodolites ... ... 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 steel helmets ... ... A

Military infra-red equipment and image-intensifier equipment, and specialised parts and components therefor ... ... 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

Compasses and ship's course indicators specially designed for submarines ... A

Diesel engines of 1,500 brake horse power and over with rotary speed of 700 rev/min 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 parts and components therefor ... ... A

Marine boilers having either of the following characteristics:—
(*a*) a heat release rate (at maximum rating) equal to or in excess of 2,000 kW per hour per cubic metre of furnace volume ... ... A
or
(*b*) a ratio of steam generated in kg/h (at maximum rating) to the dry weight of the boiler in kg equal to or in excess of 0·83 ... ... A

Nets, anti-submarine and anti-torpedo ... ... A

Non-magnetic diesel engines capable of developing 50 brake horse power and over, specially designed for military purposes and having
(*a*) non-magnetic parts other than crank-case, block, head, pistons, covers, end plates, valve facings, gaskets, and fuel, lubrication and other supply lines ... ... A
or
(*b*) a non-magnetic content exceeding 75% of their total weight ... ... A

Periscopes, submarine ... ... A

Torpedo aiming, control or loading apparatus, torpedo tubes and other apparatus for discharging torpedoes ... ... A

Underwater detecting devices specially designed for military purposes, magnetic, pressure or accoustic, and controls and parts and components therefor ... A

Noxious chemicals, the following:—

Bromobenzyl cyanide	A
*o*Chlorobenzylidenemalononitrile (*o*Chlorobenzalmalononitrile)	A
*mono*Chloromethyl chloroformate	A
2-Chlorotriethylamine	A
Dibenzoxazepine	A
Dibromodimethyl ether	A
Dichlorodimethyl ether	A
2:2′-Dichlorotriethylamine	A
Diphenylaminechloroarsine	A
Diphenylchloroarsine	A
Diphenylcyanoarsine	A
Ethyl NN-dimethylphosphoramidocyanidate	A
Ethyldibromoarsine	A
Ethyldichloroarsine	A
Lewisite (chlorovinyldichloroarsine and dichlorodivinylchloroarsine)	A
Methyldichloroarsine	A
Mustard gas (dichlorodiethyl sulphide)	A
Phenylcarbylamine chloride (phenylaminocarbonyl chloride)	A
Phenylacyl chloride (*w*-Chloroacetophenone)	A
Phenyldibromoarsine	A
Phenyldichloroarsine	A
Pinacolyl methylphosphonofluoridate	A
*iso*Propyl methylphosphonofluoridate	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 of a width of 50 mm or more	A
Portable anti-riot devices for administering an electric shock or an incapacitating substance, and specialised parts and components therefor	A
Refuelling apparatus and appliances, for military aircraft, the following:—	
(1) Aircraft pressure-refuellers and aircraft refuellers, open circuit	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 dispeners, 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 parts and components therefor	A
Rockets motors and parts and components therefor	A
Searchlight control units	A
Searchlights, power-controlled, of which the reflectors have a diameter of 50 cm or more	A

Ships of war, designed for offensive or defensive action (surface or underwater) whether or not converted to non-military use ... ... A

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

Specialised machinery, equipment and gear specially designed for the examination, manufacture, testing and checking of the arms, ammunition, appliances and machines referred to in this Group, including but not limited to 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 neck varnishing machines ... ... A
Cartridge sizing or rectifying machines ... ... A
Cartridge wadding machines ... ... A
Centrifugal casting machines capable of casting tubes 1·8m or more in length, with a wall thickness of 5cm 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 1·8m 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, fire-arms, 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 rifling groove or bore	A
Small arms rifling machines	A
Small arms spill boring machines	A
Tank turret bearing grinding machines	A
Supply dropping apparatus, aircraft	A
Tanks, self-propelled guns and other 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
Engines specially designed, or essentially modified for military use, for the propulsion of the above-mentioned vehicles; and parts thereof	A
Specially designed parts and components of any of the above-mentioned vehicles	A
Trailers and semi-trailers of a carrying capacity of 25 tonnes or over	A
Training devices specially designed for military purposes, the following:—	
Flight and navigational synthetic training equipment and parts and components therefor	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
Water cannon and parts and components therefor	A

GROUP 2

Note. Goods specified in the heads of this Group may also be specified in Groups 3B and 3H of this Part of this Schedule.

Atomic Energy Minerals, Materials and Appliances

Beryllium and products thereof, the following:—

Beryllium and alloys containing more than 50% of beryllium, in crude or semi-fabricated forms ... ... A

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

Beryllium compounds ... ... A

Calcium containing both 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

Centrifuges, gas, capable of the enrichment or separation of isotopes, and specially designed parts, components and equipment therefor ... ... A

Chlorine trifluoride ... ... A

Compressors and blowers (turbo, centrifugal and axial flow types), wholly made of, or lined with, aluminium, nickel or alloy containing 60% or more of nickel, having a capacity of 1·7m³/min 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 250g of fluorine per hour ... ... A

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

Fluorine ... ... A

Graphite, artificial, having a boron content of one part per million or less and a total thermal neutron absorption cross-section of 5 millibarns or less per atom A

Hafnium and products thereof, the following:—

Hafnium and alloys containing more than 60% of hafnium, in crude or semi-fabricated forms ... ... A

Hafnium compounds containing more than 60% of hafnium ... ... 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% of nickel, separately or together ... ... A

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

Lithium and products thereof, the following:—

Lithium and alloys containing 50% or more of lithium, in crude or semi-fabricated forms ... ... A

Lithium, alloys, mixtures, concentrates and compounds, containing lithium enriched in the lithium-6 isotope ... ... A

Alloys containing a higher percentage of magnesium than of any other element and 10% or more of lithium ... ... A

Hydrides in which lithium, whether normal, depleted or enriched in the lithium-6 isotope, is compounded with hydrogen or its isotopes or complexed with other metals or aluminium hydride ... ... A

Substances not specified above containing lithium enriched in the lithium-6 isotope ... ... A

Machines (including nuclear reactor fuel chopping machines and counter current solvent extractors), materials and equipment specially designed for use in the processing of irradiated nuclear materials in order to isolate or recover fissionable materials, and specially designed parts, components and accessories 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

Nickel powder having a nickel content of 99% or more and a particle size of less than 100 microns, whether compacted or not ... ... A

Nuclear materials, the following:—

Minerals, raw and treated (including residues and tailings), containing more than 0·05% of uranium or thorium, separately or combined ... ... A

Plutonium (all isotopes) and products thereof, the following:—

Plutonium and alloys containing plutonium ... ... A

Plutonium compounds ... ... A

Thorium and products thereof, the following:—

Thorium and alloys containing 1·5% or more of thorium, in crude or semi-fabricated forms ... ... A

Thorium compounds, but not including substances for medical purposes A

Irradiated thorium containing the isotope 233 of uranium ... ... A

Uranium and products thereof, the following:—

Natural uranium and alloys thereof, in crude or semi-fabricated forms, having a uranium content of more than 0·05% ... ... A

Natural uranium compounds, having a uranium content of more than 0·05%, but not including substances for medical purposes ... ... A

Uranium enriched in the isotope 235 and alloys thereof ... ... A

Uranium compounds enriched in the isotope 235 ... ... A

The isotope 233 of uranium and alloys thereof ... ... A

Compounds containing the isotope 233 of uranium... ... ... A

Irradiated uranium containing plutonium ... ... A

Mixtures containing any of the foregoing ... ... 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) Components specially designed for use in a nuclear reactor, or in association with such a reactor, the following:—

(*a*) Reactor vessels ... ... A

(*b*) Core support structures ... ... A

(*c*) Coolant pumps ... ... A

(*d*) Fuel handling equipment ... ... A

(*e*) Heat exchangers ... ... A

(*f*) Control rods ... ... A

(*g*) Control rod drive mechanisms ... ... 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

Plant and equipment specially designed for the production or concentration of deuterium or its compounds ... ... A

Plant specially designed for fabricating nuclear fuel elements ... ... A

Plant specially designed for the production of uranium hexafluoride (UF_6) ... A

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

Tritium and compounds containing tritium in which the ratio by number of tritium atoms to hydrogen atoms exceeds 1 to 1,000; and goods containing or incorporating one or more of the foregoing ... ... A but not including

(*a*) labelled compounds not exceeding 100 curies per shipment (in this entry "labelled compounds" means compounds in which one of the atoms is a different isotope from that found normally), or

(*b*) self-luminous products, gas and aerosol detectors, electron tubes, lightning or static electricity gradient meters, devices designed for the ionization of air, including static elimination devices, ion generating tubes, detector cells of gas chromatography devices, calibration standards, or apparatus and instruments not elsewhere specified in this Schedule incorporating such products or devices, provided that each product or device contains not more than 40 curies of tritium in any chemical or physical form.

Valves with bellows seal, wholly made of or lined with aluminium, nickel or alloy containing 60% or more of nickel, separately or together ... ... A

Zirconium and products thereof, in which the ratio of hafnium content to zirconium content is less than one part to five hundred parts by weight, the following:—

Zirconium and alloys containing more than 50% of zirconium, in crude or semi-fabricated forms ... ... A

Manufactures wholly of any of the above-mentioned substances ... ... A

Zirconium compounds, but not including zirconium oxide thermally stabilised with calcium oxide or magnesium oxide or both... ... ... A

GROUP 3

STRATEGIC GOODS NOT SPECIFIED IN GROUPS 1 AND 2

GROUP 3A

Metal Working Machinery and Associated Equipment

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 and turbine disc turning machines; C

(*b*) Machines and apparatus specially designed for making or measuring gas turbine blades;... C

(*c*) Rotor grinding machines; C

(2) Machines for milling aircraft skin; C

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

Machines, gear making or gear finishing, the following:—

(*a*) Gear grinding machines, generating type:—

(i) capable of accepting gear blanks of 914 mm diameter and over; or C

(ii) designed to grind gears to a face width of 177 mm or over for the production of helical or herringbone gears; C

(*b*) Machines designed for the production of gears having a diametral pitch finer than 48 (a module finer than 0·5 mm) and meeting a quality standard better than Admiralty Class I... C

Machines, internal grinding (other than hand-held drills) 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 C

Machines, spin-forming and flow-forming with double support or three rollers, the following:—

(1) Horizontal spindle type designed to have and having a drive motor of 80 horse power (59kW) or more; C

(2) Vertical spindle type designed to have and having a drive motor of 50 horse power (37kW) or more C

Machine tools and numerical control systems, the following:—

(1) Machine tools and dimensional inspection machines equipped or capable of being equipped with numerical control systems (as specified in the item below) C

other than:—

(*a*) boring mills, milling machines and machining centres having all of the following characteristics:—

(i) maximum slide travel in any axis equal to or less than 3,000 mm;

(ii) positioning accuracy of any axis equal to or greater than $\pm$ 0·01 mm per 300 mm and 0·005 mm for each additional 300 mm;

(iii) spindle power equal to or less than 20 kW;

(iv) single working spindle;

(v) axial and radial axis motion measured at the spindle axis in one revolution of the spindle equal to or greater than $D \times 2 \times 10^{-5}$ mm TIR (peak to peak) where D is the spindle diameter in millimetres;

(vi) not more than 3 axes capable of simultaneously co-ordinated contouring motion regardless of the numerical control unit connected to the machine;

(*b*) machine tools (other than any specified in sub-heading (*a*) above) and dimensional inspection machines having all of the following characteristics:—

(i) positioning accuracy of any axis equal to or greater than $\pm$0·01 mm per 300 mm and 0·005 mm for each additional 300 mm;

(ii) radial axis motion measured at the spindle axis equal to or greater than 0·008 mm TIR (peak to peak) in one revolution of the spindle (for lathes and other turning machines);

(iii) not more than 3 axes capable of simultaneously co-ordinated contouring motion regardless of the numerical control unit connected to the machine;

(2) Numerical control systems the following:—

(*a*) Units for numerically controlling simultaneously co-ordinated (contouring and continuous path) movements of machine tools and dimensional inspection machines in two or more axes C

other than units having all of the following characteristics:—

(i) hardwired [not softwired or Computerised Numerical Control (CNC)];

(ii) no more than two contouring interpolating axes can be simultaneously co-ordinated;

(iii) minimum programmable increment equal to or greater (coarser) than 0·001 mm;

(iv) without interface to allow direct computer input;

(*b*) Direct Numerical Control (DNC) systems consisting of a dedicated-stored programme computer acting as a host computer and controlling, on-line and off-line, one or more numerically-controlled machine tools or inspecting machines (as specified in (1) of this entry), related software, and interface and communication equipment for data transfer between the host computer memory, the interpolation functions and the numerically-controlled machine tools; C

(3) Spindle assemblies, consisting of spindles and bearings as a minimal assembly, other than those assemblies with axial and radial axis motion measured along the spindle axis in one revolution of the spindle equal to or greater (coarser) than the following:— C

(*a*) 0·0008 mm TIR (peak-to-peak) for lathes and turning machines; or

(*b*) $D \times 2 \times 10^{-5}$ mm TIR (peak-to-peak) where D is the spindle diameter in millimetres, for milling machines, boring mills, jig grinders and machining centres;

(4) Lead screws, including ball nut screws, other than those having all the following characteristics:— C

(*a*) accuracy equal to or greater (coarser) than 0·004 mm/300 mm;

(*b*) overall accuracy equal to or greater (coarser) than $(0{\cdot}0025 + 5 \times 10^{-6} \times L)$ mm where L is the effective length in millimetres of the screw;

(*c*) concentricity of the centre line of the journal bearing surface and the centre line of the major diameter of the screw equal to or greater (coarser) than 0·005 mm TIR (peak-to-peak) at a distance of 3 times the diameter of the screw or less from the journal bearing surface;

(5) Linear and rotary position feedback units including inductive type devices, graduated scales and laser systems, other than; C

(*a*) linear type units having an accuracy equal to or greater (coarser) than $(0{\cdot}0004 + 13 \times 10^{-6} \times L)$ mm for L equal to or less than 100 mm and $(0{\cdot}0015 + 2 \times 10^{-6} \times L)$ mm, for L greater than 100 mm, where L is the effective length in millimetres of the linear measurement;

(*b*) rotary types having an accuracy equal to or greater (coarser) than 2 seconds of arc;

(6) Specially designed sub-assemblies for the equipment specified in (1) and (2) above C

Presses, the following:—

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

(2) Presses designed or re-designed for the working or forming of metals or alloys with a melting point exceeding 1,900°C C

(3) Presses, hydraulic, the following:—

(*a*) Vertical presses of an effective operating pressure of over 10,000 tonnes; C

(*b*) Horizontal presses of an effective operating pressure of over 5,000 tonnes; C

(4) Presses, isostatic, the following:—

(*a*) capable of achieving a maximum working pressure of 1,406 kg per

sq cm or more and possessing a chamber cavity with an inside diameter of more than 40·6 cm; or C

(*b*) capable of achieving a maximum working pressure of 351 kg per sq cm or more and having a controlled thermal environment within the closed cavity, other than those possessing a chamber cavity with an inside diameter of less than 12·7 cm which are also capable of achieving and maintaining a controlled environment only between 80°C and —35°C C

(5) Control equipment and parts and components specially designed for the presses in sub-heads (1), (2), (3) and (4) in this entry C

GROUP 3B

Note. Goods specified in the heads of this Group may also be specified in Group 2 of this Part of this Schedule.

