STATUTORY INSTRUMENTS

1967 No. 983

STRATEGIC GOODS

The Strategic Goods (Control) Order 1967

Made - - -	*28th June* 1967
Laid before Parliament	*5th July* 1967
Coming into Operation	*19th July* 1967

The Board of Trade in pursuance of the powers conferred upon them by sections 3(1) and 22(3) of the Emergency Laws (Re-enactments and Repeals) Act 1964(a), hereby order as follows:—

1. Subject to the provisions of Article 2 of this Order, a person in the United Kingdom, or a person who is ordinarily resident in the United Kingdom and who is a citizen of the United Kingdom and Colonies or a British protected person, shall not dispose of any goods of a description included in Schedule 1 hereto situated outside the United Kingdom to the government, any government agency or other authority of, or to any person in, any country or territory specified in Schedule 2 hereto, or, if he has reasonable cause to believe that those goods may be imported directly or indirectly into any such country or territory, to any person whatsoever.

2. Nothing in Article 1 shall be taken to prohibit the disposal of—

(*a*) any goods under the authority of a licence granted by the Board of Trade under this Article, provided that any conditions attached to the licence are complied with;

(*b*) any goods which are to be supplied directly to any ship as ships' stores for that ship or to any aircraft as stores for that aircraft;

(*c*) any aircraft turbine engine fuel which is to be supplied directly to any aircraft as fuel for that aircraft.

3. The Orders specified in Schedule 3 hereto are hereby revoked:

Provided that any licence granted under Article 2 of the Strategic Goods (Control) Order 1961(b), and in force immediately before the commencement of this Order shall have effect in like manner as if it had been granted under Article 2 of this Order.

4. In this Order—

" dispose of " means disposal whether inside or outside the United Kingdom and includes disposal of

(*a*) ownership or any proprietary interest, or

(*b*) the right to possession, or

(*c*) possession whether or not accompanied by any disposal of ownership or of any proprietary interest or of the right to possession,

but does not include disposal by a carrier (otherwise than by way of sale) in the course of his business as such;

(a) 1964 c. 60. (b) S.I. 1961/2242 (1961 III, p. 3919).

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 reference, with such amendments (if any) thereto as may have been made before the making of this Order;

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

any other terms the meaning of which in certain contexts is defined in Schedule 1 hereto have, when used in such a context, the meaning so ascribed to them.

5. This Order may be cited as the Strategic Goods (Control) Order 1967 and shall come into operation on 19th July 1967.

28th June 1967.

Brown,
Minister of State,
Board of Trade.

SCHEDULE 1

PART I

GROUP 1

Aircraft, Arms and Military Stores and Appliances

Aircraft and helicopters, of the piloted or pilotless types; aero-engines and aircraft or helicopter equipment; associated equipment and components.

Arms, missiles and munitions; components and parts specially designed therefor.

Articles (including vehicles) specially designed or adapted for military use, and all components and parts specially designed therefor.

Biological and chemical materials adapted for use in war to produce casualties in men or animals, or to damage crops; equipment specially designed and intended—

(1) for their dissemination, or

(2) for defence against them;

components and parts specially designed therefor.

Cables, electric, buoyant types, suitable for sweeping magnetic mines.

Cryogenic equipment, the following:—

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

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

(*b*) Ruggedised for mobile ground use;

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

(2) Electrical, magnetic or electronic equipment designed for operation at ambient temperatures below −130° Centigrade;

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

Environmental chambers capable of pressures of 26 torr or less, including those with a pressure capability only and those which also are capable of simulating other environments such as radiation and temperature, other than equipment fitted with industrial machinery not specified in Schedule 1 of this Order; and specially designed parts, controls and devices therefor.

Explosives, propellants and related substances, the following:—

(1) (*a*) Ammonium perchlorate.

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

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

(*d*) Guanidinium nitrate.

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

*asym*Dimethylhydrazine.

*sym*Dimethylhydrazine.

Hydrazine in concentrations of 70 per cent. or more.

Hydrazinium nitrate.

Hydrazinium perchlorates.

Methylhydrazine.

(*f*) Hydrogen peroxide in concentrations of 80 per cent. or more.

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

(*h*) Perfluoroguanidines.

(*i*) Picrates (in dry or wetted form).

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

*sym*Diethyldiphenylurea (centralite 1).

*sym*Dimethyldiphenylurea (centralite 2).

*asym*Diphenylurea.

Ethyldiphenylcarbamate.

Ethyl*asym*diphenylurea.

Ethyl di-*o*-tolycarbamate.

Ethyl N-ethylphenylcarbamate.

Methyl*asym*diphenylurea.

2-Nitrodiphenylamine.

N-Methyl-*p*-nitroaniline.

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

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

Ground and airborne equipment developed solely or of a kind used mainly for aircraft, other than types in normal civil use.

Instruments or devices capable of automatically measuring the speed of sound *in situ* in water and rated for differential sensitivity measurements in the proportion of 1 in 5,000 or higher and specialised parts therefor. Equipment containing such instruments or devices.

Machinery and machine tools and apparatus specially designed or adapted for the production, testing, research into and development of any of the items specified in this Group.

