# Council Regulation (EC) No 423/2007 of 19 April 2007 concerning restrictive measures against Iran (repealed)

## COUNCIL REGULATION (EC) No 423/2007

## of 19 April 2007

## concerning restrictive measures against Iran (repealed)

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Articles 60 and 301 thereof,

Having regard to Council Common Position 2007/140/CFSP of 27 February 2007 concerning restrictive measures against Iran[(1)],

Having regard to the proposal from the Commission,

Whereas:

(1) On 23 December 2006, the United Nations Security Council adopted Resolution 1737 (2006) (UNSCR 1737 (2006)) deciding that Iran should without further delay suspend all enrichment-related and reprocessing activities, as well as work on all heavy water-related projects, and take certain steps required by the International Atomic Energy Agency (IAEA) Board of Governors, which the United Nations Security Council deems essential to build confidence in the exclusively peaceful purpose of Iran's nuclear programme. In order to persuade Iran to comply with this mandatory decision, the United Nations Security Council decided that all Member States of the United Nations should apply a number of restrictive measures.

(2) In line with UNSCR 1737 (2006), Common Position 2007/140/CFSP provides for certain restrictive measures against Iran. These measures include restrictions on exports and imports of goods and technology which could contribute to Iran's enrichment-related, reprocessing, or heavy water-related activities, or to the development of nuclear weapon delivery systems, a ban on the provision of related services, a ban on investment related to such goods and technology, a ban on procurement of relevant goods and technology from Iran, as well as the freezing of funds and economic resources of persons, entities and bodies engaged in, directly associated with or providing support for such activities or development.

(3) These measures fall within the scope of the Treaty establishing the European Community and, therefore, notably with a view to ensuring their uniform application by economic operators in all Member States, Community legislation is necessary in order to implement them as far as the Community is concerned.

(4) This Regulation derogates from existing Community legislation that provides for general rules on exports to, and imports from, third countries, and in particular from Council Regulation (EC) No 1334/2000 of 22 June 2000 setting up a Community regime

for the control of exports of dual-use items and technology[(2)], in so far as this Regulation covers the same goods and technology.

(5) For reasons of expediency, the Commission should be empowered to publish the list of banned goods and technology and any amendments to it that will be adopted by the Sanctions Committee or the United Nations Security Council, and to amend the lists of persons, entities and bodies whose funds and economic resources should be frozen on the basis of decisions reached by the United Nations Security Council or by the Sanctions Committee.

(6) As regards the procedure for establishing and amending the list referred to in Article 7(2) of this Regulation, the Council should exercise the corresponding implementing powers itself in view of the objectives of UNSCR 1737 (2006), notably to constrain Iran's development of sensitive technologies in support of its nuclear and missile programmes, and the proliferation-sensitive nature of the activities undertaken by the persons and entities supporting these programmes.

(7) Member States should determine the penalties applicable to infringements of the provisions of this Regulation. The penalties provided for should be proportionate, effective and dissuasive.

(8) In order to ensure that the measures provided for in this Regulation are effective, the latter should enter into force on the day of its publication,

HAS ADOPTED THIS REGULATION:

*Article 1*

For the purposes of this Regulation only, the following definitions shall apply:

(a) ‘Sanctions Committee’ means the Committee of the United Nations Security Council which was established pursuant to paragraph 18 of UNSCR 1737 (2006);

(b) ‘technical assistance’ means any technical support related to repairs, development, manufacture, assembly, testing, maintenance, or any other technical service, and may take forms such as instruction, advice, training, transmission of working knowledge or skills or consulting services; including verbal forms of assistance;

(c) the term ‘goods’ includes items, materials and equipment;

(d) the term ‘technology’ includes software;

(e) ‘investment’ means acquisition or extension of a participation in enterprises, including the acquisition in full of such enterprises and the acquisition of shares and securities of a participating nature;

(f) ‘brokering services’ means activities of persons, entities and partnerships acting as intermediaries by buying, selling or arranging the transfer of goods and technology, or negotiating or arranging transactions that involve the transfer of goods or technology;

(g) ‘funds’ means financial assets and benefits of every kind, including but not limited to:

  (i) cash, cheques, claims on money, drafts, money orders and other payment instruments;

(ii) deposits with financial institutions or other entities, balances on accounts, debts and debt obligations;

(iii) publicly- and privately-traded securities and debt instruments, including stocks and shares, certificates representing securities, bonds, notes, warrants, debentures and derivatives contracts;

(iv) interest, dividends or other income on or value accruing from or generated by assets;

(v) credit, right of set-off, guarantees, performance bonds or other financial commitments;

(vi) letters of credit, bills of lading, bills of sale; and

(vii) documents showing evidence of an interest in funds or financial resources;

(h) 'freezing of funds' means preventing any moving, transfer, alteration, use of, access to, or dealing with funds in any way that would result in any change in their volume, amount, location, ownership, possession, character, destination or other change that would enable the funds to be used, including portfolio management;

(i) 'economic resources' means assets of every kind, whether tangible or intangible, movable or immovable, which are not funds but which may be used to obtain funds, goods or services;

(j) 'freezing of economic resources' means preventing the use of economic resources to obtain funds, goods or services in any way, including, but not limited to, by selling, hiring or mortgaging them;

(k) 'territory of the Community' means the territories of the Member States to which the Treaty is applicable, under the conditions laid down in the Treaty, including their airspace**[**F1;**]**

(l) **[**F2'contract or transaction' means any transaction of whatever form and whatever the applicable law, whether comprising one or more contracts or similar obligations made between the same or different parties; for this purpose 'contract' includes a bond, guarantee or indemnity, particularly a financial guarantee or financial indemnity, and credit, whether legally independent or not, as well as any related provision arising under, or in connection with, the transaction;

(m) 'claim' means any claim for indemnity or any other claim of this type, such as a claim for compensation or a claim under a guarantee, notably any claim for extension or payment of a bond, guarantee or indemnity, particularly a financial guarantee or financial indemnity, of whatever form;

(n) 'person, entity or body in Iran' means:

(i) the State of Iran or any public authority thereof;

(ii) any natural person in, or resident in, Iran;

(iii) any legal person, entity or body having its registered office in Iran;

(iv) any legal person, entity or body controlled directly or indirectly by one or more of the above mentioned persons or bodies.**]**

**Textual Amendments**

**F1** Substituted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

**F2** Inserted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 2*

**[**F3 1.**]** It shall be prohibited:

a to sell, supply, transfer or export, directly or indirectly, the following goods and technology, whether or not originating in the Community, to any natural or legal person, entity or body in, or for use in, Iran:

(i) all goods and technology contained in the Nuclear Suppliers Group and Missile Technology Control Regime lists. These goods and technology are listed in Annex I;

(ii) other goods and technology determined by the Sanctions Committee or the United Nations Security Council as goods and technology which could contribute to Iran's enrichment-related, reprocessing, or heavy water-related activities, or to the development of nuclear weapon delivery systems. These goods and technology are also listed in Annex I;

(iii) **[**F2 certain other goods and technology that could contribute to enrichment-related, reprocessing or heavy-water-related activities, to the development of nuclear weapon delivery systems, or to the pursuit of activities related to other topics about which the IAEA has expressed concerns or identified as outstanding. These goods and technology are listed in Annex IA;**]**

b to participate, knowingly and intentionally, in activities the object or effect of which is to circumvent the prohibition referred to in point (a).

**[**F3 2 Annex I shall not include goods and technology included in the Common Military List of the European Union(3).**]**

**Textual Amendments**

**F2** Inserted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

**F3** Inserted by Council Regulation (EC) No 618/2007 of 5 June 2007 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 3*

1 A prior authorisation shall be required for the sale, supply, transfer or export, directly or indirectly, of the goods and technology listed in Annex II, whether or not originating in the Community, to any natural or legal person, entity or body in, or for use in, Iran.

**[**F4 1a For all exports for which an authorisation is required under this Regulation, such authorisation shall be granted by the competent authorities of the Member State where the exporter is established and shall be in accordance with the detailed rules laid down in Article 11 of Regulation (EC) No 428/2009 of 5 May 2009 setting up a Community regime for the control

of exports, transfer, brokering and transit of dual-use items[4]. The authorisation shall be valid throughout the Union.**]**

2 Annex II shall include any goods and technology other than those included in Annex I, which could contribute to enrichment-related, reprocessing or heavy water-related activities, to the development of nuclear weapon delivery systems, or to the pursuit of activities related to other topics about which the International Atomic Energy Agency (IAEA) has expressed concerns or identified as outstanding.

3 Exporters shall supply the competent authorities with all relevant information required for their application for an export authorisation.

4 The competent authorities of the Member States, as indicated in the websites listed in Annex III, shall not grant any authorisation for any sale, supply, transfer or export of the goods or technology included in Annex II, if they determine that the sale, supply, transfer or export thereof would contribute to one of the following activities:

a Iran's enrichment-related, reprocessing or heavy water-related activities;

b the development of nuclear weapon delivery systems by Iran; or

c the pursuit by Iran of activities related to other topics about which the IAEA has expressed concerns or identified as outstanding.

5 Under the conditions set out in paragraph 4, the competent authorities of the Member States, as indicated in the websites listed in Annex III, may annul, suspend, modify or revoke an export authorisation which they have already granted.

6 Where they refuse to grant an authorisation, or annul, suspend, substantially limit or revoke an authorisation in accordance with paragraph 4, the Member States shall notify the other Member States and the Commission thereof and share the relevant information with them, while complying with the provisions concerning the confidentiality of such information of Council Regulation (EC) No 515/97 of 13 March 1997 on mutual assistance between the administrative authorities of the Member States and cooperation between the latter and the Commission to ensure the correct application of the law on customs and agricultural matters[5].

7 Before a Member State grants an export authorisation which has been denied by another Member State or States, in accordance with paragraph 4, for an essentially identical transaction and for which the denial is still valid, it will first consult the Member State or States which issued the denial as provided for in paragraphs 5 and 6. If, following such consultations, the Member State concerned decides to grant an authorisation, it shall inform the other Member States and the Commission thereof, providing all relevant information to explain the decision.

**Textual Amendments**

**F4** Substituted by Council Regulation (EU) No 1228/2009 of 15 December 2009 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 4*

**[**[F1]It shall be prohibited to purchase, import or transport the goods and technology listed in Annexes I and IA from Iran, whether the item concerned originates in Iran or not.**]**

**Textual Amendments**

**F1** Substituted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*[F2 Article 4a*

In order to prevent the transfer of goods and technology that are listed in Annexes I and IA, cargo aircraft and merchant vessels owned or operated by Iran Air Cargo and Islamic Republic of Iran Shipping Line shall be required to submit pre-arrival or pre-departure information, for all goods brought into or out of the Community, to the competent customs authorities of the Member State concerned.

The rules governing the obligation to provide pre-arrival and pre-departure information, in particular time limits to be respected and data to be required, shall be as laid down in the applicable provisions concerning entry and exit summary declarations as well as customs declarations in Regulation (EC) No 648/2005 of the European Parliament and of the Council of 13 April 2005 amending Council Regulation (EEC) No 2913/92 establishing the Community Customs Code[6] and in Commission Regulation (EC) No 1875/2006 of 18 December 2006 amending Regulation (EEC) No 2454/93 laying down provisions for the implementation of Regulation (EEC) No 2913/92[7].

In addition, Iran Air Cargo and Islamic Republic of Iran Shipping Line and or their representatives shall declare whether the goods are covered by Regulation (EC) No 1334/2000 or by this Regulation and, if their export is subject to authorisation, specify the particulars of the export licence granted.

[F5 Until 31 December 2010, the entry and exit summary declarations and the required additional elements referred to in this Article may be submitted in written form using commercial, port or transport information, provided that they contain the necessary particulars.

As from 1 January 2011, the required additional elements referred to in this Article shall be submitted either in written form or using the entry and exit summary declarations as appropriate.]]

**Textual Amendments**

**F2** Inserted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

**F5** Substituted by Council Regulation (EC) No 680/2009 of 27 July 2009 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 5*

[F1 1 It shall be prohibited:

a to provide, directly or indirectly, technical assistance related to the goods and technology listed in the Common Military List of the European Union, or related to the provision, manufacture, maintenance and use of goods included in that list, to any natural or legal person, entity or body in, or for use in, Iran;

b to provide, directly or indirectly, technical assistance or brokering services related to the goods and technology listed in Annexed I and IA, or related to the provision,

manufacture, maintenance and use of goods listed in Annexes I and IA, to any natural or legal person, entity or body in, or for use in, Iran;

c to provide investment to enterprises in Iran engaged in the manufacture of goods and technology listed in the Common Military List of the European Union or in Annexes I and IA;

d to provide, directly or indirectly, financing or financial assistance related to the goods and technology listed in the Common Military List of the European Union or in Annexes I and IA, including in particular grants, loans and export credit insurance, for any sale, supply, transfer or export of such items, or for any provision of related technical assistance to any natural or legal person, entity or body in, or for use in, Iran;

e to participate, knowingly and intentionally, in activities, the object or effect of which is to circumvent the prohibitions referred to in points (a) to (d).**]**

2 The provision of:

a technical assistance, or brokering services related to, goods and technology listed in Annex II and to the provision, manufacture, maintenance and use of these items, directly or indirectly to any person, entity or body in, or for use in Iran;

b investment to enterprises in Iran engaged in the manufacture of goods and technology as listed in Annex II;

c financing or financial assistance related to goods and technologies referred to in Annex II, including in particular grants, loans and export credit insurance, for any sale, supply, transfer or export of these items, or for any provision of related technical assistance, directly or indirectly, to any person, entity or body in, or for use in Iran;

shall be subject to an authorisation of the competent authority of the Member State concerned.

3 The competent authorities of the Member States, as indicated in the websites listed in Annex III, shall not grant any authorisation for the transactions referred to in paragraph 2, if they determine that the action were to contribute to one of the following activities:

a Iran's enrichment-related, reprocessing or heavy water-related activities;

b the development of nuclear weapon delivery systems by Iran; or

c the pursuit by Iran of activities related to other topics about which the IAEA has expressed concerns or identified as outstanding.

**Textual Amendments**

**F1** Substituted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 6*

The competent authorities of the Member States, as indicated in the websites listed in Annex III, may grant, under such terms and conditions as they deem appropriate, an authorisation for a transaction in relation to goods and technology, assistance, investment or brokering services referred to in Articles 2 or 5(1), where the Sanctions Committee has determined in advance and on a case-by-case basis that the transaction would clearly contribute neither to the development of technologies in support of Iran's proliferation sensitive nuclear activities, nor to the development of nuclear weapon development delivery systems, including where such goods and technology, assistance, investment or brokering services are for food, agricultural, medical or other humanitarian purposes, provided that:

(a) the contract for delivery of the goods or technology, or for the provision of assistance, includes appropriate end-user guarantees, and

(b) Iran has undertaken not to use the goods or technology concerned, or if applicable, the assistance concerned, in proliferation sensitive nuclear activities or for development of nuclear weapon delivery systems.

*Article 7*

**[**F1 1 All funds and economic resources belonging to, owned, held or controlled by the persons, entities and bodies listed in Annex IV shall be frozen. Annex IV shall include the persons, entities and bodies designated by the United Nations Security Council or by the Sanctions Committee in accordance with paragraph 12 of United Nations Security Council Resolution 1737 (2006) and paragraph 7 of United Nations Security Council Resolution 1803 (2008).**]**

2 All funds and economic resources belonging to, owned, held or controlled by the persons, entities and bodies listed in Annex V shall be frozen. Annex V shall include natural and legal persons, entities and bodies, not covered by Annex IV, who, in accordance with Article 5(1)(b) of Common Position 2007/140/CFSP, have been identified as:

a being engaged in, directly associated with, or providing support for, Iran's proliferation-sensitive nuclear activities, or

b being engaged in, directly associated with, or providing support for, Iran's development of nuclear weapon delivery systems, or

c acting on behalf of or at the direction of a person, entity or body referred to under (a) or (b), or

d being a legal person, entity or body owned or controlled by a person, entity or body referred to under (a) or (b), including through illicit means.

3 No funds or economic resources shall be made available, directly or indirectly, to or for the benefit of the natural or legal persons, entities or bodies listed in Annexes IV and V.

4 The participation, knowingly and intentionally, in activities the object or effect of which is, directly or indirectly, to circumvent the measures referred to in paragraphs 1, 2 and 3 shall be prohibited.

**Textual Amendments**

**F1** Substituted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 8*

By way of derogation from Article 7, the competent authorities of the Member States, as indicated in the websites listed in Annex III, may authorise the release of certain frozen funds or economic resources, if the following conditions are met:

(a) **[**F6 the funds or economic resources are the subject of a judicial, administrative or arbitral lien established before the date on which the person, entity or body referred to in Article 7 has been designated by the Sanctions Committee, the Security Council or by the Council or of a judicial, administrative or arbitral judgment rendered prior to that date;**]**

(b) the funds or economic resources will be used exclusively to satisfy claims secured by such a lien or recognised as valid in such a judgment, within the limits set by applicable laws and regulations governing the rights of persons having such claims;

(c) the lien or judgment is not for the benefit of a person, entity or body listed in Annex IV or V;

(d) recognising that the lien or judgment is not contrary to public policy in the Member State concerned; and

(e) if Article 7(1) applies, the Sanctions Committee has been notified by the Member State of the lien or judgment.

**Textual Amendments**

**F6** Substituted by Council Regulation (EC) No 618/2007 of 5 June 2007 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 9*

By way of derogation from Article 7 and provided payment by a person, entity or body listed in Annex IV or V is due under a contract, agreement or obligation that was concluded by, or arose for the person, entity or body concerned, before the date on which that person, entity or body has been designated by the Sanctions Committee, the Security Council or by the Council, the competent authorities of the Member States, as indicated in the websites listed in Annex III, may authorise, under such conditions as they deem appropriate, the release of certain frozen funds or economic resources, if the following conditions are met:

(a) the competent authority concerned has determined that:

(i) the funds or economic resources shall be used for a payment by a person, entity or body listed in Annex IV or V;

(ii) the contract, agreement or obligation will not contribute to the manufacture, sale, purchase, transfer, export, import, transport or use of goods and technology listed in Annexes I and II; and

(iii) the payment is not in breach of Article 7(3);

(b) if Article 7(1) applies, the Member State concerned has notified the Sanctions Committee of that determination and its intention to grant an authorisation, and the Sanctions Committee has not objected to that course of action within ten working days of notification; and

(c) if Article 7(2) applies, the Member State concerned has notified that determination of its competent authority and its intention to grant an authorisation to the other Member States and to the Commission at least two weeks prior to the authorisation.

*Article 10*

1 By way of derogation from Article 7, the competent authorities of the Member States, as indicated in the websites listed in Annex III, may authorise, under such conditions as they deem appropriate, the release of certain frozen funds or economic resources, or the making available of certain funds or economic resources, if the following conditions are met:

a the competent authority concerned has determined that the funds or economic resources are:

(i) necessary to satisfy the basic needs of persons listed in Annex IV or V, and their dependent family members, including payments for foodstuffs, rent or mortgage, medicines and medical treatment, taxes, insurance premiums, and public utility charges;

(ii) intended exclusively for payment of reasonable professional fees and reimbursement of incurred expenses associated with the provision of legal services; or

(iii) intended exclusively for payment of fees or service charges for routine holding or maintenance of frozen funds or economic resources; and

b if the authorisation concerns a person, entity or body listed in Annex IV, the Member State concerned has notified the Sanctions Committee of that determination and its intention to grant an authorisation, and the Sanctions Committee has not objected to that course of action within five working days of notification.

2 By way of derogation from Article 7, the competent authorities of the Member States, as indicated in the websites listed in Annex III, may authorise the release of certain frozen funds or economic resources or the making available of certain funds or economic resources, after having determined that the funds or economic resources are necessary for extraordinary expenses, provided that

a if the authorisation concerns a person, entity or body listed in Annex IV, the Sanctions Committee has been notified of this determination by the Member State concerned and that the determination has been approved by that Committee, and

b if the authorisation concerns a person, entity or body listed in Annex V, the competent authority has notified the grounds on which it considers that a specific authorisation should be granted to the other competent authorities of the Member States and to the Commission at least two weeks before the authorisation.

3 The relevant Member State shall inform the other Member States and the Commission of any authorisation granted under paragraphs 1 and 2.

*Article 11*

1 Article 7(3) shall not prevent financial or credit institutions in the Community from crediting frozen accounts where they receive funds transferred by third parties to the account of a listed natural or legal person, entity or body, provided that any additions to such accounts will also be frozen. The financial or credit institution shall inform the competent authorities about such transactions without delay.

2 Article 7(3) shall not apply to the addition to frozen accounts of:

a interest or other earnings on those accounts; or

**[**[F6]b payments due under contracts, agreements or obligations that were concluded or arose before the date on which the person, entity or body referred to in Article 7 has been designated by the Sanctions Committee, the Security Council or by the Council;**]**

provided that any such interest, other earnings and payments are frozen in accordance with Article 7(1) or 7(2).

**Textual Amendments**

**F6** Substituted by Council Regulation (EC) No 618/2007 of 5 June 2007 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*[F2 Article 11a*

1 Credit and financial institutions which come within the scope of Article 18 shall, in their activities with credit and financial institutions referred to in paragraph 2, and in order to prevent such activities contributing to proliferation-sensitive nuclear activities or to the development of nuclear weapon delivery systems:

a exercise continuous vigilance over account activity, particularly through their programmes on customer due diligence and under their obligations relating to money laundering and financing of terrorism;

b require that in payment instructions all information fields which relate to the originator and beneficiary of the transaction in question be completed and if that information is not supplied, refuse the transaction;

c maintain all records of transactions for a period of five years and make them available to national authorities on request;

d if they suspect or have reasonable grounds to suspect that funds are related to proliferation financing, promptly report their suspicions to the financial intelligence unit (FIU) or to another competent authority designated by the Member State concerned, as indicated on the websites listed in Annex III, without prejudice to Articles 5 and 7. The FIU or such other competent authority will serve as a national centre for receiving and analysing suspicious transaction reports regarding potential proliferation financing. The FIU or such other competent authority shall have access, directly or indirectly, on a timely basis to the financial, administrative and law enforcement information that it requires to properly undertake this function, including the analysis of suspicious transaction reports.

2 The measures set out in paragraph 1 shall apply to credit and financial institutions in their activities with:

a credit and financial institutions domiciled in Iran, in particular with Bank Saderat;

b branches and subsidiaries, where they come within the scope of Article 18, of credit and financial institutions domiciled in Iran, as listed in Annex VI;

c branches and subsidiaries, where they do not come within the scope of Article 18, of credit and financial institutions domiciled in Iran, as listed in Annex VI;

d credit and financial institutions that are neither domiciled in Iran nor come within the scope of Article 18 but are controlled by persons and entities domiciled in Iran, as listed in Annex VI.

**Textual Amendments**

**F2** Inserted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 11b*

1 Bank Saderat branches and subsidiaries that come within the scope of Article 18 shall notify the competent authority of the Member State where they are established, as indicated on the websites listed in Annex III, of all transfers of funds carried out or received by them,

the names of the parties, the amount and the date of the transaction, within five working days after carrying out or receiving the transfer of funds concerned. If the information is available, the notification must specify the nature of the transaction and, where appropriate, the nature of the goods covered by the transaction and must, in particular, state whether the goods are covered by Regulation (EC) No 1334/2000 or by this Regulation and, if their export is subject to authorisation, indicate the number of the licence granted.

2 Subject to, and in accordance with, the information-sharing arrangements, the other notified competent authorities shall without delay transmit these data, as necessary, in order to prevent any transaction that could contribute to proliferation-sensitive nuclear activities or to the development of nuclear weapons delivery systems, to the competent authorities of other Member States where the counterparts to such transactions are established.**]**

**Textual Amendments**

**F2** Inserted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 12*

1 The freezing of funds and economic resources or the refusal to make funds or economic resources available, carried out in good faith on the basis that such action is in accordance with this Regulation, shall not give rise to liability of any kind on the part of the natural or legal person or entity or body implementing it, or its directors or employees, unless it is proved that the funds and economic resources were frozen or withheld as a result of negligence.

**[**[F1]2 The prohibitions set out in Article 5(1)(d) and Article 7(3) shall not give rise to liability of any kind on the part of the natural or legal persons or entities concerned, if they did not know, and had no reasonable cause to suspect, that their actions would infringe these prohibitions.**]**

**[**[F2]3 The disclosure in good faith, as provided for in Articles 11a and 11b, by an institution or by a person covered by this Regulation or an employee or director of such an institution, of the information referred to in Articles 11a and 11b shall not involve the institution or person or its directors or employees in liability of any kind.**]**

**Textual Amendments**

**F1** Substituted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

**F2** Inserted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

***[**[F2]Article 12a***

1 No claim for indemnity or any other claim of this type, such as a claim for compensation or a claim under a guarantee, notably a claim for extension or payment of a bond, guarantee or indemnity, particularly a financial guarantee or financial indemnity, of whatever form, made by:

a designated persons, entities or bodies listed in Annexes IV, V and VI;

b any other person, entity or body in Iran, including the Iranian government;

c any person, entity or body acting through or on behalf of one of these persons or entities

in connection with any contract or transaction the performance of which would have been affected, directly or indirectly, wholly or in part, by the measures imposed by this Regulation shall be satisfied.

2 The performance of a contract or transaction shall be regarded as having been affected by the measures imposed by this Regulation where the existence or content of the claim results directly or indirectly from those measures.

3 In any proceedings for the enforcement of a claim, the onus of proving that satisfying the claim is not prohibited by paragraph 1 shall be on the person seeking the enforcement of that claim.**]**

**Textual Amendments**

**F2** Inserted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 13*

1 Without prejudice to the applicable rules concerning reporting, confidentiality and professional secrecy, natural and legal persons, entities and bodies shall:

a supply immediately any information which would facilitate compliance with this Regulation, such as accounts and amounts frozen in accordance with Article 7, to the competent authorities of the Member States, as indicated in the websites listed in Annex III, where they are resident or located, and shall transmit such information, directly or through the Member States, to the Commission;

b cooperate with the competent authorities, as indicated in the websites listed in Annex III, in any verification of this information.

2 Any additional information directly received by the Commission shall be made available to the Member State concerned.

3 Any information provided or received in accordance with this Article shall be used only for the purposes for which it was provided or received.

*Article 14*

The Commission and Member States shall immediately inform each other of the measures taken under this Regulation and shall supply each other with any other relevant information at their disposal in connection with this Regulation, in particular information in respect of violations and enforcement problems and judgments handed down by national courts.

*Article 15*

**[**[F4]1 The Commission shall:

a amend Annex I on the basis of determinations made by either the United Nations Security Council or the Sanctions Committee;

b amend Annex IA and Annex II on the basis of information supplied by Member States;

c amend Annex III on the basis of information supplied by Member States;

d amend Annex IV on the basis of determinations made by either the United Nations Security Council or the Sanctions Committee;

e amend Annex VI on the basis of decisions taken in respect of Annexes III and IV to Council Common Position 2007/140/CFSP.**]**

2 The Council, acting by qualified majority, shall establish, review and amend the list of persons, entities and bodies referred to in Article 7(2) and in full accordance with the determinations made by the Council in respect of Annex II to Common Position 2007/140/CFSP. The list in Annex V shall be reviewed in regular intervals and at least every 12 months.

3 The Council shall state individual and specific reasons for decisions taken pursuant to paragraph 2 and make them known to the persons, entities and bodies concerned.

**Textual Amendments**

**F4** Substituted by Council Regulation (EU) No 1228/2009 of 15 December 2009 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

*Article 16*

1 Member States shall lay down the rules on penalties applicable to infringements of this Regulation and shall take all measures necessary to ensure that they are implemented. The penalties provided for shall be effective, proportionate and dissuasive.

2 Member States shall notify the Commission of those rules without delay after the entry into force of this Regulation and shall notify it of any subsequent amendment.

*Article 17*

1 Member States shall designate the competent authorities referred to in this Regulation and identify them in or through the websites as listed in Annex III.

2 Member States shall notify the Commission of their competent authorities without delay after the entry into force of this Regulation and shall notify it of any subsequent amendment.