Chemical and Petroleum Equipment

Chemical plant and equipment, the following:—

(1) Containers, jacketed only, including mobile types, for the storage or transportation of liquid gases at temperatures below —170°C, the following:—

(*a*) Types specially designed for liquefied gases boiling at temperatures below —200°C having a liquid capacity of more than 946 litres and an evaporation loss rate of less than 3% per day as determined at an ambient temperature of 24°C and without exposure to direct sunlight; C

(*b*) Types specially designed for liquid fluorine; C

(*c*) Mobile equipment specially designed for liquid oxygen, nitrogen or argon having a capacity exceeding 4,542 litres and an evaporation loss rate of less than 1·5% per day as determined at an ambient temperature of 24°C and without exposure to direct sunlight, other than equipment with multi-laminar type insulation under vacuum; ... C

(2) Gas liquefying equipment, the following:—

(*a*) Equipment for the production of liquid hydrogen, other than plants with a capacity of less than 1½ tonnes per 24 hour day and not designed for, or capable of, the production of hydrogen slush; ... C

(*b*) Equipment for the production of liquid fluorine; C

(*c*) Helium equipment, the following:—

(i) for the separation of helium from natural gases; C

(ii) specially designed for the production of lambda-phase helium (helium II); C

(iii) other equipment for the production of liquid helium; ... ... C other than:—

(*a*) equipment with a capacity not exceeding 20 litres per hour;

(*b*) equipment with piston-expansion machines with a capacity not exceeding 50 litres per hour;

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

Cryogenic equipment, the following:—

(1) Equipment designed for maintaining an ambient temperature below —170°C:—

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

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

(2) Electrical, magnetic and electronic equipment, electrical conductors, and materials, specially designed for operation continuously or discontinuously at ambient temperatures below —170°C, the following:—

(*a*) Superconductive metals, alloys, compounds, composites and intercalate materials, other than the following:— ... ... A

(i) superconductive wire having a filament cross-sectional area of $4{\cdot}42 \times 10^{-3}$ sq mm (or 75 microns diameter) or greater;

(ii) superconductive niobium-titanium wire having a filament cross-sectional area of $1{\cdot}26 \times 10^{-3}$ sq mm (or 40 microns diameter) or greater in a copper matrix;

(*b*) Components, the following:—

(i) Josephson effect devices; ... ... A

(ii) Dayem bridges; ... ... A

(iii) Proximity effect bridges; ... ... A

(iv) Super-normal-super (SNS) proximity devices; ... ... A

(v) Memory and logic devices; ... ... A

(vi) Phase slip devices; ... ... A

(*c*) High field-high current density superconductive magnets rated for producing magnetic fields of 30 kilogauss or greater at current densities of 10,000 A/sq. cm. or greater, other than magnets with coil outside diameter greater than 5 cm and less than 50 cm; ... ... A

(*d*) Superconducting electrical equipment (rotating machines and transformers) designed for use in marine or airborne applications; ... A

(3) Specially designed accessories, sub-assemblies, parts and components for the equipment of (1) and (2) of this entry ... ... A

In this entry—

"Dayem bridges" means superconducting thin film devices with a reduced area section having a much lower critical current than the adjoining areas and acting as a conductive weak link.

"Proximity effect bridges" means superconducting weak link devices whose low critical current is due to an overlay of normal metal rather than a small area.

"Dayem bridges" and "proximity effect bridges" can act as superconducting switches and may be employed in superconducting quantum interference devices.

Pipe valves, cocks and pressure regulators, either

(1) designed to operate at temperatures below —220°C; or C

(2) having all flow contact surfaces made of materials containing 90% or more, separately or combined, of fantalum, titanium or zirconium, except materials containing more than 97%, but less than 99·7% titanium ... C

Pumps, the following:—

(1) Vacuum pumps, the following:—

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

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

(*c*) Cryopump systems in which the circulation of liquefied gas is used to achieve a vacuum by lowering the temperature of the environment, designed to operate at temperatures of less than —220°C measured at atmospheric pressure; C

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

(2) Other pumps having any of the following characteristics:—

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

(*b*) designed to operate at temperatures below —220°C; or ... ... A

(*c*) all flow contact surfaces made of materials containing 90% or more, separately or combined, of tantalum, titanium or zirconium, except materials containing more than 97%, but less than 99·7% titanium ... C

Tubing made of, lined with, or covered with, any of the following materials:—

(*a*) Coagulated dispersion grades of polytetrafluoroethylene;

(*b*) Copolymers of tetrafluorethylene and hexafluoropropylene;

(*c*) Copolymers and terpolymers composed of any combination of the monomers tetrafluoroethylene, chlorotrifluoroethylene, vinylidene fluoride, hexafluoropropylene and bromotrifluoroethylene, other than the copolymers of tetrafluoroethylene and hexafluoropropylene;

the following:—

(1) Un-reinforced, heat-shrinkable, tubing having an inner diameter of less than 28·57 mm, before shrinkage; C

(2) Reinforced tubing designed for operating pressures of 105·45 kg per sq cm or greater, whether or not specially processed to make the flow surfaces electrically conductive; connectors and fittings therefor C

GROUP 3C

Electrical and Power-Generating Equipment

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 operating at temperatures of 200°C or less, including re-generative cells, which generate electric power from consumable components all of which are supplied from outside the cell; C

(*b*) Primary cells and batteries 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°C, of ten years or more; C

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

(iii) utilising a lithium anode with lithium salt solute in organic solvent (non-aqueous) electrolyte and having an energy density at the 24 hour discharge rate of greater than 100 W-hrs/lb. at 24°C and greater than 35 W-hrs/lb. at —29°C; C

(*c*) Mechanically rechargeable leak-proof batteries having cells with removable zinc plates with porous air electrodes and immersed in electrolyte of potassium hydroxide; C

(*d*) Molten salt electrolyte cells and batteries which normally operate at temperatures of 150°C or below; C

(2) Photo-voltaic cells, the following:—

(*a*) Types with a power output of 14 mW or more per sq cm under 100 mW per sq cm tungsten (2,800 °K) illumination; C

(*b*) Gallium arsenide type cells, other than those having a power output of less than 4 mW per sq. cm under 100 mW per sq cm tungsten (2,800 °K) illumination; C

(*c*) Types with a power output of 450 mW or more per sq cm under 10 W per sq cm silicon carbide (1750 °K) illumination; C

(3) Power sources, based on radioactive materials systems, excluding the following:— C

(*a*) those having an output power of less than 0·5 W and a total weight of more than 90·7 Kg;
and

(*b*) those specially designed and developed for medical use within the human body;

(4) Specially designed parts, components and sub-assemblies for the equipment specified in (1) to (3) above C

In this entry—

"Energy density" is the product of the average power in watts and the duration of the discharge in hours to 90% of the initial load voltage divided by the total weight of the cell or battery in pounds.

The limit of 200°C relates to the fuel cell alone and not to any other equipment whether integrated with or ancillary to such cells.

Electron beam equipment for the deposition, coating, or working of thin film and specialised parts and components therefor ... ... A

Furnaces, electric vacuum, including those capable of operating with protective atmospheres, the following:—

(1) Consumable electrode vacuum arc furnaces with a capacity in excess of 5 tonnes; C

(2) Skull type vacuum arc furnaces; C

(3) Specially designed parts, components and controls for the furnaces specified in sub-heads (1) and (2) C

Plasma arc equipment, the following:—

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

(*a*) devices wherein the flow of gas is for isolation purposes only; and

(*b*) devices of less than 100 kW for cutting, welding, melting, plating or spraying;

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

(3) Equipment incorporating are devices as specified in (1) above C

GROUP 3D

General Industrial Equipment

Environmental chambers capable of pressures below 10^{-4} Torr, other than equipment fitted with industrial machinery not specified in Schedule 1 of this Order; and specially designed parts, components and ancillary equipment therefor ... A

Machines and equipment specially designed for the manufacture of devices and assemblies included in sub-heads (2), (3), (4) and (5) of the entry relating to materials composed of crystals having spinel, hexagonal, orthorhombic or garnet crystal structures, in Group 3G and for the manufacture of magnetic recording media (other than for magnetic tape specified in sub-head (5) of the entry relating to recording or reproducing equipment in Group 3G), the following:—

(1) Equipment for the manufacture of single and multi-aperture forms specified in sub-heads (2), (3) and (4) of the entry relating to materials composed of crystals in Group 3G, the following:—

(*a*) automatic presses for the production of the specified forms; ... C

(*b*) press dies for the production of the specified forms;... C

(*c*) automatic equipment for the monitoring, grading, sorting, exercising or testing of the specified forms; C

(2) Equipment for the manufacture of thin film devices, the following:—

(*a*) equipment for the manufacture of thin film memory storage or switching devices having square hysteresis loops; C

(*b*) automatic equipment for the monitoring, grading, sorting, exercising or testing of thin film (including plated wire and plated rods) memory storage or switching devices; C

(3) Automatic equipment for monitoring, exercising or testing assemblies of any devices specified in sub-heads (2), (3) and (4) of the entry relating to materials composed of crystals in Group 3G; C

(4) Equipment for the application of magnetic coatings to recording media specified in sub-head (5) of the entry relating to recording or reproducing equipment in Group 3G; C

(5) Automatic and semi-automatic equipment for monitoring, grading, exercising or testing recording media specified in sub-head (5) of the entry relating to recording or reproducing equipment in Group 3G; C

(6) Specially designed test equipment, parts, components and controls for the equipment specified in sub-heads (1) to (5) C

Note. For magnetic tape equipment see the entry relating to machinery and apparatus for the working of synthetic film, in this Group.

Machines and apparatus for the manufacture or testing of electronic devices, components and materials, the following:—

(1) Machines and apparatus specially designed for the manufacture of electronic valves specified in Group 3F (including parts, components and sub-assemblies therefor); C

(2) Machines and apparatus for the manufacture of electronic component assemblies, sub-assemblies and microcircuits specified in Group 3F and semi-conductor devices (including components and sub-assemblies therefor) the following:—

(*a*) Machines and apparatus specially designed for the manufacture of transistors and crystal diodes specified in Group 3F and any types of silicon transistors; C

(*b*) Equipment for one or more of the following operations: slicing, dicing, scribing, slice breaking, probing, testing, sorting; C

(*c*) Bonders and welders, other than general purpose resistance type spot welders; C

(*d*) Masks; C

(*e*) Machines and apparatus for the manufacture of masks or the creation of a photosensitive pattern on the surface of a semi-conductor or insulating substrate; C

(3) Equipment, other than equipment specially designed for the zone purification of germanium, for the purifying or processing 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: C

(*a*) purifying beyond 99·9%;

(*b*) equalising distribution of residual impurities;

(*c*) achieving controlled introduction of impurities;

(*d*) producing monocrystalline materials, including forming on substrate;

(4) Equipment specially designed to produce electronic assemblies by depositing or printing on insulating materials or otherwise forming, in situ, component parts other than basic wiring; C

(5) Specialised controls, parts, components and accessories for equipment mentioned in sub-heads (1), (2), (3) and (4) of this entry C

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

(1) Vacuum metallising machinery specially designed for the continuous strip roll coating with metallised sheathing of synthetic film for dielectric use in the manufacture of capacitors capable of reliable performance in relation to their electrical and mechanical characteristics and maintaining their design service lifetime while operating either over the whole range of ambient temperatures from below —45°C to above 100°C or at ambient temperatures of 200°C or higher, capable of being used with any of the following devices whether or not equipped with such devices C

(*a*) Cutting devices for slitting the film into strips suitable for capacitors;

(*b*) Shadow masks or similar devices to achieve uncoated strips;

(*c*) Controls for the automatic correction of the coating process;

(*d*) Special devices to burn out the metal deposit on pinholes to prevent electrical faults in the capacitors.