Pressurised breathing equipment and partial pressure suits for use in aircraft; anti-g suits; flak suits; parachutes of a kind used for combat personnel, cargo-dropping and aircraft deceleration; liquid oxygen converters of a kind used for aircraft and missiles; catapults and cartridge actuated devices of a kind utilised in emergency escape of personnel from aircraft.

Self-contained diving and underwater swimming apparatus, the following:—

(1) Closed and semi-closed circuit (rebreathing) apparatus.

(2) Specially designed components for use in the conversion of open-circuit apparatus to military use.

(3) Articles specially designed for military use with self-contained diving and underwater swimming apparatus.

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.

Vessels of war and propulsion machinery for such vessels; components, parts, accessories and attachments specially designed therefor.

GROUP 2

Atomic Energy Materials and Appliances

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

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

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.

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

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

Fissionable material, the following:—

Plutonium.

Uranium enriched in the isotope 235.

The isotope 233 of uranium.

Alloys, compounds and mixtures of any of the foregoing.

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

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

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

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

Machines, materials and equipment specially designed for use in the processing of irradiated nuclear materials in order to isolate or recover fissionable materials.

Mass spectrographs and mass spectrometers, the following:—

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

Single focus types possessing a radius of curvature of 5 inches or more;

and sub-assemblies, components and parts specially designed therefor.

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

Nuclear reactors and associated equipment, the following;—

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

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

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

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

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

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

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

Thorium and its compounds and mixtures containing such substances.

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

Uranium and its compounds and mixtures containing such substances.

Valves, 3 centimetres or greater in diameter, with bellows seal, wholly made of or lined with aluminium, nickel or alloy containing 60 per cent. or more of nickel, and with other than metal-to-metal seats.

GROUP 3

Electrical, Electronic and Scientific Appliances

Amplifiers or oscillator devices, the following:—

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

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

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

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

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

(6) Paramagnetic amplifiers.

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

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

In this entry—

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

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

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

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.

Capacitors, tantalum or niobium electrolytic, the following:—

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

Sintered electrolytic capacitors except those having a casing made of epoxy resin or sealed with epoxy resin.

Electrolytic capacitors constructed with foils.

Centrifugal testing apparatus possessing any of the following characteristics:—

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

capable of carrying a load of 250 pounds or more;

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

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

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

(2) equipment employing cells not specified in the entries relating to Photoelectric cells and Thermal detecting cells in Group 3 of this Order or flame detectors for industrial furnaces.

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

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

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

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

(*a*) Altimeters—

(i) pulse modulated,

(ii) frequency modulated having an electrical output accuracy better than ±3 feet over the whole range between 0 and 100 feet or ±3 per cent. above 100 feet,

(iii) frequency modulated using other than conventional techniques.

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

(*c*) Equipment utilising—

(i) the constant velocity, or

(ii) the rectilinear propagation characteristics

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

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

(*e*) Equipment pressurised throughout.

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

(3) Airborne radar equipment.

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

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

(*b*) Radar equipment having a peak output from the transmitter greater than 160 kilowatts.

(*c*) Radar equipment having an 80 per cent. or better cumulative probability of detection of a 20 square metre target at a free space range of 50 nautical miles on an aircraft having an equivalent echoing area of 20 square metres.

(*d*) Radar equipment utilising other than conventional pulse modulation with a constant pulse repetition frequency, in which the frequency of the transmitted signal is not changed deliberately between groups of pulses, from pulse to pulse or within a single pulse.

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

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

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

Radial closing velocity of the target 2,000 feet per second.

Probability of false alarm 10^{-6}.

Operating factor 3dB.

Fluctuation of the target in accordance with Rayleigh distribution.

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

(*a*) the constant velocity, or

(*b*) the rectilinear propagation characteristics

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

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

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

Communication transmission equipment, the following:—

(1) Terminal and intermediate repeater or amplifier equipment designed to deliver, carry or receive frequencies higher than 150 kilocycles per second into,

or in, a communication system, other than carrier communication terminals specially designed for power lines and operating at frequencies below 1,500 kilocycles per second.

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

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

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

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

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

Compasses and gyroscopic apparatus, the following:—

(1) Accelerometers with a threshold of 0·005g or less, or a linearity of less than 0·25 per cent. of output over the operating range, or both, which are designed for use in inertial navigation systems or in guidance systems.

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

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

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

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

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

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

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

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

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

(6) Gyros with a rated free directional drift rate of less than 0·5° per hour in a 1g environment.

(7) Gyro compasses which incorporate gyros specified in (6) above or which, when operated in a gyro compass mode, have a compass error, before compensation, due to gyroscopic drift of less than $\frac{1}{30}$ of a radian at 0° latitude.

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

(9) Specially designed parts and components, testing, calibration and alignment equipment for the equipment specified in sub-heads (1) to (7) inclusive.

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

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

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

Computers, electronic, and specialised components, parts, sub-assemblies and accessories therefor.

Control equipment, the following:—

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

(*a*) a rated electrical error of 10 minutes or less or of 0·25 per cent. or less of maximum output voltage;

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

(*c*) multi-speed from single-shaft types;

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

(*e*) types employing solid state Hall effect;

(*f*) types designed for gimbal mounting;

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

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

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

(*a*) Isolation types having a variation of gain constant (linearity of gain) of 0·2 per cent. or better.