*Article 18*

This Regulation shall apply:

(a) within the territory of the Community;

(b) on board any aircraft or any vessel under the jurisdiction of a Member State;

(c) to any person inside or outside the territory of the Community who is a national of a Member State;

(d) to any legal person, entity or body which is incorporated or constituted under the law of a Member State;

(e) to any legal person, entity or body in respect of any business done in whole or in part within the Community.

*Article 19*

This Regulation shall enter into force on the day of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

# [F7ANNEX I

## Goods and technology referred to in Articles 2, 4 and 5(1)

**Textual Amendments**

**F7** Substituted by Commission Regulation (EC) No 116/2008 of 28 January 2008 amending Council Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

INTRODUCTORY NOTES

Where possible, the items in this Annex are defined by reference to the list of dual-use items set out in Annex I to Council Regulation (EC) No 1334/2000, as amended by Council Regulation (EC) No 1183/2007[8].

The descriptions of the items in this Annex are often, but not always, identical or similar to descriptions of the items set out in the list of dual-use items. Each description is based as much as possible on that of the first dual-use item referred to. Where there are differences between the two descriptions, the description of the goods or technology found in this Annex shall be decisive. For the sake of clarity, an asterisk indicates that a description is based on the description of the dual-use item referred to, but contains different values for the technical parameters used or omits or adds specific elements.

If only part of the scope of the dual-use item referred to is covered by an entry in this Annex, the reference number taken from the list of dual-use items is preceded by '*ex*'.

For the definitions of terms between 'double quotation marks' please refer to Regulation (EC) No 1183/2007.

This Annex does not include goods and technology (including software) included in the Common Military List of the European Union[9]. In accordance with Article 1(1)(c) of Common Position 2007/140/CFSP[10], the Member States of the European Union will prohibit the direct or indirect supply, sale or transfer of such goods and technology to Iran.

General Notes

1. For control or prohibition of goods which are designed or modified for military use, see the relevant list(s) of controls or prohibitions on military goods maintained by individual Member States. References in this Annex that state 'See also Military Goods Controls' refer to the same lists.

2. The object of the prohibitions contained in this Annex should not be defeated by the export of any non-prohibited goods (including plant) containing one or more prohibited components when the prohibited component or components are the principal element of the goods and can feasibly be removed or used for other purposes.

*N.B.: In judging whether the prohibited component or components are to be considered the principal element, it is necessary to weigh the factors of quantity, value and technological know-how involved and other special circumstances which might establish the prohibited component or components as the principal element of the goods being procured.*

3. Goods specified in this Annex include both new and used goods.

Nuclear Technology Note (NTN)

(To be read in conjunction with Section I.0.B.)

The sale, supply, transfer or export of 'technology' directly associated with any goods whose sale, supply, transfer or export is prohibited in Section I.0.A is prohibited according to the provisions of Category I.0.

'Technology' for the 'development', 'production' or 'use' of goods under prohibition remains under prohibition even when applicable to non-prohibited goods.

The approval of goods for export granted in accordance with Article 6 of Regulation (EC) No 423/2007, also authorizes the export to the same end-user of the minimum 'technology' required for the installation, operation, maintenance and repair of the goods.

Prohibitions on 'technology' transfer do not apply to information 'in the public domain' or to 'basic scientific research'.
General Technology Note (GTN)

(To be read in conjunction with Sections I.1B, I.2B, I.3B, I.4B, I.5B, I.6B, I.7B and I.9B.)

The sale, supply, transfer or export of 'technology' which is 'required' for the 'development', 'production' or 'use' of goods whose sale, supply, transfer or export is prohibited in Categories I.1 to I.9, is prohibited according to the provisions of Categories I.1 to I.9.

'Technology' 'required' for the 'development', 'production' or 'use' of goods under prohibition remains under prohibition even when applicable to non-prohibited goods.

Prohibitions do not apply to that 'technology' which is the minimum necessary for the installation, operation, maintenance (checking) and repair of those goods which are not prohibited or whose export has been authorised in accordance with Regulation (EC) No 423/2007.

Prohibitions on 'technology' transfer do not apply to information 'in the public domain', to 'basic scientific research' or to the minimum necessary information for patent applications.
General Software Note (GSN)

(This note overrides any prohibition within sections I.0B, I.1B, I.2B, I.3B, I.4B, I.5B, I.6B, I.7B and I.9B.)

Categories I.0 to I.9 of this list do not prohibit 'software' which is either:

a. Generally available to the public by being:

   1. Sold from stock at retail selling points, without restriction, by means of:

      a. Over-the-counter transactions;

      b. Mail order transactions;

      c. Electronic transactions; or

      d. Telephone order transactions; and

   2. Designed for installation by the user without further substantial support by the supplier; or

b. 'In the public domain'.

I.0 NUCLEAR MATERIAL, FACILITIES AND EQUIPMENT

I.0A

GOODS

| No | Relevant item(s) from Annex to Regulation (EC) No 1183/2007 | Description |
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| I.0A.001 | 0A001 | 'Nuclear reactors' and specially designed or prepared equipment and components therefor, as follows:<br>a. 'Nuclear reactors' capable of operation so as to maintain a controlled self-sustaining fission chain reaction;<br>b. Metal vessels, or major shop-fabricated parts therefor, specially designed or prepared to contain the core of a 'nuclear reactor', including the reactor vessel head for a reactor pressure vessel;<br>c. Manipulative equipment specially designed or prepared for inserting or removing fuel in a 'nuclear reactor';<br>d. Control rods specially designed or prepared for the control of the fission process in a 'nuclear reactor', support or suspension structures therefor, rod drive mechanisms and rod guide tubes;<br>e. Pressure tubes specially designed or prepared to |

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| | | | contain fuel elements and the primary coolant in a 'nuclear reactor' at an operating pressure in excess of 5,1 MPa; |
| | | f. | Zirconium metal and alloys in the form of tubes or assemblies of tubes in which the ratio of hafnium to zirconium is less than 1:500 parts by weight, specially designed or prepared for use in a 'nuclear reactor'; |
| | | g. | Coolant pumps specially designed or prepared for circulating the primary coolant of 'nuclear reactors'; |
| | | h. | 'Nuclear reactor internals' specially designed or prepared for use in a 'nuclear reactor', including support columns for the core, fuel channels, thermal shields, baffles, core grid plates, and diffuser plates;<br>*Note: In I.0A.001.h. 'nuclear reactor internals' means any major structure within a reactor vessel which has one or more functions such as supporting the core, maintaining fuel alignment, directing primary coolant flow, providing radiation shields for the reactor vessel,* |

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| | | *and guiding in-core instrumentation.*<br>i. Heat exchangers (steam generators) specially designed or prepared for use in the primary coolant circuit of a 'nuclear reactor';<br>j. Neutron detection and measuring instruments specially designed or prepared for determining neutron flux levels within the core of a 'nuclear reactor'. |
| I.0A.002 | *ex* 0B001* (0B001.a, 0B001.b.1-13, 0B001.c, 0B001.d 0B001.e 0B001.f 0B001.g 0B001.h 0B001.i and 0B001.j) | Plant for the separation of isotopes of 'natural uranium', 'depleted uranium' and 'special fissile materials', and specially designed or prepared equipment and components therefor, as follows:<br>Plant specially designed for separating isotopes of 'natural uranium', 'depleted uranium', and 'special fissile materials', as follows:<br>1. Gas centrifuge separation plant;<br>2. Gaseous diffusion separation plant;<br>3. Aerodynamic separation plant;<br>4. Chemical exchange separation plant;<br>5. Ion-exchange |

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| | | separation plant;<br>6. Atomic vapour 'laser' isotope separation (AVLIS) plant;<br>7. Molecular 'laser' isotope separation (MLIS) plant;<br>8. Plasma separation plant;<br>9. Electro magnetic separation plant;<br>Gas centrifuges and assemblies and components, specially designed or prepared for gas centrifuge separation process, as follows:<br>*Note: In I.0A.002.b. 'high strength-to-density ratio material' means any of the following:*<br>a. *Maraging steel capable of an ultimate tensile strength of 2 050 MPa or more;*<br>b. *Aluminium alloys capable of an ultimate tensile strength of* |

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| | | | *460 MPa or more; or* |
| | | c. | *'Fibrous or filamentary materials' with a 'specific modulus' of more than 3,18 × $10^6$ m and a 'specific tensile strength' greater than 76,2 × $10^3$ m*; |
| | | 1. | Gas centrifuges; |
| | | 2. | Complete rotor assemblies; |
| | | 3. | Rotor tube cylinders with a wall thickness of 12 mm or less, a diameter of between 75 mm and 400 mm, made from 'high strength-to-density ratio materials'; |
| | | 4. | Rings or bellows with a wall thickness of 3 mm or less and a diameter of |

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| | | | between 75 mm and 400 mm and designed to give local support to a rotor tube or to join a number together, made from 'high strength-to-density ratio materials'; |
| | | 5. | Baffles of between 75 mm and 400 mm diameter for mounting inside a rotor tube, made from 'high strength-to-density ratio materials'; |
| | | 6. | Top or bottom caps of between 75 mm and 400 mm diameter to fit the ends of a rotor tube, made from 'high strength-to-density ratio materials'; |

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| | | 7. | Magnetic suspension bearings consisting of an annular magnet suspended within a housing made of or protected by 'materials resistant to corrosion by $UF_6$' containing a damping medium and having the magnet coupling with a pole piece or second magnet fitted to the top cap of the rotor; |
| | | 8. | Specially prepared bearings comprising a pivot-cup assembly mounted on a damper; |
| | | 9. | Molecular pumps comprised of cylinders having internally machined or extruded helical |

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| | | | grooves and internally machined bores; |
| | | 10. | Ring-shaped motor stators for multiphase AC hysteresis (or reluctance) motors for synchronous operation within a vacuum in the frequency range of 600 to 2 000 Hz and a power range of 50 to 1 000 Volt-Amps; |
| | | 11. | Centrifuge housing/ recipients to contain the rotor tube assembly of a gas centrifuge, consisting of a rigid cylinder of wall thickness up to 30 mm with precision machined ends and made of or protected by ‘materials |

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| | | | resistant to corrosion by $UF_6$'; |
| | | 12. | Scoops consisting of tubes of up to 12 mm internal diameter for the extraction of $UF_6$ gas from within a centrifuge rotor tube by a Pitot tube action, made of or protected by 'materials resistant to corrosion by $UF_6$'; |
| | | 13. | Frequency changers (converters or inverters) specially designed or prepared to supply motor stators for gas centrifuge enrichment, having all of the following characteristics, and specially designed components therefor: |
| | | | a. Multiphase output |

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| | | of 600 to 2 000 Hz;<br>b. Frequency control better than 0,1 %;<br>c. Harmonic distortion of less than 2 %; and<br>d. An efficiency greater than 80 %; |
| | | Equipment and components, specially designed or prepared for gaseous diffusion separation process, as follows:<br>1. Gaseous diffusion barriers made of porous metallic, polymer or ceramic ‘materials resistant to corrosion by $UF_6$’ with a pore size of 10 to 100 nm, a thickness of 5 mm or less, and, for |

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| | | tubular forms, a diameter of 25 mm or less;<br>2. Gaseous diffuser housings made of or protected by 'materials resistant to corrosion by $UF_6$';<br>3. Compressors (positive displacement, centrifugal and axial flow types) or gas blowers with a suction volume capacity of 1 $m^3$/min or more of $UF_6$, and discharge pressure up to 666,7 kPa, made of or protected by 'materials resistant to corrosion by $UF_6$';<br>4. Rotary shaft seals for compressors or blowers specified in I.0A.002.c.3. and |

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| | | | designed for a buffer gas in-leakage rate of less than 1 000 $cm^3$/min.; |
| | | 5. | Heat exchangers made of aluminium, copper, nickel, or alloys containing more than 60 per cent nickel, or combinations of these metals as clad tubes, designed to operate at sub-atmospheric pressure with a leak rate that limits the pressure rise to less than 10 Pa per hour under a pressure differential of 100 kPa; |
| | | 6. | Bellow valves made of or protected by ‘materials resistant to corrosion by $UF_6$’, with a diameter of 40 mm |

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| | | to 1 500 mm;<br>Equipment and components, specially designed or prepared for aerodynamic separation process, as follows:<br>1. Separation nozzles consisting of slit-shaped, curved channels having a radius of curvature less than 1 mm, resistant to corrosion by $UF_6$, and having a knife-edge contained within the nozzle which separates the gas flowing through the nozzle into two streams;<br>2. Tangential inlet flow-driven cylindrical or conical tubes, (vortex tubes), made of or protected by 'materials resistant to corrosion by $UF_6$' |

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| | | | with a diameter of between 0,5 cm and 4 cm and a length to diameter ratio of 20:1 or less and with one or more tangential inlets; |
| | | 3. | Compressors (positive displacement, centrifugal and axial flow types) or gas blowers with a suction volume capacity of 2 $m^3$/min or more, made of or protected by 'materials resistant to corrosion by $UF_6$', and rotary shaft seals therefor; |
| | | 4. | Heat exchangers made of or protected by 'materials resistant to corrosion by $UF_6$'; |

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| | | 5. Aerodynamic separation element housings, made of or protected by 'materials resistant to corrosion by $UF_6$' to contain vortex tubes or separation nozzles;<br>6. Bellows valves made of or protected by 'materials resistant to corrosion by $UF_6$', with a diameter of 40 to 1 500 mm;<br>7. Process systems for separating $UF_6$ from carrier gas (hydrogen or helium) to 1 ppm $UF_6$ content or less, including:<br>a. Cryogenic heat exchangers and cryoseparators capable of temperatures of 153 |

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| | | | | K (– 120 °C) or less; |
| | | | b. | Cryogenic refrigeration units capable of temperatures of 153 K (– 120 °C) or less; |
| | | | c. | Separation nozzle or vortex tube units for the separation of $UF_6$ from carrier gas; |
| | | | d. | $UF_6$ cold traps capable of temperatures of 253 K (– 20 °C) or less; |
| | | Equipment and components, specially designed or prepared for chemical exchange | | |

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| | | separation process, as follows:<br>1. Fast-exchange liquid-liquid pulse columns with stage residence time of 30 seconds or less and resistant to concentrated hydrochloric acid (e.g. made of or protected by suitable plastic materials such as fluorocarbon polymers or glass);<br>2. Fast-exchange liquid-liquid centrifugal contactors with stage residence time of 30 seconds or less and resistant to concentrated hydrochloric acid (e.g. made of or protected by suitable plastic materials such as fluorocarbon polymers or glass);<br>3. Electrochemical reduction cells |

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| | | | resistant to concentrated hydrochloric acid solutions, for reduction of uranium from one valence state to another; |
| | | 4. | Electrochemical reduction cells feed equipment to take $U^{+4}$ from the organic stream and, for those parts in contact with the process stream, made of or protected by suitable materials (e.g. glass, fluorocarbon polymers, polyphenyl sulphate, polyether sulfone and resin-impregnated graphite); |
| | | 5. | Feed preparation systems for producing high purity uranium chloride solution consisting |

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| | | of dissolution, solvent extraction and/or ion exchange equipment for purification and electrolytic cells for reducing the uranium $U^{+6}$ or $U^{+4}$ to $U^{+3}$; |
| | | 6. Uranium oxidation systems for oxidation of $U^{+3}$ to $U^{+4}$; |
| | | Equipment and components, specially designed or prepared for ion-exchange separation process, as follows: |
| | | 1. Fast reacting ion-exchange resins, pellicular or porous macro-reticulated resins in which the active chemical exchange groups are limited to a coating on the surface of an inactive porous support |

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| | | | structure, and other composite structures in any suitable form, including particles or fibres, with diameters of 0,2 mm or less, resistant to concentrated hydrochloric acid and designed to have an exchange rate half time of less than 10 seconds and capable of operating at temperatures in the range of 373 K (100 °C) to 473 K (200 °C); |
| | | 2. | ion-exchange columns (cylindrical) with a diameter greater than 1 000 mm, made of or protected by materials resistant to concentrated hydrochloric |

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| | | | acid (e.g. titanium or fluorocarbon plastics) and capable of operating at temperatures in the range of 373 K (100 °C) to 473 K (200 °C) and pressures above 0,7 MPa; |
| | | | 3. ion-exchange reflux systems (chemical or electrochemical oxidation or reduction systems) for regeneration of the chemical reducing or oxidizing agents used in ion-exchange enrichment cascades; |
| | | | Equipment and components, specially designed or prepared for atomic vapour ‘laser’ isotope separation process (AVLIS), as follows: |

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| | | 1. | High power strip or scanning electron beam guns with a delivered power of more than 2,5 kW/ cm for use in uranium vaporization systems; |
| | | 2. | Liquid uranium metal handling systems for molten uranium or uranium alloys, consisting of crucibles, made of or protected by suitable corrosion and heat resistant materials (e.g. tantalum, yttria-coated graphite, graphite coated with other rare earth oxides or mixtures thereof), and cooling equipment for the crucibles; |

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| | | N.B.: See also I.2A.002.<br>3. Product and tails collector systems made of or lined with materials resistant to the heat and corrosion of uranium metal vapour or liquid, such as yttria-coated graphite or tantalum;<br>4. Separator module housings (cylindrical or rectangular vessels) for containing the uranium metal vapour source, the electron beam gun and the product and tails collectors;<br>5. 'Lasers' or 'laser' systems for the separation of uranium isotopes with a spectrum |

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| | | frequency stabiliser for operation over extended periods of time;<br>N.B.: See also I.6A.001 and I.6A.008.<br>Equipment and components, specially designed or prepared for molecular 'laser' isotope separation process (MLIS) or chemical reaction by isotope selective laser activation (CRISLA), as follows:<br>1. Supersonic expansion nozzles for cooling mixtures of $UF_6$ and carrier gas to 150 K (– 123 °C) or less and made from 'materials resistant to corrosion by $UF_6$';<br>2. Uranium pentafluoride ($UF_5$) product collectors consisting of filter, impact, or cyclone type collectors or combinations |

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| | | thereof, and made of 'materials resistant to corrosion by $UF_5$/$UF_6$'; |
| | | 3. Compressors made of or protected by 'materials resistant to corrosion by $UF_6$', and rotary shaft seals therefor; |
| | | 4. Equipment for fluorinating $UF_5$ (solid) to $UF_6$ (gas); |
| | | 5. Process systems for separating $UF_6$ from carrier gas (e.g. nitrogen or argon) including: |
| | | a. Cryogenic heat exchangers and cryoseparators capable of temperatures of 153 K (–120 °C) or less; |

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| | | | b. Cryogenic refrigeration units capable of temperatures of 153 K (– 120 °C) or less; |
| | | | c. $UF_6$ cold traps capable of temperatures of 253 K (– 20 °C) or less; |
| | | 6. | ‘Lasers’ or ‘laser’ systems for the separation of uranium isotopes with a spectrum frequency stabiliser for operation over extended periods of time; |
| | | | N.B.: See also I.6A.001 and I.6A.008. |
| | | | Equipment and components, specially designed or prepared for |

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| | | plasma separation process, as follows:<br>1. Microwave power sources and antennae for producing or accelerating ions, with an output frequency greater than 30 GHz and mean power output greater than 50 kW;<br>2. radio-frequency ion excitation coils for frequencies of more than 100 kHz and capable of handling more than 40 kW mean power;<br>3. Uranium plasma generation systems;<br>4. Liquid metal handling systems for molten uranium or uranium alloys, consisting of |

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| | | crucibles, made of or protected by suitable corrosion and heat resistant materials (e.g. tantalum, yttria-coated graphite, graphite coated with other rare earth oxides or mixtures thereof), and cooling equipment for the crucibles;<br>N.B.: See also I.2A.002.<br>5. Product and tails collectors made of or protected by materials resistant to the heat and corrosion of uranium vapour such as yttria-coated graphite or tantalum;<br>6. Separator module housings (cylindrical) for containing the |

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| | | uranium plasma source, radio-frequency drive coil and the product and tails collectors and made of a suitable non-magnetic material (e.g. stainless steel);<br>Equipment and components, specially designed or prepared for electromagnetic separation process, as follows:<br>1. Ion sources, single or multiple, consisting of a vapour source, ioniser, and beam accelerator made of suitable non-magnetic materials (e.g. graphite, stainless steel, or copper) and capable of providing a total ion beam current of |

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| | | 50 mA or greater; |
| | | 2. Ion collector plates for collection of enriched or depleted uranium ion beams, consisting of two or more slits and pockets and made of suitable non-magnetic materials (e.g. graphite or stainless steel); |
| | | 3. Vacuum housings for uranium electromagnetic separators made of non-magnetic materials (e.g. stainless steel) and designed to operate at pressures of 0,1 Pa or lower; |
| | | 4. Magnet pole pieces with a diameter greater than 2 m; |

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| | | 5. High voltage power supplies for ion sources, having all of the following characteristics:<br>a. Capable of continuous operation;<br>b. Output voltage of 20 000 V or greater;<br>c. Output current of 1 A or greater; and<br>d. Voltage regulation of better than 0,01 % over a period of 8 hours;<br>N.B.: See also I.3A.006. |
| | | 6. Magnet power supplies (high power, direct current) having |

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| | | all of the following characteristics:<br>a. Capable of continuous operation with a current output of 500 A or greater at a voltage of 100 V or greater; and<br>b. Current or voltage regulation better than 0,01 % over a period of 8 hours.<br>N.B.: See also I.3A.005. |
| I.0A.003 | 0B002 | Specially designed or prepared auxiliary systems, equipment and components, as follows, for isotope separation plant specified in I.0A.002, made of or protected by 'materials resistant to corrosion by $UF_6$':<br>a. Feed autoclaves, ovens or systems |

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| | | | | | used for passing $UF_6$ to the enrichment process; |
| | | | b. | | Desublimers or cold traps, used to remove $UF_6$ from the enrichment process for subsequent transfer upon heating; |
| | | | c. | | Product and tails stations for transferring $UF_6$ into containers; |
| | | | d. | | Liquefaction or solidification stations used to remove $UF_6$ from the enrichment process by compressing, cooling and converting $UF_6$ to a liquid or solid form; |
| | | | e. | | Piping systems and header systems specially designed for handling $UF_6$ within gaseous diffusion, centrifuge or aerodynamic cascades; |
| | | | f. | 1. | Vacuum manifolds or vacuum headers having a suction capacity of 5 $m^3$/ minute or more; or |
| | | | | 2. | Vacuum pumps specially designed for use in $UF_6$ bearing atmospheres; |

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| | | g. $UF_6$ mass spectrometers/ion sources specially designed or prepared for taking on-line samples of feed, product or tails from $UF_6$ gas streams and having all of the following characteristics:<br>1. Unit resolution for mass of more than 320 amu;<br>2. Ion sources constructed of or lined with nichrome or monel, or nickel plated;<br>3. Electron bombardment ionisation sources; and<br>4. Collector system suitable for isotopic analysis. |
| I.0A.004 | 0B003 | Plant for the conversion of uranium and equipment specially designed or prepared therefor, as follows:<br>a. Systems for the conversion of uranium ore concentrates to $UO_3$;<br>b. Systems for the conversion of $UO_3$ to $UF_6$;<br>c. Systems for the conversion of $UO_3$ to $UO_2$; |

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| | | d. Systems for the conversion of $UO_2$ to $UF_4$;<br>e. Systems for the conversion of $UF_4$ to $UF_6$;<br>f. Systems for the conversion of $UF_4$ to uranium metal;<br>g. Systems for the conversion of $UF_6$ to $UO_2$;<br>h. Systems for the conversion of $UF_6$ to $UF_4$;<br>i. Systems for the conversion of $UO_2$ to $UCl_4$. |
| I.0A.005 | 0B004 | Plant for the production or concentration of heavy water, deuterium and deuterium compounds and specially designed or prepared equipment and components therefor, as follows:<br>a. Plant for the production of heavy water, deuterium or deuterium compounds, as follows:<br>1. Water-hydrogen sulphide exchange plants;<br>2. Ammonia-hydrogen exchange plants;<br>b. Equipment and components, as follows:<br>1. Water-hydrogen sulphide exchange towers fabricated from fine carbon |

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| | | | | steel (e.g. ASTM A516) with diameters of 6 m to 9 m, capable of operating at pressures greater than or equal to 2 MPa and with a corrosion allowance of 6 mm or greater; |
| | | | 2. | Single stage, low head (i.e. 0,2 MPa) centrifugal blowers or compressors for hydrogen sulphide gas circulation (i.e. gas containing more than 70 % $H_2S$) with a throughput capacity greater than or equal to 56 $m^3$/ second when operating at pressures greater than or equal to 1,8 MPa suction |

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| | | | and having seals designed for wet $H_2S$ service; |
| | | 3. | Ammonia-hydrogen exchange towers greater than or equal to 35 m in height with diameters of 1,5 m to 2,5 m capable of operating at pressures greater than 15 MPa; |
| | | 4. | Tower internals, including stage contactors, and stage pumps, including those which are submersible, for heavy water production utilizing the ammonia-hydrogen exchange process; |
| | | 5. | Ammonia crackers with operating pressures greater |

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| | | | than or equal to 3 MPa for heavy water production utilizing the ammonia-hydrogen exchange process; |
| | | 6. | Infrared absorption analysers capable of on-line hydrogen/ deuterium ratio analysis where deuterium concentrations are equal to or greater than 90 %; |
| | | 7. | Catalytic burners for the conversion of enriched deuterium gas into heavy water utilizing the ammonia-hydrogen exchange process; |
| | | 8. | Complete heavy water upgrade systems, or columns therefor, for the |

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| | | upgrade of heavy water to reactor-grade deuterium concentration. |
| I.0A.006 | 0B005 | Plant specially designed for the fabrication of 'nuclear reactor' fuel elements and specially designed or prepared equipment therefor.<br>*Note: A plant for the fabrication of 'nuclear reactor' fuel elements includes equipment which:*<br>a. *Normally comes into direct contact with or directly processes or controls the production flow of nuclear materials*;<br>b. *Seals the nuclear materials within the cladding*;<br>c. *Checks the integrity of the cladding or the seal; or*<br>d. *Checks the finish treatment of the sealed fuel*. |
| I.0A.007 | 0B006 | Plant for the reprocessing of irradiated 'nuclear reactor' fuel elements, and specially designed or prepared equipment and components therefor:<br>*Note: I.0A.007 includes:*<br>a. *Plant for the reprocessing of irradiated 'nuclear reactor' fuel elements including equipment and components which normally come into direct contact with and directly control the irradiated fuel and the major nuclear material* |

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| | | | *and fission product processing streams;* |
| | | b. | *Fuel element chopping or shredding machines, i.e. remotely operated equipment to cut, chop, shred or shear irradiated 'nuclear reactor' fuel assemblies, bundles or rods;* |
| | | c. | *Dissolvers, critically safe tanks (e.g. small diameter, annular or slab tanks) specially designed or prepared for the dissolution of irradiated 'nuclear reactor' fuel, which are capable of withstanding hot, highly corrosive liquids, and which can be remotely loaded and maintained;* |
| | | d. | *Counter-current solvent extractors and ion-exchange processing equipment specially designed or prepared for use in a plant for the reprocessing of irradiated 'natural uranium', 'depleted uranium' or 'special fissile materials';* |
| | | e. | *Holding or storage vessels specially designed to be critically safe and resistant to the corrosive effects of nitric acid;*<br>*Note: Holding or storage vessels may* |

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| | | *have the following features:*<br>1. *Walls or internal structures with a boron equivalent (calculated for all constituent elements as defined in the note to I.0A.012) of at least two per cent;*<br>2. *A maximum diameter of 175 mm for cylindrical vessels; or*<br>3. *A maximum width of 75 mm for either a slab or annular vessel.*<br>f. *Process control instrumentation specially designed or prepared for monitoring or controlling the reprocessing of irradiated 'natural uranium', 'depleted uranium' or 'special fissile materials'.* |
| I.0A.008 | 0B007 | Plant for the conversion of plutonium and equipment specially designed or prepared therefor, as follows:<br>a. Systems for the conversion of |