(2) Specialised parts and components for the machinery specified above ... C

(3) (*a*) 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 3G of this Schedule C

(*b*) Specialised parts and components for goods falling within (3)(*a*) above C

Machinery and apparatus specially designed for the manufacture of cable and wire described in the entry relating to cable and wire in Group 3F C

Machines and apparatus specially designed for the extrusion of polytetrafluoroethylene and co-polymer of tetrafluoroethylene and hexafluoropropylene and coagulated dispersions, powders and pastes derived therefrom, and specialised parts and components therefor C

Machines for filament winding and tape-laying using any of the materials described in the entry relating to fibrous and filamentary materials in Group 3I, the following:—

(1) Machines of which the motions for positioning, wrapping and winding of fibres are co-ordinated and programmed in three or more axes, specially designed to fabricate composite structures or laminates from fibrous and filamentary materials, and the mechanical parts of the machines, co-ordinating and programming controls, and specialised parts, components and accessories therefor C

(2) Machines of which the motions for positioning and laying of tape and sheets are co-ordinated and programmed in two or more axes, specially designed for the manufacture of composite airframe and missile structures C

Rolling mills of the kind used for the reduction of metal by rolling, specially designed or re-designed for the rolling of metals or alloys with a melting point exceeding 1,900°C, and specially designed controls, parts and components (other than rolls and ancillary equipment) therefor C

Vibration testing equipment (other than mechanical type vibrators) capable of providing a thrust greater than 900 kg and specialised ancillary equipment therefor ... ... A

Wind tunnels and devices (including but not limited to hot shot tunnels, plasma arc tunnels, shock tunnels, shock tubes, gas tunnels and light gas guns) capable of simulating environments at velocities of Mach 1·4 and above, and specially designed parts, components and accessories therefor, other than wind tunnels specially designed for educational purposes and having a maximum internal cross section measurement of less than 25 cm C

GROUP 3E

Compasses, Gyroscopic Apparatus, Marine Equipment and Ships (other than Warships and Naval Equipment)

Compasses and gyroscopic apparatus, the following:—

(1) Accelerometers with a threshold of 0·005 g or less, or a linearity error within 0·25% of full scale output, or both, which are designed for use in inertial navigation systems or in guidance systems, of all types; ... ... A

(2) Automatic pilots, except types for surface vessels and aircraft control; ... C

(3) Gyro compasses with provision for determining and transmitting ship's level reference data (roll, pitch) in addition to own ship's course data; ... C

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

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

(6) Gyros with a rated free directional drift rate of less than 0·5° (1Sigma or root mean square) per hour in a 1g environment C

(7) Inertial or other equipment using accelerometers, specified in (1) above or gyros specified in (6) above or both, and systems incorporating such equipment; C

(8) Integrated flight instrument systems for aircraft which include gyro-stabilisers or automatic pilots or both; C

(9) Specially designed parts and components, testing, calibration and alignment equipment for the equipment specified in sub-heads (1) to (8) inclusive of this entry C

Gas turbine engines for marine propulsion of 3,500 rated shaft horsepower and above, whether originally designed for marine use or adapted for such use from aero engines C

Ships, the following:—

(1) Hydrofoil vessels; ... ... S

(2) Ships, sea going, including sea going fishing vessels and coasters, designed for speeds of over 26 knots when fully loaded; ... ... S

(3) Ships with hulls and propulsion machinery made wholly or primarily of non-magnetic materials; ... ... S

(4) Ships with decks and platforms specially strengthened to receive weapons; S

(5) Ships fitted with any of the following:—

(*a*) Apparatus and equipment specified in Group 1 of this Part of this Schedule ... ... S

(*b*) Apparatus and equipment specified in the entries in Group 3 of this Part of this Schedule relating to—

(i) apparatus of a kind used for detecting or locating objects under water;

(ii) communication, detection and tracking equipment;

(iii) communication, navigation, direction finding and radar equipment and

(iv) compasses and gyroscopic apparatus; ... ... S

(*c*) Degaussing equipment ... ... S

GROUP 3F

Note. Goods specified in the heads of this Group may also be specified in Group 1 of this Part of this Schedule.

Electronic Equipment including Communications and Radar

Amplifiers (other than microwave amplifiers included in the entry relating to microwave equipment), the following:—

(1) Tuned amplifiers having a bandwidth which exceeds 50 MHz or 10% of the mean frequency, whichever is less, other than those specially designed for use in community television distribution systems or for use in radio communications equipment in the high frequency band below 30 MHz; ... A

(2) Untuned amplifiers having a bandwidth which exceeds 10 MHz, other than types having either of the following characteristics:— ... ... A

(*a*) a bandwidth not exceeding 50 MHz, provided that the power output does not exceed 5 W; or

(*b*) a bandwidth between 50 MHz and 100 MHz, provided that the power output does not exceed 1 W.

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.

"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 and components of such apparatus ... ... A

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, fish or whales vertically below the apparatus, and specialised components of such apparatus C

Burst transmitters and associated receiving equipment (other than simple on-line morse or other data signal converters or standard items of ADP equipment) and specialised assemblies, sub-assemblies, parts and components therefor ... A

In this entry a burst transmitter is any electronic equipment or device for use with radio or other communications systems, whether part of a transmitter or modulation device or ancillary to it, which has a capability to accept and store data (telegraphic, speech or other) and to transmit these at transmission speeds/bit rates which are multiples of the input keying speed/bit rates, the purpose or effect of which is to reduce total message duration time and thus to evade detection by other than the intended recipient.

Cable and wire, the following:—

(1) Cable (including coaxial cable, but excluding oil well logging cable) and wire, coated with or insulated with any of the following materials:—

(*a*) polytetrafluoroethylene, coagulated dispersion grades only;

(*b*) copolymers of tetrafluoroethylene and hexafluoropropylene;

(*c*) copolymers and terpolymers composed of any combination of the monomers tetrafluoroethylene, chlorotrifluoroethylene, vinylidenefluoride, hexafluoropropylene and bromotrifluoroethylene, other than the copolymers of tetrafluoroethylene and hexafluoropropylene; ... C

(2) Coaxial cable with the outer conductor electroplated directly on spirally grooved cable dielectric; C

(3) Communications cable, the following:—

(*a*) Submarine cable; ... ...

(*b*) Coaxial communications cable using a dielectric aired by discs, beads, spiral, screw or any other means, other than those having

4 cores or fewer, none of which has an inner diameter of the outer conductor of more than 14 mm; C

(*c*) Secure communications cable, coaxial or multi-conductor, protected by mechanical or electrical means from physical damage or intrusion in such manner that communications security is maintained between terminals without the need for additional encoding and scrambling equipment, other than cable which is only armoured by a tough outer sheath or screened electromagnetically C

Capacitors designed to maintain or capable of maintaining their rated electrical or mechanical characteristics during their specified operating lifetime, the following:—

(1) Monolithic ceramic capacitors rated for operation over the whole range of ambient temperatures from below —45°C to above 100°C; C

(2) Tantalum electrolytic capacitors rated for operation at ambient temperatures exceeding +125°C, other than sintered electrolytic capacitors having a casing made of epoxy resin and capacitors sealed or coated with epoxy resin; C

(3) Other capacitors rated for operation at ambient temperatures below —55°C or above 200°C C

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

other than

(1) industrial equipment of a kind using cells not specified in the entries relating to photo-electric cells and thermal detecting cells elsewhere in this Group;

(2) equipment used for industrial and civilian intrusion alarms, traffic and industrial movement control and counting systems, medical applications, industrial inspection, sorting or analysis of the properties of materials, or for simple educational or entertainment purposes;

(3) flame detectors for industrial furnaces;

(4) equipment of a kind using a single detector cell with no scanning of the detector and used for laboratory or industrial non-contact temperature measurement;

(5) instruments capable of measuring radiated power or energy and having a response time constant greater than 10 milliseconds;

(6) equipment of a kind using ultrasonic waves

(*a*) which operates in contact with a controlled material to be inspected or which is used for industrial cleaning, sorting or materials handling, emulsification or homogenisation;

(*b*) used for under-water communications, designed for operation with amplitude modulation and having a communications range of 500 m or less, a carrier frequency of 40 to 60 kHz, and a carrier power supplied to the transducer of 1 W or less.

Communications transmission equipment, single and multi-channel, including terminal, intermediate amplifier or repeater equipment and multiplex equipment used for line or radio communication systems, and data modems making use of the above communications systems and associated multiplex equipment, the following:—

(1) Equipment employing analogue transmission techniques with analogue input and output, including but not restricted to frequency division multiplex (FDM), designed to deliver, carry or receive frequencies higher than 600 kHz into, or in, a communications system, other than carrier com-

munications terminals specially designed for power lines and operating at frequencies below 1,500 kHz; C

(2) Equipment employing digital transmission techniques with analogue input and output, including but not restricted to pulse code modulation (PCM), designed for use on communications circuits; C

(3) Data communications equipment employing digital transmission with digital input and output, including telegraphic and data transmission, the following:—

(*a*) Equipment designed for operation at a data signalling rate in bits per second, excluding servicing and administrative channels, numerically exceeding either 4,800 bits per second or 160% of the channel or sub-channel bandwidth in Hz; C

(*b*) Equipment employing an automatic error detection and correction system in which retransmission is not required for correction and the data signalling rate exceeds 300 bits per second; C

(4) Parts, components, accessories and sub-assemblies specially designed for equipment specified in (1), (2) and (3) of this entry and test equipment specially designed for the equipment in (2) of this entry C

In this entry—

"Data signalling rate" takes into account that, for non-binary modulation systems, "bauds" and "bits per second" are not equal since bits for coding, checking and synchronisation should be included with the "bits per second".

"Bandwidth", for data communications equipment designed to operate in one voice channel, is 3,100 Hz and for voice frequency telegraph systems designed to International Telegraph and Telephone Consultative Committee (CCITT) and International Radio Consultative Committee (CCIR) standards "bandwidth" is the number of channels times the channel spacing.

Cypher machines, cryptographic and coding devices and equipment, and associated equipment, usable on any transmission system that is designed to ensure the secrecy of communications and thus prevent clear reception by anyone other than the intended receiver; including specialised assemblies, sub-assemblies, parts and components therefor, and equipment containing such assemblies, sub-assemblies and components ... ... A

other than—

simple coding devices or equipment only ensuring the privacy of communications.

Electronic cathode-ray tubes, vacuum tubes or valves (other than tubes included in the entry relating to X-ray systems, flash discharge types), the following:—

(1) Cathode-ray tubes having any of the following characteristics:— ... C

(*a*) a resolving power of 32 lines or more per mm using the shrinking raster method of measurement;

(*b*) with travelling wave, or distributed deflection structure, or incorporating other techniques to minimise mismatch of fast phenomena signals to the deflection structure;

(*c*) alpha-numeric and similar display tubes in which a symbol-mask within the tube can be scanned to display any of the symbols on any part of the phosphor;

(2) Cold cathode tubes, whether gas-filled or not, operating in a manner similar to a spark gap, containing three or more electrodes and having all of the following characteristics:— C

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

(*b*) rated for peak currents of 100 A or more;

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

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

(3) Electron tubes other than commercial standard television camera tubes not having fibre optic faceplates and commercial standard X-ray amplifier tubes, and specialised components and parts therefor, the following:—

(*a*) Image intensifiers, image converters, and camera tubes incorporating or coupled with image intensifiers or image converters; ... ... A

(*b*) Electronic storage tubes (including memory transformers of radar pictures); C

(*c*) Camera tubes with return beam readout, including return beam vidicons and image isocons, but excluding conventional non-ruggedised image orthicons; C

(*d*) Camera tubes without return beam readout (including secondary electron conduction vidicons), for which, with a faceplate illuminance of 10^{-4} Lumens/ft^2 (foot-candles) or an irradiance of 5×10^{-5} W/m^2, the product of (i) the relative amplitude response (in percentage) at 400 lines/picture height and (ii) the output signal current (in nA) exceeds 200; C

(*e*) Camera tubes with fibre optic faceplates or electron image amplification by internal microchannel plates or both of the type specified in the entry for optical elements and elements for optical tubes in this Group C

(*f*) Ruggedised vidicon-type tubes, including secondary electron conduction and silicon target vidicon-type tubes, but excluding tubes not capable of withstanding acceleration greater than 2½**g** at any frequency within the vibration frequency range of 5 Hz to 2000 Hz ... C

In this entry:—

"Return beam readout" relates to camera tubes in which the electron beam is returned to an internal dynode structure within the tube.

To determine the required measurement for tubes specified in (*d*) above the source of illumination should be the International Commission on Illumination reference "A", 2854°K; the test target should have a contrast of 80% or more; the picture aspect ratio should be 3: 4.

(4) Gas discharge voltage regulator tubes having two or more electrodes designed to withstand an acceleration of short duration (shock) greater than 1000**g** or to operate in ambient temperatures exceeding 200°C; ... C

(5) Hydrogen thyratron tubes rated for a peak pulse power of 12·5 MW or more; C

(6) Vacuum tubes specially designed for use as pulse modulators for radar or similar applications, having a peak anode voltage rating of 100 kV or more or rated for a peak pulse power of 2·4 MW or more, and specially designed parts and components therefor C

(7) Valves, the following:—

(*a*) Valves in which space charge control is utilised as a functional parameter, the following:—

(i) valves rated for continuous wave operation above 4000 MHz at the maximum rated anode dissipation; C

(ii) valves rated for continuous wave operation over the frequency range 300 to 4000 MHz, the following:—

(*a*) for which (under any condition of cooling) the product of the maximum rated anode dissipation (expressed in W) and

the square of the maximum frequency (expressed in MHz) at the maximum rated anode dissipation, is greater than 10^9; C
or ... ...