(*b*) Summing types having a variation of gain constant (linearity of gain) or an accuracy of summation of 0·2 per cent. or better.

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

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

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

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

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

(*c*) types employing solid state Hall effect;

(*d*) types designed for gimbal mounting;

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

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

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

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

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

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

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

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

(*a*) Types designed to operate from power sources of more than 300 cycles per second (other than those designed to operate from power sources of over 300 cycles per second up to but not exceeding 400 cycles per second with a temperature range of from −25° Centigrade to 100° Centigrade).

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

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

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

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

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

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

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

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

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

or

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

(*c*) Types designed for gimbal mounting.

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

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

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

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

(9) Synchronous motors, the following:—

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

(*b*) Types in excess of size 11 (1·1 inches in diameter) but not exceeding size 30 (3·0 inches in diameter) having synchronous speeds in excess of 3,600 revolutions per minute.

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

(*d*) Types designed to operate below −25° Centigrade or above 100° Centigrade.

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

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

(*a*) Electrical-input types possessing—

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

or

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

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

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

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

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

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

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

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

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 and components therefor, and equipment containing such assemblies, sub-assemblies and components, other than—

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

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

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

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

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

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

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

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

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

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

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

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

Electromagnetic waveguides and components therefor, the following:—

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

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

(3) Pressurised waveguides and specialised components therefor.

(4) Electromagnetic waveguide components, the following:—

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

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

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

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

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

Electronic and precision instruments and apparatus, the following:—

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

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

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

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

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

(i) an amplifier bandwidth greater than 30 megacycles per second;

(ii) a time base shorter than 30 nanoseconds per centimetre, including calibrated magnified sweep factor;

(iii) employing accelerating potentials in excess of 10 kilovolts;

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

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

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

(vii) ruggedised to meet a military specification;

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

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

(x) a rise time of less than 12 nanoseconds;

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

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

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

(C) the unit does not utilise an accelerating potential greater than 12 kilovolts.

(*b*) Specialised parts and accessories, the following:—

Oscilloscope plug-in units and external amplifiers and pre-amplifiers which have a bandwidth greater than that specified in (*a*)(i) above or a quality factor better than that specified in proviso (A) above.

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

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

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

(1) Cathode-ray tubes—

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

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

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

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

(2) Image intensifier tubes, image converter tubes and specialised parts, including fibre optic plates specially designed optically therefor; electronic storage tubes including memory transformers of radar pictures and ruggedised vidicon-type tubes but excluding other television camera tubes and X-ray intensifier tubes.

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

(4) Hydrogen thyratron tubes, the following:—

(*a*) rated for a peak pulse power of 2 megawatts or more;

(*b*) of metal-ceramic construction.

(5) Valves, the following:—

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

(*b*) constructed with beryllium oxide ceramic;

and specialised parts therefor.

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

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

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

(9) Valves, the following:—

(*a*) Klystrons, travelling wave tubes and magnetrons, other than fixed frequency pulsed magnetrons designed to operate at frequencies in the range of 9·3 to 9·5 kilomegacycles per second with a maximum peak output power not greater than 25 kilowatts.

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

and specialised parts therefor.

(10) Valves—

(*a*) rated for CW operation over the frequency range of 300 to 1,000 megacycles per second and for which (at any part of this frequency range and

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

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

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

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

and specialised parts therefor.

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

(12) Cold cathode 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:—

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

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

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

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

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

Electronic equipment and components, the following:—

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

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

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

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

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

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

Magnetometers of the following types:—

(1) Fluxgate.

(2) Electron beam sensing.

(3) Paramagnetic.

(4) Nucleonic.

(5) Hall effect.

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

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

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

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

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

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

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

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

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

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

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

(5) Thin film memory storage or switching devices.

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

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

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

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

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

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

(2) designed for use at frequencies in excess of 1,000 megacylces per second;

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

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

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

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

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

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

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

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

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

Photographic apparatus, the following:—

(1) High speed cinematograph recording cameras employing—

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

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

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

(3) Microflash apparatus capable of giving a flash of 5 microseconds or shorter duration at a minimum recurrence frequency of 200 flashes per second.

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

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

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

Photomultiplier tubes, the following:—

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

(2) having an anode pulse rise time of less than 2 nanoseconds.

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

Quartz crystals and assemblies thereof in any stage of fabrication (worked, semi-finished or mounted), the following:—

(1) for use as filters—

(*a*) specially designed crystals; or

(*b*) assemblies of crystals;

(2) for use as oscillators—

(*a*) designed for operation over a temperature range wider than 70° Centigrade;

(*b*) designed for a frequency stability of plus or minus 0·0003 per cent. or better over the rated temperature range;

(*c*) mounted in glass holders;

(*d*) mounted in metal holders sealed with thermocompression welding; or

(*e*) capable when mounted of being passed through a circular hole with a diameter of 0·42 inch.

Radio receivers, panoramic, being receivers which search automatically a part of the radio-frequency spectrum and indicate the signals received, and specialised parts therefor, except ancillary equipment for commercial receivers with which the frequency spectrum searched does not exceed ± 20 per cent. of the intermediate frequency of the receiver or ± 2 megacycles per second.