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| | | plutonium nitrate to oxide;<br>b. Systems for plutonium metal production. |
| I.0A.009 | 0C001 | ‘Natural uranium’ or ‘depleted uranium’ or thorium in the form of metal, alloy, chemical compound or concentrate and any other material containing one or more of the foregoing.<br>*Note: I.0A.009 does not prohibit the following:*<br>a. *Four grammes or less of ‘natural uranium’ or ‘depleted uranium’ when contained in a sensing component in instruments;*<br>b. *‘Depleted uranium’ specially fabricated for the following civil non-nuclear applications:*<br>1. *Shielding;*<br>2. *Packaging;*<br>3. *Ballasts having a mass not greater than 100 kg;*<br>4. *Counter-weights having a mass not greater than 100 kg;*<br>c. *Alloys containing less than 5 % thorium;*<br>d. *Ceramic products containing thorium, which have been manufactured for non-nuclear use.* |
| I.0A.010 | 0C002 | ‘Special fissile materials’.<br>*Note: I.0A.010 does not prohibit four ‘effective* |

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| | | *grammes' or less when contained in a sensing component in instruments.* |
| I.0A.011 | 0C003 | Deuterium, heavy water (deuterium oxide) and other compounds of deuterium, and mixtures and solutions containing deuterium, in which the isotopic ratio of deuterium to hydrogen exceeds 1:5 000. |
| I.0A.012 | 0C004 | Graphite, nuclear grade, having a purity level of less than 5 parts per million 'boron equivalent' and with a density greater than 1,5 g/$cm^3$.<br>N.B.: See also I.1A.028.<br>*Note 1: I.0A.012 does not prohibit the following:*<br>a. *Manufactures of graphite having a mass less than 1 kg, other than those specially designed or prepared for use in a nuclear reactor;*<br>b. *Graphite powder.*<br>*Note 2: In I.0A.012, 'boron equivalent' (BE) is defined as the sum of $BE_z$ for impurities (excluding $BE_{carbon}$ since carbon is not considered an impurity) including boron, where:*<br>*$BE_z$ (ppm) = CF × concentration of element Z in ppm;*<br>*where CF is the conversion factor =* $\frac{\sigma_Z A_B}{\sigma_B A_Z}$ *and $\sigma_B$ and $\sigma_Z$ are the thermal neutron capture cross sections (in barns) for naturally occurring boron and element Z respectively; and $A_B$ and $A_Z$ are the atomic masses of naturally* |

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| | | *occurring boron and element Z respectively.* |
| I.0A.013 | 0C005 | Specially prepared compounds or powders for the manufacture of gaseous diffusion barriers, resistant to corrosion by $UF_6$ (e.g. nickel or alloy containing 60 weight per cent or more nickel, aluminium oxide and fully fluorinated hydrocarbon polymers), having a purity of 99,9 weight per cent or more and a mean particle size of less than 10 micrometres measured by American Society for Testing and Materials (ASTM) B330 standard and a high degree of particle size uniformity. |

I.0B

TECHNOLOGY, INCLUDING SOFTWARE

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
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| I.0B.001 | 0D001 | 'Software' specially designed or modified for the 'development', 'production' or 'use' of goods specified in Section I.0A. |
| I.0B.002 | 0E001 | 'Technology' according to the Nuclear Technology Note for the 'development', 'production' or 'use' of goods specified in Section I.0A. |

I.1 MATERIALS, CHEMICALS, 'MICROORGANISMS' AND 'TOXINS'

I.1A

GOODS

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
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| I.1A.001 | 1A102 | Resaturated pyrolized carbon-carbon components designed for space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005.<br>N.B.: See also Military Goods Controls for components for rockets and missiles. |
| I.1A.002 | 1A202 | Composite structures in the form of tubes and having both of the following characteristics:<br>N.B.: See also I.9A.011.<br>a. An inside diameter of between 75 mm and 400 mm; and<br>b. Made with any of the 'fibrous or filamentary materials' specified in I.1A.024 or I.1A.034.a. or with carbon prepreg materials specified in I.1A.034.c. |
| I.1A.003 | 1A225 | Platinized catalysts specially designed or prepared for promoting the hydrogen isotope exchange reaction between hydrogen and water for the recovery of tritium from heavy water or for the production of heavy water. |
| I.1A.004 | 1A226 | Specialized packings which may be used in separating heavy water from ordinary water, having both of the following characteristics:<br>a. Made of phosphor bronze mesh chemically treated to improve wettability; and<br>b. Designed to be used in vacuum distillation towers. |
| I.1A.005 | 1A227 | High-density (lead glass or other) radiation shielding |

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| | | windows, having all of the following characteristics, and specially designed frames therefor:<br>a. A 'cold area' greater than 0,09 $m^2$;<br>b. A density greater than 3 $g/cm^3$; and<br>c. A thickness of 100 mm or greater.<br>Technical Notes:<br>*In I.1A.005 the term 'cold area' means the viewing area of the window exposed to the lowest level of radiation in the design application.* |
| I.1A.006 | *ex* 1B001* (1B001.a, *ex* 1B001.b and 1B001.c) | Equipment for the production of fibres, prepregs, preforms or 'composites' specified in I.1A.024, as follows, and specially designed components and accessories therefor:<br>N.B.: See also I.1A.007 and I.1A.014.<br>Filament winding machines of which the motions for positioning, wrapping and winding fibres are coordinated and programmed in three or more axes, specially designed for the manufacture of 'composite' structures or laminates from 'fibrous or filamentary materials';<br>Tape-laying machines of which the motions for positioning and laying tape or sheets are coordinated and programmed in two or more axes, specially designed |

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| | | for the manufacture of 'composite' airframe or 'missile' structures;<br>*Note: In I.1A.006.b., 'missile' means complete rocket systems and unmanned aerial vehicle systems.*<br>Multidirectional, multidimensional weaving machines or interlacing machines, including adapters and modification kits, for weaving, interlacing or braiding fibres to manufacture 'composite' structures;<br>Technical Notes:<br>*For the purposes of I.1A.006.c. the technique of interlacing includes knitting.*<br>*Note: I.1A.006.c. does not prohibit textile machinery not modified for the above end-uses.* |
| I.1A.007 | 1B101 and *ex* 1B001.d | Equipment, other than that specified in I.1A.006, for the 'production' of structural composites as follows;<br>and specially designed components and accessories therefor:<br>*Note: Components and accessories specified in I.1A.007 include moulds, mandrels, dies, fixtures and tooling for the preform pressing, curing, casting, sintering or bonding of composite structures,* |

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| | | *laminates and manufactures thereof.*<br>a. Filament winding machines of which the motions for positioning, wrapping and winding fibres can be coordinated and programmed in three or more axes, designed to fabricate composite structures or laminates from fibrous or filamentary materials, and coordinating and programming controls;<br>b. Tape-laying machines of which the motions for positioning and laying tape and sheets can be coordinated and programmed in two or more axes, designed for the manufacture of composite airframe and 'missile' structures;<br>c. Equipment designed or modified for the 'production' of 'fibrous or filamentary materials' as follows:<br>1. Equipment for converting polymeric fibres (such as polyacrylonitrile, rayon or polycarbosilane) including special |

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| | | provision to strain the fibre during heating;<br>2. Equipment for the vapour deposition of elements or compounds on heated filament substrates;<br>3. Equipment for the wet-spinning of refractory ceramics (such as aluminium oxide);<br>d. Equipment designed or modified for special fibre surface treatment or for producing prepregs and preforms specified in entry I.9A.026.<br>*Note: I.1A.007.d. includes rollers, tension stretchers, coating equipment, cutting equipment and clicker dies.* |
| I.1A.008 | 1B102 | Metal powder 'production equipment' and components as follows:<br>N.B.: See also I.1A.009.b.<br>a. Metal powder 'production equipment' usable for the 'production', in a controlled environment, of spherical or atomised |

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| | | materials specified in I.1A.025.a., I.1A.025.b., I.1A.029.a.1., I.1A.029.a.2. or in the Military Goods Controls.<br>b. Specially designed components for 'production equipment' specified in I.1A.008.a.<br>*Note: I.1A.008 includes:*<br>a. *Plasma generators (high frequency arc-jet) usable for obtaining sputtered or spherical metallic powders with organization of the process in an argon-water environment;*<br>b. *Electroburst equipment usable for obtaining sputtered or spherical metallic powders with organization of the process in an argon-water environment;*<br>c. *Equipment usable for the 'production' of spherical aluminium powders by powdering a melt in an inert medium (e.g. nitrogen).* |
| I.1A.009 | 1B115 | Equipment, other than that specified in I.1A.008, for the production of propellant and propellant constituents, as follows, and specially designed components therefor:<br>a. 'Production equipment' for the 'production', handling or |

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| | | acceptance testing of liquid propellants or propellant constituents specified in I.1A.025.a., I.1A.025.b., I.1A.029 or in the Military Goods Controls;<br>b. 'Production equipment' for the 'production', handling, mixing, curing, casting, pressing, machining, extruding or acceptance testing of solid propellants or propellant constituents specified in I.1A.025.a., I.1A.025.b., I.1A.029 or in the Military Goods Controls.<br>*Note: I.1A.009.b. does not prohibit batch mixers, continuous mixers or fluid energy mills. For the prohibition of batch mixers, continuous mixers and fluid energy mills see I.1A.011, I.1A.012 and I.1A.013.*<br>*Note 1: For equipment specially designed for the production of military goods, see the Military Goods Controls.*<br>*Note 2: I.1A.009 does not prohibit equipment for the 'production', handling and acceptance testing of boron carbide* |
| I.1A.010 | 1B116 | Specially designed nozzles for producing pyrolitically |

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| | | derived materials formed on a mould, mandrel or other substrate from precursor gases which decompose in the 1 573 K (1 300 °C) to 3 173 K (2 900 °C) temperature range at pressures of 130 Pa to 20 kPa. |
| I.1A.011 | 1B117 | Batch mixers with provision for mixing under vacuum in the range of zero to 13,326 kPa and with temperature control capability of the mixing chamber and having all of the following, and specially designed components therefor:<br>a. A total volumetric capacity of 110 litres or more; and<br>b. At least one mixing/kneading shaft mounted off centre. |
| I.1A.012 | 1B118 | Continuous mixers with provision for mixing under vacuum in the range of zero to 13,326 kPa and with a temperature control capability of the mixing chamber having any of the following, and specially designed components therefor:<br>a. Two or more mixing/kneading shafts; or<br>b. A single rotating shaft which oscillates and having kneading teeth/pins on the shaft as well as inside the casing of the mixing chamber. |
| I.1A.013 | 1B119 | Fluid energy mills usable for grinding or milling substances specified in I.1A.025.a., I.1A.025.b., I.1A.029 or in the Military Goods Controls, and |

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| | | specially designed components therefore. |
| I.1A.014 | 1B201 | Filament winding machines, other than those specified in I.1A.006 or I.1A.007, and related equipment, as follows:<br>a. Filament winding machines having all of the following characteristics:<br>1. Having motions for positioning, wrapping, and winding fibres coordinated and programmed in two or more axes;<br>2. Specially designed to fabricate composite structures or laminates from 'fibrous or filamentary materials'; and<br>3. Capable of winding cylindrical rotors of diameter between 75 and 400 mm and lengths of 600 mm or greater;<br>b. Coordinating and programming controls for the |

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| | | filament winding machines specified in I.1A.014.a.;<br>c. Precision mandrels for the filament winding machines specified in I.1A.014.a. |
| I.1A.015 | 1B225 | Electrolytic cells for fluorine production with an output capacity greater than 250 g of fluorine per hour. |
| I.1A.016 | 1B226 | Electromagnetic isotope separators designed for, or equipped with, single or multiple ion sources capable of providing a total ion beam current of 50 mA or greater.<br>*Note: I.1A.016 includes separators:*<br>a. *Capable of enriching stable isotopes;*<br>b. *With the ion sources and collectors both in the magnetic field and those configurations in which they are external to the field.* |
| I.1A.017 | 1B227 | Ammonia synthesis converters or ammonia synthesis units, in which the synthesis gas (nitrogen and hydrogen) is withdrawn from an ammonia/hydrogen high-pressure exchange column and the synthesized ammonia is returned to said column |
| I.1A.018 | 1B228 | Hydrogen-cryogenic distillation columns having all of the following characteristics:<br>a. Designed for operation with internal temperatures of 35 K (– 238 °C) or less;<br>b. Designed for operation at an |

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| | | internal pressure of 0,5 to 5 MPa;<br>c. Constructed of either:<br>1. Stainless steel of the 300 series with low sulphur content and with an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; or<br>2. Equivalent materials which are both cryogenic and $H_2$-compatible; and<br>d. With internal diameters of 1 m or greater and effective lengths of 5 m or greater. |
| I.1A.019 | 1B229 | Water-hydrogen sulphide exchange tray columns and 'internal contactors', as follows:<br>*N.B.: For columns which are specially designed or prepared for the production of heavy water see I.0A.005.*<br>a. Water-hydrogen sulphide exchange tray columns, having all of the following characteristics:<br>1. Can operate at pressures |

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| | | of 2 MPa or greater;<br>2. Constructed of carbon steel having an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; and<br>3. With a diameter of 1,8 m or greater;<br>b. 'Internal contactors' for the water hydrogen sulphide exchange tray columns specified in I.1A.019.a.<br>Technical Notes:<br>*'Internal contactors' of the columns are segmented trays which have an effective assembled diameter of 1,8 m or greater, are designed to facilitate countercurrent contacting and are constructed of stainless steels with a carbon content of 0,03 % or less. These may be sieve trays, valve trays, bubble cap trays, or turbogrid trays* |
| I.1A.020 | 1B230 | Pumps capable of circulating solutions of concentrated or dilute potassium amide catalyst in liquid ammonia ($KNH_2/NH_3$), having all of the following characteristics: |

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| | | a. Airtight (i.e., hermetically sealed);<br>b. A capacity greater than 8,5 $m^3$/h; and<br>c. Either of the following characteristics:<br>1. For concentrated potassium amide solutions (1 % or greater), an operating pressure of 1,5 to 60 MPa; or<br>2. For dilute potassium amide solutions (less than 1 %), an operating pressure of 20 to 60 MPa. |
| I.1A.021 | 1B231 | Tritium facilities or plants, and equipment therefor, as follows:<br>a. Facilities or plants for the production, recovery, extraction, concentration, or handling of tritium;<br>b. Equipment for tritium facilities or plants, as follows:<br>1. Hydrogen or helium refrigeration units capable of cooling to 23 K (– 250 °C) or less, with heat |

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| | | removal capacity greater than 150 W;<br>2. Hydrogen isotope storage or purification systems using metal hydrides as the storage or purification medium. |
| I.1A.022 | 1B232 | Turboexpanders or turboexpander-compressor sets having both of the following characteristics:<br>a. Designed for operation with an outlet temperature of 35 K (– 238 °C) or less; and<br>b. Designed for a throughput of hydrogen gas of 1 000 kg/h or greater. |
| I.1A.023 | 1B233 | Lithium isotope separation facilities or plants, and equipment therefor, as follows:<br>a. Facilities or plants for the separation of lithium isotopes;<br>b. Equipment for the separation of lithium isotopes, as follows:<br>1. Packed liquid-liquid exchange columns specially designed for lithium amalgams;<br>2. Mercury or lithium |

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| | | amalgam pumps;<br>3. Lithium amalgam electrolysis cells;<br>4. Evaporators for concentrated lithium hydroxide solution. |
| I.1A.024 | 1C010.b | 'Fibrous or filamentary materials' which may be used in organic 'matrix', metallic 'matrix' or carbon 'matrix''composite' structures or laminates, as follows:<br>N.B.: See also I.1A.034 and I.9A.026.<br>b. Carbon 'fibrous or filamentary materials', having all of the following:<br>1. A 'specific modulus' exceeding $12,7 \times 10^6$ m; and<br>2. A 'specific tensile strength' exceeding $23,5 \times 10^4$ m;<br>*Note: I.1A.024.b. does not prohibit fabric made from 'fibrous or filamentary materials' for the repair of 'civil aircraft' structures or laminates, in which the size of individual sheets does not exceed 100 cm × 100 cm.*<br>Technical Notes: |

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| | | *Properties for materials described in I.1A.024.b. should be determined using SACMA recommended methods SRM 12 to 17, or national equivalent tow tests, such as Japanese Industrial Standard JIS-R-7601, Paragraph 6.6.2., and based on lot average.* |
| I.1A.025 | 1C011.a and 1C011.b | Metals and compounds, as follows:<br>N.B.: See also Military Goods Controls and I.1A.029.<br>a. Metals in particle sizes of less than 60 μm whether spherical, atomised, spheroidal, flaked or ground, manufactured from material consisting of 99 % or more of zirconium, magnesium and alloys of these;<br>Technical Notes:<br>*The natural content of hafnium in the zirconium (typically 2 % to 7 %) is counted with the zirconium.*<br>*Note: The metals or alloys listed in I.1A.025.a. are prohibited whether or not the metals or alloys are encapsulated in aluminium, magnesium, zirconium or beryllium.* |

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| | | b. Boron or boron carbide of 85 % purity or higher and a particle size of 60 μm or less;<br>*Note: The metals or alloys listed in I.1A.025.b. are prohibited whether or not the metals or alloys are encapsulated in aluminium, magnesium, zirconium or beryllium.* |
| I.1A.027 | 1C102 | Resaturated pyrolized carbon-carbon materials designed for space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005.<br>N.B.: See also Military Goods Controls for materials for rockets and missiles. |
| I.1A.028 | *ex* 1C107*<br>(1C107.a, *ex* 1C107.b, *ex* 1C107.c and *ex* 1C107.d) | Graphite and ceramic materials as follows:<br>Fine grain graphites with a bulk density of 1,72 g/cm$^3$ or greater, measured at 288 K (15 °C), and having a grain size of 100 μm or less, usable for rocket nozzles and re-entry vehicle nose tips, which can be machined to any of the following products:<br>1. Cylinders having a diameter of 120 mm or greater and a length of 50 mm or greater;<br>2. Tubes having an inner diameter of 65 mm |

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| | | or greater and a wall thickness of 25 mm or greater and a length of 50 mm or greater; or<br>3. Blocks having a size of 120 mm × 120 mm × 50 mm or greater;<br>*N.B.: See also I.0A.012.*<br>Pyrolytic or fibrous reinforced graphites, usable for rocket nozzles and reentry vehicle nose tips usable in ‘missiles’;<br>*N.B.: See also I.0A.012.*<br>Ceramic composite materials (dielectric constant less than 6 at any frequency from 100 MHz to 100 GHz) for use in radomes usable in ‘missiles’;<br>Bulk machinable silicon-carbide reinforced unfired ceramic, usable for nose tips usable for ‘missiles’. |
| I.1A.029 | *ex* 1C111* (1C111.a.1-3, 1C111.a.4, 1C111.b.1-4 and 1C111.c) | Propellants and constituent chemicals for propellants, other than those specified in I.1A.025, as follows:<br>Propulsive substances:<br>1. Spherical aluminium powder, other than that |

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| | | | | specified in the Military Goods Controls, with particles of uniform diameter of less than 200 μm and an aluminium content of 97 % by weight or more, if at least 10 % of the total weight is made up of particles of less than 63 μm, according to ISO 2591:1988 or national equivalents; Technical Notes: *A particle size of 63 μm (ISO R-565) corresponds to 250 mesh (Tyler) or 230 mesh (ASTM standard E-11).* |
| | | | 2. | Metal fuels, other than that specified in the Military Goods |

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| | | | Controls, in particle sizes of less than 60 μm, whether spherical, atomized, spheroidal, flaked or ground, consisting 97 % by weight or more of any of the following:<br>a. Zirconium;<br>b. Beryllium;<br>c. Magnesium; or<br>d. Alloys of the metals specified by (a) to (c) above;<br>Technical Notes:<br>*The natural content of hafnium in the zirconium (typically 2 % to 7 %) is counted with the zirconium.* |
| | | 3. | Oxidiser substances usable in liquid propellant rocket engines as follows: |

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| | | | a. Dinitrogen trioxide;<br>b. Nitrogen dioxide/ dinitrogen tetroxide;<br>c. Dinitrogen pentoxide;<br>d. Mixed Oxides of Nitrogen (MON);<br>Technical Notes:<br>*Mixed Oxides of Nitrogen (MON) are solutions of Nitric Oxide (NO) in Dinitrogen Tetroxide/ Nitrogen Dioxide ($N_2O_4$/ $NO_2$) that can be used in missile systems. There are a range of compositions that can be denoted as MONi or MONij, where i and j are integers representing the percentage of Nitric Oxide in the mixture (e.g., MON3* |

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| | | | *contains 3 % Nitric Oxide, MON25 25 % Nitric Oxide. An upper limit is MON40, 40 % by weight). N.B.: See Military Goods Controls for Inhibited Red Fuming Nitric Acid (IRFNA); N.B.: See Military Goods Controls and I.1A.049 for Compounds composed of fluorine and one or more of other halogens, oxygen or nitrogen;* |
| | | 4. | Hydrazine derivatives as follows:<br>a. trimethylhydrazine;<br>b. tetramethylhydrazine;<br>c. N, N diallylhydrazine;<br>d. allylhydrazine;<br>e. ethylene dihydrazine;<br>f. monomethylhydrazine dinitrate; |

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| | | g. unsymmetrical dimethylhydrazine nitrate;<br>h. hydrazinium azide;<br>i. dimethylhydrazinium azide;<br>N.B.: See Military Goods Controls for Hydrazinium nitrate;<br>k. diimido oxalic acid dihydrazine;<br>l. 2-hydroxyethylhydrazine nitrate (HEHN);<br>N.B.: See Military Goods Controls for Hydrazinium perchlorate;<br>n. hydrazinium diperchlorate;<br>o. methylhydrazine nitrate (MHN);<br>p. diethylhydrazine nitrate (DEHN);<br>q. 1,4-dihydrazine nitrate (DHTN);<br>Polymeric substances:<br>1. Carboxy-terminated polybutadiene (CTPB);<br>2. Hydroxy-terminated polybutadiene (HTPB), |

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| | | other than that specified in the Military Goods Controls;<br>3. Polybutadiene-acrylic acid (PBAA);<br>4. Polybutadiene-acrylic acid-acrylonitrile (PBAN);<br>Other propellant additives and agents:<br>N.B.: See Military Goods Controls for carboranes, decaboranes, pentaboranes and derivatives thereof;<br>2. Triethylene glycol dinitrate (TEGDN);<br>3. 2-Nitrodiphenylamine (CAS 119-75-5);<br>4. Trimethylolethane trinitrate (TMETN) (CAS 3032-55-1);<br>5. Diethylene glycol dinitrate (DEGDN);<br>6. Ferrocene derivatives as follows:<br>N.B.: See Military Goods Controls for catocene;<br>b. Ethyl ferrocene; |

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| | | | c. Propyl ferrocene (CAS 1273-89-8); N.B.: See Military Goods Controls for n-butyl ferrocene;<br>e. Pentyl ferrocene (CAS 1274-00-6);<br>f. Dicyclopentyl ferrocene;<br>g. Dicyclohexyl ferrocene;<br>h. Diethyl ferrocene;<br>i. Dipropyl ferrocene;<br>j. Dibutyl ferrocene;<br>k. Dihexyl ferrocene;<br>l. Acetyl ferrocenes; N.B.: See Military Goods Controls for ferrocene Carboxylic acids; N.B.: See Military Goods Controls for butacene;<br>o. Other ferrocene derivatives usable as rocket |

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| | | propellant burning rate modifiers, other than those specified in the Military Goods Controls.<br>*Note: For propellants and constituent chemicals for propellants not specified in I.1A.029, see the Military Goods Controls.* |
| I.1A.030 | 1C116 | Maraging steels (steels generally characterised by high nickel, very low carbon content and the use of substitutional elements or precipitates to produce age-hardening) having an ultimate tensile strength of 1 500 MPa or greater, measured at 293 K (20 °C), in the form of sheet, plate or tubing with a wall or plate thickness equal to or less than 5 mm.<br>N.B.: See also I.1A.035. |
| I.1A.031 | *ex* 1C117* | Tungsten, molybdenum and alloys of these metals in the form of uniform spherical or atomized particles of 500 micrometre diameter or less with a purity of 97 % or greater for fabrication of motor components, usable in 'missiles' (i.e., heat shields, nozzle substrates, nozzle throats and thrust vector control surfaces). |
| I.1A.032 | 1C118 | Titanium-stabilised duplex stainless steel (Ti-DSS) having all of the following:<br>a. Having all of the following characteristics: |

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| | | | 1. | Containing 17,0-23,0 weight percent chromium and 4,5-7,0 weight percent nickel; |
| | | | 2. | Having a titanium content of greater than 0,10 weight percent; and |
| | | | 3. | A ferritic-austenitic microstructure (also referred to as a two-phase microstructure) of which at least 10 percent is austenite by volume (according to ASTM E-1181-87 or national equivalents); and |
| | | b. | Having any of the following forms: | |
| | | | 1. | Ingots or bars having a size of 100 mm or more in each dimension; |
| | | | 2. | Sheets having a width of 600 mm or more and a |

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| | | thickness of 3 mm or less; or<br>3. Tubes having an outer diameter of 600 mm or more and a wall thickness of 3 mm or less. |
| I.1A.033 | 1C202 | Alloys as follows:<br>a. Aluminium alloys having both of the following characteristics:<br>1. 'Capable of' an ultimate tensile strength of 460 MPa or more at 293 K (20 °C); and<br>2. In the form of tubes or cylindrical solid forms (including forgings) with an outside diameter of more than 75 mm;<br>b. Titanium alloys having both of the following characteristics:<br>1. 'Capable of' an ultimate tensile strength of 900 MPa |

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| | | or more at 293 K (20 °C); and<br>2. In the form of tubes or cylindrical solid forms (including forgings) with an outside diameter of more than 75 mm.<br>Technical Notes:<br>*The phrase alloys 'capable of' encompasses alloys before or after heat treatment.* |
| I.1A.034 | 1C210 and *ex* 1C010.a | 'Fibrous or filamentary materials' or prepregs, other than those specified in I.1A.024, as follows:<br>a. Carbon or aramid 'fibrous or filamentary materials' having either of the following characteristics:<br>1. A 'specific modulus' of 12,7 × $10^6$ m or greater; or<br>2. A 'specific tensile strength' of 235 × $10^3$ m or greater;<br>*Note: I.1A.034.a. does not prohibit aramid 'fibrous or filamentary materials' having 0,25 percent or more by weight of* |

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| | | *an ester based fibre surface modifier;*<br>b. Glass 'fibrous or filamentary materials' having both of the following characteristics:<br>1. A 'specific modulus' of 3,18 × $10^6$ m or greater; and<br>2. A 'specific tensile strength' of 76,2 × $10^3$ m or greater;<br>c. Thermoset resin impregnated continuous 'yarns', 'rovings', 'tows' or 'tapes' with a width of 15 mm or less (prepregs), made from carbon or glass 'fibrous or filamentary materials' specified in I.1A.024 or I.1A.034.a or .b.<br>Technical Notes:<br>*The resin forms the matrix of the composite.*<br>*Note: In I.1A.034, 'fibrous or filamentary materials' is restricted to continuous 'monofilaments', 'yarns', 'rovings', 'tows' or 'tapes'.* |
| I.1A.035 | 1C216 | Maraging steel, other than that specified in I.1A.030, 'capable of' an ultimate tensile strength of 2 050 MPa or more, at 293 K (20 °C).<br>*Note: I.1A.035 does not prohibit forms in which all* |

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| | | *linear dimensions are 75 mm or less.*<br>Technical Notes:<br>*The phrase maraging steel 'capable of' encompasses maraging steel before or after heat treatment.* |
| I.1A.036 | 1C225 | Boron enriched in the boron-10 ($^{10}$B) isotope to greater than its natural isotopic abundance, as follows: elemental boron, compounds, mixtures containing boron, manufactures thereof, waste or scrap of any of the foregoing.<br>*Note: In I.1A.036 mixtures containing boron include boron loaded materials.*<br>Technical Notes:<br>*The natural isotopic abundance of boron-10 is approximately 18,5 weight per cent (20 atom per cent).* |
| I.1A.037 | 1C226 | Tungsten, tungsten carbide, and alloys containing more than 90 % tungsten by weight, having both of the following characteristics:<br>a. In forms with a hollow cylindrical symmetry (including cylinder segments) with an inside diameter between 100 mm and 300 mm; and<br>b. A mass greater than 20 kg.<br>*Note: I.1A.037 does not prohibit manufactures specially designed as weights or gamma-ray collimators* |
| I.1A.038 | 1C227 | Calcium having both of the following characteristics:<br>a. Containing less than 1 000 parts per million by weight of metallic impurities other |