(*b*) where applied to external anode tubes rated only without a radiator and rated only for free air circulation, the product is greater than 5×10^7; C

In this entry—

For valves specially designed for television transmitters operating in the frequency range of 470 to 960 MHz and rated for operation without a grid current, the product of the rated anode dissipation and the square of the maximum frequency may reach 15×10^{10}.

For valves intended for other applications and rated for operation without a grid current, the product of the rated anode dissipation and the square of the maximum ferquency may reach $2{\cdot}5 \times 10^8$.

(iii) Valves rated only for pulse operation above 1000 MHz at the peak pulse output power; C

(iv) Valves rated only for pulse operation between 300 and 1000 MHz and for which (under any condition of cooling), the product of the peak pulse output power (expressed in W) and the square of the maximum frequency (expressed in MHz) is greater than $4{\cdot}5 \times 10^{10}$; C

(*b*) Klystrons, travelling wave tubes and magnetrons, other than:— ... C

(i) low power oscillator klystrons designed to operate at frequencies below 13·5 GHz with a maximum power of less than 3 W;

(ii) fixed frequency and tunable pulsed magnetrons designed for equipment which is not specified in this Schedule and which is in normal civil use, designed to operate at frequencies below 3·5 GHz with a maximum rated output power not exceeding 1·2 MW or between 3·5 and 10·5 GHz with a maximum rated output power not exceeding 300 kW;

(iii) fixed frequency continuous wave magnetrons manufactured for medical, industrial heating or cooking purposes, operating at a frequency of 2·45 GHz$\pm$0·05 GHz with a maximum rated output power not exceeding 5 kW or at a frequency lower than 1 GHz with a maximum rated output power not exceeding 25 kW;

(*c*) Valves, not specified in (*b*) above, of the kind in which the velocity of the electrons is utilised as one of the functional parameters; ... C

(*d*) Valves designed to withstand acceleration of short duration (shock) greater than 1,000 g; ... ... A

(*e*) Valves designed for operation in ambient temperatures exceeding 200°C; C

(*f*) Specially designed parts for the valves specified in this entry ... C

Electronic components, assemblies, sub-assemblies, printed circuit boards and microcircuits, the following:—

(1) High density assemblies, constituting one or more functional circuits (other than those with a discrete component density of 15 per cc or less) having any of the following characteristics:—

(*a*) consisting of discrete components and integrated circuits: C

(*b*) incorporating any active discrete component specified elsewhere in Group 3F of this Schedule; C

(*c*) designed or rated for continuous operation without derating over the temperature range from —55°C to +85°C; C

(*d*) designed or rated as radiation hardened circuits; C

(2) Printed circuit boards (single-sided, double-sided or multilayer), the following:—

(*a*) those designed to physically mount and provide electrical interconnection between electronic components but which are not manufactured from any of the following insulating materials:— C

(i) paper base phenolics;

(ii) glass cloth melamine;

(iii) glass epoxy resin;

(iv) polyethylene terephthalate;

(v) any other insulating materials with a continuous operating temperature not exceeding 150°C;

(*b*) those made of the materials specified in (*a*)(i) to (v) in this subheading but which mount electronic components specified in this entry; C

(3) Microcircuits (monolithic integrated circuits, multichip, hybrid or film type microcircuits), other than the following:— C

(*a*) encapsulated passive networks formed by thick film deposition techniques;

(*b*) encapsulated and tested circuits (other than those designed or rated as radiation hardened) packaged in TO-5 outline cases (7·747 to 9·398 mm diameter) or in non-hermetically sealed cases, the following:

(i) bipolar gates, inverters, buffers, bilateral switches, drivers, counters, latches, adders, comparators, parity generators, multiplexers, expanders, flip-flops, multivibrators, code converters, registers, decoders, demultiplexers, diode matrices, multipliers and Schmidt-triggers, designed for operation as digital logic circuit elements and having all the following characteristics:—

(*a*) a product of the typical basic gate propagation delay time in nanoseconds and the power dissipation per basic gate, in milliwatts, not less than 70 pJ (that is speed-power product/gate not less than 70 pJ);

(*b*) a typical propagation delay time not less than 5 nanoseconds;

(*c*) not rated for operation below —20°C or above +75°C; and

(*d*) encapsulated in a package having 16 terminals or less;

(*c*) non-reprogrammable P-channel MOS circuits, not rated for operation below —20°C or above +75°C, specially designed for, and which by virtue of circuit design, content and lay-out are limited to use for, simple manually operated calculators which provide no more than any of the following six operational functions:—

(*a*) addition;

(*b*) subtraction;

(*c*) multiplication;

(*d*) division (including percentage and reciprocal);

(*e*) squaring;

(*f*) square root;

(*d*) P-channel MOS circuits, not rated for operation below —20°C or above +75°C, specifically designed as, and which by virtue of circuit design, content and lay-out are limited to use as, digital shift registers with both the following characteristics:—

(*a*) a maximum clock rate of 2 MHz; and

(*b*) a maximum number of bits per package of 256;

(*e*) non-reprogrammable microcircuits specially designed for, and which by virtue of circuit design, content and lay-out are limited to use only for, functional purposes in the electrical systems of motor vehicles;

(*f*) untuned AC amplifiers having a bandwidth of less than 1 MHz and a maximum rated power dissipation of 5 W or less at a case temperature of 25°C;

(*g*) audio amplifiers having a maximum rated power dissipation of 25 W or less at a case temperature of 25°C;

(*h*) operational amplifiers, having all the following characteristics:—

(i) a typical unity-gain open-loop bandwidth of not more than 5 MHz;

(ii) a typical open-loop voltage gain of not more than 100.000 or 100 dB;

(iii) a maximum intrinsic rated input offset voltage of not less than 5 mV;

(iv) a slew rate not exceeding 1 V/microsecond; and

(v) not rated for operation below —20°C or above +75°C;

(*i*) voltage regulators, having all of the following characteristics:—

(i) a rated nominal output voltage of 40 V or less;

(ii) a maximum output current of 150 mA or less;

(iii) a rated maximum power dissipation of 1·5 W or less, at a case (or mounting base) temperature of 25°C; and

(iv) not rated for operation below —20°C or above +75°C;

(*j*) voltage comparators, having all of the following characteristics:—

(i) a maximum input of offset voltage of not less than 2 mV;

(ii) a typical switching speed or typical response time of not less than 30 nanoseconds; and

(iii) not rated for operation below —20°C or above +75°C;

(*k*) microcircuits specially designed for civil uses as frequency modulation stereo multiplex demodulators, television synchronisation signal processors and television chroma signal processors, and not rated for operation below —40°C or above +85°C;

(*l*) bipolar memory devices, having all of the following characteristics:—

(i) a maximum number of bits per package not exceeding 64;

(ii) a typical access time not less than 50 nanoseconds;

(iii) not rated for operation below —20°C or above +75°C; and

(iv) encapsulated in a package having 16 terminals or less;

(*m*) non-reprogrammable, non-imaging, microcircuits specially designed for use in cameras (including cine cameras) other than those specified in the entries relating to photographic apparatus, instruments and appliances in Groups 1 and 3G in medical pacemakers, and which by circuit design, content and lay-out are normally limited to such use;

(*n*) bipolar microcircuits designed for operation as electronically controlled inductive, magnetic or optical switches or as threshold value switches, with switching times of 7 microseconds or greater, designed for civil uses and not rated for operation below —20°C or above +75°C.

In this entry—

"Assembly" means a number of components assembled to perform a specific function or functions, replaceable as an entity (and normally capable of being disassembled).

"Microcircuit" means a device in which a number of passive and active circuit elements are considered as indivisibly associated on or within a continuous structure to perform the function of a circuit.

"Monolithic integrated circuit" means a microcircuit fabricated as a single

component consisting of elements formed in or on a single semi-conducting substrate by diffusion, implantation or deposition.

"Film type microcircuit" means an array of circuit elements and metallic interconnections formed by deposition of a thick or thin film on an insulating substrate.

"Multichip microcircuit" means a microcircuit containing two or more monolithic integrated circuit chips bonded to a common substrate.

"Hybrid microcircuit" means a microcircuit consisting of a combination of film type microcircuits and monolithic integrated circuit elements or combinations of either with discrete components.

"Circuit element" means a single active or passive functional item in an electronic circuit, such as one diode, one transistor, one resistor or one capacitor.

"Discrete component" means a separately packaged circuit element with its own external connections.

Electronic measuring, calibrating, counting, testing and time interval measuring equipment (whether or not incorporating frequency standards), the following:—

(1) Equipment designed as reference frequency standards for laboratory use, with a stability over 24 hours or more of 1 part in 10^{10} or better; ... A

(2) Equipment designed for fixed ground use and containing a frequency standard, or standards, with a stability over 24 hours of 1 part in 10^{9} or better; ... ... A

(3) Equipment designed for portable or mobile use and containing a frequency standard, or standards, with a stability over 24 hours of 1 part in 10^{8} or better; ... ... A

(4) Instruments designed for use at frequencies exceeding 18 GHz; ... A

(5) Instruments designed and rated for use at frequencies exceeding 12·5 GHz the following:—

(*a*) comb frequency generators; ... ... A

(*b*) transfer oscillators; ... ... A

(*c*) frequency converters; ... ... A

(6) Instruments designed for use at frequencies exceeding 1 GHz, the following:—

(*a*) network analysers, for the automatic measurement of equivalent circuit parameters over a range of frequencies C

(*b*) specially calibrated microwave instrumentation receivers capable of measuring amplitude and phase simultaneously; C

(*c*) instruments for the direct measurement of phase or impedance; ... C

(*d*) programmable instruments; C

(7) Instruments employing time compression of the input signal or Fast Fourier Transform techniques; ... ... A

(8) Instruments incorporating computing facilities capable of addressing memories, the following:—

(*a*) instruments having an internal, fixed or alterable memory of more than 2,048 bits; or ... ... A

(*b*) instruments having an internal, fixed or alterable memory of more than 4,096 bits for word lengths not exceeding 4 bits; ... ... A

(9) Digital counters, the following:—

(*a*) counters capable of counting successive input signals with less than 5 nanoseconds time difference without prescaling (digital division) of the input signal; ... ... A

(*b*) counters employing prescaling of the input signal in which the prescaler is capable of resolving successive input signals with less than 1 nanosecond time difference ... ... A

(*c*) counters containing burst frequency measuring capability exceeding 100 MHz; ... ... A

(10) Time interval measuring equipment employing digital techniques capable of measuring time intervals of less than 5 nanoseconds; ... ... A

(11) Testing equipment rated to maintain specified operating data over a range of ambient temperatures from below —25°C to above 55°C ... A

(12) Digital voltage measuring apparatus (with or without electrical outputs), irrespective of the physical units in which calibrated, with a reading speed (from zero to the measured value) faster than 25 accesses per second, other than visual quantization apparatus capable of providing an average value —displayed or not—of the results of the measurement and multichannel analysers of all types used in nuclear instrumentation, having any of the following characteristics:—

(*a*) a digital resolution over the whole scale greater than 0·0005%; ... A

(*b*) an accuracy greater than 0·002% of reading over an ambient temperature range of ±5°C or more, or a stability better than 10^{-6} of reading over a period of 24 hours or more ... ... A

(*c*) a capability of more than 500 independent measurements per second; A

In this entry—

"Programmable" means that the equipment functions can be controlled by the injection of digitally coded electrical signals from an external source; and

"Reading speed" does not include changes in range or polarity.

Frequency synthesizers (any kind of frequency source or signal generator, regardless of the technique used, providing a multiplicity of simultaneous or alternative output frequencies, from one or more outputs, controlled by, derived from or disciplined by a lesser number of standard, or master, frequencies) and equipment containing frequency synthesizers, the following:—

(1) Frequency synthesizers containing frequency standards specified in sub-heading 1 of the entry relating to electronic measuring, calibrating, counting, testing and time interval measuring equipment, in this Group; A

(2) Instrument frequency synthesizers and synthesized signal generators, producing output frequencies whose accuracy and short and long term stability are controlled by, derived from, or disciplined by the input frequency or internal master standard frequency, and having any of the following characteristics:—

(*a*) a maximum output frequency in excess of 550 MHz; ... ... A

(*b*) having a phase noise to signal ratio better than —60 dB or an AM noise to signal ratio better than —70 dB referred to the 30 kHz band centred on the carrier, excluding the 1 Hz band centred on the carrier; A

(*c*) electrically programmable (in that the output frequency can be controlled or selected by the injection of digitally coded electrical signals from an external control source) with a speed of switching from one selected output frequency to another selected output frequency less than 10 milliseconds; ... ... A

(*d*) having a level of spurious components in the output better than —80 dB non-harmonic or —60 dB harmonic component measured relative to the selected output frequency; ... ... A

(*e*) having more than 3 different selected synthesized output frequencies available simultaneously from one or more outputs; ... ... A

(*f*) having facilities for pulse modulation of the output frequency ... A

(3) Airborne communications equipment using frequency synthesizers, the following:—

(*a*) equipment designed to receive or transmit frequencies greater than 156 MHz; ... ... A

(*b*) equipment incorporating facilities for the rapid selection of more than 200 channels per equipment, other than equipments operating in the frequency range of 108 to 136 MHz incorporating facilities for the rapid selection of 720 channels or fewer at not less than 25 kHz channel spacing which have been in normal civil use for at least one year; ... ... A

(*c*) equipment with a speed of switching from one selected output frequency to another selected output frequency less than 50 milliseconds; ... ... A

(*d*) frequency synthesizers designed for any of the equipment specified in sub-headings (3)(*a*) to (*c*) of this entry, whether supplied separately or with such equipment and exceeding the parameters defined for equipment specified in sub-heading (2) of this entry; ... ... A