Radio relay communications equipment and specialised components and sub-assemblies therefor, designed for use as follows:—

(1) at frequencies in excess of 300 megacycles per second but not exceeding 470 megacycles per second and having any of the following characteristics:—

(*a*) a power output exceeding 5 watts; or

(*b*) a signal bandwidth at the input to the modulator exceeding 150 kilocycles per second; or

(*c*) for other than fixed service;

(2) at frequencies exceeding 470 megacycles per second.

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

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

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

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

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

Radio transmitters and components, the following:—

(1) Transmitters or transmitter amplifiers designed to operate at output frequencies greater than 235 megacycles per second, other than—

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

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

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

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

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

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

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

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

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

(3) Components and sub-assemblies, including but not limited to intermediate frequency and power amplifiers and their parts, modulators and modulation amplifiers, aerial filters, aerials and their connecting devices, control equipment placed in racks and maintenance equipment specially designed for use in the transmitters specified in heads (1) and (2) above.

Recording or reproducing equipment, the following:—

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

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

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

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

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

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

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

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

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

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

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

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

(i) for use at input frequencies greater than 300 megacycles per second, or

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

(3) (*a*) Power diodes in which the rated maximum recurrent reverse voltage exceeds 1,000 volts per junction at 25° Centigrade under any conditions of cooling, other than those in which the rated forward current per junction under continuous operation exceeds 200 amperes and the rated maximum recurrent reverse voltage does not exceed 1,300 volts per junction.

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

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

(4) Tunnel diodes.

In this entry the maximum recurrent reverse voltage is the maximum value of the periodic overvoltage impressed across the cell or rectifying element in the reverse direction including circuit effects such as commutation but does not include random transient overvoltage.

Semi-conductor Hall field probes, specially designed components, parts, sub-assemblies and test equipment (including adaptors and couplers) therefor, the following:—

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

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

(3) Types with an open circuit sensitivity greater than $\frac{0{\cdot}12 \text{ Volt}}{\text{Amperes} \times \text{Kilogauss.}}$

In this entry—

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

Telegraph apparatus, the following:—

(1) Apparatus designed for the transmission or reception of messages at a speed

exceeding 500 words per minute or 375 bauds, whichever is the less, other than—telemetering, telecommand and telesignalling equipment, including data transmission equipment, designed for industrial purposes but not designed for the transmission of written or printed text.

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

(3) Specialised parts and accessories for such apparatus.

Thermal detecting cells, the following:—

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

Thermoelectric materials and devices, the following:—

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

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

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

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

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

In this entry—

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

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

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

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

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

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

(*a*) an average f_T of 40 to 240 megacycles per second and designed to have a maximum collector dissipation greater than 150 milliwatts;

(*b*) an average f_T greater than 240 megacycles per second.

(4) Any type using silicon as the bulk semi-conductor material and having any of the following characteristics:—

(*a*) an average f_T of up to 500 kilocycles per second and designed to have a maximum collector dissipation greater than 5 watts;

(*b*) an average f_T from above 500 kilocycles per second to 3 megacycles per second and designed to have a maximum collector dissipation greater than 500 milliwatts;

(*c*) an average f_T from above 3 megacycles per second to 20 megacycles per second and designed to have a maximum collector dissipation greater than 250 milliwatts;

(*d*) an average f_T greater than 20 megacycles per second;

(*e*) majority carrier devices, including but not limited to field effect transistors and metal oxide semi-conductor transistors;

(*f*) a modulus of the current gain in the common emitter configuration of 10 or more for collector currents of 100 microamperes or less.

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

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

In this entry—

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

" f_T " means the product of the modulus of the small signal current gain in the common emitter connection (h_{fe}) and the frequency at which it is measured, provided the modulus of h_{fe} is substantially less than the low frequency value. 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 f_1 (the frequency at which the modulus of h_{fe} is equal to 1) is quoted instead of f_T, f_T may be regarded as equal to f_1; and

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

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

GROUP 4

Chemicals

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

Beryllium compounds.

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

(1) Boron trifluaoride and its complexes.

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

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

(*a*) Boric oxides, acids, acid esters, inorganic borates and perborates.

(*b*) Boron trichloride and its complexes.

(*c*) Fluoroboric acids and fluoroborates.

(*d*) Enamel and glass-making compositions or mixtures.

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

Chlorine trifluoride.

Dichlorotetrafluoroethane.

Diethylenetriamine of a purity of 96 per cent. or higher.

Fluorine.

Gallium compounds, monocrystalline.

Hafnium compounds containing more than 15 per cent. of hafnium.

Indium compounds, monocrystalline.

Lithium compounds and mixtures, the following:—

(1) Compounds containing lithium enriched in the lithium-6 isotope and mixtures containing one or more such compounds.

(2) Hydrides, in which lithium is compounded with hydrogen or hydrogen isotopes or complexed with any other metal or metals or aluminium hydride.

Niobium compounds containing 20 per cent. or more niobium.

Primary explosives and priming compositions, the following:—

(1) (*a*) Diazodinitrophenol.

(*b*) Lead azide.