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| | | than magnesium; and<br>b. Containing less than 10 parts per million by weight of boron. |
| I.1A.039 | 1C228 | Magnesium having both of the following characteristics:<br>a. Containing less than 200 parts per million by weight of metallic impurities other than calcium; and<br>b. Containing less than 10 parts per million by weight of boron. |
| I.1A.040 | 1C229 | Bismuth having both of the following characteristics:<br>a. A purity of 99,99 % or greater by weight; and<br>b. Containing less than 10 parts per million by weight of silver. |
| I.1A.041 | 1C230 | Beryllium metal, alloys containing more than 50 % beryllium by weight, beryllium compounds, manufactures thereof, and waste or scrap of any of the foregoing.<br>*Note: I.1A.041 does not prohibit the following:*<br>a. *Metal windows for X-ray machines, or for bore-hole logging devices;*<br>b. *Oxide shapes in fabricated or semi-fabricated forms specially designed for electronic component parts or as substrates for electronic circuits;*<br>c. *Beryl (silicate of beryllium and aluminium) in the form of emeralds or aquamarines.* |

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| I.1A.042 | 1C231 | Hafnium metal, alloys containing more than 60 % hafnium by weight, hafnium compounds containing more than 60 % hafnium by weight, manufactures thereof, and waste or scrap of any of the foregoing. |
| I.1A.043 | 1C232 | Helium-3 ($^3$He), mixtures containing helium-3, and products or devices containing any of the foregoing.<br>*Note: I.1A.043 does not prohibit a product or device containing less than 1 g of helium-3.* |
| I.1A.044 | 1C233 | Lithium enriched in the lithium-6 ($^6$Li) isotope to greater than its natural isotopic abundance, and products or devices containing enriched lithium, as follows: elemental lithium, alloys, compounds, mixtures containing lithium, manufactures thereof, waste or scrap of any of the foregoing.<br>*Note: I.1A.044 does not prohibit thermoluminescent dosimeters.*<br>Technical Notes:<br>*The natural isotopic abundance of lithium-6 is approximately 6,5 weight per cent (7,5 atom per cent).* |
| I.1A.045 | 1C234 | Zirconium with a hafnium content of less than 1 part hafnium to 500 parts zirconium by weight, as follows: metal, alloys containing more than 50 % zirconium by weight, compounds, manufactures thereof, waste or scrap of any of the foregoing.<br>*Note: I.1A.045 does not prohibit zirconium in* |

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| | | *the form of foil having a thickness of 0,10 mm or less.* |
| I.1A.046 | 1C235 | Tritium, tritium compounds, mixtures containing tritium in which the ratio of tritium to hydrogen atoms exceeds 1 part in 1 000, and products or devices containing any of the foregoing.<br>*Note: I.1A.046 does not prohibit a product or device containing less than 1,48 × $10^3$ GBq (40 Ci) of tritium.* |
| I.1A.047 | 1C236 | Alpha-emitting radionuclides having an alpha half-life of 10 days or greater but less than 200 years, in the following forms:<br>a. Elemental;<br>b. Compounds having a total alpha activity of 37 GBq/kg (1 Ci/kg) or greater;<br>c. Mixtures having a total alpha activity of 37 GBq/kg (1 Ci/kg) or greater;<br>d. Products or devices containing any of the foregoing.<br>*Note: I.1A.047 does not prohibit a product or device containing less than 3,7 GBq (100 millicuries) of alpha activity.* |
| I.1A.048 | 1C237 | Radium-226 ($^{226}$Ra), radium-226 alloys, radium-226 compounds, mixtures containing radium-226, manufactures therof, and products or devices containing any of the foregoing.<br>*Note: I.1A.048 does not prohibit the following:*<br>a. *Medical applicators;*<br>b. *A product or device containing less than 0,37 GBq* |

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| | | *(10 millicuries) of radium-226.* |
| I.1A.049 | 1C238 | Chlorine trifluoride ($ClF_3$). |
| I.1A.050 | 1C239 | high-explosives, other than those specified in the Military Goods Controls, or substances or mixtures containing more than 2 % by weight thereof, with a crystal density greater than 1,8 g/$cm^3$ and having a detonation velocity greater than 8 000 m/s. |
| I.1A.051 | 1C240 | Nickel powder and porous nickel metal, other than those specified in I.0A.013, as follows:<br>a. Nickel powder having both of the following characteristics:<br>1. A nickel purity content of 99,0 % or greater by weight; and<br>2. A mean particle size of less than 10 micrometres measured by American Society for Testing and Materials (ASTM) B330 standard;<br>b. Porous nickel metal produced from materials specified in I.1A.051.a.<br>*Note: I.1A.051 does not prohibit the following:* |

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| | | a. *Filamentary nickel powders;*<br>b. *Single porous nickel sheets with an area of 1 000 $cm^2$ per sheet or less.*<br>Technical Notes:<br>*I.1A.051.b. refers to porous metal formed by compacting and sintering the materials in I.1A.051.a. to form a metal material with fine pores interconnected throughout the structure.* |

I.1B

TECHNOLOGY, INCLUDING SOFTWARE

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
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| I.1B.001 | *ex* 1D001 | 'Software' specially designed or modified for the 'development', 'production' or 'use' of equipment specified in I.1A.006. |
| I.1B.002 | 1D101 | 'Software' specially designed or modified for the 'use' of goods specified in I.1A.007 to I.1A.009, or I.1A.011 to I.1A.013. |
| I.1B.003 | 1D103 | 'Software' specially designed for analysis of reduced observables such as radar reflectivity, ultraviolet/ infrared signatures and acoustic signatures. |
| I.1B.004 | 1D201 | 'Software' specially designed for the 'use' of goods specified in I.1A.014. |
| I.1B.005 | 1E001 | 'Technology' according to the General Technology Note for the 'development' or 'production' of equipment or materials specified in I.1A.006 to I.1A.051. |
| I.1B.006 | 1E101 | 'Technology' according to the General Technology |

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| | | Note for the 'use' of goods specified in I.1A.001, I.1A.006 to I.1A.013, I.1A.026, I.1A.028, I.1A.029 to I.1A.032, I.1B.002 or I.1B.003. |
| I.1B.007 | *ex* 1E102 | 'Technology' according to the General Technology Note for the 'development' of 'software' specified in I.1B.001 to I.1B.003. |
| I.1B.008 | 1E103 | 'Technology' for the regulation of temperature, pressure or atmosphere in autoclaves or hydroclaves, when used for the 'production' of 'composites' or partially processed 'composites'. |
| I.1B.009 | 1E104 | 'Technology' relating to the 'production' of pyrolytically derived materials formed on a mould, mandrel or other substrate from precursor gases which decompose in the 1 573 K (1 300 °C) to 3 173 K (2 900 °C) temperature range at pressures of 130 Pa to 20 kPa.<br>*Note: I.1B.009 includes 'technology' for the composition of precursor gases, flow-rates and process control schedules and parameters.* |
| I.1B.010 | *ex* 1E201 | 'Technology' according to the General Technology Note for the 'use' of goods specified in I.1A.002 to I.1A.005, I.1A.014 to I.1A.023, I.1A.024.b., I.1A.033 to I.1A.051, or I.1B.004. |
| I.1B.011 | 1E202 | 'Technology' according to the General Technology Note for the 'development' or 'production' of goods specified in I.1A.002 to I.1A.005. |

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| I.1B.012 | 1E203 | 'Technology' according to the General Technology Note for the 'development' of 'software' specified in I.1B.004. |

## I.2 MATERIALS PROCESSING

### I.2A

### GOODS

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
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| I.2A.001 | *ex* 2A001* | Anti-friction bearings and bearing systems, as follows, and components therefor:<br>*Note: I.2A.001 does not prohibit balls with tolerances specified by the manufacturer in accordance with ISO 3290 as grade 5 or worse.*<br>Radial ball bearings having all tolerances specified by the manufacturer in accordance with ISO 492 Tolerance Class 2 (or ANSI/ABMA Std 20 Tolerance Class ABEC-9 or RBEC-9, or other national equivalents), or better and having all of the following characteristics:<br>a. An inner ring bore diameter between 12 and 50 mm;<br>b. An outer ring outside diameter between 25 and 100 mm; and<br>c. A width between 10 and 20 mm. |
| I.2A.002 | 2A225 | Crucibles made of materials resistant to liquid actinide metals, as follows:<br>a. Crucibles having both of the following characteristics: |

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| | | 1. A volume of between 150 $cm^3$ and 8 000 $cm^3$; and<br>2. Made of or coated with any of the following materials, having a purity of 98 % or greater by weight:<br>a. Calcium fluoride ($CaF_2$);<br>b. Calcium zirconate (metazirconate) ($CaZrO_3$);<br>c. Cerium sulphide ($Ce_2S_3$);<br>d. Erbium oxide (erbia) ($Er_2O_3$);<br>e. Hafnium oxide (hafnia) ($HfO_2$);<br>f. Magnesium oxide (MgO);<br>g. Nitrided niobium-titanium-tungsten alloy (approximately 50 % Nb, 30 % Ti, |

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| | | 20 % W);<br>h. Yttrium oxide (yttria) ($Y_2O_3$); or<br>i. Zirconium oxide (zirconia) ($ZrO_2$); |
| | | b. Crucibles having both of the following characteristics:<br>1. A volume of between 50 $cm^3$ and 2 000 $cm^3$; and<br>2. Made of or lined with tantalum, having a purity of 99,9 % or greater by weight; |
| | | c. Crucibles having all of the following characteristics:<br>1. A volume of between 50 $cm^3$ and 2 000 $cm^3$;<br>2. Made of or lined with tantalum, having a purity of 98 % or greater by weight; and |

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| | | 3. Coated with tantalum carbide, nitride, boride, or any combination thereof |
| I.2A.003 | 2A226 | Valves having all of the following characteristics:<br>a. A 'nominal size' of 5 mm or greater;<br>b. Having a bellows seal; and<br>c. Wholly made of or lined with aluminium, aluminium alloy, nickel, or nickel alloy containing more than 60 % nickel by weight.<br>Technical Notes:<br>*For valves with different inlet and outlet diameters, the 'nominal size' in I.2A.003 refers to the smallest diameter* |
| I.2A.004 | *ex* 2B001.a*, 2B001.d | Machine tools and any combination thereof, for removing (or cutting) metals, ceramics or 'composites', which, according to the manufacturer's technical specification, can be equipped with electronic devices for 'numerical control', and specially designed components as follows:<br>N.B.: See also I.2A.016.<br>*Note 1: I.2A.004 does not prohibit special purpose machine tools limited to the manufacture of gears.*<br>*Note 2: I.2A.004 does not prohibit special purpose machine tools limited to the* |

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| | | *manufacture of any of the following parts:*<br>a. *Crankshafts or camshafts;*<br>b. *Tools or cutters;*<br>c. *Extruder worms;*<br>*Note 3: A machine tool having at least two of the three turning, milling or grinding capabilities (e.g., a turning machine with milling capability), must be evaluated against each applicable entry I.2A.004.a and I.2A.016.*<br>Machine tools for turning, for machines capable of machining diameters greater than 35 mm, having all of the following characteristics:<br>1. Positioning accuracy with 'all compensations available' equal to or less (better) than 6 µm according to ISO 230/2 (1988)[a] or national equivalents along any linear axis; and<br>2. Two or more axes which can be coordinated simultaneously for 'contouring control'; |

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| | | *Note 1: I.2A.004.a. does not prohibit turning machines specially designed for the production of contact lenses, having all of the following characteristics:*<br>1. *Machine controller limited to using ophthalmic based software for part programming data input; and*<br>2. *No vacuum chucking.*<br>*Note 2: I.2A.004.a does not prohibit bar machines (Swissturn), limited to machining only bar feed thru, if maximum bar diameter is equal to or less than 42 mm and there is no capability of mounting chucks. Machines may have drilling and/or milling capabilities for machining parts with diameters less than 42 mm.*<br>Electrical discharge machines (EDM) of the non-wire type which have two or more rotary axes which can be coordinated simultaneously |

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| | | for ‘contouring control’; |
| I.2A.005 | *ex* 2B006.b* | Dimensional inspection or measuring systems, equipment and ‘electronic assemblies’, as follows:<br>Linear and angular displacement measuring instruments, as follows:<br>Linear displacement measuring instruments having any of the following:<br>Technical Notes:<br>*For the purpose of I.2A.005.b.1. ‘linear displacement’ means the change of distance between the measuring probe and the measured object.*<br>a. Non-contact type measuring systems with a ‘resolution’ equal to or less (better) than 0,2 |

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| | | | µm within a measuring range up to 0,2 mm;<br>b. Linear voltage differential transformer systems having all of the following characteristics:<br>1. 'Linearity' equal to or less (better) than 0,1 % within a measuring range up to 5 mm; and<br>2. Drift equal to or less (better) than 0,1 % per day at a |

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| | | | standard ambient test room temperature ± 1 K; or |
| | | | c. Measuring systems having all of the following: |
| | | | 1. Containing a ‘laser’; and |
| | | | 2. Maintaining, for at least 12 hours, over a temperature range of ± 1 K around a standard temperature and at a standard pressure, all of the following: |
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| | | | full scal of 0,1 µm or less (bet and |
| | | | b. A ‘me unc equ to or less (bet than (0,2 + L/2 000 µm (L is the mea leng in mm |
| | | | *Note: I.2A.005.b.1. does not prohibit measuring interferomete systems, without closed or open loop feedback, containing a laser to measure slide movement* |

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| | | *errors of machine tools, dimensional inspection machines, or similar equipment.*<br>Angular displacement measuring instruments having an 'angular position deviation' equal to or less (better) than 0,00025 °;<br>*Note: I.2A.005.b.2. does not prohibit optical instruments, such as autocollimators, using collimated light (e.g. laser light) to detect angular displacement of a mirror* |
| I.2A.006 | 2B007.c | 'Robots' having the following characteristics and specially designed controllers and 'end-effectors' therefor:<br>N.B.: See also I.2A.019.<br>c. Specially designed or rated as radiation-hardened to withstand a total |

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| | | radiation dose greater than $5 \times 10^3$ Gy (silicon) without operational degradation.<br>Technical Notes:<br>*The term Gy(silicon) refers to the energy in Joules per kilogram absorbed by an unshielded silicon sample when exposed to ionising radiation.* |
| I.2A.007 | 2B104 | 'Isostatic presses' having all of the following:<br>N.B.: See also I.2A.017.<br>a. Maximum working pressure of 69 MPa or greater;<br>b. Designed to achieve and maintain a controlled thermal environment of 873 K (600 °C) or greater; and<br>c. Possessing a chamber cavity with an inside diameter of 254 mm or greater. |
| I.2A.008 | 2B105 | Chemical vapour deposition (CVD) furnaces designed or modified for the densification of carbon-carbon composites. |
| I.2A.009 | 2B109 | Flow-forming machines and specially designed components as follows:<br>N.B.: See also I.2A.020.<br>a. Flow-forming machines having all of the following:<br>1. According to the manufacturer's technical specification, can be |

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| | | equipped with 'numerical control' units or a computer control, even when not equipped with such units; and<br>2. With more than two axes which can be coordinated simultaneously for 'contouring control'.<br>b. Specially designed components for flow-forming machines specified in I.2A.009.a.<br>*Note: I.2A.009 does not prohibit machines that are not usable in the production of propulsion components and equipment (e.g. motor cases) for 'missiles'.*<br>Technical Notes:<br>*Machines combining the function of spin-forming and flow-forming are for the purpose of I.2A.009 regarded as flow-forming machines* |
| I.2A.010 | 2B116 | Vibration test systems, equipment and components therefor, as follows:<br>a. Vibration test systems employing feedback or closed loop techniques and incorporating a digital controller, capable of vibrating a system at an |

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| | | acceleration equal to or greater than 10 g rms between 20 Hz and 2 kHz and imparting forces equal to or greater than 50 kN, measured 'bare table';<br>b. Digital controllers, combined with specially designed vibration test software, with a 'real-time bandwidth' greater than 5 kHz designed for use with vibration test systems specified in I.2A.010.a.;<br>c. Vibration thrusters (shaker units), with or without associated amplifiers, capable of imparting a force equal to or greater than 50 kN, measured 'bare table', and usable in vibration test systems specified in I.2A.010.a.;<br>d. Test piece support structures and electronic units designed to combine multiple shaker units in a system capable of providing an effective combined force equal to or greater than 50 kN, measured 'bare table', and usable in vibration systems specified in I.2A.010.a.<br>Technical Notes: |

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| | | *In I.2A.010, 'bare table' means a flat table, or surface, with no fixture or fittings* |
| I.2A.011 | 2B117 | Equipment and process controls, other than those specified in I.2A.007 or I.2A.008, designed or modified for densification and pyrolysis of structural composite rocket nozzles and reentry vehicle nose tips. |
| I.2A.012 | 2B119 | Balancing machines and related equipment, as follows:<br>N.B.: See also I.2A.021.<br>a. Balancing machines having all the following characteristics:<br>1. Not capable of balancing rotors/ assemblies having a mass greater than 3 kg;<br>2. Capable of balancing rotors/ assemblies at speeds greater than 12 500 rpm;<br>3. Capable of correcting unbalance in two planes or more; and<br>4. Capable of balancing to a residual specific unbalance of 0,2 g mm per |

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| | | kg of rotor mass;<br>*Note: I.2A.012.a. does not prohibit balancing machines designed or modified for dental or other medical equipment.*<br>b. Indicator heads designed or modified for use with machines specified in I.2A.012.a.<br>Technical Notes:<br>*Indicator heads are sometimes known as balancing instrumentation* |
| I.2A.013 | 2B120 | Motion simulators or rate tables having all of the following characteristics:<br>a. Two axes or more;<br>b. Slip rings capable of transmitting electrical power and/or signal information; and<br>c. Having any of the following characteristics:<br>1. For any single axis having all of the following:<br>a. Capable of rates of 400 degrees/s or more, or 30 degrees/s |

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| | | or less; and<br>b. A rate resolution equal to or less than 6 degrees/s and an accuracy equal to or less than 0,6 degrees/s;<br>2. Having a worst-case rate stability equal to or better (less) than plus or minus 0,05 % averaged over 10 degrees or more; or<br>3. A positioning accuracy equal to or better than 5 arc second.<br>*Note: I.2A.013 does not prohibit rotary tables designed or modified for machine tools or for medical equipment.* |

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| I.2A.014 | 2B121 | Positioning tables (equipment capable of precise rotary positioning in any axes), other than those specified in I.2A.013, having all the following characteristics:<br>a. Two axes or more; and<br>b. A positioning accuracy equal to or better than 5 arc second.<br>*Note: I.2A.014 does not prohibit rotary tables designed or modified for machine tools or for medical equipment.* |
| I.2A.015 | 2B122 | Centrifuges capable of imparting accelerations above 100 g and having slip rings capable of transmitting electrical power and signal information. |
| I.2A.016 | 2B201, 2B001.b.2 and 2B001.c.2 | Machine tools and any combination thereof, as follows, for removing or cutting metals, ceramics or 'composites', which, according to the manufacturer's technical specification, can be equipped with electronic devices for simultaneous 'contouring control' in two or more axes:<br>*Note: For 'numerical control' units prohibited because of their associated 'software' see I.2B.002.*<br>a. Machine tools for milling, having any of the following characteristics:<br>1. Positioning accuracies with 'all compensations available' equal to |

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| | | | or less (better) than 6 μm according to ISO 230/2 (1988)[a] or national equivalents along any linear axis; |
| | | | 2. Two or more contouring rotary axes; or |
| | | | 3. Five or more axes which can be coordinated simultaneously for 'contouring control'. |
| | | | *Note: I.2A.016.a. does not prohibit milling machines having the following characteristics:* |
| | | | a. *X-axis travel greater than 2 m; and* |
| | | | b. *Overall positioning accuracy on the x-axis more (worse) than 30 μm.* |
| | | b. | Machine tools for grinding, having any of the following characteristics: |
| | | | 1. Positioning accuracies |

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| | | with 'all compensations available' equal to or less (better) than 4 μm according to ISO 230/2 (1988)[a] or national equivalents along any linear axis;<br>2. Two or more contouring rotary axes; or<br>3. Five or more axes which can be coordinated simultaneously for 'contouring control'.<br>*Note: I.2A.016.b. does not prohibit the following grinding machines:*<br>a. *Cylindrical external, internal, and external-internal grinding machines having all of the following characteristics:*<br>1. *Limited to a maximum workpiece* |

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| | | *capacity of 150 mm outside diameter or length; and*<br>2. *Axes limited to x, z and c;*<br>b. *Jig grinders that do not have a z-axis or a w-axis with an overall positioning accuracy less (better) than 4 µm according to ISO 230/2 (1988)[a] or national equivalents.*<br>*Note 1: I.2A.016 does not prohibit special purpose machine tools limited to the manufacture of any of the following parts:*<br>a. *Gears;*<br>b. *Crankshafts or camshafts;*<br>c. *Tools or cutters;*<br>d. *Extruder worms.*<br>*Note 2: A machine tool having at least two of the three turning, milling or grinding capabilities (e.g., a turning machine with milling capability), must* |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | *be evaluated against each applicable entry I.2A.004.a. or I.2A.016.a. or b.* |
| I.2A.017 | 2B204 | 'Isostatic presses', other than those specified in I.2A.007, and related equipment, as follows:<br>a. 'Isostatic presses' having both of the following characteristics:<br>1. Capable of achieving a maximum working pressure of 69 MPa or greater; and<br>2. A chamber cavity with an inside diameter in excess of 152 mm;<br>b. Dies, moulds and controls, specially designed for 'isostatic presses' specified in I.2A.017.a.<br>Technical Notes:<br>*In I.2A.017 the inside chamber dimension is that of the chamber in which both the working temperature and the working pressure are achieved and does not include fixtures. That dimension will be the smaller of either the inside diameter of the pressure chamber or the inside diameter of the insulated furnace chamber, depending on which of the* |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | *two chambers is located inside the other.* |
| I.2A.018 | 2B206 | Dimensional inspection machines, instruments or systems, other than those specified in I.2A.005, as follows:<br>a. Computer controlled or numerically controlled dimensional inspection machines having both of the following characteristics:<br>1. Two or more axes; and<br>2. A one-dimensional length 'measurement uncertainty' equal to or less (better) than (1,25 + L/1 000) µm tested with a probe of an 'accuracy' of less (better) than 0,2 µm (L is the measured length in millimetres) (Ref.: VDI/VDE 2617 Parts 1 and 2);<br>b. Systems for simultaneous linear-angular inspection of hemishells, |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | having both of the following characteristics:<br>1. 'Measurement uncertainty' along any linear axis equal to or less (better) than 3,5 µm per 5 mm; and<br>2. 'Angular position deviation' equal to or less than 0,02 °.<br>*Note 1: Machine tools that can be used as measuring machines are prohibited if they meet or exceed the criteria specified for the machine tool function or the measuring machine function.*<br>*Note 2: A machine specified in I.2A.018 is prohibited if it exceeds the prohibition threshold anywhere within its operating range.*<br>Technical Notes:<br>*1. The probe used in determining the measurement uncertainty of a dimensional inspection system shall be described in VDI/VDE 2617 parts 2, 3 and 4.*<br>*2. All parameters of measurement values in I.2A.018 represent plus/minus i.e., not total band.* |
| I.2A.019 | 2B207 | 'Robots', 'end-effectors' and control units, other than |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | those specified in I.2A.006, as follows:<br>a. ‘Robots’ or ‘end-effectors’ specially designed to comply with national safety standards applicable to handling high-explosives (for example, meeting electrical code ratings for high-explosives);<br>b. Control units specially designed for any of the ‘robots’ or ‘end-effectors’ specified in I.2A.019.a. |
| I.2A.020 | 2B209 | Flow forming machines, spin forming machines capable of flow forming functions, other than those specified in I.2A.009, and mandrels, as follows:<br>a. Machines having both of the following characteristics:<br>1. Three or more rollers (active or guiding); and<br>2. Which, according to the manufacturer's technical specification, can be equipped with ‘numerical control’ units or a computer control; |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | b. Rotor-forming mandrels designed to form cylindrical rotors of inside diameter between 75 mm and 400 mm.<br>*Note: I.2A.020.a. includes machines which have only a single roller designed to deform metal plus two auxiliary rollers which support the mandrel, but do not participate directly in the deformation process.* |
| I.2A.021 | 2B219 | Centrifugal multiplane balancing machines, fixed or portable, horizontal or vertical, as follows:<br>a. Centrifugal balancing machines designed for balancing flexible rotors having a length of 600 mm or more and having all of the following characteristics:<br>1. Swing or journal diameter greater than 75 mm;<br>2. Mass capability of from 0,9 to 23 kg; and<br>3. Capable of balancing speed of revolution greater than 5 000 r.p.m.;<br>b. Centrifugal balancing machines designed for balancing hollow |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | cylindrical rotor components and having all of the following characteristics:<br>1. Journal diameter greater than 75 mm;<br>2. Mass capability of from 0,9 to 23 kg;<br>3. Capable of balancing to a residual imbalance equal to or less than 0,01 kg × mm/kg per plane; and<br>4. Belt drive type. |
| I.2A.022 | 2B225 | Remote manipulators that can be used to provide remote actions in radiochemical separation operations or hot cells, having either of the following characteristics:<br>a. A capability of penetrating 0,6 m or more of hot cell wall (through-the-wall operation); or<br>b. A capability of bridging over the top of a hot cell wall with a thickness of 0,6 m or more (over-the-wall operation).<br>Technical Notes:<br>*Remote manipulators provide translation of human operator actions to a remote operating arm and* |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | *terminal fixture. They may be of 'master/slave' type or operated by joystick or keypad.* |
| I.2A.023 | 2B226 | Controlled atmosphere (vacuum or inert gas) induction furnaces, and power supplies therefor, as follows:<br>a. Furnaces having all of the following characteristics:<br>1. Capable of operation above 1 123 K (850 °C);<br>2. Induction coils 600 mm or less in diameter; and<br>3. Designed for power inputs of 5 kW or more;<br>b. Power supplies, with a specified power output of 5 kW or more, specially designed for furnaces specified in I.2A.023.a.<br>*Note: I.2A.023.a. does not prohibit furnaces designed for the processing of semiconductor wafers.* |
| I.2A.024 | 2B227 | Vacuum or other controlled atmosphere metallurgical melting and casting furnaces and related equipment as follows:<br>a. Arc remelt and casting furnaces having both of the following characteristics: |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | 1. Consumable electrode capacities between 1 000 $cm^3$ and 20 000 $cm^3$, and<br>2. Capable of operating with melting temperatures above 1 973 K (1 700 °C);<br>b. Electron beam melting furnaces and plasma atomization and melting furnaces, having both of the following characteristics:<br>1. A power of 50 kW or greater; and<br>2. Capable of operating with melting temperatures above 1 473 K (1 200 °C);<br>c. Computer control and monitoring systems specially configured for any of the furnaces specified in I.2A.024.a. or b. |
| I.2A.025 | 2B228 | Rotor fabrication or assembly equipment, rotor straightening equipment, bellows-forming mandrels and dies, as follows:<br>a. Rotor assembly equipment for |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | | assembly of gas centrifuge rotor tube sections, baffles, and end caps;<br>*Note: I.2A.025.a. includes precision mandrels, clamps, and shrink fit machines.* |
| | | b. | Rotor straightening equipment for alignment of gas centrifuge rotor tube sections to a common axis;<br>Technical Notes:<br>*In I.2A.025.b. such equipment normally consists of precision measuring probes linked to a computer that subsequently controls the action of, for example, pneumatic rams used for aligning the rotor tube sections.* |
| | | c. | Bellows-forming mandrels and dies for producing single-convolution bellows.<br>Technical Notes:<br>*In I.2A.025.c. the bellows have all of the following characteristics:*<br>1. *Inside diameter between 75 mm and 400 mm;*<br>2. *Length equal to or greater than 12,7 mm;* |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | 3. *Single convolution depth greater than 2 mm; and*<br>4. *Made of high-strength aluminium alloys, maraging steel or high strength 'fibrous or filamentary materials'.* |
| I.2A.026 | 2B230 | 'Pressure transducers' capable of measuring absolute pressures at any point in the range 0 to 13 kPa and having both of the following characteristics:<br>a. Pressure sensing elements made of or protected by aluminium, aluminium alloy, nickel or nickel alloy with more than 60 % nickel by weight; and<br>b. Having either of the following characteristics:<br>1. A full scale of less than 13 kPa and an 'accuracy' of better than + 1 % of full scale; or<br>2. A full scale of 13 kPa or greater |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