(4) Digitally-controlled radio receivers, whether or not computer controlled, which search or scan automatically a part of the electromagnetic spectrum, using frequency synthesisers, the following:—

(*a*) digitally-controlled receivers in which the switching operation takes less than 50 milliseconds, other than:— ... ... A

(i) non-ruggedized radio receivers capable of digital control of frequency selection with an operating frequency (antenna input) in the range from 100 kHz to 32 MHz, with a frequency resolution not better than 10 Hz, and with a speed of switching from one selected operating frequency to another selected operating frequency greater than 10 milliseconds;

(ii) non-ruggedized digitally-controlled pre-set type radio receivers designed for use in civil communications, which have 200 selective channels or fewer;

(*b*) frequency synthesisers designed for the equipment specified in sub-heading (4)(*a*) of this entry, whether supplied separately or with such equipment, and exceeding the parameters defined for equipment specified in sub-heading (2) of this entry, other than those specially designed for receivers specified in sub-headings (4)(*a*)(i) and (ii) of this entry; ... ... A

(5) Radio transmitters incorporating transmitter drive units, exciters and master oscillators using frequency synthesis, the following:—

(*a*) transmitters having an output frequency of up to 32 MHz with a frequency resolution of better than 10 Hz and with a speed of switching from one selected output frequency to another selected output frequency less than 10 milliseconds; ... ... A

(*b*) transmitters having an output frequency from 32 MHz to 235 MHz with a frequency resolution of better than 250 Hz and with a speed of switching from one selected output frequency to another selected output frequency less than 50 milliseconds; ... ... A

(*c*) transmitters having an output frequency greater than 235 MHz, other than:— ... ... A

(i) television broadcasting transmitters having an output frequency from 470 MHz to 960 MHz with a frequency resolution of not better than 1 kHz and where the manually-operated frequency synthesizer incorporated in or driving the transmitter has an output frequency not greater than 120 MHz;

(ii) FM and AM ground communications equipment for use in the land mobile service and operating in the 420 to 470 MHz band with a power output of 50 W for mobile units and 300 W for

fixed units with a frequency resolution of not better than 6·25 kHz and with a speed of switching from one selected output frequency to another selected output frequency of greater than 50 milliseconds;

(*d*) transmitters having more than three different selected sythesized output frequencies available simultaneously from one or more outputs; A

(*e*) transmitters with facilities for pulse modulation of the output frequency of the transmitter or of the incorporated frequency synthesizer; ... ... A

(*f*) frequency synthesizers designed for any of the equipments specified in sub-headings (5)(*a*) to (*e*) of this entry, whether supplied separately or with such equipment, and exceeding the parameters specified in sub-heading (2) of this entry; ... ... A

(6) Specially designed parts, components, accessories and sub-assemblies for equipment specified in sub-headings (2) to (5) of this entry; ... ... A

Lasers and laser systems and specially designed parts and components therefor (including amplification stages) and any equipment containing lasers or designed to contain lasers, other than ... ... A

(1) lasers and specially designed components and parts therefor, when not contained in equipment, the following:—

(*a*) argon, krypton and dye lasers with both the following characteristics:—

(i) an output wavelength shorter than 0·8 microns; and

(ii) a pulsed output not exceeding 0·5 joule per pulse and an average or continuous wave maximum rated output power not exceeding 20 W;

(*b*) helium-cadmium and nitrogen lasers with both the following characteristics:—

(i) an output wavelength shorter than 0·8 microns; and

(ii) a pulsed output not exceeding 0·5 joule per pulse and an average or continuous wave maximum rated output power not exceeding 120 W;

(*c*) helium-neon lasers with an output wavelength shorter than 0·8 microns;

(*d*) ruby-lasers with both the following characteristics:—

(i) an output wavelength shorter than 0·8 microns; and

(ii) an energy output not exceeding 2 joules per pulse;

(*e*) CO_2 lasers with all the following characteristics:—

(i) an output wavelength in the range of 9 to 11 microns;

(ii) a pulsed output not exceeding 2 joules per pulse and an average or continuous wave maximum rated output power not exceeding 1,200 W; and

(iii) in which the beam, electrical excitation and gas flow, if any, are in the same direction; or those using the transverse excitation atmospheric (TEA) principle for excitation;

(*f*) Nd:YAG and Nd:Glass lasers with both of the following characteristics:—

(i) an output wavelength of 1·06 microns; and

(ii) a pulsed output not exceeding 0·5 joule per pulse and an average or continuous wave maximum rated output power not exceeding 10 W;

(2) equipment containing lasers specified in (1) above, the following:—

(*a*) equipment specially designed for industrial and civilian intrusion detection and alarm systems;

(*b*) equipment specially designed for medical applications;

(*c*) simple educational devices;

(*d*) equipment specially designed for traffic and industrial movement control and counting systems;

(*e*) equipment specially designed for the detection of environmental pollution;

(*f*) optical spectrometers and densitometers;

(*g*) equipment containing continuous wave helium-neon gas lasers, but not including laser feedback systems and laser interferometers used in equipment specified in the entry relating to machine tools and numerical control systems in Group 3A;

(*h*) equipment for cutting or bonding textiles;

(*i*) equipment for cutting paper;

(*j*) equipment containing lasers for drilling diamond dies for the wire drawing industry;

(*k*) electronic daylight scanning equipment with auxiliary electronic screening unit specially designed for printing processes;

(3) equipment for educational and laboratory purposes and containing lasers specified in (1)(*f*) above.

Materials specially designed and manufactured for use as absorbers of electromagnetic waves having frequencies greater than 2×10^8 Hz, and less than 3×10^{12} Hz C

Microwave equipment, including parametric amplifiers, capable of operating at frequencies over 1 GHz (other than microwave equipment included in the entries relating to communication, navigation, direction finding and radar equipment; radio transmitters and components; radio relay communications equipment; coaxial cable with the outer conductor electroplated directly on spirally-grooved cable dielectric; and electronic measuring, calibrating, counting, testing and time interval measuring equipment), the following:—

(1) Rigid and flexible waveguides and components therefor designed for use at frequencies in excess of 18 GHz; C

(2) Waveguides having a bandwidth ratio greater than 1·7: 1; C

(3) Waveguide components, the following:—

(*a*) Directional couplers having a bandwidth ratio greater than 1·7: 1 and a directivity over the band of 20 dB or more; C

(*b*) Rotary joints capable of transmitting more than one isolated channel or having a bandwidth greater than 5% of the centre mean frequency, other than rotary joints used in air traffic control equipment carrying combinations of frequencies suitable for secondary surveillance radar antennae co-mounted on a primary radar antenna and which do not have a bandwidth exceeding 5% of the centre mean frequency; ... C

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

(4) TEM mode devices using magnetic, including gyro-magnetic, properties; C

(5) TR and anti-TR tubes and components therefor, excluding the following: C

(*a*) those designed for use in waveguides and operating at a peak power not exceeding 3 MW and at a frequency of 1·5 GHz or less;

(*b*) those designed for use in waveguides and operating at a peak power not exceeding 1·2 MW and at a frequency over the range 1·5 GHz to 3·5 GHz;

(*c*) those designed for use in waveguides and operating at a peak power not exceeding 600 kW and at a frequency over the range 3·5 GHz to 6 GHz; or

(*d*) those designed for use in waveguides and operating at a peak power not exceeding 300 kW and at a frequency over the range 6 GHz to 10·5 GHz;

(6) Assemblies and sub-assemblies in which the isolating base material functions as a dielectric (as used in stripline, microstrip or slotline) other than those specifically designed for use in civil television systems to meet ITU standards and using, as an isolation material, paper base phenolics, glass cloth melamine, glass cloth epoxy resin, polyethylene terephthalate or any other isolating material capable of withstanding an operating temperature not exceeding 150°C; C

(7) Phased array antennae and sub-assemblies, permitting electronic control of beam shaping and pointing, and specially designed parts and components therefor; C

(8) Microwave assemblies or sub-assemblies having circuits fabricated by the same processes as used in integrated circuit technology, that include active circuit elements (see also the entries relating to radio frequency signal processing devices; and electronic components, assemblies, sub-assemblies; printed circuit boards and microcircuits); C

(9) Microwave assemblies or sub-assemblies which contain band pass or band stop filters and which are capable of operating at 3 GHz or greater; C

(10) Amplifiers (see also the entry relating to amplifiers); C

(11) PIN Modulators (see also the entry relating to semi-conductor diodes); C

In this entry—

"ITU Standards" means the standards for civil television systems designed to International Telecommunication Union recomendations.

Navigation, direction finding, radar and airborne communication equipment, the following:—

(1) Airborne communication equipment and specially designed parts and components therefor, having any of the following characteristics:—

(*a*) designed to operate at frequencies greater than 156 MHz; C

(*b*) incorporating facilities for:—

(i) the rapid selection of more than 200 channels per equipment; or C

(ii) equipment using frequency synthesis techniques; C

other than conventional equipment operating in the frequency range of 108 to 136 MHz with 720 channels or fewer at not less than 25 kHz spacing;

(*c*) pressurised throughout; C

(*d*) rated for continuous operation over a range of ambient temperatures extending from below —55°C to above 55°C; C

(*e*) designed for single side band operation (SSB); C

(*f*) designed for modulating methods employing any form of digital modulation using time and frequency redundancy such as "Quantized Frequency Modulation" (QFM); C

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

(*a*) Equipment designed to make use of the Doppler frequency phenomena; C

(*b*) Equipment utilising either or both of the following characteristics:— C

(i) the constant velocity;

(ii) the rectilinear propagation of electromagnetic waves having frequency less than 4×10^{14} Hz (0·75 microns);

(*c*) Radio altimeters—

(i) pulse modulated C

(ii) frequency modulated having a displayed electrical output accuracy better than ±·914 m over the whole range between 0 and 30·4 m or ±3% above 30·4 m; C

(iii) frequency modulated using other than conventional techniques; C

(*d*) Direction finding equipment, operating at frequencies greater than 5 MHz other than equipment designed for search and rescue purposes provided that the receiver operates on a crystal controlled fixed frequency of 121·5 MHz 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 MHz; C

(*e*) Equipment pressurised throughout; C

(*f*) Equipment rated for continuous operation over a range of ambient temperatures extending from below —55°C to above 55°C; C

(3) Airborne radar equipment; C

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

(*a*) Equipment operating at a frequency of less than 1·5 GHz and having a peak output power from the transmitter greater than 2·5 MW; ... C

(*b*) Equipment operating at a frequency within the range from 1·5 to 3·5 GHz and having a peak output power from the transmitter greater than 1 MW; C

(*c*) Equipment operating at a frequency within the range from 3·5 to 6·0 GHz and having a peak output power from the transmitter greater than 500 kW; C

(*d*) Equipment operating at a frequency within the range from 6·0 to 10·5 GHz and having a peak output power from the transmitter greater than 250 kW; C

(*e*) Equipment operating at a frequency of less than 3·5 GHz and having an 80% or better probability of detection for a 10 sq m target at a free space range of 250 nautical miles; C

(*f*) Equipment operating at a frequency within the range from 3·5 to 10·5 GHz and having an 80% or better probability of detection for a 10 sq m target at a free space range of 100 nautical miles; C

(*g*) Equipment utilising other than pulse modulation with a constant pulse repetition frequency or staggered pulse repetition frequency or both, in which the carrier frequency of the transmitted signal is not changed deliberately between groups of pulses, from pulse to pulse, or within a single pulse; C

(*h*) Equipment using a Doppler technique for any purpose, other than moving target indicator systems using a conventional double or triple pulse delay line cancellation technique; C

(*i*) Equipment including other than conventional signal processing techniques; C

(*j*) Equipment not specified above, other than commercial equipment designed for pulse operation at the following frequency ranges measured in GHz C

(i) from 1.215 to 1.400

(ii) from 2.300 to 2.690

(iii) from 2.700 to 3.700

(iv) from 5.250 to 5.925

(v) from 8.500 to 10.500

In this entry cumulative probability of detection must be determined according to the following parameters:—

Radial closing velocity of the target 610 m per second
Probability of false alarm 10^{-8}
Operating factor 3 dB
Fluctuation of the target in accordance with Rayleigh distribution.

(5) Ground and marine equipment for use with airborne navigation equipment utilising either or both of the following characteristics:— C

(*a*) the constant velocity;

(*b*) the rectilinear propagation of electromagnetic waves having frequency less than 4×10^4 Hz (0·75 microns);

(6) Ground and marine direction finding equipment operating at frequencies greater than 30 MHz; C

(7) Specially designed parts, accessories, testing or calibrating equipment and training or simulating equipment for the apparatus in heads (2), (3), (4), (5) or (6) of this entry C

Optical elements and elements for optical tubes, the following:—

(1) Non-flexible fused fibre optic plates or bundles, having a fibre pitch (centre to centre spacing) of less than 15 microns; a light-absorbing medium surrounding each fibre or interstitially placed between fibres; and a diameter greater than 13 mm; C

(2) Microchannel plates for electron image amplification, having 15,000 or more hollow tubes per plate; and a hole pitch (centre to centre spacing) of less than 30 microns C

Photo-electric cells (other than germanium photo cells with a peak response less than 17,500 Å (1·75 microns), the following:—

(1) Photo-electric cells and photo-conductive cells (including photo-transistors and similar cells), with a peak sensitivity at a wavelength longer than 12,000 Å (1·2 microns) or shorter than 3,000 Å (0·3 microns) ... ... A

(2) Photo-transistors and semi-conductor photo-diodes, with a response time constant of 0·5 microsecond or less measured at the operating temperature of the cell for which the time constant reaches a minimum ... A

Photomultiplier tubes, the following:—

(1) for which the maximum sensitivity occurs at wavelengths longer than 7,500 Å or shorter than 3,000 Å; or C

(2) having an anode pulse rise time of less than 1 nanosecond C

Pulse modulators of a kind used for providing electric impulses of peak power exceeding 2·4 MW 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 ... C

Radio receivers, the following:—

(1) Panoramic radio receivers, being receivers which search or scan automatically a part of the electromagnetic spectrum and indicate or identify the received signals other than ancillary equipment for receivers with which the frequency spectrum searched does not exceed either $\pm 20\%$ of the intermediate frequency of the receiver or ± 2 MHz; C

(2) Digitally controlled radio receivers, whether or not computer controlled, which search or scan automatically a part of the electromagnetic spectrum and in which the switching operation takes less than 50 milliseconds and which indicate or identify the received signals, other than the following:— C

(*a*) receivers capable of digital control of frequency selection, with a maximum operating frequency over the range from 100 kHz to 32 MHz and where the speed of switching from one selected operating fre-

quency to another selected operating frequency does not take less than 10 milliseconds, and

(*b*) digitally controlled pre-set type radio receivers designed for use in civil communications which have 200 selective channels or fewer.