(*c*) Lead thiocyanate.

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

(*e*) Mercury fulminate.

(*f*) Tetrazene.

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

(3) Sodium azide.

Tantalum compounds containing 20 per cent. or more tantalum.

Trichlorotrifluoroethane.

Zirconium compounds in which the ratio of hafnium content to zirconium content is less than one part to 500 parts by weight, other than zirconium oxide thermally stabilised with calcium oxide or magnesium oxide or both.

GROUP 5

Minerals and Metals

In this Group—

" raw materials " means ores, concentrates, matte, regulus, residues and dross (ashes), from which the metal described in the entry can be extracted;

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

" semi-fabricated forms " means the following (whether or not coated, plated, drilled or punched):—

(1) wrought or worked materials, fabricated by rolling, drawing, extruding, forging, impact extruding, pressing, graining, atomising and grinding, the following:—

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, pipes and tubes (including tube rounds, squares and hollows) and drawn or extruded wire; or

(2) cast material produced by casting in dies, sand, metal, plaster or other types types of moulds, including high pressure castings, sintered forms and forms made by powder metallurgy.

Beryllium, the following:—

Ores (other than gem grade beryl) and concentrates.

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

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

Boron, the following:—

Boron and alloys containing 10 per cent. or more of boron, in crude or semi-fabricated forms.

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

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

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

Hafnium and alloys containing more than 15 per cent, of hafnium, in crude or semi-fabricated forms, or scrap.

Iron and steel, the following:—

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

(1) (*a*) armour plate

(*b*) precipitation hardening steels containing 4 per cent. or more of nickel; or

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

(*a*) 10 per cent. or more of molybdenum;

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

(*c*) 1·5 per cent. or more of niobium or tantalum or both;

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

in crude or semi-fabricated forms.

Lithium, the following:—

Lithium and alloys containing 50 per cent. or more of lithium in crude or semi-fabricated forms.

Lithium alloys and mixtures containing lithium enriched in the lithium-6 isotope.

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

(1) 0·4 per cent. or more of zirconium;

(2) 1·5 per cent. or more of thorium;

(3) 1·0 per cent. or more of rare earth metals (cerium mischmetall);

(4) 10 per cent. or more of lithium;

in crude or semi-fabricated forms, or scrap.

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 70,000 (using C.G.S. units) or 0·0875 (using Henry-metre units) or more;

(*b*) remanence 98·5 per cent. or over of maximum flux for materials having magnetic permeability;

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

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

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

Monazite and monazite sands.

Ores containing thorium including uranothorianite.

Ores containing uranium including pitchblende.

Molybdenum, the following:—

Molybdenum and alloys containing 90 per cent. or more of molybdenum, in crude or semi-fabricated forms, other than ferro-molybdenum, molybdenum metal wire or molybdenum alloy wire.

Molybdenum pipes and tubing, platinum clad.

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

Niobium and alloys containing 50 per cent. or more of niobium or 60 per cent. or more of niobium-tantalum in combination, other than ferro-niobium or ferro-niobium-tantalum, in crude or semi-fabricated forms, or scrap.

Silicon, the following:—

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

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

(*c*) monocrystalline.

Tantalum and alloys containing 60 per cent. or more of tantalum or 60 per cent. or more of tantalum-niobium in combination, other than ferro-tantalum or ferro-tantalum-niobium, in crude or semi-fabricated forms, or scrap.

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

Titanium and alloys containing 70 per cent. or more of titanium, other than ferro-titanium, in crude or semi-fabricated forms, or scrap.

Tungsten and alloys containing 50 per cent. or more of tungsten, in crude or semi-fabricated forms,

other than—

(*a*) ferro-tungsten;

(*b*) tungsten carbide;

(*c*) tungsten powder;

(*d*) crude or semi-fabricated pressed-sintered forms weighing less than 20 pounds or forms made therefrom except sheet with a width of 12 inches or more;

(*e*) wire made from pressed-sintered tungsten.

Uranium, the following:—

(1) Ferro-uranium, whether briquetted or not.

(2) Uranium and alloys containing any percentage of uranium, in crude or semi-fabricated forms.

Zirconium, in which the ratio of hafnium content to zirconium content is less than one to 500 parts by weight, the following:—

(1) Ferro-zirconium, whether briquetted or not.

(2) Zirconium and alloys containing more than 50 per cent. of zirconium in crude or semi-fabricated forms.

(3) Manufactures wholly of zirconium or of alloys containing more than 50 per cent. of zirconium.

GROUP 6

Engineering products

Ball or roller bearings, and parts thereof, the following:—

(1) Ball or cylindrical roller bearings (other than separable (magneto type) ball bearings, needle roller bearings and ball thrust bearings) manufactured to

tolerances specified in Part II of this Schedule or closer, and possessing one or both of the following characteristics:—

(*a*) made of any material other than:—

(i) low carbon steel containing not more than 0·4 per cent. 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 type En 31 as specified in British Standard 970: 1955 (wrought steels), or equivalent types normally used in the manufacture of ball or roller bearings;

(iii) nickel-molybdenum steel type En 34 as specified in British Standard 970: 1955 (wrought steels), or equivalent types normally used in the manufacture of ball or roller bearings;

(*b*) processed by heat treatment for the purpose of stabilising them for use at normal operation temperatures over 150° Centigrade.