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| | | and an 'accuracy' of better than + 130 Pa.<br>Technical Notes:<br>*For the purposes of I.2A.026, 'accuracy' includes non-linearity, hysteresis and repeatability at ambient temperature.* |
| I.2A.027 | 2B231 | Vacuum pumps having all of the following characteristics:<br>a. Input throat size equal to or greater than 380 mm;<br>b. Pumping speed equal to or greater than 15 $m^3$/s; and<br>c. Capable of producing an ultimate vacuum better than 13 mPa.<br>Technical Notes:<br>*1. The pumping speed is determined at the measurement point with nitrogen gas or air.*<br>*2. The ultimate vacuum is determined at the input of the pump with the input of the pump blocked off* |
| I.2A.028 | 2B232 | Multistage light gas guns or other high-velocity gun systems (coil, electromagnetic, and electrothermal types, and other advanced systems) capable of accelerating projectiles to 2 km/s or greater |

**a** Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

I.2B

TECHNOLOGY, INCLUDING SOFTWARE

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
|---|---|---|
| I.2B.001 | *ex* 2D001 | 'Software', other than that specified in I.2B.002, specially designed or modified for the 'development', 'production' or 'use' of equipment specified in I.2A.004 to I.2A.006. |
| I.2B.002 | 2D002 | 'Software' for electronic devices, even when residing in an electronic device or system, enabling such devices or systems to function as a 'numerical control' unit, capable of co-ordinating simultaneously more than four axes for 'contouring control'.<br>*Note 1: I.2B.002 does not prohibit 'software' specially designed or modified for the operation of machine tools not specified in Category I.2.* |
| I.2B.003 | 2D101 | 'Software' specially designed or modified for the 'use' of equipment specified in I.2A.007 to I.2A.015. |
| I.2B.004 | 2D201 | 'Software' specially designed for the 'use' of equipment specified in I.2A.017 to I.2A.024.<br>*Note: 'Software' specially designed for equipment specified in I.2A.018 includes 'software' for simultaneous measurements of wall thickness and contour* |
| I.2B.005 | 2D202 | 'Software' specially designed or modified for the 'development', 'production' or 'use' of equipment specified in I.2A.016. |

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| I.2B.006 | *ex* 2E001 | 'Technology' according to the General Technology Note for the 'development' of equipment or 'software' specified in I.2A.002 to I.2A.004, I.2A.006.b., I.2A.006.c, I.2A.007 to I.2A.028, I.2B.001, I.2B.003 or I.2B.004. |
| I.2B.007 | *ex* 2E002 | 'Technology' according to the General Technology Note for the 'production' of equipment specified in I.2A.002 to I.2A.004, I.2A.006.b., I.2A.006.c, I.2A.007 to I.2A.028. |
| I.2B.008 | 2E101 | 'Technology' according to the General Technology Note for the 'use' of equipment or 'software' specified in I.2A.007, I.2A.009, I.2A.010, I.2A.012 to I.2A.015 or I.2B.003. |
| I.2B.009 | *ex* 2E201 | 'Technology' according to the General Technology Note for the 'use' of equipment or 'software' specified in I.2A.002 to I.2A.005, I.2A.006.b., I.2A.006.c., I.2A.016 to I.2A.020, I.2A.022 to I.2A.028, I.2B.004 or I.2B.005. |

## I.3 ELECTRONICS

### I.3A

### GOODS

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
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| I.3A.001 | *ex* 3A001.a* | Electronic components, as follows:<br>a. General purpose integrated circuits, as follows:<br>*Note 1: The prohibition status of wafers (finished* |

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| | | *or unfinished), in which the function has been determined, is to be evaluated against the parameters of I.3A.001.a.*<br>*Note 2: Integrated circuits include the following types:*<br>*'Monolithic integrated circuits';*<br>*'Hybrid integrated circuits';*<br>*'Multichip integrated circuits';*<br>*'Film type integrated circuits', including silicon-on-sapphire integrated circuits;*<br>*'Optical integrated circuits'.*<br>Integrated circuits having all of the following characteristics:<br>a. Designed or rated as radiation hardened to withstand a total irradiation dose of $5 \times 10^3$ Gy |

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| | | (silicon) or higher; and<br>b. Usable in protecting rocket systems and 'unmanned aerial vehicles' against nuclear effects (e.g., Electromagnetic Pulse (EMP), X-rays, combined blast and thermal effects), and usable for 'missiles'. |
| I.3A.002 | 3A101 | Electronic equipment, devices and components, as follows:<br>a. Analogue-to-digital converters, usable in 'missiles', designed to meet military specifications for ruggedized equipment;<br>b. Accelerators capable of delivering electromagnetic radiation produced by bremsstrahlung from accelerated electrons of 2 MeV or greater, and |

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| | | systems containing those accelerators. *Note: I.3A.002.b. above does not specify equipment specially designed for medical purposes.* |
| I.3A.003 | 3A201 | Electronic components as follows;<br>a. Capacitors having either of the following sets of characteristics:<br>1. a. Voltage rating greater than 1,4 kV;<br>b. Energy storage greater than 10 J;<br>c. Capacitance greater than 0,5 µF; and<br>d. Series inductance less than 50 nH; or<br>2. a. Voltage rating greater than 750 V;<br>b. Capacitance greater than 0,25 µF; and |

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| | | | c. Series inductance less than 10 nH; |
| | | b. | Superconducting solenoidal electromagnets having all of the following characteristics:<br>1. Capable of creating magnetic fields greater than 2 T;<br>2. A ratio of length to inner diameter greater than 2;<br>3. Inner diameter greater than 300 mm; and<br>4. Magnetic field uniform to better than 1 % over the central 50 % of the inner volume;<br>*Note: I.3A.003.b. does not prohibit magnets specially designed for and exported 'as parts of' medical nuclear magnetic resonance (NMR) imaging systems. The phrase 'as part of' does not necessarily mean physical part in the same shipment; separate shipments from* |

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| | | | | | | | *different sources are allowed, provided the related export documents clearly specify that the shipments are dispatched 'as part of' the imaging systems.* |
| | | | | c. | | | Flash X-ray generators or pulsed electron accelerators having either of the following sets of characteristics: |
| | | | | | 1. | a. | An accelerator peak electron energy of 500 keV or greater but less than 25 MeV; and |
| | | | | | | b. | With a 'figure of merit' (K) of 0,25 or greater; or |
| | | | | | 2. | a. | An accelerator peak electron energy of 25 MeV or |

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| | | greater; and<br>b. A 'peak power' greater than 50 MW.<br>*Note: I.3A.003.c. does not prohibit accelerators that are component parts of devices designed for purposes other than electron beam or X-ray radiation (electron microscopy, for example) nor those designed for medical purposes:*<br>Technical Notes:<br>*1. The 'figure of merit' K is defined as:*<br>$K = 1,7 \times 10^3 V^{2,.65} Q$<br>*V is the peak electron energy in million electron volts.*<br>*If the accelerator beam pulse duration is less than or equal to 1 μs, then Q is the total accelerated charge in Coulombs. If the accelerator beam pulse duration is greater than 1 μs, then Q is the maximum accelerated charge in 1 μs.*<br>*Q equals the integral of i with respect to t, over* |

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| | | *the lesser of 1 μs or the time duration of the beam pulse ($Q = \int idt$), where i is beam current in amperes and t is time in seconds.* |
| | | *2. 'Peak power' = (peak potential in volts) × (peak beam current in amperes).* |
| | | *3. In machines based on microwave accelerating cavities, the time duration of the beam pulse is the lesser of 1 μs or the duration of the bunched beam packet resulting from one microwave modulator pulse.* |
| | | *4. In machines based on microwave accelerating cavities, the peak beam current is the average* |

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| | | *current in the time duration of a bunched beam packet* |
| I.3A.004 | 3A225 | Frequency changers or generators, other than those specified in I.0A.002.b.13., having all of the following characteristics:<br>a. Multiphase output capable of providing a power of 40 W or greater;<br>b. Capable of operating in the frequency range between 600 and 2 000 Hz;<br>c. Total harmonic distortion better (less) than 10 %; and<br>d. Frequency control better (less) than 0,1 %.<br>Technical Notes:<br>*Frequency changers in I.3A.004 are also known as converters or inverters.* |
| I.3A.005 | 3A226 | High-power direct current power supplies, other than those specified in I.0A.002.j.6., having both of the following characteristics:<br>a. Capable of continuously producing, over a time period of 8 hours, 100 V or greater with current output of 500 A or greater; and<br>b. Current or voltage stability better than 0,1 % over a time period of 8 hours |
| I.3A.006 | 3A227 | High-voltage direct current power supplies, other |

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| | | than those specified in I.0A.002.j.5., having both of the following characteristics:<br>a. Capable of continuously producing, over a time period of 8 hours, 20 kV or greater with current output of 1 A or greater; and<br>b. Current or voltage stability better than 0,1 % over a time period of 8 hours. |
| I.3A.007 | 3A228 | Switching devices, as follows:<br>a. Cold-cathode tubes, whether gas filled or not, operating similarly to a spark gap, having all of the following characteristics:<br>1. Containing three or more electrodes;<br>2. Anode peak voltage rating of 2,5 kV or more;<br>3. Anode peak current rating of 100 A or more; and<br>4. Anode delay time of 10 μs or less;<br>*Note: I.3A.007 includes gas krytron tubes and vacuum sprytron tubes.*<br>b. Triggered spark-gaps having both of the following characteristics: |

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| | | 1. An anode delay time of 15 μs or less; and<br>2. Rated for a peak current of 500 A or more;<br>c. Modules or assemblies with a fast switching function having all of the following characteristics:<br>1. Anode peak voltage rating greater than 2 kV;<br>2. Anode peak current rating of 500 A or more; and<br>3. Turn on time of 1 μs or less. |
| I.3A.008 | 3A229 | Firing sets and equivalent high-current pulse generators as follows:<br>N.B.: See also Military Goods Controls.<br>a. Explosive detonator firing sets designed to drive multiple controlled detonators specified in I.3A.011;<br>b. Modular electrical pulse generators (pulsers) having all of the following characteristics:<br>1. Designed for portable, mobile, or ruggedized-use; |

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| | | 2. Enclosed in a dust-tight enclosure;<br>3. Capable of delivering their energy in less than 15 μs;<br>4. Having an output greater than 100 A;<br>5. Having a 'rise time' of less than 10 μs into loads of less than 40 ohms;<br>6. No dimension greater than 254 mm;<br>7. Weight less than 25 kg; and<br>8. Specified for use over an extended temperature range 223 K (– 50 °C) to 373 K (100 °C) or specified as suitable for aerospace applications.<br>*Note: I.3A.008.b. includes xenon flash lamp drivers.*<br>Technical Notes:<br>*In I.3A.008.b.5. 'rise time' is defined as the time* |

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| | | *interval from 10 % to 90 % current amplitude when driving a resistive load* |
| I.3A.009 | 3A230 | High-speed pulse generators having both of the following characteristics:<br>a. Output voltage greater than 6 V into a resistive load of less than 55 ohms, and<br>b. 'Pulse transition time' less than 500 ps.<br>Technical Note:<br>*In I.3A.009, 'pulse transition time' is defined as the time interval between 10 % and 90 % voltage amplitude* |
| I.3A.010 | 3A231 | Neutron generator systems, including tubes, having both of the following characteristics:<br>a. Designed for operation without an external vacuum system; and<br>b. Utilizing electrostatic acceleration to induce a tritium-deuterium nuclear reaction |
| I.3A.011 | 3A232 | Detonators and multipoint initiation systems, as follows:<br>N.B.: See also Military Goods Controls.<br>a. Electrically driven explosive detonators, as follows:<br>1. Exploding bridge (EB);<br>2. Exploding bridge wire (EBW);<br>3. Slapper; |

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| | | 4. Exploding foil initiators (EFI);<br>b. Arrangements using single or multiple detonators designed to nearly simultaneously initiate an explosive surface over greater than 5 000 $mm^2$ from a single firing signal with an initiation timing spread over the surface of less than 2,5 µs.<br>*Note: I.3A.011 does not prohibit detonators using only primary explosives, such as lead azide.*<br>Technical Note:<br>*In I.3A.011 the detonators of concern all utilise a small electrical conductor (bridge, bridge wire or foil) that explosively vapourises when a fast, high-current electrical pulse is passed through it.*<br>*In nonslapper-types, the exploding conductor starts a chemical detonation in a contacting high-explosive material such as PETN (Pentaerythritoltetranitrate).*<br>*In slapper detonators, the explosive vapourisation of the electrical conductor drives a flyer or slapper across a gap and the impact of the slapper on an explosive starts a chemical detonation. The slapper in some designs is driven by a magnetic force.*<br>*The term exploding foil detonator may refer to either an EB or a slapper-type detonator. Also, the word initiator is sometimes used in place of the word detonator* |

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| I.3A.012 | 3A233 | Mass spectrometers, other than those specified in I.0A.002.g., capable of measuring ions of 230 atomic mass units or greater and having a resolution of better than 2 parts in 230, as follows, and ion sources therefor:<br>a. Inductively coupled plasma mass spectrometers (ICP/MS);<br>b. Glow discharge mass spectrometers (GDMS);<br>c. Thermal ionization mass spectrometers (TIMS);<br>d. Electron bombardment mass spectrometers which have a source chamber constructed from, lined with or plated with materials resistant to $UF_6$;<br>e. Molecular beam mass spectrometers having either of the following characteristics:<br>1. A source chamber constructed from, lined with or plated with stainless steel or molybdenum and equipped with a cold trap capable of cooling to 193 K (–80 °C) or less; or |

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| | | 2. A source chamber constructed from, lined with or plated with materials resistant to $UF_6$;<br>f. Mass spectrometers equipped with a microfluorination ion source designed for actinides or actinide fluorides. |

I.3B

TECHNOLOGY, INCLUDING SOFTWARE

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
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| I.3B.001 | 3D101 | 'Software' specially designed or modified for the 'use' of equipment specified in I.3A.002.b |
| I.3B.002 | *ex* 3E001 | 'Technology' according to the General Technology Note for the 'development' or 'production' of equipment or materials specified in I.3A.001 to I.3A.003, or in I.3A.007 to I.3A.012. |
| I.3B.003 | *ex* 3E101 | 'Technology' according to the General Technology Note for the 'use' of equipment or 'software' specified in I.3A.001, I.3A.002 or I.3B.001. |
| I.3B.004 | 3E102 | 'Technology' according to the General Technology Note for the 'development' of 'software' specified in I.3B.001. |
| I.3B.005 | *ex* 3E201 | 'Technology' according to the General Technology Note for the 'use' of equipment |

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| | | specified in I.3A.003 to I.3A.012. |

## I.4 COMPUTERS

### I.4A

### GOODS

| No | Relevant item(s) from Annex to Regulation (EC) No 1183/2007 | Description |
|---|---|---|
| I.4A.001 | 4A001.a.1 * | Electronic computers and related equipment, as follows:<br>N.B.: See also I.4A.002.<br>a. Specially designed to have the following characteristics:<br>Rated for continuous operation at temperatures below 228 K (– 45 °C) or above 328 K (55 °C);<br>*Note: I.4A.001 does not apply to computers specially designed for civil automobile or railway train applications.* |
| I.4A.002 | 4A101* | Analogue computers, ‘digital computers’ or digital differential analysers having all of the following characteristics:<br>N.B.: See also Military Goods Controls for computers for use in rockets or missiles. |

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| | | a. Designed or modified for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005; and<br>b. Designed as ruggedised or radiation hardened to withstand radiation levels of 5 × $10^3$ Gy (silicon) or higher. |
| I.4A.003 | 4A102 | 'Hybrid computers' specially designed for modelling, simulation or design integration of space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005.<br>N.B.: See also Military Goods Controls for rockets or missiles related computers.<br>*Note: This prohibition only applies when the equipment is supplied with 'software' specified in I.7B.003 or I.9B.003.* |

I.4B

TECHNOLOGY, INCLUDING SOFTWARE

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
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| I.4B.001 | *ex* 4E001.a | 'Technology' according to the General Technology Note, for the 'development', 'production' or 'use' of equipment or 'software' specified in I.4A.001, I.4A.002 or I.4A.003. |

I.5 TELECOMMUNICATIONS AND 'INFORMATION SECURITY'

I.5A

GOODS

| No | Relevant item(s) from Annex to Regulation (EC) No 1183/2007 | Description |
|---|---|---|
| I.5A.001 | 5A101 | Telemetering and telecontrol equipment, including ground equipment, designed or modified for 'missiles'.<br>Technical Notes:<br>*In I.5A.001 'missile' means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.*<br>*Note:I.5A.001 does not prohibit:*<br>a. *Equipment designed or modified for manned aircraft or satellites;*<br>b. *Ground based equipment designed or modified for terrestrial or marine applications;*<br>c. *Equipment designed for commercial, civil or 'Safety of Life' (e.g. data integrity, flight safety) GNSS services;* |

I.5B

TECHNOLOGY, INCLUDING SOFTWARE

| No | Relevant item(s) from Annex to Regulation (EC) No 1183/2007 | Description |
|---|---|---|
| I.5B.001 | 5D101 | 'Software' specially designed or modified for the 'use' of equipment specified in I.5A.001. |
| I.5B.002 | 5E101 | 'Technology' according to the General Technology Note for the 'development', |

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| | | 'production' or 'use' of equipment specified in I.5A.001 or software specified in I.5B.001. |

## I.6 SENSORS AND LASERS

### I.6A

### GOODS

| No | Relevant item(s) from Annex to Regulation (EC) No 1183/2007 | Description |
|---|---|---|
| I.6A.001 | *ex* 6A005.b*, *ex* 6A005.c* and *ex* 6A005.d*<br>a.:<br>*ex* 6A005.d.4<br>b.:<br>*ex* 6A005.b.2-4<br>c.:<br>*ex* 6A005.c.2 | 'Lasers', other than those specified in I.0A.002.g.5. or I.0A.002.h.6., components and optical equipment, as follows:[a]<br>a. Pulsed excimer (XeF, XeCl, KrF) 'lasers' having all of the following characteristics:<br>1. Operating at wavelengths between 240 nm and 360 nm;<br>2. A repetition rate greater than 250 Hz; and<br>3. An average output power exceeding 500 W.<br>b. Copper (Cu) vapour 'lasers' having both of the following characteristics:<br>1. Operating at wavelengths |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | between 500 nm and 600 nm; and<br>2. An average output power exceeding 40 W.<br>c. Solid state 'tunable' alexandrite (CR: $BeAl_2O_4$) 'lasers' having all of the following characteristics:<br>1. Operating at wavelengths between 720 nm and 800 nm;<br>2. A bandwidth of 0,005 nm or less;<br>3. A repetition rate greater than 125 Hz; and<br>4. An average output power exceeding 30 W. |
| I.6A.002 | 6A007.c | Gravity gradiometers. |
| I.6A.003 | 6A102 | Radiation hardened 'detectors' specially designed or modified for protecting against nuclear effects (e.g. electromagnetic pulse (EMP), X-rays, combined blast and thermal effects) and usable for 'missiles', designed or rated to withstand radiation |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | levels which meet or exceed a total irradiation dose of $5 \times 10^5$ rads (silicon).<br>Technical Notes:<br>*In I.6A.003, a 'detector' is defined as a mechanical, electrical, optical or chemical device that automatically identifies and records, or registers a stimulus such as an environmental change in pressure or temperature, an electrical or electromagnetic signal or radiation from a radioactive material. This includes devices that sense by one time operation or failure.* |
| I.6A.004 | 6A107 | Gravity meters (gravimeters) and components for gravity meters and gravity gradiometers, as follows:<br>a. Gravity meters, designed or modified for airborne or marine use, and having a static or operational accuracy of $7 \times 10^{-6}$ $m/s^2$ (0,7 milligal) or less (better), and having a time-to-steady-state registration of two minutes or less;<br>b. Specially designed components for gravity meters specified in I.6A.004.a. and gravity gradiometers specified in I.6A.002. |
| I.6A.005 | 6A108 | Radar systems and tracking systems as follows:<br>a. Radar and laser radar systems designed or modified for use |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | | in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005;<br>N.B.: See also Military Goods Controls for radar and laser systems for rockets or missiles.<br>*Note: I.6A.005.a. includes the following:*<br>a. *Terrain contour mapping equipment;*<br>b. *Imaging sensor equipment;*<br>c. *Scene mapping and correlation (both digital and analogue) equipment;*<br>d. *Doppler navigation radar equipment.* |
| | | b. | Precision tracking systems, usable for 'missiles', as follows:<br>1. Tracking systems which use a code translator in conjunction with either surface or airborne references or navigation |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | satellite systems to provide real-time measurements of in-flight position and velocity;<br>2. Range instrumentation radars including associated optical/ infrared trackers with all of the following capabilities:<br>a. Angular resolution better than 3 milliradians;<br>b. Range of 30 km or greater with a range resolution better than 10 m rms;<br>c. Velocity resolution better than 3 m/ s.<br>Technical Notes:<br>*In I.6A.005.b.*<br>*'missile' means* |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | *complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.* |
| I.6A.006 | 6A202 | Photomultiplier tubes having both of the following characteristics:<br>a. Photocathode area of greater than 20 $cm^2$; and<br>b. Anode pulse rise time of less than 1 ns. |
| I.6A.007 | 6A203 | Cameras and components, as follows:<br>a. Mechanical rotating mirror cameras, as follows, and specially designed components therefor:<br>1. Framing cameras with recording rates greater than 225 000 frames per second;<br>2. Streak cameras with writing speeds greater than 0,5 mm per microsecond;<br>*Note: In I.6A.007.a. components of such cameras include their synchronizing electronics units and rotor assemblies consisting of* |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | *turbines, mirrors and bearings.*<br>b. Electronic streak cameras, electronic framing cameras, tubes and devices, as follows:<br>1. Electronic streak cameras capable of 50 ns or less time resolution;<br>2. Streak tubes for cameras specified in I.6A.007.b.1.;<br>3. Electronic (or electronically shuttered) framing cameras capable of 50 ns or less frame exposure time;<br>4. Framing tubes and solid-state imaging devices for use with cameras specified in I.6A.007.b.3., as follows:<br>a. Proximity focused image intensifier tubes having the photocathode deposited |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | | on a transparent conductive coating to decrease photocathode sheet resistance; |
| | | b. | Gate silicon intensifier target (SIT) videcon tubes, where a fast system allows gating the photoelectrons from the photocathode before they impinge on the SIT plate; |
| | | c. | Kerr or Pockels cell electro-optical shuttering; |
| | | d. | Other framing tubes and solid-state imaging devices having a |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | fast-image gating time of less than 50 ns specially designed for cameras specified in I.6A.007.b.3.;<br>c. Radiation-hardened TV cameras, or lenses therefor, specially designed or rated as radiation hardened to withstand a total radiation dose greater than $50 \times 10^3$ Gy(silicon) ($5 \times 10^6$ rad (silicon)) without operational degradation.<br>Technical Notes:<br>*The term Gy(silicon) refers to the energy in Joules per kilogram absorbed by an unshielded silicon sample when exposed to ionising radiation* |
| I.6A.008 | 6A205 | 'Lasers', 'laser' amplifiers and oscillators, other than those specified in I.0A.002.g.5., I.0A.002.h.6. and I.6A.001; as follows:<br>a. Argon ion 'lasers' having both of the following characteristics:<br>1. Operating at wavelengths |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | between 400 nm and 515 nm; and<br>2. An average output power greater than 40 W;<br>b. Tunable pulsed single-mode dye laser oscillators having all of the following characteristics:<br>1. Operating at wavelengths between 300 nm and 800 nm;<br>2. An average output power greater than 1 W;<br>3. A repetition rate greater than 1 kHz; and<br>4. Pulse width less than 100 ns;<br>c. Tunable pulsed dye laser amplifiers and oscillators, having all of the following characteristics:<br>1. Operating at wavelengths between 300 nm and 800 nm; |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | | 2. | An average output power greater than 30 W; | |
| | | | 3. | A repetition rate greater than 1 kHz; and | |
| | | | 4. | Pulse width less than 100 ns; | |
| | | | *Note: I.6A.008.c. does not prohibit single mode oscillators;* | | |
| | | d. | Pulsed carbon dioxide ‘lasers’ having all of the following characteristics: | | |
| | | | 1. | Operating at wavelengths between 9 000 nm and 11 000 nm; | |
| | | | 2. | A repetition rate greater than 250 Hz; | |
| | | | 3. | An average output power greater than 500 W; and | |
| | | | 4. | Pulse width of less than 200 ns; | |
| | | e. | Para-hydrogen Raman shifters | | |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | | designed to operate at 16 micrometre output wavelength and at a repetition rate greater than 250 Hz; |
| | | f. | Neodymium-doped (other than glass) ‘lasers’, having an output wavelength exceeding 1 000 nm but not exceeding 1 100 nm, as follows: |
| | | | 1. Pulse-excited, ‘Q-switched lasers’ having a ‘pulse duration’ equal to or more than 1 ns, and having either of the following: |
| | | | a. A single-transverse mode output having an average output power exceeding 40 W; or |
| | | | b. A multiple-transverse mode output having an average power exceeding |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

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| | | 50 W; or<br>2. Incorporating frequency doubling to give an output wavelength of 500 nm or more but not exceeding 550 nm and having an average output power exceeding 40 W. |
| I.6A.009 | 6A225 | Velocity interferometers for measuring velocities exceeding 1 km/s during time intervals of less than 10 microseconds.<br>*Note: I.6A.009 includes velocity interferometers such as VISARs (Velocity interferometer systems for any reflector) and DLIs (Doppler laser interferometers).* |
| I.6A.010 | 6A226 | Pressure sensors, as follows:<br>a. Manganin gauges for pressures greater than 10 GPa;<br>b. Quartz pressure transducers for pressures greater than 10 GPa |
| I.6A.011 | *ex* 6B108* | Systems specially designed for radar cross section measurement usable for 'missiles' and their subsystems. |

**a** The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

I.6B

TECHNOLOGY, INCLUDING SOFTWARE

| No | Relevant item(s) from Annex to Regulation (EC) No 1183/2007 | Description |
|---|---|---|
| I.6B.001 | 6D102 | 'Software' specially designed or modified for the 'use' of goods specified in I.6A.005. |
| I.6B.002 | 6D103 | 'Software' which processes post-flight, recorded data, enabling determination of vehicle position throughout its flight path, specially designed or modified for 'missiles'.<br>Technical Notes:<br>*In I.6B.002 'missile' means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.* |
| I.6B.003 | *ex* 6E001 | 'Technology' according to the General Technology Note for the 'development' of equipment, materials or 'software' specified in I.6A.001, I.6A.002.c, I.6A.003, I.6A.004 to I.6A.010, I.6B.001 or I.6B.002. |
| I.6B.004 | *ex* 6E002 | 'Technology' according to the General Technology Note for the 'production' of equipment or materials specified in I.6A.001, I.6A.002.c or I.6A.003 to I.6A.010. |
| I.6B.005 | *ex* 6E101 | 'Technology' according to the General Technology Note for the 'use' of equipment or 'software' specified in I.6A.002 to I.6A.005, I.6A.011, I.6B.001 or I.6B.002. |
| I.6B.006 | *ex* 6E201 | 'Technology' according to the General Technology Note for the 'use' of equipment |

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| | | specified in I.6A.001 or I.6A.006 to I.6A.010. |

## I.7 NAVIGATION AND AVIONICS

### I.7A

### GOODS

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
|---|---|---|
| I.7A.001 | *ex* 7A002*<br>(*ex* 7A002.a and *ex* 7A002.d) | Gyros having any of the following characteristics, and specially designed components therefor:<br>N.B.: See also I.7A.003.<br>a. A 'drift rate''stability', when measured in a 1 g environment over a period of one month and with respect to a fixed calibration value, of less (better) than 0,5 degree per hour when specified to function at linear acceleration levels up to and including 100 g; or<br>b. Specified to function at linear acceleration levels exceeding 100 g. |
| I.7A.002 | 7A101, *ex* 7A001.a.3 | Accelerometers as follows, and specially designed components therefor:<br>a. Linear accelerometers, designed for use in inertial navigation systems or in guidance systems of all types, usable in 'missiles', having all the following characteristics, and specially designed |