(3) Specially designed parts, components and accessories for the radio receivers specified in (1) and (2) of this entry C

Radio relay communications equipment, the following:—

(1) Equipment employing tropospheric, ionospheric or meteoric scatter phenomena and specialised test equipment therefor; ... ... A

(2) radio relay equipment for use at frequencies exceeding 470 MHz; ... C

(3) Parts, components and sub-assemblies:—

(*a*) specially designed for (1) above; ... ... A

(*b*) specially designed for (2) above; C

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

(1) non-programmable and capable of operating at frequencies over 12·5 GHz; C

(2) programmable and capable of operating at frequencies over 1·0 GHz; ... C

(3) having a display bandwidth in excess of 125 MHz; C

(4) employing time compression of the input signal or Fast Fourier Transform techniques; C

(5) incorporating computing facilities capable of addressing an internal fixed or alterable memory, as follows—

(*a*) of more than 2048 bits for word lengths exceeding 4 bits; or ... C

(*b*) of more than 4096 bits for word lengths of 4 bits or less; C

(6) having either of the following characteristics for analysing frequencies greater than 1 GHz;

(*a*) including a scanning preselector; or C

(*b*) incorporating a tracking signal generator; C

(7) having an overall display dynamic range of better than 80 dB; C

(8) specially designed parts, components and accessories for the equipment specified in (1) to (7) of this entry C

Radio transmitters and components (other than transmitters incorporating transmitter drive units, exciters and master oscillators using frequency synthesis, which are specified in the entry relating to frequency synthesisers in this Group, or radio relay communications equipment specified in the entry relating to radio relay communications equipment in this Group), the following:—

(1) Transmitters or transmitter amplifiers designed to operate at output frequencies greater than 960 MHz C

(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; C

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

(3) Specially designed parts, components, accessories and sub-assemblies for the equipment specified in this entry C

Semi-conductor diodes (other than photo-diodes which are specified in the entry relating to photo-electric cells in this Group and light emitting diodes used as indicator elements or in alpha-numeric displays) which are not elsewhere specified in this Schedule, the following:—

(1) Having a bulk material other than selenium or copper oxide and designed or rated for use at input or output frequencies above 12·5 GHz C

(2) Having any of the following characteristics:—

(*a*) Point contact diodes designed or rated for use at input or output frequencies above 12·5 GHz; C

(*b*) Mixer and detector diodes designed or rated for use at input or output frequencies above 1 GHz; C

(*c*) Bulk effect oscillator and amplifier devices (including those used for the direct conversion of DC to RF power) designed or rated for use at output frequencies greater than 1 GHz; C

(*d*) Voltage variable capacitor diodes designed or rated for use at input or output frequencies greater than 300 MHz, other than those having all of the following characteristics:— C

(i) a rated power dissipation of less than 0·5 W at 25°C;

(ii) a series inductance higher than 1 nH; and

(iii) a typical figure of merit Q of less than 800 measured at a reverse voltage (Vr) of 4 V and a frequency of 50 MHz;

(*e*) Fast recovery diodes having the following:—

(i) a rated maximum reverse recovery time of less than 1 nanosecond or C

(ii) both a rated forward rectified current over 1 A and a rated maximum reverse recovery time of less than 30 nanoseconds; ... C

(*f*) Tunnel diodes having the following:—

(i) a resistive cut-off frequency (F_{RO}) exceeding 20 GHz or ... A

(ii) a maximum reverse recovery time of less than 1 nanosecond; ... A

(*g*) PIN diodes designed or rated for use at input or output frequencies above 1 GHz C

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

Thyristors, the following:—

(1) types designed for use in pulse modulators having a rated turn-on time of less than 1 microsecond where the rated peak current exceeds 100A; ... C

(2) types having a rated turn-off time of less than 3 microseconds; C

(3) types having a rated turn-off time of 3 microseconds or more but less than 6 microseconds and a figure of merit greater than 1; C

(4) types having a rated turn-off time of from 6 to 10 microseconds and a figure of merit greater than 10 C

In this entry—

"The figure of merit" is defined as the product of the repetitive peak off-state voltage (V DRM) in kV and the repetitive peak on-state current (I TRM) in A as shown on the thyriston data sheets.

Transistors and specialised parts therefor (other than photo-transistors which are specified in the entry relating to photo-electric cells in this Group), the following:—

(1) Transistors using a bulk semi-conductor material other than germanium or silicon; C

(2) Transistors using silicon as the bulk semi-conductor material, the following:—

(*a*) types having an average f_T greater than 2 GHz; C

(*b*) types having a product of the average f_T in GHz and the maximum collector dissipation in W exceeding 3; C

(*c*) majority carrier devices, including field effect transistors and metal oxide semi-conductor transistors, other than field effect transistors encapsulated in non-hermetically sealed cases and having a maximum collector dissipation of 500 mW or less and a maximum operating frequency of 250 MHz or less C

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, trigger devices or other similar 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°C, under any cooling conditions; and

where f alpha (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) is quoted instead of f_T, f_T may be regarded as 0·8 times f alpha; and

where the average f_T is not quoted or known, this value shall be taken at 1·5 times the minimum f_T; and

"Maximum operating frequency" means $f_{max} = \frac{gm}{2 \pi Ci}$

where gm is the maximum transconductance in Siemens (mho) and Ci is the input capacitance in pico-farads.

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

X-Ray systems, flash discharge type, including tubes having all of the following characteristics:— C

(1) peak power greater than 500 MW;

(2) output voltage greater than 500 kV; and

(3) pulse width less than 0·2 microsecond.

GROUP 3G

Note. Goods specified in the heads of this Group may also be specified in Group 1 of this Part of this Schedule.

Scientific Instruments and Apparatus, Servo-Mechanisms and Photographic Equipment.

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

(1) Isolation types having a variation of gain constant (linearity of gain) of 0·2% or better; ... ... A

(2) Summing types having a variation of gain constant (linearity of gain) or an accuracy of summation of 0·2% or better ... ... A

(3) Types employing solid state Hall effect; ... ... A

(4) Types designed to operate below −55°C or above +125°C; ... ... A

(5) Specially designed parts, components, sub-assemblies and test equipment (including adaptors and couplers) for the equipment specified in (1) to (4) of this entry ... ... A

Centrifugal testing apparatus possessing any of the following characteristics:—

(1) Driven by a motor or motors having a total rated horse power greater than 400 horse power; C

(2) Capable of carrying a pay load of 250 pounds or more; C

(3) Capable of exerting a centrifugal acceleration of 8g or more on a pay-load of 200 pounds or more C

Computers, electronic, and equipment and systems incorporating such computers, and specialised parts, components, peripherals, displays, sub-assemblies, accessories and spare parts for such computers, the following:

(1) Computers designed or modified for use in aircraft, missiles or space vehicles to a specification for continuous operation at temperatures from below —45°C to above 55°C ... ... A

(2) Digital computers and differential analysers, the following:

(*a*) Those designed or modified to limit electromagnetic radiation to levels below those acceptable for normal civil use ... ... A

(*b*) Those ruggedised for military use or modified so as to be ruggedised for military use ... ... A

(*c*) Those designed or modified for data (message) switching or incorporating equipment or devices or using techniques [including software, microprogramme control (firmware) and specialised logic control (hardware)] for accepting, storing, processing and retransmitting data groups ... ... A

(3) Equipment and systems incorporating computers specified in (1) and (2) above ... ... A

(4) Specialised parts, components, peripherals, displays, sub-assemblies, accessories and spare parts for computers specified in (1) and (2) above A

(5) Other computers C

(6) Equipment and systems incorporating computers not specified in (1) and (2) above C

(7) Specialised parts, components, peripherals, displays, sub-assemblies, accessories and spare parts for computers not specified in (1) and (2) above but excluding (save as otherwise provided below) the following peripherals and displays: C

(*a*) Digital computer peripherals, the following:

(i) Punched card readers not capable of operating at a speed exceeding 2,000 cards per minute;

(ii) Punched card punches;

(iii) Paper tape readers not capable of operating at a speed exceeding 2,000 characters per second;

(iv) Paper tape punches;

(v) Manually operated keyboards, including teletype input devices;

(vi) Non-impact printers not capable of operating at a speed exceeding 2,500 characters per minute;

(vii) Impact line printers;

(viii) Impact character printers;

(*b*) Digital computer displays, the following:

(i) Non-graphic cathode-ray tube displays for which circuitry and character generation devices external to the tube limit displays to alpha-numeric characters in fixed formats or to graphs com-

posed only of the same basic elements as are used for alpha-numeric composition;

(ii) Graphic cathode-ray tube displays having the characteristic specified at (i) above in relation to non-graphic displays, and also the characteristic that the squence of symbols is fixed by the format and character generators in the display and cannot be generated arbitrarily by the computer;

(iii) Those with light guns or other graphic input devices of a kind ordinarily used as parts of the cathode-ray tube displays specified at (i) and (ii) above;

(iv) Cathode-ray tube displays of a kind ordinarily used as parts of industrial or medical equipment and not specially designed for computer use;

(v) Non-coherent visible-spectrum light emitting diode displays;

(vi) Nixie-type tube displays;

(vii) Other non-graphic displays having the characteristic specified at (i) above in relation to cathode-ray tube non-graphic displays, and other graphic displays having the characteristics specified at (ii) above in relation to cathode-ray tube graphic displays, but not those having circuitry or non-mechanical character-generation devices integral with the display, nor those having any of the following characteristics:

(A) an area of 1200 sq cm or less and a minimum character height of less than 8 mm;

(B) an area greater than 1200 sq cm and a minimum character height of less than 20 mm;

(C) a capability of displaying at more than the three levels off, intermediate and full on;

but not excluding interface or control units for such peripherals and displays.

Converters, analogue-to-digital and digital-to-analogue, other than digital voltage measuring apparatus specified in Group 3F, the following:—

(1) Electrical-input types possessing:—

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

(*b*) an accuracy in excess of 1 part in more than 10,000 of full scale; or A

(*c*) a figure of merit of 10^7 or more (derived from the number of complete conversions per second divided by the accuracy); ... ... A

(2) Solid state synchro-to-digital and digital-to-synchro resolvers ... ... A

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

(*a*) rotary types having an accuracy or maximum incremental accuracy better than ± 1 part in 10,000 of full scale; ... ... A

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

(4) Types employing solid state Hall effect; ... ... A

(5) Types designed to operate below —55°C or above +125°C; ... ... A

(6) Specially designed parts, components, sub-assemblies and test equipment (including adaptors and couplers) for the equipment specified in (1) to (5) of this entry ... ... A

Electrical optical devices designed to monitor relative rotation of remote surfaces; and specially designed parts, components, sub-assemblies and test equipment (including adaptors and couplers) for such equipment ... ... A

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

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

(1) a rated conformity of 0·25% or less, or of 13 minutes of arc or less; ... A

(2) types employing solid state Hall effect; ... ... A

(3) types designed for gimbal mounting; ... ... A

(4) types designed to operate below —55°C or above +125°C; ... ... A

(5) specially designed parts, components, sub-assemblies and test equipment (including adaptors and couplers) for the equipment specified in this entry A

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

(1) types employing solid state Hall effect; ... ... A

(2) types with a housing diameter of 50·8 mm and smaller and a length (without shaft ends) of 101·6 mm and smaller, or with a diameter-to-length ratio greater than 2:1, having one or both of the following characteristics:—

(*a*) with a rated linearity of 0·1% or less; ... ... A

(*b*) being temperature compensated or temperature corrected types; ... A

(3) types designed to operate below —55°C or above +125°C; ... ... A

(4) specially designed parts, components sub-assemblies and test equipment (including adaptors and couplers) for the equipment specified in this entry A

Magnetometers capable of a sensitivity better than $\pm 1{\cdot}0$ gamma ($\pm 10^{-5}$ oersteds) and specialised parts therefor C

In this entry—

"Sensitivity" is defined as the visually recognised minimum sinusoidal signal in the frequency range of 0·025 Hz to 1·5 Hz when signal-to-noise ratio is higher than 1.