(2) Parts of ball or roller bearings, the following:—

Outer rings, inner rings, retainers, balls, rollers and sub-assemblies usable only for bearings described in head (1) of this entry.

Cables, the following:—

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

(*a*) Tetrafluoroethylene and polytetrafluoroethylene.

(*b*) Chlorotrifluoroethylene and polychlorotrifluoroethylene.

(*c*) Polyvinylidenefluoride.

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

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

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

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

(*h*) Polybromotrifluoroethylene.

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

(*j*) Dibromotetrafluoroethane.

(2) Co-axial cable having any of the following features:—

(*a*) using a mineral insulator dielectric;

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

(*c*) designed for gas pressurisation for the purpose of withstanding external overpressure and for raising the maximum voltage rating of the cable;

(*d*) designed for submarine use.

(3) Submarine communication cable containing more than one pair of conductors.

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° Centigrade, the following:—

(*a*) with a multi-laminar type insulation under vacuum;

(*b*) with other insulating systems, having a liquid capacity of 250 gallons or more, specially designed for use with liquid fluorine or for liquefied gases boiling below −200° Centigrade and having an evaporation loss rate of less than 3 per cent. per day as determined at an ambient temperature of 24° Centigrade in the shade;

(*c*) with other insulating systems designed only for liquid oxygen, nitrogen or argon, the following:—

(i) fixed storage tanks having a capacity of 500 tons or more; or

(ii) mobile equipment having a capacity of over 1,200 gallons and an

evaporation loss rate of less than 1·5 per cent. per day as determined at an ambient temperature of 24° Centigrade in the shade.

(2) Gas liquefying equipment, the following:—

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

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

(*c*) Liquid fluorine producing equipment.

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

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

(ii) capable of producing more than 20 litres of liquid helium per hour.

(3) Plant and equipment specially designed for production or concentration of deuterium oxide.

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

Electron beam equipment, the following:—

(1) Welding and machining equipment, and specialised parts therefor.

(2) Equipment for the deposition of thin film, the coating of thin film, or the working of both of these, and specialised parts therefor.

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

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

(2) Skull type vacuum arc furnaces.

(3) Electron beam vacuum furnaces.

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

(5) Vacuum induction furnaces designed to operate at temperatures higher than 1,650° Centigrade, other than furnaces with a workpiece space of not more than 13,000 cubic centimetres and designed to operate at temperatures not higher than 1,900° Centigrade, and furnaces with a workpiece space of not more than 3,200 cubic centimetres with no single dimension (length, width, height or diameter) of that space in excess of 10 inches and designed to operate at temperatures not higher than 2,300° Centigrade.

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

other than—

(*a*) furnaces for heat treatment (i) up to 12 inches × 12 inches × 12 inches designed for temperatures not higher than 2,300° Centigrade; (ii) up to 600 cubic centimetres designed for temperatures not higher than 2,700° Centigrade,

(*b*) melting furnaces up to 3,200 cubic centimetres designed for temperatures not higher than 2,300° Centigrade.

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

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

(1) Equipment for the manufacture of electronic valves (including components and sub-assemblies therefor), the following:—

(*a*) Machines and apparatus specially designed for the manufacture of electronic valves specified in Group 3.

(*b*) Machines and apparatus for the automatic or semi-automatic assembly of electronic valves, other than standard equipment and apparatus designed for exhaust sealing and gettering of standard entertainment-type 7-pin miniature and 9-pin Noval valves.

(*c*) Automatic or semi-automatic testing or sorting or testing and sorting equipment for use with machines and apparatus mentioned in sub-heads (*a*) and (*b*).

(2) Machines and apparatus for the manufacture of semi-conductor devices, assemblies and sub-assemblies specified under electronic equipment and components in Group 3 (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 3 and any types of silicon transistors.

(*b*) Equipment for one or more of the following operations:—Slicing, dicing, scribing, slice breaking, probing, testing, sorting.

(*c*) Bonders and welders.

(*d*) Masks.

(*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.

(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:—

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

(*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.

(5) Specialised controls, parts and accessories for equipment mentioned in sub-heads (1), (2), (3) and (4).

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

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

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

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

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

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

(1) Machines of the kind capable of making the cables detailed in sub-heads (1) and (3) of the heading in this Group relating to cables.

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

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

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

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

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

Machines and apparatus specially designed for the extrusion of polytetrafluoroethylene coagulated dispersions, powders and pastes derived therefrom, and specialised components therefor.

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

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

(*a*) Compressor case boring machines.

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

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

(*d*) Rotor grinding machines.

(2) Machines for milling aircraft skin.

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

Machines, measuring or gauging, the following:—

Numerical control servo-driven measuring or gauging machines specially designed for measuring at any point of the contour the dimensional shape and contour characteristics of two-dimensional or three-dimensional objects, including objects of revolution.

Machines, metal working, the following:—

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

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

(i) capable of accepting gear blanks of 36 inches work diameter and over; or

(ii) capable of accepting gear blanks of 9 inches work diameter and over for the production of helical or herringbone gears.

