

SCHEDULES

[F1]SCHEDULE 2E

Regulation 21

Quantum computing and advanced materials goods and technology PART 1

Textual Amendments

- F1** Sch. 2E inserted (14.4.2022 at 5.00 p.m.) by The Russia (Sanctions) (EU Exit) (Amendment) (No. 8) Regulations 2022 (S.I. 2022/452), reg. 1(2), Sch. Pt. 1

Interpretation

1.—(1) Terms printed in quotation marks and not defined or interpreted in this Schedule have the meaning given to them in—

- (a) Schedules 2 and 3 to the Export Control Order 2008, or
- (b) Annex I of the Dual-Use Regulation,

as applicable.

(2) For the purposes of this Schedule, the interpretative notes in Part 2 apply.

PART 2

Quantum computing and advanced materials goods

2. Equipment, “electronic assemblies” and components, specially designed for “quantum computers”, quantum electronics, quantum sensors, quantum processing units, qubit circuits, qubit devices or quantum radar systems.

Note 1: “Quantum computers” perform computations that harness the collective properties of quantum states, such as superposition, interference and entanglement.

Note 2: Units, circuits and devices include but are not limited to superconducting circuits, quantum annealing, ion trap, photonic interaction, silicon/spin and cold atoms.

3. “Cryogenic refrigeration systems” designed to maintain temperatures below 1.1 kelvin for 48 hours or more and related cryogenic refrigeration equipment and components as follows:

- (a) pulse tubes;
- (b) cryostats;
- (c) dewars;
- (d) gas handling systems (GHS);
- (e) compressors;
- (f) control units.

Changes to legislation: There are currently no known outstanding effects for the The Russia (Sanctions) (EU Exit) Regulations 2019, SCHEDULE 2E. (See end of Document for details)

Note: “Cryogenic refrigeration systems” include but are not limited to dilution refrigeration, a diabatic demagnisation refrigerators and laser cooling systems.

4. Ultra-High vacuum (“UHV”) equipment as follows—
 - (a) UHV pumps (sublimation, turbomolecular, diffusion, cryogenic, ion-getter);
 - (b) UHV pressure gauges.

Note: UHV means 100 nanoPascals (nPa) or lower

5. High quantum efficiency (“QE”) photodetectors and sources with a QE greater than 80% in the wavelength range exceeding [^{F2}400] nanometers but not exceeding [^{F3}1,600] nanometers.

Textual Amendments

- F2** Words in Sch. 2E para. 5 substituted (29.10.2022) by The Russia (Sanctions) (EU Exit) (Amendment) (No. 15) Regulations 2022 (S.I. 2022/1110), regs. 1(2)(b), **11(6)(a)**
- F3** Words in Sch. 2E para. 5 substituted (29.10.2022) by The Russia (Sanctions) (EU Exit) (Amendment) (No. 15) Regulations 2022 (S.I. 2022/1110), regs. 1(2)(b), **11(6)(b)**

6. Manufacturing equipment as follows—
 - (a) additive manufacturing equipment for the production of metal parts;
 - (b) additive manufacturing equipment for “energetic materials”, including equipment using ultrasonic extrusion;
 - (c) vat photopolymerisation additive manufacturing equipment using stereo lithography (SLA) or direct light processing (DLP);
 - [machines for additive manufacturing by plastics or rubber deposit;
 - ^{F4}(d) machines for additive manufacturing by plaster, cement, ceramics or glass deposit;
 - (e) machines for additive manufacturing by plaster, cement, ceramics or glass deposit;
 - (f) parts of machines for additive manufacturing].

Note: Paragraph 6(a) only applies to the following systems—

- (i) powder-bed systems using selective laser melting (SLM), laser cladding, direct metal laser sintering (DMLS) or electron beam melting (^{F5}ELM), or
- (ii) powder-fed systems using laser cladding, direct energy deposition or laser metal deposition.

Textual Amendments

- F4** Sch. 2E para. 6(d)-(f) inserted (21.4.2023) by The Russia (Sanctions) (EU Exit) (Amendment) Regulations 2023 (S.I. 2023/440), regs. 1(2), **14(2)(a)**
- F5** Word in Sch. 2E para. 6 substituted (21.4.2023) by The Russia (Sanctions) (EU Exit) (Amendment) Regulations 2023 (S.I. 2023/440), regs. 1(2), **14(2)(b)**

7. Metal powders and metal alloy powders specially designed for the additive manufacturing equipment specified in paragraph 6(a).

8. Microscopes, related equipment and detectors, as follows—
 - (a) scanning electron microscopes (SEM);
 - (b) scanning auger microscopes;
 - (c) transmission electron microscopes (TEM);

- (d) atomic force microscopes (AFM);
 - (e) scanning force microscopes (SFM);
 - (f) equipment and detectors specially designed for use with the microscopes specified in subparagraphs (a) to (e), employing any of the following—
 - (i) X-ray photo spectroscopy (XPS);
 - (ii) energy-dispersive X-ray spectroscopy (EDX, EDS);
 - (iii) electron back scatter detector (EBSD) systems;
 - (iv) electron spectroscopy for chemical analysis (ESCA).
9. “Decapsulation” equipment for semiconductor devices.

Note: “Decapsulation” means the removal of a cap, lid, or encapsulating material from a packaged integrated circuit by mechanical, thermal, or chemical methods.

Textual Amendments

- F2** Words in Sch. 2E para. 5 substituted (29.10.2022) by [The Russia \(Sanctions\) \(EU Exit\) \(Amendment\) \(No. 15\) Regulations 2022 \(S.I. 2022/1110\)](#), regs. 1(2)(b), **11(6)(a)**
- F3** Words in Sch. 2E para. 5 substituted (29.10.2022) by [The Russia \(Sanctions\) \(EU Exit\) \(Amendment\) \(No. 15\) Regulations 2022 \(S.I. 2022/1110\)](#), regs. 1(2)(b), **11(6)(b)**
- F4** Sch. 2E para. 6(d)-(f) inserted (21.4.2023) by [The Russia \(Sanctions\) \(EU Exit\) \(Amendment\) Regulations 2023 \(S.I. 2023/440\)](#), regs. 1(2), **14(2)(a)**
- F5** Word in Sch. 2E para. 6 substituted (21.4.2023) by [The Russia \(Sanctions\) \(EU Exit\) \(Amendment\) Regulations 2023 \(S.I. 2023/440\)](#), regs. 1(2), **14(2)(b)**

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10. “Software” specially designed or modified for the “development”, “production” or “use” of the systems, equipment and components specified in paragraphs 2 to 9.

11. “Software” for digital twins (DT) of additive manufactured products or for the determination of the reliability of additive manufactured products.

12. “Technology” “required” for the “development”, “production” or “use” of the systems, equipment, components and software specified in paragraphs 2 to 11.]

Changes to legislation:

There are currently no known outstanding effects for the The Russia (Sanctions) (EU Exit) Regulations 2019, SCHEDULE 2E.