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

(1) Monocrystals of ferrites and garnets (synthetic only); C

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

(*a*) switching speed of 0·3 microsecond or faster at the minimum field strength required for switching at 40°C; C

(*b*) a maximum dimension less than 0·76 mm; C

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

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

(*b*) a maximum dimension less than 2·54 mm; C

(4) Multi-aperture forms having 10 or more apertures; C

(5) Thin film (including plated wire and plated rods) memory storage or switching devices; C

(6) Materials suitable for application in electromagnetic devices making use of the gyro-magnetic resonance phenomenon; C

(7) Rod forms possessing either of the following characteristics:—

(*a*) a switching speed of 0·3 microsecond or faster at the minimum field strength required for switching at 40°C; C

(*b*) a minimum dimension less than 0·254 mm; C

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

Microscopes, ion, having a resolving power better than 10 Å C

Oscilloscopes, electronic devices and specialised parts and components therefor, the following:—

(1) Cathode-ray oscilloscopes, associated plug-in units and external amplifiers and pre-amplifiers having any of the following characteristics:—

(*a*) an amplifier bandwidth greater than 100 MHz; C

(*b*) incorporating, or designed for use with, cathode-ray tubes with travelling wave (delay line) vertical deflection structure; ... ... A

(*c*) ruggedised to meet a military specification; .... A

(*d*) rated for operation over an ambient temperature range of from below —25°C to above +55°C; ... ... A

(2) Electronic devices (sampling devices) for stroboscopic analysis of a signal, whether sub-assemblies or separate units, designed to be used in conjunction with an oscilloscope to permit the analysis of recurring phenomena, and which increase the capabilities of an oscilloscope to permit measurements within the limits of oscilloscopes with an amplifier bandwidth greater than 100 MHz C

In this entry—

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

Photographic apparatus and film, the following:—

(1) High speed cinema recording cameras and equipment, the following:—

(*a*) Cameras in which the film is continuously advanced throughout the recording period, and which are capable of recording at framing rates exceeding 13,150 frames per second, using any camera and film combination from the standard 8 mm to the 90 mm size, inclusive; ... A

(*b*) Special optical or electronic devices which supplement, replace, or are interchangeable with, standard camera components for the purpose of increasing the number of frames per second; ... ... A

(2) High speed cameras in which the film does not move, and which are capable of recording at rates exceeding 1,000,000 frames per second for the full framing height of standard 35 mm wide photographic film, or proportionately higher rates for lesser frame heights, or proportionately lower rates for greater frame heights;... ... ... A

(3) Cameras incorporating image converters and specially designed controls, parts, components and accessories therefor;... ... ... A

(4) Streak cameras having writing speeds of 10 mm per microsecond and above; ... ... A

(5) Camera shutters with speeds of, or greater than, 50 nanoseconds per operation and specially designed parts, components and accessories therefor; ... ... A

(6) Film, the following:—

(*a*) high speed film having:—

(i) an intensity dynamic ratio of 1,000,000 to 1 or more; or ... A

(ii) a speed of ASA 10,000 (or its equivalent) or better; ... ... A

(*b*) colour film having a spectral sensitivity extending beyond 7,200 Å or below 2,000 Å; ... ... A

(7) High speed plates having an intensity dynamic range of 1,000,000 to 1 or more ... ... A

Piezo-electric quartz crystals, blanks, plates, bars, rods and toroids, worked, semi-fabricated or mounted, including assemblies thereof C

Potentiometers, having a rated conformity better than 0·25% for a linear potentiometer or 1% for a non-linear potentiometer, the following:—

(1) Linear potentiometers having a constant resolution and a rated linearity of 0·1% or less; ... ... A

(2) Non-linear potentiometers having a variable resolution and a rated conformity of:—

(*a*) 1% 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

(*b*) 0·5% 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

(3) Types designed for gimbal mounting; ... ... A

(4) Types designed to operate below —55°C or above +125°C; ... ... A

(5) Specially designed parts, components, sub-assemblies and test equipment (including adaptors and couplers) for the equipment specified in (1) to (4) of this entry ... ... A

Radio frequency signal processing devices operating in the range of frequencies above 150 MHz and employing elastic waves in piezo-electric substances including but not limited to lithium niobate, lithium tantalate, bismuth germanium oxide, yttrium garnet and quartz, the following:—

(1) Surface acoustic wave devices which permit direct processing of signals at carrier frequencies exceeding 156 MHz, including amplifiers, fixed, tapped and dispersive delay lines, pulse compression devices and non-linear devices; C

(2) Bulk (volume) acoustic wave devices which permit direct processing of signals at carrier frequencies exceeding 1 GHz, including pulse compression and convolution devices, non-linear devices and fixed delay lines; ... C

(3) Specialised parts and components for the equipment specified in (1) and (2) of this entry C

Recording or reproducing equipment, the following:—

(1) Equipment using magnetic techniques (other than equipment specially designed for voice or music and equipment specially designed to use magnetic card, tag, label or bank cheque recording media with a magnetic surface area not exceeding 65 sq cm); C

(2) Equipment using electron beams operating in a vacuum or using laser produced light beams or both, that produce patterns or images directly on the recording surface (other than equipment specially designed for television recording or reproducing on discs or both); C

(3) Equipment specially designed for image development (other than equipment specially designed for television recording or reproducing on discs or both); C

(4) Graphic instruments capable of continuous direct recording of sinusoidal waves at frequencies exceeding 20 kHz; C

(5) Specially designed recording media (tapes, drums, discs and matrices) other than magnetic cards, checks and similar discrete non-rigid magnetic media (except tape) for use with the equipment specified in (1), (2) and (3) above; C

(6) Specially designed parts and components for the equipment specified in (1), (2), (3) and (4) above; C

Semi-conductor Hall field probes, specially designed parts, components, sub-assemblies and test equipment (including adaptors and couplers) therefor, the following:—

(1) Types made of indium arsenide-phosphide; C

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

(3) Types with an open circuit sensitivity greater than $\frac{0{\cdot}12\ V}{A \times kG}$ C

In this entry—

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

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

(1) types designed to operate from power sources of more than 300 Hz other than those designed to operate from power sources of over 300 Hz up to but not exceeding 400 Hz with a temperature range of from —55°C to 125°C; ... A

(2) types designed to have a torque-to-inertia ratio of 50,000 radians per second or greater; ... ... A

(3) types incorporating special features to secure internal damping ... ... A

(4) types employing solid state Hall effect; ... ... A

(5) types designed to operate below —55°C or above 125°C; ... ... A

(6) specially designed parts, components sub-assemblies and test equipment (including adaptors and couplers) for the equipment specified in this entry A

Synchros, resolvers, microsyns, synchro-tels and inductosyns, possessing any of the following characteristics:—

(1) a rated electrical error of 7 minutes of arc or less or of 0·2% or less of maximum output voltage; ... ... A

(2) a rated dynamic accuracy for receiver types of 1° or less, except that for units of size 30 (76·2 mm in diameter) or larger, a rated dynamic accuracy of less than 1°; ... ... A

(3) multi-speed from single shaft types; ... ... A

(4) types employing solid state Hall effect; ... ... A

(5) types designed for gimbal mounting; ... ... A

(6) types designed to operate below —55°C or above 125°C; ... ... A

(7) specially designed parts, components sub-assemblies and test equipment (including adaptors and couplers) for the equipment specified in this entry A

Synchronous motors, the following:—

(1) types not exceeding size 20 (50·8 mm in diameter) having synchronous speeds in excess of 3,600 r.p.m.; ... ... A

(2) types designed to operate from power sources of more than 400 Hz; ... A

(3) types designed to operate below —55°C or above 125°C; ... ... A

(4) specially designed parts, components sub-assemblies and test equipment (including adaptors and couplers) for the equipment specified in this entry; 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; C

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

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

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

(5) Specialised parts, components, and sub-assemblies for (1), (2), (3) and (4) in this entry C

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.

Torquers, direct current and alternating current (torque motors specially designed for gyros and stabilised platforms); and specialised parts, components, sub-assemblies and test equipment (including adaptors and couplers) for such equipment ... ... A

GROUP 3H

Note. Goods specified in the heads of this group may also be specified in Group 2 of this Part of this Schedule.

Metals, Minerals and their Manufactures

In this Group, the following definitions apply:—

Crude forms:

Anodes, balls, bars (including notched bars and wire bars), billets, blocks, blooms, briquettes, cakes, cathodes, crystals, cubes, dice, grains, granules, ingots, lumps, pellets, pigs, powder, rondelles, shot, slabs, slugs, sponge, sticks:

Semi-fabricated forms (whether or not coated, plated, drilled or punched):

(i) Wrought or worked material fabricated by rolling, drawing, extruding, forging, impact extruding, pressing, graining, atomising and grinding, i.e. angles, channels, circles, discs, dust, flakes, foil and leaf, forgings, plates, powder, pressings and stampings, ribbons, rings, rods (including bare welding rods, wire rods and rolled wire), sections, shapes, sheets, strip, pipe and tube (including tube rounds, squares and hollows), drawn or extruded wire;

(ii) Cast material produced by casting in sand, die, metal, plaster or other types of moulds, including high pressure castings, sintered forms, and forms made by powder metallurgy.

Anti-friction bearings and parts thereof, the following:—

(1) Ball and cylindrical roller bearings (other than needle roller bearings) having an inner bore diameter of 10 mm or less, and hollow bearings having an inner bore diameter exceeding 10 mm and having tolerances specified in Table 2 (EP5) of British Standard 292: 1969 or better and either or both of the following characteristics:—

(*a*) made of any material other than— C

(i) low carbon steel containing not more than 0·4% of carbon and no other elements except those present as impurities or in such low quantities as not to modify the basic characteristics of the steel;

(ii) high carbon chromium steel types Steel—534A99 and 535A99 as specified in British Standard 970: Part 2: 1970, or equivalent types normally used in the manufacture of ball or roller bearings;

(iii) nickel-molybdenum steel type Steel—665M17 as specified in British Standard 970: Part 3: 1971, or equivalent types normally used in the manufacture of ball or roller bearings;

(*b*) processed by heat treatment for the purpose of stabilising such bearings for use at normal temperatures over 150°C; C

(2) Ball and cylindrical roller bearings (other than needle roller bearings and separable ball bearings and thrust ball bearings) having an inner bore diameter exceeding 10 mm, and having tolerances specified in Table 3 (EP7) of British Standard 292: 1969, or better, and either or both of the characteristics in (1) (*a*) or (1) (*b*) of this entry; C

(3) Parts of ball and roller bearings, the following:—

Outer rings, inner rings, retainers, balls, rollers and sub-assemblies usable only for bearings specified in sub-items (1) and (2) of this entry; ... C

This entry also covers bearings having tolerances specified in imperial measures which are equivalent to the metric tolerances specified in British Standard 292: 1969.

Cobalt based alloys containing a higher percentage by weight of cobalt than of any other elements and one or more of the following constituents in the proportions stated:—

(*a*) 5% or more of tantalum; or C

(*b*) 1% or more of thorium, aluminium, yttrium, zirconium or cerium oxides; or C

(*c*) 0·05% or more of rare earth metals; C

in crude or semi-fabricated forms.

Graphite, artificial, whether or not coated or mixed with other elements or compounds, having an apparent relative density of not less than 1·90 when compared with water at 15·5°C, other than artificial graphite which has been coated or mixed with inorganic materials to improve only its electrical conductivity, its mechanical resistance or its mechanical friction properties C

Magnesium based alloys containing a higher percentage by weight of magnesium than of any other element and 1·0% or more of didymium, cerium, lanthanum, neodymium, praseodymium, yttrium, or scandium, in crude, semi-fabricated or scrap forms C

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 of 120,000 (using C.G.S. units) or 0·15 (using Henry-metre units) or more; C

(*b*) remanence 98·5% or over of maximum flux for materials having magnetic permeability; C

(*c*) a composition capable of an energy product:—

(i) greater than 10 times 10^6 gauss-oersteds (that is, 80,000 joules per cubic metre); or C

(ii) of 4·85 times 10^6 gauss-oersteds (that is, 38,600 joules per cubic metre) or more, and having a coercive force of 1,800 oersteds (that is, 143,200 A per metre) or greater; C

(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 0·1 mm or less C

Molybdenum alloys containing not less than 97·5% or more than 99·9% of molybdenum, in crude or semi-fabricated forms, other than wire C

Nickel alloys, containing a higher percentage by weight of nickel than of any other element and containing:—

(1) 11% or more of aluminium and titanium combined; or C

(2) 1% or more of oxides of thorium, aluminium, yttrium, zirconium, cerium, or lanthanum; or C

(3) 0·05% or more of scandium, yttrium, didymium, cerium, lanthanum, neodymium or praseodymium C

in crude or semi-fabricated forms.

Niobium based alloys containing 60% or more but not more than 99·3% of niobium, or having a combined content of 60% or more but not more than 99·3% of niobium—tantalum, in crude, semi-fabricated or scrap forms ... C

Steels in crude or semi-fabricated forms containing a higher percentage by weight of iron than of any other element and not being products obtained by casting with a carbon content of more than 1·5%, the following:—

(1) steels containing 10% or more of molybdenum; C

(2) steels containing 5% or more of molybdenum together with 14% or more of chromium; C

For armour plate, see Group 1 of this Part of this Schedule.

Tantalum, the following:—

(1) Tantalum powder containing less than 200 parts per million of total metallic impurities; C

(2) Sintered anodes fabricated from tantalum powder containing less than 200 parts per million of total metallic impurities; C

(3) Tantalum based alloys containing 60% or more of tantalum (other than ferro-tantalum or ferro-tantalum-niobium), in crude or semi-fabricated forms or scrap C

Titanium based alloys, the following:—

(1) Alloys containing, 3% aluminium, 2·5% vanadium and the balance titanium, in sheet, strip, tube forms or scrap; C

(2) Alloys containing:—

(*a*) 6% aluminium, 2% niobium (columbium), 1% tantalum, 0·8% molybdenum and the balance titanium;

(*b*) 6% aluminium, 2% tin, 1·5% zirconium, 1% molybdenum, 0·35% bismuth, 0·1% silicon and the balance of titanium; or

(*c*) 7% aluminium, 4% molybdenum and the balance titanium, in crude or semi-fabricated forms or scrap; C

(3) Other compositions containing three or more of any alloying additives, other than oxygen, nitrogen, hydrogen or carbon, the total of which is more than 11% but less than 30%, in crude or semi-fabricated forms or scrap C

In this entry—

the alloying compositions are nominal and may be subject to slight variations.