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| | | components therefor;<br>1. A 'bias''repeatability' of less (better) than 1 250 micro g; and<br>2. A 'scale factor''repeatability' of less (better) than 1 250 ppm;<br>*Note: I.7A.002.a. does not specify accelerometers which are specially designed and developed as MWD (Measurement While Drilling) Sensors for use in downhole well service operations.*<br>Technical Notes:<br>*1. In I.7A.002.a. 'missile' means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km;*<br>*2. In I.7A.002.a. the measurement of 'bias' and 'scale factor' refers to a* |

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| | | *one sigma standard deviation with respect to a fixed calibration over a period of one year;*<br>b. Continuous output accelerometers specified to function at acceleration levels exceeding 100 g. |
| I.7A.003 | 7A102* | All types of gyros, other than those specified in I.7A.001, usable in 'missiles', with a rated 'drift rate''stability' of less than 0,5° (1 sigma or rms) per hour in a 1 g environment and specially designed components therefor.<br>Technical Note:<br>*In I.7A.003 'missile' means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.* |
| I.7A.004 | *ex* 7A103 (7A103.a, *ex* 7A103.b and 7A103.c) | Instrumentation, navigation equipment and systems, as follows; and specially designed components therefor:<br>Inertial or other equipment using accelerometers specified in I.7A.002 or gyros specified in I.7A.001 or I.7A.003 and systems incorporating such equipment;<br>Integrated flight instrument systems, which include gyrostabilisers or automatic |

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| | | pilots, designed or modified for use in 'missiles'; 'Integrated navigation systems', designed or modified for 'missiles' and capable of providing a navigational accuracy of 200 m Circle of Equal Probability (CEP) or less.<br>Technical Notes:<br>*1. An 'integrated navigation system' typically incorporates the following components:*<br>a. *An inertial measurement device (e.g., an attitude and heading reference system, inertial reference unit, or inertial navigation system);*<br>b. *One or more external sensors used to update the position and/or velocity, either periodically or* |

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| | | *continuously throughout the flight (e.g., satellite navigation receiver, radar altimeter, and/or Doppler radar); and*<br>c. *Integration hardware and software;*<br>*2. In I.7A.004.c. 'missile' means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.* |
| I.7A.005 | 7A104 | Gyro-astro compasses and other devices, which derive position or orientation by means of automatically tracking celestial bodies or satellites and specially designed components therefor. |
| I.7A.006 | 7A105 | Receiving equipment for Global Navigation Satellite Systems (GNSS; e.g. GPS, GLONASS, or Galileo), having any of the following characteristics, and specially designed components therefor:<br>a. Designed or modified for use in space launch |

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| | | | vehicles specified in I.9A.001, unmanned aerial vehicles specified in I.9A.003 or sounding rockets specified in I.9A.005; or<br>N.B.: See also Military Goods Controls for receiving equipment for rockets or missiles. |
| | | b. | Designed or modified for airborne applications and having any of the following:<br>1. Capable of providing navigation information at speeds in excess of 600 m/s;<br>2. Employing decryption, designed or modified for military or governmental services, to gain access to GNSS secured signal/data; or<br>3. Being specially designed to employ anti-jam features (e.g. null steering antenna or electronically |

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| | | steerable antenna) to function in an environment of active or passive countermeasures.<br>*Note: I.7A.006.b.2. and I.7A.006.b.3. do not prohibit equipment designed for commercial, civil or 'Safety of Life' (e.g., data integrity, flight safety) GNSS services* |
| I.7A.007 | 7A106 | Altimeters of radar or laser radar type, designed or modified for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005.<br>N.B.: See also Military Goods Controls for altimeters for rockets or missiles. |
| I.7A.008 | 7A115 | Passive sensors for determining bearing to specific electromagnetic source (direction finding equipment) or terrain characteristics, designed or modified for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005.<br>N.B.: See also Military Goods Controls for passive sensors for rockets or missiles.<br>*Note: I.7A.008 includes sensors for the following equipment:*<br>a. *Terrain contour mapping equipment;*<br>b. *Imaging sensor equipment (both active and passive);* |

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| | | c. *Passive interferometer equipment.* |
| I.7A.009 | 7A116 | Flight control systems and servo valves, as follows; designed or modified for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005.<br>N.B.: See also Military Goods Controls for flight control systems and servo valves for rockets or missiles.<br>a. Hydraulic, mechanical, electro-optical, or electro-mechanical flight control systems (including fly-by-wire types);<br>b. Attitude control equipment;<br>c. Flight control servo valves designed or modified for the systems specified in I.7A.009.a. or I.7A.009.b., and designed or modified to operate in a vibration environment greater than 10 g rms between 20 Hz and 2 kHz. |
| I.7A.010 | 7A117 | 'Guidance sets', usable in 'missiles' capable of achieving system accuracy of 3,33 % or less of the range (e.g., a 'CEP' of 10 km or less at a range of 300 km). |
| I.7A.011 | 7B001 | Test, calibration or alignment equipment specially designed for equipment specified in I.7A.001 to I.7A.010. |
| I.7A.012 | 7B002 | Equipment, as follows, specially designed to characterize mirrors for ring 'laser' gyros:<br>N.B.: See also I.7A.014. |

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| | | a. Scatterometers having a measurement accuracy of 10 ppm or less (better);<br>b. Profilometers having a measurement accuracy of 0,5 nm (5 angstrom) or less (better). |
| I.7A.013 | 7B003* | Equipment specially designed for the 'production' of equipment specified in I.7A.001 to I.7A.010.<br>*Note: I.7A.013 includes:*<br>a. *Gyro tuning test stations;*<br>b. *Gyro dynamic balance stations;*<br>c. *Gyro run-in/motor test stations;*<br>d. *Gyro evacuation and fill stations;*<br>e. *Centrifuge fixtures for gyro bearings;*<br>f. *Accelerometer axis align stations;*<br>g. *(reserved)*<br>h. *Accelerometer test stations;*<br>i. *Inertial measurement unit (IMU) module testers;*<br>j. *Inertial measurement unit (IMU) platform testers;*<br>k. *Inertial measurement unit (IMU) stable element handling fixtures;*<br>l. *Inertial measurement unit (IMU) platform balance fixture.* |
| I.7A.014 | 7B102 | Reflectometers specially designed to characterise mirrors, for 'laser' gyros, having a measurement |

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| | | accuracy of 50 ppm or less (better). |
| I.7A.015 | 7B103 | 'Production facilities' and 'production equipment' as follows:<br>a. 'Production facilities' specially designed for equipment specified in I.7A.010;<br>b. 'Production equipment', and other test, calibration and alignment equipment, other than that specified in I.7A.011 to I.7A.013, designed or modified to be used with equipment specified in I.7A.001 to I.7A.010. |

I.7B

TECHNOLOGY, INCLUDING SOFTWARE

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
|---|---|---|
| I.7B.001 | *ex* 7D101 | 'Software' specially designed or modified for the 'use' of equipment specified in I.7A.001 to I.7A.008, I.7A.009.a., I.7A.009.b. or I.7A.011 to I.7A.015 |
| I.7B.002 | 7D102 | Integration 'software' as follows:<br>a. Integration 'software' for the equipment specified in I.7A.004.b.;<br>b. Integration 'software' specially designed for the equipment specified in I.7A.004.a.;<br>c. Integration 'software' designed |

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| | | or modified for the equipment specified in I.7A.004.c.<br>*Note: A common form of integration 'software' employs Kalman filtering.* |
| I.7B.003 | 7D103 | 'Software' specially designed for modelling or simulation of the 'guidance sets' specified in I.7A.010 or for their design integration with the space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005.<br>*Note: 'Software' specified in I.7B.003 remains prohibited when combined with specially designed hardware specified in I.4A.003.* |
| I.7B.004 | *ex* 7E001 | 'Technology' according to the General Technology Note for the 'development' of equipment or 'software' specified in I.7A.001 to I.7A.015, or in I.7B.001 to I.7B.003. |
| I.7B.005 | *ex* 7E002 | 'Technology' according to the General Technology Note for the 'production' of equipment specified in I.7A.001 to I.7A.015. |
| I.7B.006 | 7E101 | 'Technology' according to the General Technology Note for the 'use' of equipment specified in I.7A.001 to I.7A.015 or I.7B.001 to I.7B.003. |
| I.7B.007 | 7E102 | 'Technology' for protection of avionics and electrical subsystems against electromagnetic pulse (EMP) and electromagnetic interference (EMI) hazards, from external sources, as follows:<br>a. Design 'technology' for shielding systems; |

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| | | b. Design 'technology' for the configuration of hardened electrical circuits and subsystems;<br>c. Design 'technology' for the determination of hardening criteria of I.7B.007.a. and I.7B.007.b. |
| I.7B.008 | 7E104 | 'Technology' for the integration of the flight control, guidance, and propulsion data into a flight management system for optimization of rocket system trajectory. |

## I.9 AEROSPACE AND PROPULSION

### I.9A

### GOODS

| **No** | **Relevant item(s) from Annex to Regulation (EC) No 1183/2007** | **Description** |
|---|---|---|
| I.9A.001 | *ex* 9A004 | Space launch vehicles<br>N.B.: See also I.9A.005.<br>For rockets and missiles see Military Goods Controls.<br>*Note: I.9A.001 does not prohibit payloads.* |
| I.9A.002 | 9A011 | Ramjet, scramjet or combined cycle engines and specially designed components therefor.<br>N.B.: See also I.9A.012 and I.9A.016. |
| I.9A.003 | *ex* 9A012.a | 'Unmanned aerial vehicles' ('UAVs'), associated systems, equipment and components as follows:<br>'UAVs' having any of the following:<br>Having all of the following: |

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| | | a. Having any of the following:<br>1. An autonomous flight control and navigation capability (e.g., an autopilot with an Inertial Navigation System); or<br>2. Capability of controlled-flight out of the direct vision range involving a human operator (e.g., televisual remote control); and<br>b. Having any of the following:<br>1. Incorporating an aerosol dispensing system/ mechanism with a |

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| | | | capacity greater than 20 litres; or |
| | | 2. | Designed or modified to incorporate an aerosol dispensing system/ mechanism with a capacity greater than 20 litres; or |
| | | | Capable of delivering a payload to a range of at least 300 km. |
| | | | Technical Notes: |
| | | | *1. An aerosol consists of particulate or liquids other than fuel components, by-products or additives, as part of the payload to be dispersed in the atmosphere. Examples of aerosols include* |

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| | | *pesticides for crop dusting and dry chemicals for cloud seeding.*<br>*2.* *An aerosol dispensing system/ mechanism contains all those devices (mechanical, electrical, hydraulic, etc.), which are necessary for storage and dispersion of an aerosol into the atmosphere. This includes the possibility of aerosol injection into the combustion exhaust vapour and into the propeller slip stream* |
| I.9A.004 | 9A101 | Turbojet and turbofan engines (including turbocompound engines), as follows:<br>a. Engines having both of the following characteristics:<br>1. Maximum thrust |

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| | | value greater than 400 N (achieved un-installed) excluding civil certified engines with a maximum thrust value greater than 8 890 N (achieved un-installed), and<br>2. Specific fuel consumption of 0,15 kg/N/hr or less (at maximum continuous power at sea level static and standard conditions);<br>b. Engines designed or modified for use in 'missiles'. |
| I.9A.005 | 9A104 | Sounding rockets, capable of a range of at least 300 km.<br>N.B.: See also I.9A.001.<br>For rockets and missiles see Military Goods Controls. |
| I.9A.006 | 9A105 | Liquid propellant rocket engines, as follows:<br>N.B.: See also I.9A.017.<br>a. Liquid propellant rocket engines usable in 'missiles', having a total impulse capacity |

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| | | equal to or greater than 1,1 MNs;<br>b. Liquid propellant rocket engines, usable in complete rocket systems or unmanned aerial vehicles, capable of a range of 300 km, other than those specified in I.9A.006.a., having a total impulse capacity equal to or greater than 0,841 MNs. |
| I.9A.007 | 9A106 | Systems or components, usable in 'missiles', as follows, specially designed for liquid rocket propulsion systems:<br>a. Ablative liners for thrust or combustion chambers;<br>b. Rocket nozzles;<br>c. Thrust vector control sub-systems;<br>Technical Note: *Examples of methods of achieving thrust vector control specified in I.9A.007.c. are:*<br>1. *Flexible nozzle;*<br>2. *Fluid or secondary gas injection;*<br>3. *Movable engine or nozzle;*<br>4. *Deflection of exhaust gas stream (jet vanes or probes); or* |

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| | | | 5. *Thrust tabs.* |
| | | d. | Liquid and slurry propellant (including oxidisers) control systems, and specially designed components therefor, designed or modified to operate in vibration environments greater than 10 g rms between 20 Hz and 2 kHz.<br>*Note: The only servo valves and pumps specified in I.9A.007.d., are the following:*<br>a. *Servo valves designed for flow rates equal to or greater than 24 litres per minute, at an absolute pressure equal to or greater than 7 MPa, that have an actuator response time of less than 100 ms;*<br>b. *Pumps, for liquid propellants, with shaft speeds equal to or greater than 8 000 r.p.m.* |

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| | | *or with discharge pressures equal to or greater than 7 MPa.* |
| I.9A.008 | 9A107 and *ex* 9A007.a | Solid propellant rocket engines, usable in complete rocket systems or unmanned aerial vehicles, capable of a range of 300 km, having total impulse capacity equal to or greater than 0,841 MNs.<br>N.B.: See also I.9A.017. |
| I.9A.009 | 9A108 | Components usable in 'missiles', as follows, specially designed for solid rocket propulsion systems:<br>a. Rocket motor cases and 'insulation' components therefor;<br>b. Rocket nozzles;<br>c. Thrust vector control sub-systems.<br>Technical Note: *Examples of methods of achieving thrust vector control specified in I.9A.009.c. are:*<br>1. *Flexible nozzle;*<br>2. *Fluid or secondary gas injection;*<br>3. *Movable engine or nozzle;*<br>4. *Deflection of exhaust gas stream (jet vanes or probes); or* |

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| | | 5. *Thrust tabs.* |
| I.9A.010 | 9A109 | Hybrid rocket motors, usable in 'missiles', and specially designed components therefor.<br>N.B.: See also I.9A.017.<br>Technical Note:<br>*In I.9A.010 'missile' means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.* |
| I.9A.011 | 9A110 | Composite structures, laminates and manufactures thereof, specially designed for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005 or the subsystems specified in I.9A.006.a., I.9A.007 to I.9A.009, I.9A.014 or I.9A.017.<br>N.B.: See also Military Goods Controls for composite structures, laminates and manufactures thereof, for rockets and missiles. |
| I.9A.012 | *ex* 9A111* | Pulse jet engines, usable in 'missiles', and specially designed components therefor.<br>N.B.: See also I.9A.002 and I.9A.016. |
| I.9A.013 | 9A115 | Launch support equipment as follows:<br>N.B.: See also Military Goods Controls for launch support equipment for rockets and missiles.<br>a. Apparatus and devices for handling, control, activation or launching, designed or modified for space launch vehicles specified in I.9A.001, unmanned aerial |

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| | | vehicles specified in I.9A.003 or sounding rockets specified in I.9A.005;<br>b. Vehicles for transport, handling, control, activation or launching, designed or modified for space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005. |
| I.9A.014 | 9A116 | Reentry vehicles, usable in 'missiles', and equipment designed or modified therefor, as follows:<br>a. Reentry vehicles;<br>b. Heat shields and components therefor fabricated of ceramic or ablative materials;<br>c. Heat sinks and components therefor fabricated of light-weight, high heat capacity materials;<br>d. Electronic equipment specially designed for reentry vehicles. |
| I.9A.015 | 9A117 | Staging mechanisms, separation mechanisms, and interstages, usable in 'missiles'. |
| I.9A.016 | *ex* 9A118* | Devices to regulate combustion usable in engines, which are usable in 'missiles', specified in I.9A.002 or I.9A.012. |
| I.9A.017 | 9A119 | Individual rocket stages, usable in complete rocket systems or unmanned aerial vehicles, capable of a range of 300 km, other than those |

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| | | specified in I.9A.006, I.9A.008 and I.9A.010. |
| I.9A.018 | 9A120 | Liquid propellant tanks specially designed for propellants specified in I.1A.029 or 'other liquid propellants', used in rocket systems capable of delivering at least a 500 kg payload to a range of at least 300 km.<br>*Note: In I.9A.018 'other liquid propellants' includes, but is not limited to, propellants specified in the Military Goods Controls* |
| I.9A.019 | | (reserved) |
| I.9A.020 | *ex* 9B105* | Wind tunnels for speeds of Mach 0,9 or more, usable for 'missiles' and their subsystems. |
| I.9A.021 | 9B106 | Environmental chambers and anechoic chambers, as follows:<br>a. Environmental chambers capable of simulating the following flight conditions:<br>1. Vibration environments equal to or greater than 10 g rms, measured 'bare table', between 20 Hz and 2 kHz imparting forces equal to or greater than 5 kN; and<br>2. Altitude equal to or greater than 15 km; or |

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| | | | 3. Temperature range of at least 223 K (– 50 °C) to 398 K (+ 125 °C);<br>Technical Notes:<br>*1. I.9A.021.a. describes systems that are capable of generating a vibration environment with a single wave (e.g., a sine wave) and systems capable of generating a broad band random vibration (i.e., power spectrum);*<br>*2. In I.9A.021.a.1. 'bare table' means a flat table, or surface with no fixture or fittings.*y |
| | | b. | Environmental chambers capable of simulating the following flight conditions:<br>1. Acoustic environments at an overall |

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| | | sound pressure level of 140 dB or greater (referenced to 20 μPa) or with a total rated acoustic power output of 4 kW or greater; and<br>2. Altitude equal to or greater than 15 km; or<br>3. Temperature range of at least 223 K (– 50 °C) to 398 K (+ 125 °C). |
| I.9A.022 | *ex* 9B115 | Specially designed ‘production equipment’ for the systems, sub-systems and components specified in I.9A.002, I.9A.004, I.9A.006 to I.9A.010, I.9A.012, I.9A.014 to I.9A.017. |
| I.9A.023 | *ex* 9B116 | Specially designed ‘production facilities’ for the space launch vehicles specified in I.9A.001, or systems, sub-systems, and components specified in I.9A.002, I.9A.004, I.9A.005 to I.9A.010, I.9A.012, or I.9A.014 to I.9A.017.<br>N.B.: See also Military Goods Controls for ‘production facilities’ for rockets and missiles. |
| I.9A.024 | *ex* 9B117* | Test benches and test stands for solid or liquid propellant rockets or rocket motors, |

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| | | having either of the following characteristics:<br>The capacity to handle more than 90 kN of thrust; or<br>Capable of simultaneously measuring the three axial thrust components. |
| I.9A.025 | 9C108 | 'Insulation' material in bulk form and 'interior lining', for rocket motor cases usable in 'missiles' or specially designed for 'missiles'.<br>Technical Note:<br>*In I.9A.025 'missile' means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.* |
| I.9A.026 | 9C110 | Resin impregnated fibre prepregs and metal coated fibre preforms therefor, for composite structures, laminates and manufactures specified in I.9A.011, made either with organic matrix or metal matrix utilising fibrous or filamentary reinforcements having a 'specific tensile strength' greater than 7,62 × $10^4$ m and a 'specific modulus' greater than 3,18 × $10^6$ m.<br>N.B.: See also I.1A.024 and I.1A.034.<br>*Note: The only resin impregnated fibre prepregs specified in entry I.9A.026 are those using resins with a glass transition temperature ($T_g$), after cure, exceeding 418 K (145 °C) as determined by ASTM D4065 or equivalent.* |

I.9B

TECHNOLOGY, INCLUDING SOFTWARE

| No | Relevant item(s) from Annex to Regulation (EC) No 1183/2007 | Description |
|---|---|---|
| I.9B.001 | *ex* 9D001 | 'Software' specially designed or modified for the 'development' of equipment or 'technology' specified in I.9A.002, I.9A.009, I.9A.012, I.9A.015 or I.9A.016. |
| I.9B.002 | 9D101 | 'Software' specially designed or modified for the 'use' of goods specified in I.9A.020, I.9A.021, I.9A.023 or I.9A.024. |
| I.9B.003 | 9D103 | 'Software' specially designed for modelling, simulation or design integration of the space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005, or the subsystems specified in I.9A.006.a., I.9A.007, I.9A.009, I.9A.014 or I.9A.017.<br>*Note: 'Software' specified in I.9B.003 remains prohibited when combined with specially designed hardware specified in I.4A.003.* |
| I.9B.004 | *ex* 9D104 | 'Software' specially designed or modified for the 'use' of **[**[X1]goods specified in I.9A.002**]**, I.9A.004, I.9A.006, I.9A.007.c., I.9A.007.d., I.9A.008, I.9A.009.c., I.9A.010, I.9A.012, I.9A.013.a., I.9A.014.d., I.9A.015 or I.9A.016. |
| I.9B.005 | 9D105 | 'Software' which coordinates the function of more than one subsystem, specially designed or modified for 'use' in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005. |

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| I.9B.006 | *ex* 9E001 | 'Technology' according to the General Technology Note for the 'development' of equipment or 'software' specified in I.9A.001, I.9A.003, I.9A.021 to I.9A.024, or I.9B.002 to I.9B.005. |
| I.9B.007 | *ex* 9E002 | 'Technology' according to the General Technology Note for the 'production' of equipment specified in I.9A.001, I.9A.003 or I.9A.021 to I.9A.024. |
| I.9B.008 | 9E101 | 'Technology' according to the General Technology Note for the 'development' or 'production' of goods specified in I.9A.004 to I.9A.017. |
| I.9B.009 | *ex* 9E102 | 'Technology' according to the General Technology Note for the 'use' of space launch vehicles specified in I.9A.001, or goods specified in I.9A.002, I.9A.004 to I.9A.017, I.9A.020 to I.9A.024, I.9B.002 or I.9B.003.**]** |

**Editorial Information**

**X1** Substituted by Corrigendum to Commission Regulation (EC) No 116/2008 of 28 January 2008 amending Council Regulation (EC) No 423/2007 concerning restrictive measures against Iran (Official Journal of the European Union L 35 of 9 February 2008).

## **[**[F2]ANNEX IA

'Goods and technology referred to in Article 2(1) point (a)(iii)'

INTRODUCTORY NOTES

1. Unless otherwise stated, reference numbers used in the column entitled 'Description' refer to the descriptions of dual-use items and technology set out in Annex I to Regulation (EC) No 1334/2000.

2. A reference number in the column entitled 'Related item from Annex I to Regulation (EC) No 1183/2007' means that the characteristics of the item described in the column

'Description' lie outside the parameters set out in the description of the dual-use entry referred to.

3. Definitions of terms between 'single quotation marks' are given in a technical note to the relevant item.

4. Definitions of terms between 'double quotation marks' can be found in Annex I to Regulation (EC) No 1183/2007.

General Notes

1. The object of the prohibitions contained in this Annex should not be defeated by the export of any non-prohibited goods (including plant) containing one or more prohibited components when the prohibited component or components are the principal element of the goods and can feasibly be removed or used for other purposes.

*N.B.: In judging whether the prohibited component or components are to be considered the principal element, it is necessary to weigh the factors of quantity, value and technological know-how involved and other special circumstances which might establish the prohibited component or components as the principal element of the goods being procured.*

2. Goods specified in this Annex include both new and used goods.

General Technology Note (GTN)(To be read in conjunction with Section IA.B.)

1. The sale, supply, transfer or export of 'technology' which is 'required' for the 'development', 'production' or 'use' of goods the sale, supply, transfer or export of which is prohibited in Part A (Goods) below, is prohibited in accordance with the provisions of Section IA.B.

2. The 'technology''required' for the 'development', 'production' or 'use' of prohibited goods remains under prohibition even when applicable to non-prohibited goods.

3. Prohibitions do not apply to that 'technology' which is the minimum necessary for the installation, operation, maintenance (checking) and repair of those goods which are not prohibited or the export of which has been authorised in accordance with Regulation (EC) No 423/2007.

4. Prohibitions on 'technology' transfer do not apply to information 'in the public domain', to 'basic scientific research' or to the minimum necessary information for patent applications.

IA.A. GOODS

A0.

NUCLEAR MATERIALS, FACILITIES, AND EQUIPMENT

| No | Description | Related item from Annex I to Regulation (EC) No 1183/2007 |
|---|---|---|
| IA.A0.001 | Hollow cathode lamps as follows:<br>a. Iodine hollow cathode lamps with windows in pure silicon or quartz | – |

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| | b. Uranium hollow cathode lamps | |
| IA.A0.005 | Nuclear reactor vessel components and testing equipment, other than those specified in 0A001, as follows:<br>1. Seals<br>2. Internal components<br>3. Sealing, testing and measurement equipment | 0A001 |
| IA.A0.006 | Nuclear detection systems for detection, identification or quantification of radioactive materials and radiation of nuclear origin and specially designed components thereof other than those specified in 0A001.j. or 1A004.c. | 0A001.j<br>1A004.c |
| IA.A0.007 | Bellows-sealed valves made of aluminium alloy or stainless steel type 304, 304L or 316L.<br>Note: This item does not cover bellow valves defined in 0B001.c.6 and 2A226. | 0B001.c.6<br>2A226 |
| IA.A0.012 | Shielded enclosures for the manipulation, storage and handling of radioactive substances (Hot cells). | 0B006 |
| IA.A0.013 | 'Natural uranium' or 'depleted uranium' or thorium in the form of metal, alloy, chemical compound or concentrate and any other material containing one or more of the foregoing, other than those specified in 0C001. | 0C001 |

A1.

MATERIALS, CHEMICALS, 'MICROORGANISMS' AND 'TOXINS'

| **No** | **Description** | **Related item from Annex I to Regulation (EC) No 1183/2007** |
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| IA.A1.001 | Bis(2-ethylhexyl) phosphoric acid (HDEHP or D2HPA) CAS 298-07-7 solvent in any quantity, with a purity greater than 90 %. | – |
| IA.A1.002 | Fluorine gas (Chemical Abstract Number (CAS): 7782-41-4), with a purity of at least 95 %. | – |
| IA.A1.005 | Electrolytic cells for fluorine production with an output capacity greater than 100 g of fluorine per hour.<br>Note: This item does not cover electrolytic cells defined in item 1B225. | 1B225 |
| IA.A1.008 | Magnetic metals, of all types and of whatever form, having an initial relative permeability of 120 000 or more and a thickness between 0,05 and 0,1 mm. | 1C003.a |
| IA.A1.009 | [F4‘Fibrous or filamentary materials’ or prepregs, as follows:<br>a. Carbon or aramid ‘fibrous or filamentary materials’ having either of the following characteristics:<br>1. A ‘specific modulus’ exceeding $10 \times 10^6$ m; or<br>2. A ‘specific tensile strength’ exceeding $17 \times 10^4$ m;<br>b. Glass ‘fibrous or filamentary materials’ having either of | 1C010.a<br>1C010.b<br>1C210.a<br>1C210.b |

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| | the following characteristics:<br>1. A 'specific modulus' exceeding $3{,}18 \times 10^6$ m; or<br>2. A 'specific tensile strength' exceeding $76{,}2 \times 10^3$ m;<br>c. Thermoset resin-impregnated continuous 'yarns', 'rovings', 'tows' or 'tapes' with a width of 15 mm or less (once prepregs), made from carbon or glass 'fibrous or filamentary materials' other than those specified in IA.A1.010.a. or b.<br>Note: This item does not cover 'fibrous or filamentary materials' defined in items 1C010.a, 1C010.b, 1C210.a and 1C210.b.] | |
| IA.A1.010 | [F4Resin-impregnated or pitch-impregnated fibres (prepregs), metal or carboncoated fibres (preforms) or 'carbon fibre preforms', as follows:<br>a. Made from 'fibrous or filamentary materials' specified in IA.A1.009 above;<br>b. Epoxy resin 'matrix' impregnated carbon 'fibrous or filamentary materials' (prepregs), | 1C010.e.<br>1C210 |

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| | specified in 1C010.a, 1C010.b or 1C010.c, for the repair of aircraft structures or laminates, of which the size of individual sheets does not exceed 50 cm × 90 cm;<br>c. Prepregs specified in 1C010.a, 1C010.b or 1C010.c, when impregnated with phenolic or epoxy resins having a glass transition temperature (Tg) less than 433 K (160 °C) and a cure temperature lower than the glass transition temperature.<br>Note: This item does not cover 'fibrous or filamentary materials' defined in item 1C010.e.] | |
| IA.A1.011 | Reinforced silicon carbide ceramic composites usable for nose tips, re-entry vehicles, nozzle flaps, usable in 'missiles', other than those specified in 1C107. | 1C107 |
| IA.A1.012 | Maraging steels, other than those specified in 1C116 or 1C216, 'capable of' an ultimate tensile strength of 2 050 MPa or more, at 293 K (20 °C).<br>Technical note: The phrase 'maraging steel capable of' encompasses maraging steel before or after heat treatment. | 1C216 |
| IA.A1.013 | Tungsten, tantalum, tungsten carbide, tantalum carbide and alloys, having both of the following characteristics:<br>a. In forms having a hollow cylindrical | 1C226 |

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| | or spherical symmetry (including cylinder segments) with an inside diameter between 50 mm and 300 mm; and<br>b. A mass greater than 5 kg.<br>Note: This item does not cover tungsten, tungsten carbide and alloys defined in item 1C226. | |

A2.