(*b*) Machines designed for the production of gears having a diametrical pitch finer than 48 and meeting a quality standard better than Admiralty Class II.

(2) Grinding machines, the following:—

Internal grinding machines (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.

(3) Machines designed for or equipped with numerical control systems specially designed for controlling co-ordinated simultaneous contouring and continuous path machining movements in two or more axes.

(4) Presses, the following:—

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

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

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

(*d*) Isostatic press systems, the following:—

(i) capable of achieving a maximum working pressure of 20,000 pounds per square inch or greater and possessing a chamber cavity with an inside diameter in excess of 16 inches; or

(ii) capable of achieving a maximum working pressure of 5,000 pounds per square inch or greater, and having a controlled thermal environment within the closed cavity, except those possessing a chamber cavity with an inside diameter of less than 5 inches and which are also capable of achieving and maintaining a controlled thermal environment only between 80° Centigrade and −35° Centigrade.

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

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

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

Numerical control systems specially designed for controlling co-ordinated simultaneous contouring and continuous path machining movements in a machine tool in two or more axes.

Grinding heads and spindle assemblies for internal grinding machines (other than hand-held drills) designed or rated for operation at speeds in excess of 120,000 revolutions per minute.

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

Pipe valves, cocks and pressure regulators, either—

(1) designed to operate at temperatures—

(*a*) below −170° Centigrade if more than 2 inch diameter; or

(*b*) below −200° Centigrade if of 2 inch diameter or less; or

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

(*a*) metals and alloys containing—

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

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

(*b*) polytetrafluoroethylene or polychlorotrifluoroethylene.

Plasma arc equipment, the following:—

(1) Electric arc devices generating a flow of ionised gas in which the arc column is constricted, except devices wherein the flow of gas is for isolation purposes only and devices of less than 80 kilowatts for cutting, welding, plating or metal spraying.

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

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

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

Pumps, the following:—

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

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

(*b*) designed to operate—

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

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

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

(i) metals and alloys containing—

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

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

(ii) polytetrafluoroethylene or polychlorotrifluoroethylene.

(2) Vacuum pumps, the following:— .

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

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

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

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

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

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

(1) Sheet and strip mills—

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

(*b*) more than 3-high.

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

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

GROUP 7

Transport Equipment

Mechanically propelled vehicles, tractors and lift trucks, possessing or built to current military specifications differing materially from normal civilian specifications.

GROUP 8

Miscellaneous

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

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

(*b*) having a modulus of elasticity greater than 11×10^6 pounds per square inch;

(*c*) having a tensile strength to density ratio of tensile strength $\times \frac{2{\cdot}55}{\text{specific gravity}}$ greater than 350,000 pounds per square inch.

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

Fluoro carbon compounds, the following:—

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

(*a*) Tetrafluoroethylene and polytetrafluoroethylene.

(*b*) Chlorotrifluoroethylene and polychlorotrifluoroethylene.

(*c*) Polyvinylidenefluoride.

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

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

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

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

(*h*) Polybromotrifluoroethylene.

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

(*j*) Dibromotetrafluoroethane.

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

(*a*) manufactures wholly thereof;

(*b*) mixtures thereof; solutions thereof;

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

Fuels for aircraft engines, the following:—

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

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

Hydraulic fluids, the following:—

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

(*b*) Consisting wholly or mainly of petroleum (mineral) oils which have a pour point of −34° Centigrade or lower, a viscosity index of 75 or greater and are thermally stable at 371° Centigrade.

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

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

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

(3) fluoro-alcohol esters and perfluoroalkyl ethers; or

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

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

Polymeric materials and manufacturers thereof, the following:—

(*a*) Polyimides.

(*b*) Polybenzimidazoles.

(*c*) Polyimidazopyrrolones.

(*d*) Aromatic polyamides.

(*e*) Polyparaxylylenes.

(*f*) Laminated or reinforced forms of any of the materials specified in sub-heads (*a*) to (*e*).

(*g*) Manufactures of one or more of the materials specified in sub-heads (*a*) to (*e*), not included in sub-head (*f*), where the value of the polymeric component together with that of any other components specified elsewhere in Schedule I of this Order is 50 per cent. or more of the total value of the materials used.

Polymeric products of butadiene, the following:—

(*a*) Carboxyl terminated polybutadiene, hydroxyl terminated polybutadiene and cyclised 1,2-polybutadiene.

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

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

Silicone fluids and greases, the following:—

(*a*) Chlorinated or fluorinated silicone fluids.

(*b*) Lubricating greases capable of operating at 180° Centigrade or higher and having a drop point of 220° Centigrade or higher.

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

(1) Polyester film of a thickness not exceeding 0·001 inch, but not including polyester untensilised and unmetallised film of a thickness of 0·00035 inch or more.

(2) Other film of a thickness not exceeding 0·0015 inch.

PART II

Ball and roller bearings: tolerances for bore and outside diameter, eccentricity, parallelism of races and wobble (parallelism of track to faces) referred to in Group 6 of Part I of this Schedule.