GROUP 31

Chemicals, Metalloids and Petroleum Products.

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

(1) Boron element in any form; C

(2) Boron compounds and mixtures in which the boron—10 isotope comprises more than 20% of the total boron content; C

(3) Boron compounds, mixtures and composites containing 5% or more of boron, the following:—

(*a*) boron carbide with a boron content of 74% or more by weight and composites thereof; C

(*b*) boron nitride (hexagonal close-packed structure, white form) and composites thereof; other boron-nitrogen compounds; C

(*c*) boron hydrides, other than sodium boron hydride, potassium boron hydride, monoborane, diborane and triborane; C

(*d*) organoboron compounds (i.e. those containing boron atoms directly linked to carbon atoms); C

(*e*) borides with purities above 98·5% and having melting points of 2,000°C or higher and composites thereof C

Composite structures and laminates, including metal matrix composite materials, made from the materials defined in the entry relating to fibrous and filamentary materials in this Group by any of the following methods:—

(1) by using machines of which the motions for positioning, wrapping and winding of fibres are co-ordinated and programmed in three or more axes, specially designed to make such composite structures or laminates; or ... C

(2) by metal casting; or C

(3) by strengthening eutectic alloys in situ by directional solidification ... C

Compounds of tantalum and niobium (columbium), the following:—

(1) Tantalates and niobates having a purity of 98% or more; C

(2) Other compounds containing 20% or more of tantalum in which the niobium content with respect to tantalum is less than 1 part per thousand C

Fibrous and filamentary materials suitable for use in composite structures or laminates and manufactures thereof, as follows:—

(1) having both of the following characteristics:— C

(*a*) specific modulus greater than $1{\cdot}25 \times 10^8$;

(*b*) specific tensile strength greater than 3×10^6; or

(2) having both of the following characteristics:— C

(*a*) specific modulus greater than 1×10^8;

(*b*) melting or sublimation point higher than 1,649°C in an inert environment;

other than carbon fibres having a specific modulus of less than 2×10^8 and a specific tensile strength of less than 1×10^6.

In this entry—

"Specific modulus" is Young's modulus in g/cm² (measured at a temperature of 23°C±2°C and a relative humidity of 50%±5%) divided by density in g/cm³.

"Specific tensile strength" is ultimate tensile strength in g/cm² (measured at a temperature of 23°C±2°C and a relative humidity of 50%±5%) divided by density in g/cm³.

Fluorocarbon compounds and manufactures, the following:—

(1) Monomeric and polymeric materials, the following:—

(*a*) Polychlorotrifluoroethylene, oily and waxy modifications only; ... C

(*b*) Copolymers and terpolymers composed of any combination of the monomers tetrafluoroethylene, chlorotrifluoroethylene, vinylidene-fluoride, hexafluoropropylene and bromotrifluoroethylene other than copolymers of tetrafluoroethylene and hexafluoropropylene; ... C

(*c*) Polybromotrifluoroethylene; C

(*d*) Dibromotetrafluoroethane other than dibromotetrafluoroethane having a purity of 99·8% or less and containing at least 25 particles each 200 microns or larger per 100 ml; C

(*e*) Perfluoroalkylamines; C

(2) Greases, lubricants and dielectric, damping and flotation fluids made wholly of any of the materials listed in (1) of this entry C

Hydraulic fluids consisting wholly or mainly of petroleum (mineral) oils or synthetic hydrocarbon oils which have a pour point of —34°C or lower, a viscosity index of 75 or greater and are thermally stable at 343°C; C

Lubricating oils and greases, synthetic, which are or contain as their principal ingredient, the following:—

(1) monomeric and polymeric forms of perfluorotriazines, perfluoroaromatic esthers and esters, and perfluoroaliphatic ethers and esters; C

(2) polyphenyl ethers and thio ethers containing more than three groups of any of the following:—

(*a*) phenyl;

(*b*) alkyl phenyl;

(*c*) phenyl and alkyl phenyl; C

Monocrystalline compounds and metallic materials, the following:—

(1) Silicon wafers, including epitaxially-layered types, having the following characteristics:— C

(*a*) dislocation densities of 750 per cm² or less; and

(*b*) resistance of less than 70Ω per cm for N-type or less than 100Ω per cm for P-type;

(2) Gallium compounds, other than gallium phosphide, gallium arsenide, gallium arsenide phosphide and gallium nitride, having all of the following characteristics:— C

(*a*) diffusion processed wafers;

(*b*) selenium, tellurium, silicon, sulphur or zinc doped;

(*c*) dislocation density (EPD) greater than 10,000 per square centimetre;

(*d*) carrier concentration greater than 1×10^{16} per cubic centimetre; and

(*e*) carrier mobility less than 2,000 square centimetres per Volt second;

(3) Indium compounds; C

(4) Composites (hetero-epitaxial materials) consisting of a monocrystalline insulating substance epitaxially layered with silicon, compounds of gallium or compounds of indium C

Polymeric materials and manufactures thereof, the following:—

(1) Polyimides, other than the following forms:— C

Fully cured polyimide or polyimide-based film, sheet, tape or ribbon having a maximum thickness of 0·254 mm, whether or not coated or laminated with heat-sensitive or pressure-sensitive resinous substances of an adhesive nature, which contain no fibrous reinforcing materials, and which have not been coated or laminated with carbon, graphite, metals or magnetic substances;

(2) Polybenzimidazoles; C

(3) Polyimidazopyrrolones; C

(4) Aromatic polyamides, other than staples, fibres, filaments, yarns and threads, having a fibre modulus of 0·161 newtons per tex (250 grams-force per denier) or less and a tenacity of 0·00709 newtons per tex (11 grams-force per denier), or less, and textile or mat products thereof; C

(5) Polyparaxylylenes; C

(6) Polyphenylene sulphides; C

(7) Polyquinoxalines; C

(8) Polybenzothiazoles; C

(9) Polyoxadiazoles; C

(10) Polytriazoles; C

(11) Polythiazoles; C

(12) Polyphosphonitriles; C

(13) Polybenzimidazolphenanthrolines; C

(14) Polypyrazines; C

(15) Polyspiranes; C

(16) Polysilazanes; C

(17) Polyperfluorotriazines; C

(18) Polysilsequioxane ladders; C

(19) Polyparabenzoquinone ladders; C

(20) Polynapthaleneimidazoanthraquinone ladders; C

(21) Laminated or reinforced forms of any of the materials specified in sub-heads (1) to (20) of this entry; C

(22) Manufactures of one or more of the materials specified in sub-heads (1) to (20), not included in sub-head (21), where the value of the polymeric component together with that of any other components specified elsewhere in Schedule 1 is 50% or more of the total value of the materials used ... C

In this entry—

"tenacity" is the maximum specific tensile strength when tested to the point of rupture;

"fibre modulus" is the ratio of change in stress to change in strain between two points on the stress-strain curve, viz the point of zero stress and the point of breaking stress;

"denier" means the number of grams in 9,000 metres of material, usually fibre, filament, staple, thread, etc.; and

"tex" means the number of grams in 1,000 metres of material, usually yarn.

Silicone fluids and greases, the following:—

(1) Fluorinated silicone fluids; C

(2) Silicone lubricating greases capable of operating at 180°C or higher and having a drop point of 220°C or higher C

GROUP 3J

Synthetic Film and Synthetic Rubber

Synthetic film of a thickness not exceeding 0·0254 mm capable of being used as a dielectric in the manufacture of capacitive elements specified in the entry relating to components, inductive and capacitive in Group 3F, made from the following:—

(1) Polysulphone; C

(2) Polycarbonate of a kind used in the manufacture of capacitors which can operate, permanently, at temperatures exceeding 115°C; C

(3) Fluoro-carbon compounds as specified in the relevant entry in Group 3I C

Synthetic rubber, the following:—

(1) Alkyl polysulphide liquid polymers other than water dispersions; ... C

(2) Fluorinated silicone rubber and other fluorinated elastomeric material and such organic intermediates for their production as contain 10% or more of combined fluorine; C

(3) Polymeric products of butadiene, the following:—

(*a*) Carboxyl terminated polybutadiene, hydroxyl terminated polybutadiene, thiol terminated polybutadiene and cyclised 1,2-polybutadiene; C

(*b*) Mouldable copolymers of butadiene and acrylic acid; C

(*c*) Mouldable terpolymers of butadiene, acrylonitrile and acrylic acid or any of the homologues of acrylic acid; C

(4) Carboxyl terminated polyisoprene and polyisobutylene C

SCHEDULE 2

List of Countries mentioned in Article 2 (IV)

Antigua
Ashmore and Cartier Islands
Australia
Australian Antarctic Territory

Bahamas
Bangladesh
Barbados
Belize
Bermuda
Botswana
British Antarctic Territory
British Indian Ocean Territory
British Virgin Islands
Brunei

Canada
Cayman Islands
Christmas Island
Cocos (Keeling) Islands
Cook Islands
Coral Sea Islands Territory
Cyprus

Dominica

Falkland Islands and Dependencies (S Georgia and S Sandwich Group)
Fiji

The Gambia
Ghana
Gibraltar
Gilbert Islands
Grenada
Guyana

Heard Island and McDonald Islands
Hong Kong

India
Ireland, Republic of

Jamaica

Kenya

Lesotho

Malawi
Malaysia
Malta
Mauritius
Montserrat

Namibia (South West Africa)
Nauru
New Hebrides (Anglo/French Condominium)
New Zealand
Nigeria
Norfolk Island
Niue

Pakistan, Republic of
Papua New Guinea
Pitcairn Islands Group

Ross Dependency

St. Helena (with Ascension and Tristan da Cunha)
Seychelles
Sierra Leone
Sikkim
Singapore
Solomon Islands
South Africa, Republic of
Sri Lanka
St. Kitts-Nevis-Anguilla
St. Lucia
St. Vincent
Swaziland

Tanzania
Tokelau
Tonga
Trinidad and Tobago
Turks and Caicos Islands
Tuvalu

Uganda
United States of America

Western Samoa

Zambia

SCHEDULE 3

REVOCATIONS

The Export of Goods (Control) Order 1970 S.I. 1970/1288.

The Export of Goods (Control) Order 1970 (Amendment) Order 1970 S.I. 1970/2020.

The Export of Goods (Control) (Amendment) Order 1971 S.I. 1971/113.

The Export of Goods (Control) (Amendment No. 3) Order 1972 S.I. 1972/938.

The Export of Goods (Control) (Amendment No. 4) Order 1972 S.I. 1972/1536.

The Export of Goods (Control) (Amendment) Order 1973 S.I. 1973/106.

The Export of Goods (Control) (Amendment No. 3) Order 1973 S.I. 1973/1033.

The Export of Goods (Control) (Amendment No. 3) Order 1974 S.I. 1974/213.

The Export of Goods (Control) (Amendment No. 4) Order 1974 S.I. 1974/909.

The Export of Goods (Control) (Amendment No. 5) Order 1974 S.I. 1974/2189.

The Export of Goods (Control) (Amendment No. 6) Order 1974 S.I. 1974/2204.

The Export of Goods (Control) (Amendment) Order 1975 S.I. 1975/149.

The Export of Goods (Control) (Amendment) Order 1976 S.I. 1976/666.

The Export of Goods (Control) (Amendment) Order 1977 S.I. 1977/104.

The Export of Goods (Control) (Amendment No. 2) Order 1977 S.I. 1977/1190.

The Export of Goods (Control) (Amendment) Order 1978 S.I. 1978/271.

EXPLANATORY NOTE

(This Note is not part of the Order.)

This Order revokes and replaces the Export of Goods (Control) Order 1970, as amended.

Subject to certain exceptions set out in Article 3 including in particular goods licensed to be exported or permitted to be shipped as ships' stores any goods included in Schedule 1 to this Order are prohibited to be exported from the United Kingdom or shipped as ships' stores to the destinations referred to in Article 2. There are two Parts to Schedule 1. Part I contains miscellaneous classes of goods. Part II is divided into three groups. Group 1 contains classes of aircraft, arms and related materiel, ammunition, military stores and appliances and para-military police equipment. Group 2 contains classes of atomic energy minerals, materials and applicances. Group 3 contains classes of other strategic goods. In addition all goods in respect of which an international import certificate has been issued and which have been imported into the United Kingdom are prohibited to be exported or shipped as ships' stores. All goods are prohibited to be exported from the United Kingdom, or shipped as ships' stores to Southern Rhodesia.

Article 4 of the Order provides powers for the Commissioners of Customs and Excise to demand evidence of the destinations which goods have reached. Article 5 provides that the making of false statements or the furnishing of false documents or information for the purpose of obtaining any licence or permission under the order may amount to an offence and invalidates the licence or permission. Article 6 provides for the Commissioners to require a declaration as to the goods any person leaving the United Kingdom has with him and powers of search. The penalties for these offences have been revised.

The Schedule of goods subject to control has been re-arranged, and the detailed descriptions of goods have been varied from those in the 1970 Order (as amended), in a considerable number of cases. In some cases the scope of control is widened and in others it is relaxed.

SI 1978/796
ISBN 0-11-083796-7