MATERIALS PROCESSING

| **No** | **Description** | **Related item from Annex I to Regulation (EC) No 1183/2007** |
|---|---|---|
| IA.A2.001 | Vibration test systems, equipment and components thereof, other than those specified in 2B116:<br>a. Vibration test systems employing feedback or closed loop techniques and incorporating a digital controller, capable of vibrating a system at an acceleration equal to or greater than 0,1g rms between 0,1 Hz and 2 kHz and imparting forces equal to or greater than 50 kN, measured 'bare table';<br>b. Digital controllers, combined with specially designed vibration test 'software', with a real-time bandwidth greater than 5 kHz designed for use with vibration test | 2B116 |

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| | systems specified in a.;<br>c. Vibration thrusters (shaker units), with or without associated amplifiers, capable of imparting a force equal to or greater than 50 kN, measured 'bare table', and usable in vibration test systems specified in a.;<br>d. Test piece support structures and electronic units designed to combine multiple shaker units in a system capable of providing an effective combined force equal to or greater than 50 kN, measured 'bare table', and usable in vibration systems specified in a.<br>Technical note: 'Bare table' means a flat table, or surface, with no fixture or fittings. | |
| IA.A2.004 | Remote manipulators that can be used to provide remote actions in radiochemical separation operations or hot cells, other than those specified in 2B225, having either of the following characteristics:<br>a. A capability of penetrating a hot cell wall of 0,3 m or more (through the wall operation); or<br>b. A capability of bridging over the top of a hot cell wall with a thickness of 0,3 m | 2B225 |

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| | or more (over the wall operation).<br>Technical note: Remote manipulators provide translation of human operator actions to a remote operating arm and terminal fixture. They may be of master/slave type or operated by joystick or keypad. | |
| IA.A2.011 | Centrifugal separators, capable of continuous separation without the propagation of aerosols and manufactured from:<br>1. Alloys with more than 25 % nickel and 20 % chromium by weight;<br>2. Fluoropolymers;<br>3. Glass (including vitrified or enamelled coating or glass lining);<br>4. Nickel or alloys with more than 40 % nickel by weight;<br>5. Tantalum or tantalum alloys;<br>6. Titanium or titanium alloys; or<br>7. Zirconium or zirconium alloys.<br>Note: This item does not cover centrifugal separators defined in item 2B352.c. | 2B352.c |
| IA.A2.012 | Sintered metal filters made of nickel or nickel alloy with more than 40 % nickel by weight.<br>Note: This item does not cover filters defined in item 2B352.d. | 2B352.d |

A3.

ELECTRONICS

| **No** | **Description** | **Related item from Annex I to Regulation (EC) No 1183/2007** |
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| IA.A3.001 | High voltage direct current power supplies having both of the following characteristics:<br>a. Capable of continuously producing, over a time period of eight hours, 10 kV or more, with output power of 5 kW or more with or without sweeping; and<br>b. Current or voltage stability better than 0,1 % over a time period of four hours.<br>Note: This item does not cover power supplies defined in items 0B001.j.5 and 3A227. | 3A227 |
| IA.A3.002 | Mass spectrometers, other than those specified in 3A233 or 0B002.g, capable of measuring ions of 200 atomic mass units or more and having a resolution of better than 2 parts in 200, as follows, and ion sources thereof:<br>a. Inductively coupled plasma mass spectrometers (ICP/MS);<br>b. Glow discharge mass spectrometers (GDMS);<br>c. Thermal ionisation mass spectrometers (TIMS);<br>d. Electron bombardment mass spectrometers which have a source chamber constructed from, lined with or plated with 'materials resistant to corrosion | 3A233 |

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| | by uranium hexafluoride $UF_6$’; | |
| e. | Molecular beam mass spectrometers having either of the following characteristics:<br>1. A source chamber constructed from, lined with or plated with stainless steel or molybdenum and equipped with a cold trap capable of cooling to 193 K (– 80°C) or less; or<br>2. A source chamber constructed from, lined with or plated with ‘materials resistant to corrosion by uranium hexafluoride ($UF_6$)’; | |
| f. | Mass spectrometers equipped with a microfluorination ion source designed for actinides or actinide fluorides. | |

A6.

SENSORS AND LASERS

| No | Description | Related item from Annex I to Regulation (EC) No 1183/2007 |
|---|---|---|
| IA.A6.001 | Yttrium aluminium garnet (YAG) rods | – |
| IA.A6.003 | Wave front corrector systems for use with a laser beam having a diameter exceeding 4 mm, and specially designed components thereof, including control systems, phase front sensors and ‘deformable mirrors’ including bimorph mirrors.<br>Note: This item does not cover mirrors defined in 6A004.a, 6A005.e and 6A005.f. | 6A003 |
| IA.A6.004 | Argon ion ‘lasers’ having an average output power equal to or greater than 5 W.<br>Note: This item does not cover argon ion ‘lasers’ defined in items 0B001.g.5, 6A005 and 6A205.a. | 6A005.a.6<br>6A205.a |
| IA.A6.006 | Tunable semiconductor ‘lasers’ and tunable semiconductor ‘laser’ arrays, of a wavelength between 9 μm and 17 μm, as well as array stacks of semiconductor ‘lasers’ containing at least one tunable semiconductor ‘laser’ array of such wavelength.<br>Notes:<br>1. Semiconductor ‘lasers’ are commonly called ‘laser’ diodes.<br>2. This item does not cover semiconductor ‘lasers’ defined in | 6A005.b |

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| | items 0B001.h.6 and 6A005.b | |
| IA.A6.008 | Neodymium-doped (other than glass) 'lasers', having an output wavelength greater than 1 000 nm but not exceeding 1 100 nm and output energy exceeding 10 J per pulse.<br>Note: This item does not cover neodymium-doped (other than glass) 'lasers' defined in item 6A005.c.2.b. | 6A005.c.2 |
| IA.A6.010 | Radiation-hardened cameras, or lenses thereof, other than those specified in 6A203.c., specially designed, or rated as radiation-hardened, to withstand a total radiation dose greater than $50 \times 10^3$ Gy(silicon) ($5 \times 10^6$ rad (silicon)) without operational degradation.<br>Technical note: The term Gy(silicon) refers to the energy in Joules per kilogram absorbed by an unshielded silicon sample when exposed to ionising radiation. | 6A203.c |
| IA.A6.011 | Tunable pulsed dye laser amplifiers and oscillators, having all of the following characteristics:<br>1. Operating at wavelengths between 300 nm and 800 nm;<br>2. An average output power greater than 10 W but not exceeding 30 W;<br>3. A repetition rate greater than 1 kHz; and<br>4. Pulse width less than 100 ns.<br>Notes:<br>1. This item does not cover single mode oscillators. | 6A205.c |

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| | 2. This item does not cover tunable pulsed dye laser amplifiers and oscillators defined in item 6A205.c, 0B001.g.5 and 6A005. | |
| IA.A6.012 | Pulsed carbon dioxide 'lasers' having all of the following characteristics:<br>1. Operating at wavelengths between 9 000 nm and 11 000 nm;<br>2. A repetition rate greater than 250 Hz;<br>3. An average output power greater than 100 W but not exceeding 500 W; and<br>4. Pulse width less than 200 ns.<br>Note: This item does not cover pulsed carbon dioxide laser amplifiers and oscillators defined in item 6A205.d., 0B001.h.6. and 6A005.d. | 6A205.d |

IA.B. TECHNOLOGY

| **No** | **Description** | **Related item from Annex I to Regulation (EC) No 1183/2007** |
|---|---|---|
| IA.B.001 | Technology required for the development, production, or use of the items in Part IA.A. (Goods) above. | **–]** |

**[**[F4]ANNEX II

Goods and technology referred to in Article 3

**INTRODUCTORY NOTES**

1. Unless otherwise stated, reference numbers used in the column below entitled 'Description' refer to the descriptions of dual use items and technology set out in Annex I to Regulation (EC) No 428/2009.

2. A reference number in the column below entitled 'Related item from Annex I to Regulation (EC) No 428/2009' means that the characteristics of the item described in the 'Description' column lie outside the parameters set out in the description of the dual use entry referred to.

3. Definitions of terms between 'single quotation marks' are given in a technical note to the relevant item.

4. Definitions of terms between 'double quotation marks' can be found in Annex I to Regulation (EC) No 428/2009.

**GENERAL NOTES**

1. The object of the controls contained in this Annex should not be defeated by the export of any non-controlled goods (including plant) containing one or more controlled components when the controlled component or components is/are the principal element of the goods and can feasibly be removed or used for other purposes.

*N.B.: In judging whether the controlled component or components is/are to be considered the principal element, it is necessary to weigh the factors of quantity, value and technological know-how involved and other special circumstances which might establish the controlled component or components as the principal element of the goods being procured.*

2. Goods specified in this Annex include both new and used goods.

**GENERAL TECHNOLOGY NOTE (GTN)**(To be read in conjunction with Section II.B)

1. The sale, supply, transfer or export of 'technology' which is 'required' for the 'development', 'production' or 'use' of goods the sale, supply, transfer or export of which is controlled in Part A (Goods) below, is controlled in accordance with the provisions of Section II.B.

2. The 'technology''required' for the 'development', 'production' or 'use' of goods under control remains under control even when it is applicable to non-controlled goods.

3. Controls do not apply to that 'technology' which is the minimum necessary for the installation, operation, maintenance (checking) and repair of those goods which are not controlled or the export of which has been authorised in accordance with Regulation (EC) No 423/2007.

4. Controls on 'technology' transfer do not apply to information 'in the public domain', to 'basic scientific research' or to the minimum necessary information for patent applications.

II.A. GOODS

A0.

NUCLEAR MATERIALS, FACILITIES, AND EQUIPMENT

| No | Description | Related item from Annex I to Regulation (EC) No 428/2009 |
|---|---|---|

| | | |
|---|---|---|
| II.A0.002 | Faraday isolators in the wavelength range 500 nm – 650 nm | — |
| II.A0.003 | Optical gratings in the wavelength range 500 nm – 650 nm | — |
| II.A0.004 | Optical fibres in the wavelength range 500 nm – 650 nm coated with anti-reflecting layers in the wavelength range 500 nm – 650 nm and having a core diameter greater than 0,4 mm but not exceeding 2 mm | — |
| II.A0.008 | Laser mirrors, other than those specified in 6A005.e, consisting of substrates having a thermal expansion coefficient of $10^{-6}K^{-1}$ or less at 20°C (e.g. fused silica or sapphire).<br>*Note: This item does not cover optical systems specially designed for astronomical applications, except if the mirrors contain fused silica.* | 0B001.g.5, 6A005.e |
| II.A0.009 | Laser lenses, other than those specified in 6A005.e.2, consisting of substrates having a thermal expansion coefficient of $10-^{6}K-^{1}$ or less at 20°C (e.g. fused silica). | 0B001.g, 6A005.e.2 |
| II.A0.010 | Pipes, piping, flanges, fittings made of, or lined with, nickel or nickel alloy containing more than 40 % nickel by weight, other than those specified in 2B350.h.1. | 2B350 |
| II.A0.011 | Vacuum pumps other than those specified in 0B002.f.2., or 2B231, as follows:<br>Turbomolecular pumps having a flowrate equal to or greater than 400 l/s,<br>Roots type vacuum roughing pumps having a volumetric | 0B002.f.2, 2B231 |

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| | aspiration flowrate greater than 200$m^3$/h.<br>Bellows-sealed, scroll, dry compressor, and bellows-sealed, scroll, dry vacuum pumps. | |
| II.A0.014 | Detonation chambers having a capacity of explosion absorption of more than 2.5kg TNT equivalent. | |

A1.

MATERIALS, CHEMICALS, 'MICRO-ORGANISMS' AND 'TOXINS'

| **No** | **Description** | **Related item from Annex I to Regulation (EC) No 428/2009** |
|---|---|---|
| II.A1.003 | Ring-shaped seals and gaskets, having an inner diameter of 400mm or less, made of any of the following materials:<br>a. Copolymers of vinylidene fluoride having 75 % or more beta crystalline structure without stretching;<br>b. Fluorinated polyimides containing 10 % by weight or more of combined fluorine;<br>c. Fluorinated phosphazene elastomers containing 30 % by weight or more of combined fluorine;<br>d. Polychlorotrifluoroethylene (PCTFE, e.g. Kel-F ®);<br>e. Fluoro-elastomers (e.g., Viton ®, Tecnoflon ®);<br>f. Polytetrafluoroethylene (PTFE). | |

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| II.A1.004 | Personal equipment for detecting radiation of nuclear origin, including personal dosimeters.<br>*Note: This item does not cover nuclear detection systems defined in item 1A004.c.* | 1A004.c |
| II.A1.006 | Catalysts, other than those prohibited by I.1A.003, containing platinum, palladium or rhodium, usable for promoting the hydrogen isotope exchange reaction between hydrogen and water for the recovery of tritium from heavy water or for the production of heavy water. | 1B231, 1A225 |
| II.A1.007 | Aluminium and its alloys, other than those specified in 1C002.b.4 or 1C202.a, in crude or semi-fabricated form having either of the following characteristics:<br>a. Capable of an ultimate tensile strength of 460 MPa or more at 293 K (20 °C); or<br>b. Having a tensile strength of 415 MPa or more at 298 K (25 °C). | 1C002.b.4, 1C202.a |
| II.A1.014 | Elemental powders of cobalt, neodymium or samarium or alloys or mixtures thereof containing at least 20 % by weight of cobalt, neodymium or samarium, with a particle size less than 200 μm. | |
| II.A1.015 | Pure tributyl phosphate (TBP) [CAS No 126-73-8] or any mixture having a TBP content of more than 5 % by weight. | |
| II.A1.016 | Maraging steel, other than those prohibited by I.1A.030, I.1A.035 or IA.A1.012<br>Technical Note: | |

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| | *Maraging steels are iron alloys generally characterised by high nickel, very low carbon content and the use of substitutional elements or precipitates to produce strengthening and age-hardening of the alloy.* | |
| II.A1.017 | Metals, metal powders and material as follows:<br>a. Tungsten and tungsten alloys, other than those prohibited by I.1A.031, in the form of uniform spherical or atomized particles of 500μm diameter or less with a tungsten content of 97 % by weight or more;<br>b. Molybdenum and molybdenum alloys, other than those prohibited by I.1A.031, in the form of uniform spherical or atomized particles of 500 μm diameter or less with a molybdenum content of 97 % by weight or more;<br>c. Tungsten materials in the solid form, other than those prohibited by I.1A.037, or IA.A1.013 having material compositions as follows:<br>1. Tungsten and alloys containing 97 % by weight or more of tungsten; | |

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| | 2. Copper infiltrated tungsten containing 80 % by weight or more of tungsten; or<br>3. Silver infiltrated tungsten containing 80 % by weight or more of tungsten. | |
| II.A1.018 | Soft magnetic alloys having a chemical composition as follows:<br>a) Iron content between 30 % and 60 %, and<br>b) Cobalt content between 40 % and 60 %. | |
| II.A1.019 | ‘Fibrous or filamentary materials’ or prepregs, not prohibited by Annex I or by Annex IA (under IA.A1.009, IA.A1.010) of this Regulation, or not specified by Annex I of Regulation (EC) No 428/2009, as follows:<br>a) Carbon ‘fibrous or filamentary materials’; *Note: II.A1.019a. does not cover fabrics.*<br>b) Thermoset resin-impregnated continuous ‘yarns’, ‘rovings’, ‘tows’, or ‘tapes’, made from carbon ‘fibrous or filamentary materials’;<br>c) Polyacrylonitrile (PAN) continuous | |

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| | ‘yarns’, ‘rovings’, ‘tows’ or ‘tapes’ | |

A2.

MATERIALS PROCESSING

| No | Description | Related item from Annex I to Regulation (EC) No 428/2009 |
|---|---|---|
| II.A2.002 | Machine tools for grinding having positioning accuracies with ‘all compensations available’ equal to or less (better) than 15 μm according to ISO 230/2 (1988) (1) or national equivalents along any linear axis.<br>*Note: This item does not cover machine tools for grinding defined in items 2B201.b and 2B001.c.* | 2B201.b, 2B001.c |
| II.A2.002a | Components and numerical controls, specially designed for machine tools specified in 2B001, 2B201, or II.A2.002 above. | |
| II.A2.003 | Balancing machines and related equipment as follows:<br>a. Balancing machines, designed or modified for dental or other medical equipment, having all the following characteristics:<br>1. Not capable of balancing rotors/ assemblies having a mass greater than 3 kg;<br>2. Capable of balancing rotors/ assemblies at speeds | 2B119 |

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| | greater than 12 500 rpm;<br>3. Capable of correcting imbalance in two planes or more; and<br>4. Capable of balancing to a residual specific imbalance of 0,2 g × mm per kg of rotor mass;<br>b. Indicator heads designed or modified for use with machines specified in a. above.<br>*Technical Note:*<br>*Indicator heads are sometimes known as balancing instrumentation.* | |
| II.A2.005 | Controlled atmosphere heat treatment furnaces, as follows:<br>Furnaces capable of operation at temperatures above 400 °C. | 2B226, 2B227 |
| II.A2.006 | Oxidation furnaces capable of operation at temperatures above 400 °C<br>*Note: This item does not cover tunnel kilns with roller or car conveyance, tunnel kilns with conveyor belt, pusher type kilns or shuttle kilns, specially designed for the production of glass, tableware ceramics or structural ceramics*. | 2B226, 2B227 |
| II.A2.007 | 'Pressure transducers', other than those defined in 2B230, capable of measuring absolute pressures at any | 2B230 |

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| | point in the range 0 to 200 kPa and having both of the following characteristics:<br>a. Pressure sensing elements made of or protected by 'Materials resistant to corrosion by uranium hexafluoride ($UF_6$)', and<br>b. Having either of the following characteristics:<br>1. A full scale of less than 200 kPa and an 'accuracy' of better than ± 1 % of full scale; or<br>2. A full scale of 200 kPa or greater and an 'accuracy' of better than 2 kPa.<br>*Technical Note:*<br>*For the purposes of 2B230, 'accuracy' includes non-linearity, hysteresis and repeatability at ambient temperature.* | |
| II.A2.008 | Liquid-liquid contacting equipment (mixer-settlers, pulsed columns, centrifugal contactors); and liquid distributors, vapour distributors or liquid collectors designed for such equipment, where all surfaces that come in direct contact with the chemical(s) being processed are made from any of the following materials: | 2B350.e |

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| | 1. Alloys with more than 25 % nickel and 20 % chromium by weight;<br>2. Fluoropolymers;<br>3. Glass (including vitrified or enamelled coating or glass lining);<br>4. Graphite or 'carbon graphite';<br>5. Nickel or alloys with more than 40 % nickel by weight;<br>6. Tantalum or tantalum alloys;<br>7. Titanium or titanium alloys;<br>8. Zirconium or zirconium alloys; or<br>9. Stainless steel.<br>*Technical Note:*<br>*'Carbon graphite' is a composition consisting of amorphous carbon and graphite, in which the graphite content is 8 % or more by weight.* | |
| II.A2.009 | Industrial equipment and components, other than those specified in 2B350.d, as follows:<br>Heat exchangers or condensers with a heat transfer surface area greater than 0,05 $m^2$, and less than 30 $m^2$; and tubes, plates, coils or blocks (cores) designed for such heat exchangers or condensers, where all surfaces that come in direct contact with the fluid(s) are made from any of the following materials:<br>1. Alloys with more than 25 % nickel and 20 % chromium by weight;<br>2. Fluoropolymers;<br>3. Glass (including vitrified or | 2B350.d |

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| | enamelled coating or glass lining);<br>4. Graphite or 'carbon graphite';<br>5. Nickel or alloys with more than 40 % nickel by weight;<br>6. Tantalum or tantalum alloys;<br>7. Titanium or titanium alloys;<br>8. Zirconium or zirconium alloys;<br>9. Silicon carbide;<br>10. Titanium carbide; or<br>11. Stainless steel.<br>Note: This item does not cover vehicle radiators.<br>*Technical Note:*<br>The materials used for gaskets and seals and other implementation of sealing functions do not determine the status of control of the heat exchanger. | |
| II.A2.010 | Multiple-seal, and seal-less pumps, other than those specified in 2B350.i, suitable for corrosive fluids, with manufacturer's specified maximum flow-rate greater than 0,6 $m^3$/hour, or vacuum pumps with manufacturer's specified maximum flow-rate greater than 5 $m^3$/hour [measured under standard temperature (273 K or 0 °C) and pressure (101,3kPa) conditions]; and casings (pump bodies), preformed casing liners, impellers, rotors or jet pump nozzles designed for such pumps, in which all surfaces that come in direct contact with the chemical(s) being processed are made from any of the following materials:<br>1. Alloys with more than 25 % nickel and 20 % chromium by weight; | 2B350.d |

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| | 2. Ceramics;<br>3. Ferrosilicon;<br>4. Fluoropolymers;<br>5. Glass (including vitrified or enamelled coatings or glass lining);<br>6. Graphite or 'carbon graphite';<br>7. Nickel or alloys with more than 40 % nickel by weight;<br>8. Tantalum or tantalum alloys;<br>9. Titanium or titanium alloys;<br>10. Zirconium or zirconium alloys;<br>11. Niobium (columbium) or niobium alloys;<br>12. Stainless steel; or<br>13. Aluminium alloys.<br>*Technical Note:*<br>The materials used for gaskets and seals and other implementation of sealing functions do not determine the status of control of the pump. | |
| II.A2.013 | Spin-forming machines and flow-forming machines, other than those controlled by 2B009, or prohibited by I.2A.009 or I.2A.020, having a roller force of more than 60 kN and specially designed components therefor.<br>*Technical Note:*<br>*For the purpose of II.A2.013, machines combining the functions of spin-forming and flow-forming are regarded as flow-forming machines*. | |

A3.

ELECTRONICS

| No | Description | Related item from Annex I to Regulation (EC) No 428/2009 |
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| II.A3.003 | Frequency changers or generators, other than those prohibited by I.0A.002.b.13 or I.3A.004, having all of the following characteristics, and specially designed components and software therefor:<br>a. Multiphase output capable of providing a power of 40 W or greater;<br>b. Capable of operating in the frequency range between 600 and 2 000 Hz; and<br>c. Frequency control better (less) than 0,1 %.<br>*Technical Note:*<br>*Frequency changers in II.A3.003 are also known as converters or inverters.* | |
| II.A3.004 | Spectrometers and diffractometers, designed for the indicative test or quantitative analysis of the elemental composition of metals or alloys without chemical decomposition of the material. | |

A6.

SENSORS AND LASERS

| **No** | **Description** | **Related item from Annex I to Regulation (EC) No 428/2009** |
|---|---|---|
| II.A6.002 | Optical equipment and components, other than those specified in 6A002, 6A004.b as follows:<br>Infrared optics in the wavelength range 9 000 nm – 17 000 nm and components thereof, including cadmium telluride (CdTe) components. | 6A002, 6A004.b |

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| II.A6.005 | Semiconductor 'lasers' and components thereof, as follows:<br>a. Individual semiconductor 'lasers' with an output power greater than 200 mW each, in quantities larger than 100;<br>b. Semiconductor 'laser' arrays having an output power greater than 20 W.<br>*Notes:*<br>*1. Semiconductor 'lasers' are commonly called 'laser' diodes.*<br>*2. This item does not cover 'lasers' defined in items 0B001.g.5, 0B001.h.6 and 6A005.b.*<br>*3. This item does not cover 'laser' diodes with a wavelength in the range 1 200 nm – 2 000 nm.* | 6A005.b |
| II.A6.007 | Solid state 'tunable''lasers' and specially designed components thereof as follows:<br>a. Titanium-sapphire lasers,<br>b. Alexandrite lasers.<br>*Note: This item does not cover titanium-sapphire and alexandrite lasers defined in items 0B001.g.5, 0B001.h.6 and 6A005.c.1.* | 6A005.c.1 |
| II.A6.009 | Components of acousto-optics, as follows:<br>a. Framing tubes and solid-state imaging devices | 6A203.b.4.c |

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| | having a recurrence frequency equal to or exceeding 1kHz;<br>b. Recurrence frequency supplies;<br>c. Pockels cells. | |

A7.

NAVIGATION AND AVIONICS

| No | Description | Related item from Annex I to Regulation (EC) No 428/2009 |
|---|---|---|
| II.A7.001 | Inertial navigation systems and specially designed components thereof, as follows:<br>I. Inertial navigation systems which are certified for use on 'civil aircraft' by civil authorities of a State participating in the Wassenaar Arrangement, and specially designed components thereof, as follows:<br>a. Inertial navigation systems (INS) (gimballed or strapdown) and inertial equipment designed for 'aircraft', land vehicle, vessels (surface or underwater) or 'spacecraft' for attitude, guidance | 7A003, 7A103 |

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| | | or control, having any of the following characteristics, and specially designed components thereof:<br>1. Navigation error (free inertial) subsequent to normal alignment of 0,8 nautical mile per hour (nm/hr) 'Circular Error Probable' (CEP) or less (better); or<br>2. Specified to function at linear acceleration levels exceeding 10 g; |
| | b. | Hybrid Inertial Navigation Systems embedded with Global Navigation Satellite |

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| | | Systems(s) (GNSS) or with 'Data-Based Referenced Navigation' ('DBRN') System(s) for attitude, guidance or control, subsequent to normal alignment, having an INS navigation position accuracy, after loss of GNSS or 'DBRN' for a period of up to four minutes, of less (better) than 10 metres 'Circular Error Probable' (CEP); |
| | c. | Inertial Equipment for Azimuth, Heading, or North Pointing having any of the following characteristics, and specially designed components thereof: |

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| | 1. Designed to have an Azimuth, Heading, or North Pointing accuracy equal to, or less (better) than 6 arc/ minutes RMS at 45 degrees latitude; or<br>2. Designed to have a non-operating shock level of at least 900 g at a duration of at least 1 msec. | |
| *Note: The parameters of I.a. and I.b. are applicable with any of the following environmental conditions:* | | |

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| | 1. | *Input random vibration with an overall magnitude of 7,7 g rms in the first half hour and a total test duration of one and a half hours per axis in each of the three perpendicular axes, when the random vibration meets the following:*<br>a. *A constant power spectral density (PSD) value of 0,04 $g^2$/Hz over a frequency interval of 15 to 1 000 Hz; and*<br>b. *The PSD attenuates with a frequency* |

*from 0,04 $g^2$/Hz to 0,01 $g^2$/Hz over a frequency interval from 1 000 to 2 000 Hz;*

2. *A roll and yaw rate equal to or greater than +2,62 radian/s (150 deg/s); or*
3. *According to national standards equivalent to 1. or 2. above.*

*Technical Notes:*

1. *I.b. refers to systems in which an INS and other independent navigation aids are built into a single unit (embedded) in order to achieve improved performance.*

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|---|---|---|
| | 2. | *'Circular Error Probable' (CEP) – In a circular normal distribution, the radius of the circle containing 50 percent of the individual measurements being made, or the radius of the circle within which there is a 50 percent probability of being located.* |
| II. | Theodolite systems incorporating inertial equipment specially designed for civil surveying purposes and designed to have an Azimuth, Heading, or North Pointing accuracy equal to, or less (better) than 6 arc minutes RMS at 45 degrees latitude, and specially designed components thereof. | |
| III. | Inertial or other equipment using accelerometers specified in 7A001 or 7A101, where such accelerometers are specially designed and | |

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| | developed as MWD (Measurement While Drilling) sensors for use in downhole well services operations. | |

A9.