1. INNER RING

Bore sizes

Inch type / Metric type	Over 0 including 0·4 in. / Over 0 including 10 mm.	Over 0·4 including 2 in. / Over 10 including 50 mm.	Over 2 including 3 in. / Over 50 including 80 mm.	Over 3 including 5 in. / Over 80 including 120 mm.	Over 5 including 7 in. / Over 120 including 180 mm.	Over 7 including 10 in. / Over 180 including 250 mm.	Over 10 in. / Over 250 mm.
Total bore tolerance (inches)	·0002	·00015	·0002	·00025	·0003	·0004	·0004
Eccentricity (inches)	·0002	·00015	·00015	·0002	·0003	·0003	·0004
Parallelism of races (inches) ...	·0002	·0001	·00015	·00015	·0002	·0002	·0003
Wobble or parallelism of track to faces (inches)	·0003	·00015	·00015	·0002	·0003	·0003	·0004

2. OUTER RING

Outside Diameter Sizes

Inch type. / Metric type	For bore up to and incl. 0·04 in.	For bores over 0·4 in.						
	Over 0 incl. 2 in. / Over 0 incl. 50 mm.	Over 0 incl. 3 in. / Over 0 incl. 80 mm.	Over 3 incl. 5 in. / Over 80 incl. 120 mm.	Over 5 incl. 7 in. / Over 120 incl. 180 mm.	Over 7 incl. 10 in. / Over 180 incl. 250 mm.	Over 10 incl. 12 in. / Over 250 incl. 315 mm.	Over 12 incl. 16 in. / Over 315 incl. 400 mm.	Over 16 in. / Over 400 mm.
Total outside diameter tolerance (inches) ...	·0002	·0002	·0003	·0004	·0004	·0005	·0005	·0006
Eccentricity (inches)	·0002	·0002	·0002	·0003	·0004	·0004	·0005	·0006
Parallelism of races (inches)	·0002	·0001	·0002	·0002	·0003	·0003	·0003	·0004
Wobble or parallelism of track to faces (inches)	·0003	·0002	·0002	·0003	·0004	·0004	·0005	·0006

SCHEDULE 2

Albania.

Bulgaria.

China.

Czecho-Slovakia.

Hungary.

North Korea.

North Viet Nam, that is, all that part of Viet Nam north of a line running from the mouth of the Song Ben Hat River along the course thereof to the village of Bo Ho Su and thence due west to the frontier of Laos.

Poland.

Roumania.

Soviet Zone of Germany.

Tibet.

Union of Soviet Socialist Republics.

SCHEDULE 3

ORDERS REVOKED

The Strategic Goods (Control) Order, 1961 (S.I. 1961/2242; 1961 III, p. 3919).

The Strategic Goods (Control) (Amendment) Order 1963 (S.I. 1963/640; 1963 I, p. 802).

EXPLANATORY NOTE

(This Note is not part of the Order.)

1. This Order revokes and replaces the Strategic Goods (Control) Order 1961 and the amendment thereto.

2. It prohibits the disposal of the goods specified in Schedule 1 and situated outside the United Kingdom—

(*a*) to the Government of, any authority of, or any person in, any country or territory specified in Schedule 2, or

(*b*) to any person whatsoever, if the person disposing of the goods has reasonable cause to believe that the goods will be imported into any such country or territory.

3. It effects the following changes:—

(*a*) Control is removed from electric generators, flame detectors for industrial furnaces, unworked quartz crystals, cobalt, gallium metal, alloys and amalgams, nickel alloys and nickel wire, niobium raw materials, ferro-niobium, ferro-niobium-tantalum, tantalum raw materials, ferro-tantalum, ferro-tantalum-niobium, compressors and blowers, counter current solvent extractors, equipment for processing silicon or germanium, plants for the production of titanium metal and of zirconium.

(*b*) Control is imposed on specified machines and controls for processing irradiated nuclear materials, neutron generator tubes, Hall effect magnetometers, high speed photographic apparatus, photomultiplier tubes, transistors, triggered spark gaps, electron beam equipment, vacuum furnaces, machines for the working of synthetic dielectric film, machines for the extrusion of polytetrafluoro-ethylene, numerical control measur-

ing and gauging systems and machines equipped with such systems, vacuum pumps, continuous yarns, artificial graphite, petroleum hydraulic fluids, polymeric materials and polymeric products of butadiene.

(*c*) The descriptions of goods to which control applies have been amended in the case of nuclear reactors, radiation monitoring equipment, electrolytic cells, apparatus for detecting objects under water, sintered electrolytic capacitors, communication, navigation, direction finding and radar equipment, communication transmission equipment, compasses and gyroscopic apparatus, cypher machines, electronic control equipment, electronic tubes and valves, pulse modulators, cathode ray oscilloscopes, measuring, calibrating, counting and time interval measuring apparatus, panoramic radio receivers, radio relay communications equipment, radio transmitters, telegraph apparatus, power diodes, boron, boron compounds and mixtures, diethylenetriamine, lithium and lithium compounds, tantalum compounds, iron and steel alloys, magnetic materials, silicon, titanium, tungsten wire, cables, containers for liquid gases, gas liquefying equipment, machines for the manufacture and testing of electronic devices, machines for making telecommunications cables, gear grinding machines, presses, plasma arc equipment, pipe valves, fluorocarbons, polyester film and silicone fluid.