AEROSPACE AND PROPULSION

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|---|---|---|
| II.A9.001 | Explosive bolts. | |

II.B. TECHNOLOGY

| **No** | **Description** | **Related item from Annex I to Regulation (EC) No 428/2009** |
|---|---|---|
| II.B.001 | Technology required for the development, production or use of the items in Part II A. (Goods) above. *Technical Note: Regulation (EC) No 423/2007, Article 1(d) the term 'technology' includes software.* | **]** |

**[**[F1]ANNEX III

Web sites for information on the competent authorities referred to in Articles 3(4), 3(5), 4a, 5(3), 6, 8, 9, 10(1), 10(2), 11a, 11b, 13(1) and 17, and address for notifications to the European Commission

BELGIUM

http://www.diplomatie.be/eusanctions
BULGARIA

http://www.mfa.government.bg
CZECH REPUBLIC

http://www.mfcr.cz/mezinarodnisankce
DENMARK

http://www.um.dk/da/menu/Udenrigspolitik/FredSikkerhedOgInternationalRetsorden/Sanktioner/
GERMANY

http://www.bmwi.de/BMWi/Navigation/Aussenwirtschaft/Aussenwirtschaftsrecht/embargos.html

ESTONIA

http://www.vm.ee/est/kat_622/
IRELAND

http://foreign-affairs.net/home/index.aspx?id=28519
GREECE

http://www.ypex.gov.gr/www.mfa.gr/en-US/Policy/Multilateral+Diplomacy/International+Sanctions/
SPAIN

http://www.maec.es/es/MenuPpal/Asuntos/Sanciones%20Internacionales/Paginas/Sanciones_%20Internacionales.aspx
FRANCE

http://www.diplomatie.gouv.fr/autorites-sanctions/
ITALY

http://www.esteri.it/UE/deroghe.html
CYPRUS

http://www.mfa.gov.cy/sanctions
LATVIA

http://www.mfa.gov.lv/en/security/4539
LITHUANIA

http://www.urm.lt
LUXEMBOURG

http://www.mae.lu/sanctions
HUNGARY

http://www.kulugyminiszterium.hu/kum/hu/bal/Kulpolitikank/nemzetkozi_szankciok/
MALTA

http://www.doi.gov.mt/EN/bodies/boards/sanctions_monitoring.asp
NETHERLANDS

http://www.minbuza.nl/sancties
AUSTRIA

http://www.bmeia.gv.at/view.php3?f_id=12750&LNG=en&version=
POLAND

http://www.msz.gov.pl
PORTUGAL

http://www.min-nestrangeiros.pt
ROMANIA

http://www.mae.ro/index.php?unde=doc&id=32311&idlnk=1&cat=3
SLOVENIA

http://www.mzz.gov.si/si/zunanja_politika/mednarodna_varnost/omejevalni_ukrepi/
SLOVAKIA

http://www.foreign.gov.sk

FINLAND

http://formin.finland.fi/kvyhteistyo/pakotteet
SWEDEN

http://www.ud.se/sanktioner
UNITED KINGDOM

www.fco.gov.uk/competentauthorities

Address for notifications to the European Commission:

European Commission

DG External Relations

Directorate A Crisis Platform — Policy Coordination in Common Foreign and Security Policy (CFSP)

Unit A.2. Crisis Response and Peace Building

CHAR 12/106

B-1049 Bruxelles/Brussel (Belgium)

E-mail: relex-sanctions@ec.europa.eu

Tel.: (32-2) 295 55 85

Fax: (32-2) 299 08 73**]**

## **[**[F8]ANNEX IV

List of persons, entities and bodies referred to in Article 7(1)

**Textual Amendments**

**F8** Substituted by Commission Regulation (EC) No 219/2008 of 11 March 2008 amending Council Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

A.Legal persons, entities and bodies

(1) Abzar Boresh Kaveh Co. (*alias* BK Co.). Date of UN designation: 3.3.2008. Other information: involved in the production of centrifuge components.

(2) Ammunition and Metallurgy Industries Group (*alias* (a) AMIG, (b) Ammunition Industries Group). Date of UN designation: 24.3.2007. Other information: (a) AMIG controls 7th of Tir, (b) AMIG is owned and controlled by the Defence Industries Organisation (DIO).

(3) Atomic Energy Organisation of Iran (AEOI). Date of UN designation: 23.12.2006. Other information: Involved in Iran's nuclear programme.

(4) Bank Sepah and Bank Sepah International. Date of UN designation: 24.3.2007. Other information: Bank Sepah provides support for the Aerospace Industries Organisation

(AIO) and subordinates, including Shahid Hemmat Industrial Group (SHIG) and Shahid Bagheri Industrial Group (SBIG).

(5) Barzagani Tejarat Tavanmad Saccal companies. Date of UN designation: 3.3.2008. Other information: (a) subsidiary of Saccal System companies, (b) this company tried to purchase sensitive goods for an entity listed in resolution 1737 (2006).

(6) Cruise Missile Industry Group (*alias* Naval Defence Missile Industry Group). Date of UN designation: 24.3.2007.

(7) Defence Industries Organisation (DIO). Date of UN designation: 23.12.2006. Other information: (a) Overarching MODAFL-controlled entity, some of whose subordinates have been involved in the centrifuge programme making components, and in the missile programme, (b) Involved in Iran's nuclear programme.

(8) Electro Sanam Company (*alias* (a) E. S. Co., (b) E. X. Co.). Date of UN designation: 3.3.2008. Other information: AIO front-company, involved in the ballistic missile programme.

(9) Esfahan Nuclear Fuel Research and Production Centre (NFRPC) and Esfahan Nuclear Technology Centre (ENTC). Date of UN designation: 24.3.2007. Other information: They are parts of the Atomic Energy Organisation of Iran's (AEOI) Nuclear Fuel Production and Procurement Company.

(10) Ettehad Technical Group. Date of UN designation: 3.3.2008. Other information: AIO front-company, involved in the ballistic missile programme.

(11) Fajr Industrial Group. Date of UN designation: 23.12.2006. Other information: (a) Formerly Instrumentation Factory Plant, (b) Subordinate entity of AIO, (c) Involved in Iran's ballistic missile programme.

(12) Farayand Technique. Date of UN designation: 23.12.2006. Other information: (a) Involved in Iran's nuclear programme (centrifuge programme), (b) Identified in IAEA reports.

(13) Industrial Factories of Precision (IFP) Machinery (*alias* Instrumentation Factories Plant). Date of UN designation: 3.3.2008. Other information: used by AIO for some acquisition attempts.

(14) Jabber Ibn Hayan. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: AEOI laboratory involved in fuel-cycle activities.

(15) Joza Industrial Co. Date of UN designation: 3.3.2008. Other information: AIO front-company, involved in the ballistic missile programme.

(16) Kala-Electric (*alias* Kalaye Electric). Date of UN designation: 23.12.2006. Other information: (a) Provider for PFEP — Natanz, (b) Involved in Iran's nuclear programme.

(17) Karaj Nuclear Research Centre. Date of UN designation: 24.3.2007. Other information: Part of AEOI's research division.

(18) Kavoshyar Company. Date of UN designation: 24.3.2007. Other information: Subsidiary company of AEOI.

(19) Khorasan Metallurgy Industries. Date of UN designation: 3.3.2008. Other information: (a) subsidiary of the Ammunition Industries Group (AMIG) which depends on DIO, (b) involved in the production of centrifuge components.

(20) Mesbah Energy Company. Date of UN designation: 23.12.2006. Other information: (a) Provider for A40 research reactor — Arak, (b) Involved in Iran's nuclear programme.

(21) Niru Battery Manufacturing Company. Date of UN designation: 3.3.2008. Other information: (a) subsidiary of the DIO, (b) its role is to manufacture power units for the Iranian military including missile systems.

(22) Novin Energy Company (*alias* Pars Novin). Date of UN designation: 24.3.2007. Other information: It operates within AEOI.

(23) Parchin Chemical Industries. Date of UN designation: 24.3.2007. Other information: Branch of DIO.

(24) Pars Aviation Services Company. Date of UN designation: 24.3.2007. Other information: maintains aircraft.

(25) Pars Trash Company. Date of UN designation: 23.12.2006. Other information: (a) Involved in Iran's nuclear programme (centrifuge programme), (b) Identified in IAEA reports.

(26) Pishgam (Pioneer) Energy Industries. Date of UN designation: 3.3.2008. Other information: has participated in construction of the Uranium Conversion Facility at Esfahan.

(27) Qods Aeronautics Industries. Date of UN designation: 24.3.2007. Other information: It produces unmanned aerial vehicles (UAVs), parachutes, paragliders, paramotors, etc.

(28) Sanam Industrial Group. Date of UN designation: 24.3.2007. Other information: subordinate to AIO.

(29) Safety Equipment Procurement (SEP). Date of UN designation: 3.3.2008. Other information: AIO front-company, involved in the ballistic missile programme.

(30) 7th of Tir. Date of UN designation: 23.12.2006. Other information: (a) Subordinate of DIO, widely recognised as being directly involved in Iran's nuclear programme, (b) Involved in Iran's nuclear programme.

(31) Shahid Bagheri Industrial Group (SBIG). Date of UN designation: 23.12.2006. Other information: (a) Subordinate entity of AIO, (b) Involved in Iran's ballistic missile programme.

(32) Shahid Hemmat Industrial Group (SHIG). Date of UN designation: 23.12.2006. Other information: (a) subordinate entity of AIO, (b) Involved in Iran's ballistic missile programme.

(33) Sho'a' Aviation. Date of UN designation: 24.3.2007. Other information: It produces microlights.

(34) TAMAS Company. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: (a) involved in enrichment-related activities, (b) TAMAS is an overarching body, under which four subsidiaries have been established, including one for uranium extraction to concentration and another in charge of uranium processing, enrichment and waste.

(35) Ya Mahdi Industries Group. Date of UN designation: 24.3.2007. Other information: subordinate to AIO.

[F9(36) Amin Industrial Complex (*alias* (a) Amin Industrial Compound, (b) Amin Industrial Company). Date of UN designation: 9.6.2010. Address: (a) P.O. Box 91735-549, Mashad, Iran; (b) Amin Industrial Estate, Khalage Rd., Seyedi District, Mashad, Iran; (c) Kaveh Complex, Khalaj Rd., Seyedi St., Mashad, Iran Other information: (a) Amin Industrial Complex sought temperature controllers which may be used in nuclear research and operational/production facilities, (b) Amin Industrial Complex is owned or controlled by, or acts on behalf of, the Defense Industries Organization (DIO), which was designated in UN Security Council Resolution 1737 (2006).

**Textual Amendments**

**F9** Inserted by Commission Regulation (EU) No 532/2010 of 18 June 2010 amending Council Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

(37) Armament Industries Group. Date of EU designation: 24.4.2007 (UN: 9.6.2010). Address: (a) Sepah Islam Road, Karaj Special Road Km 10, Iran; (b) Pasdaran Ave., P.O. Box 19585/777, Tehran, Iran. Other information: (a) Armament Industries Group (AIG) manufacturers and services a variety of small arms and light weapons, including large- and medium-calibre guns and related technology, (b) AIG conducts the majority of its procurement activity through Hadid Industries Complex.

(38) Defense Technology and Science Research Center. Date of EU designation: 24.4.2007 (UN: 9.6.2010). Address: Pasdaran Ave, PO Box 19585/777, Tehran, Iran. Other information: Defense Technology and Science Research Center (DTSRC) is owned or controlled by, or acts on behalf of, Iran's Ministry of Defense and Armed Forces Logistics (MODAFL), which oversees Iran's defence R&D, production, maintenance, exports, and procurement.

(39) Doostan International Company. Date of UN designation: 9.6.2010. Other information: Doostan International Company (DICO) supplies elements to Iran's ballistic missile program.

(40) Farasakht Industries. Date of UN designation: 9.6.2010. Address: P.O. Box 83145-311, Kilometer 28, Esfahan-Tehran Freeway, Shahin Shahr, Esfahan, Iran. Other information: Farasakht Industries is owned or controlled by, or acts on behalf of, the Iran Aircraft Manufacturing Company, which in turn is owned or controlled by MODAFL.

(41) Fater (or Faater) Institute. Date of UN designation: 9.6.2010. Other information: (a) Khatam al-Anbiya (KAA) subsidiary, (b) Fater has worked with foreign suppliers, likely on behalf of other KAA companies on IRGC projects in Iran, (c) Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps.

(42) First East Export Bank, P.L.C. Date of UN designation: 9.6.2010. Address: Unit Level 10 (B1), Main Office Tower, Financial Park Labuan, Jalan Merdeka, 87000 WP Labuan, Malaysia. Other information: (a) First East Export Bank, PLC is owned or controlled by, or acts on behalf of, Bank Mellat, (b) Over the last seven years, Bank Mellat has facilitated hundreds of millions of dollars in transactions for Iranian nuclear, missile, and defense entities, (c) Business Registration Number LL06889 (Malaysia).

(43) Gharagahe Sazandegi Ghaem. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Gharagahe Sazandegi Ghaem is owned or controlled by KAA (see below).

(44) Ghorb Karbala. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Ghorb Karbala is owned or controlled by KAA (see below).

(45) Ghorb Nooh. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Ghorb Nooh is owned or controlled by KAA (see below).

(46) Hara Company. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Owned or controlled by Ghorb Nooh.

(47) Imensazan Consultant Engineers Institute. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Owned or controlled by, or acts on behalf of, KAA (see below).

(48) Irano Hind Shipping Company. Date of UN designation: 9.6.2010. Address: (a) 18 Mehrshad Street, Sadaghat Street, Opposite of Park Mellat, Vali-e-Asr Ave., Tehran, Iran, (b) 265, Next to Mehrshad, Sedaghat St., Opposite of Mellat Park, Vali Asr Ave., Tehran 1A001, Iran. Other information: Owned or controlled by, or acting on behalf of, the Islamic Republic of Iran Shipping Lines.

(49) IRISL Benelux NV. Date of UN designation: 9.6.2010. Address: Noorderlaan 139, B-2030, Antwerp, Belgium. Other information: (a) V.A.T. Number BE480224531 (Belgium), (b) Other information: Owned or controlled by, or acting on behalf of, the Islamic Republic of Iran Shipping Lines.

(50) Kaveh Cutting Tools Company. Date of UN designation: 9.6.2010. Address: (a) 3rd Km of Khalaj Road, Seyyedi Street, Mashad 91638, Iran, (b) Km 4 of Khalaj Road, End of Seyedi Street, Mashad, Iran, (c) P.O. Box 91735-549, Mashad, Iran, (d) Khalaj Rd., End of Seyyedi Alley, Mashad, Iran; (e) Moqan St., Pasdaran St., Pasdaran Cross Rd., Tehran, Iran. Other information: Kaveh Cutting Tools Company is owned or controlled by, or acts on behalf of, the DIO.

(51) Khatam al-Anbiya Construction Headquarters. Date of EU designation: 24.6.2008 (UN: 9.6.2010). Other information: (a) Khatam al-Anbiya Construction Headquarters (KAA) is an Islamic Revolutionary Guard Corps (IRGC)-owned company involved in large scale civil and military construction projects and other engineering activities. It undertakes a significant amount of work on Passive Defense Organization projects. In particular, KAA subsidiaries were heavily involved in the construction of the uranium enrichment site at Qom/Fordow.

(52) M. Babaie Industries. Date of UN designation: 9.6.2010. Address: P.O. Box 16535-76, Tehran, 16548, Iran. Other information: (a) M. Babaie Industries is subordinate to Shahid Ahmad Kazemi Industries Group (formally the Air Defense Missile Industries Group) of Iran's Aerospace Industries Organization (AIO), (b) AIO controls the missile organizations Shahid Hemmat Industrial Group (SHIG) and the Shahid Bakeri Industrial Group (SBIG), both of which were designated in resolution 1737 (2006).

(53) Makin. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Makin is owned or controlled by or acting on behalf of KAA, and is a subsidiary of KAA.

(54) Malek Ashtar University. Date of EU designation: 24.6.2008 (UN: 9.6.2010). Address: Corner of Imam Ali Highway and Babaei Highway, Tehran, Iran. Other information: (a) a subordinate of the DTRSC within MODAFL, (b) this includes research groups previously falling under the Physics Research Center (PHRC), (c) IAEA inspectors have not been allowed to interview staff or see documents under the control of this organization to resolve the outstanding issue of the possible military dimension to Iran's nuclear program.

(55) Ministry of Defense Logistics Export. Date of EU designation: 24.6.2008 (UN: 9.6.2010). Address: (a) PO Box 16315-189, Tehran, Iran; (b) located on the west side of Dabestan Street, Abbas Abad District, Tehran, Iran. Other information: Ministry of Defense Logistics Export (MODLEX) sells Iranian-produced arms to customers around the world in contravention of UN Security Council Resolution 1747 (2007), which prohibits Iran from selling arms or related materiel.

(56) Mizan Machinery Manufacturing (*alias* 3MG). Date of EU designation: 24.6.2008 (UN: 9.6.2010). Address: O. Box 16595-365, Tehran, Iran. Other information: Mizan Machinery Manufacturing (3M) is owned or controlled by, or acts on behalf of, SHIG.

(57) Modern Industries Technique Company (*alias* (a) Rahkar Company, (b) Rahkar Industries, (c) Rahkar Sanaye Company, (d) Rahkar Sanaye Novin). Date of UN designation: 9.6.2010. Address: Arak, Iran. Other information: (a) Modern Industries Technique Company (MITEC) is responsible for design and construction of the IR-40 heavy water reactor in Arak, (b) MITEC has spearheaded procurement for the construction of the IR-40 heavy water reactor.

(58) Nuclear Research Center for Agriculture and Medicine (*alias* (a) Center for Agricultural Research and Nuclear Medicine, (b) Karaji Agricultural and Medical Research Center). Date of UN designation: 9.6.2010. Address: P.O. Box 31585-4395, Karaj, Iran. Other information: (a) the Nuclear Research Center for Agriculture and Medicine (NFRPC) is a large research component of the Atomic Energy Organization of Iran (AEOI), which was designated in UN Security Council Resolution 1737 (2006), (b) the NFRPC is AEOI's center for the development of nuclear fuel and is involved in enrichment-related activities.

(59) Omran Sahel. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Owned or controlled by Ghorb Nooh.

(60) Oriental Oil Kish. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Oriental Oil Kish is owned or controlled by or acting on behalf of KAA.

(61) Pejman Industrial Services Corporation. Date of UN designation: 9.6.2010. Address: P.O. Box 16785-195, Tehran, Iran. Other information: Pejman Industrial Services Corporation is owned or controlled by, or acts on behalf of, SBIG.

(62) Rah Sahel. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Rah Sahel is owned or controlled by or acting on behalf of KAA.

(63) Rahab Engineering Institute. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Rahab is owned or controlled by or acting on behalf of KAA, and is a subsidiary of KAA.

(64) Sabalan Company. Date of UN designation: 9.6.2010. Address: Damavand Tehran Highway, Tehran, Iran. Other information: Sabalan is a cover name for SHIG.

(65) Sahand Aluminum Parts Industrial Company (SAPICO). Date of UN designation: 9.6.2010. Address: Damavand Tehran Highway, Tehran, Iran. Other information: SAPICO is a cover name for SHIG.

(66) Sahel Consultant Engineers. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Owned or controlled by Ghorb Nooh.

(67) Sepanir. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Sepanir is owned or controlled by or acting on behalf of KAA.

(68) Sepasad Engineering Company. Date of UN designation: 9.6.2010. Other information: Owned or controlled by, or acting on behalf of, the Islamic Revolutionary Guard Corps. Sepasad Engineering Company is owned or controlled by or acting on behalf of KAA.

(69) Shahid Karrazi Industries. Date of UN designation: 9.6.2010. Address: Tehran, Iran. Other information: Shahid Karrazi Industries is owned or controlled by, or act on behalf of, SBIG.

(70) Shahid Satarri Industries (*alias* Shahid Sattari Group Equipment Industries). Date of UN designation: 9.6.2010. Address: Southeast Tehran, Iran. Other information: Shahid Sattari Industries is owned or controlled by, or acts on behalf of, SBIG.

(71) Shahid Sayyade Shirazi Industries. Date of UN designation: 9.6.2010. Address: (a) Next to Nirou Battery Mfg. Co, Shahid Babaii Expressway, Nobonyad Square, Tehran, Iran, (b) Pasdaran St., P.O. Box 16765, Tehran 1835, Iran, (c) Babaei Highway — Next to Niru M.F.G, Tehran, Iran. Other information: Shahid Sayyade Shirazi Industries (SSSI) is owned or controlled by, or acts on behalf of, the DIO.

(72) South Shipping Line Iran (SSL). Date of UN designation: 9.6.2010. Address: (a) Apt. No. 7, 3rd Floor, No. 2, 4th Alley, Gandi Ave., Tehran, Iran, (b) Qaem Magham Farahani St., Tehran, Iran. Other information: Owned or controlled by, or acting on behalf of, the Islamic Republic of Iran Shipping Lines.

(73) Special Industries Group. Date of EU designation: 24.4.2007 (UN: 9.6.2010). Address: Pasdaran Avenue, PO Box 19585/777, Tehran, Iran. Other information: Special Industries Group (SIG) is a subordinate of DIO.

(74) Tiz Pars. Date of UN designation: 9.6.2010. Address: Damavand Tehran Highway, Tehran, Iran. Other information: (a) Tiz Pars is a cover name for SHIG, (b) Between April and July 2007, Tiz Pars attempted to procure a five axis laser welding and cutting machine, which could make a material contribution to Iran's missile program, on behalf of SHIG.

(75) Yazd Metallurgy Industries (*alias* (a) Yazd Ammunition Manufacturing and Metallurgy Industries, (b) Directorate of Yazd Ammunition and Metallurgy

Industries.). Date of UN designation: 9.6.2010. Address: (a) Pasdaran Avenue, Next to Telecommunication Industry, Tehran 16588, Iran, (b) Postal Box 89195/878, Yazd, Iran, (c) P.O. Box 89195-678, Yazd, Iran, (d) Km 5 of Taft Road, Yazd, Iran. Other information: Metallurgy Industries (YMI) is a subordinate of DIO.**]**

B. Natural persons

(1) Fereidoun **Abbasi-Davani**. Date of UN designation: 24.3.2007. Other information: Senior Ministry of Defence and Armed Forces Logistics (MODAFL) scientist with links to the Institute of Applied Physics. Working closely with Mohsen Fakhrizadeh-Mahabadi.

(2) Dawood **Agha-Jani**. Function: Head of the PFEP - Natanz. Date of UN designation: 23.12.2006. Other information: Person involved in Iran's nuclear programme.

(3) Ali Akbar **Ahmadian**. Title: Vice Admiral. Function: Chief of Iranian Revolutionary Guard Corps (IRGC) Joint Staff. Date of UN designation: 24.3.2007.

(4) Amir Moayyed **Alai**. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: involved in managing the assembly and engineering of centrifuges.

(5) Behman **Asgarpour**. Function: Operational Manager (Arak). Date of UN designation: 23.12.2006. Other information: Person involved in Iran's nuclear programme.

(6) Mohammad Fedai **Ashiani**. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: involved in the production of ammonium uranyl carbonate and management of the Natanz enrichment complex.

(7) Abbas Rezaee **Ashtiani**. Date of UN designation: 3.3.2008. Other information: a senior official at the AEOI Office of Exploration and Mining Affairs.

(8) Bahmanyar Morteza **Bahmanyar**. Function: Head of Finance & Budget Dept, Aerospace Industries Organisation (AIO). Date of UN designation: 23.12.2006. Other information: Person involved in Iran's ballistic missile programme.

(9) Haleh **Bakhtiar**. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: involved in the production of magnesium at a concentration of 99.9 %.

(10) Morteza **Behzad**. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: involved in making centrifuge components.

(11) Ahmad Vahid **Dastjerdi**. Function: Head of the Aerospace Industries Organisation (AIO). Date of UN designation: 23.12.2006. Other information: Person involved in Iran's ballistic missile programme.

(12) Ahmad **Derakhshandeh**. Function: Chairman and Managing Director of Bank Sepah. Date of UN designation: 24.3.2007.

(13) Mohammad **Eslami**. Title: Dr. Date of UN designation: 3.3.2008. Other information: Head of Defence Industries Training and Research Institute.

(14) Reza-Gholi **Esmaeli**. Function: Head of Trade & International Affairs Dept, Aerospace Industries Organisation (AIO). Date of UN designation: 23.12.2006. Other information: Person involved in Iran's ballistic missile programme.

(15) Mohsen **Fakhrizadeh-Mahabadi**. Date of UN designation: 24.3.2007. Other information: Senior MODAFL scientist and former head of the Physics Research Centre (PHRC).

(16) Mohammad **Hejazi**. Title: Brigadier General. Function: Commander of Bassij resistance force. Date of UN designation: 24.3.2007.

(17) Mohsen **Hojati**. Function: Head of Fajr Industrial Group. Date of UN designation: 24.3.2007.

(18) Seyyed Hussein **Hosseini**. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: AEOI official involved in the heavy water research reactor project at Arak.

(19) M. Javad **Karimi Sabet**. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: Head of Novin Energy Company, which is designated under resolution 1747 (2007).

(20) Mehrdada Akhlaghi **Ketabachi**. Function: Head of Shahid Bagheri Industrial Group (SBIG). Date of UN designation: 24.3.2007.

(21) Ali Hajinia **Leilabadi**. Function: Director General of Mesbah Energy Company. Date of UN designation: 23.12.2006. Other information: Person involved in Iran's nuclear programme.

(22) Naser **Maleki**. Function: Head of Shahid Hemmat Industrial Group (SHIG). Date of UN designation: 24.3.2007. Other information: Naser Maleki is also a MODAFL official overseeing work on the Shahab-3 ballistic missile programme. The Shahab-3 is Iran's long-range ballistic missile currently in service.

(23) Hamid-Reza **Mohajerani**. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: involved in production management at the Uranium Conversion Facility (UCF) at Esfahan.

(24) Jafar **Mohammadi**. Function: Technical Adviser to the Atomic Energy Organisation of Iran (AEOI) (in charge of managing the production of valves for centrifuges). Date of UN designation: 23.12.2006. Other information: Person involved in Iran's nuclear programme.

(25) Ehsan **Monajemi**. Function: Construction Project Manager, Natanz. Date of UN designation: 23.12.2006. Other information: Person involved in Iran's nuclear programme.

(26) Mohammad Reza **Naqdi**. Title: Brigadier General. Date of UN designation: 3.3.2008. Other information: former Deputy Chief of Armed Forces General Staff for Logistics and Industrial Research/Head of State Anti-Smuggling Headquarters, engaged in efforts to get round the sanctions imposed by resolutions 1737 (2006) and 1747 (2007).

(27) Houshang **Nobari**. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: involved in the management of the Natanz enrichment complex.

(28) Mohammad Mehdi Nejad **Nouri**. Title: Lt Gen. Function: Rector of Malek Ashtar University of Defence Technology. Date of UN designation: 23.12.2006. Other information: The chemistry department of Ashtar University of Defence Technology is affiliated to MODALF and has conducted experiments on beryllium. Person involved in Iran's nuclear programme.

(29) Mohammad **Qannadi**. Function: AEOI Vice President for Research & Development. Date of UN designation: 23.12.2006. Other information: Person involved in Iran's nuclear programme.

(30) Amir **Rahimi**. Function: Head of Esfahan Nuclear Fuel Research and Production Center. Date of UN designation: 24.3.2007. Other information: Esfahan Nuclear Fuel Research and Production Center is part of the AEOI's Nuclear Fuel Production and Procurement Company, which is involved in enrichment-related activities.

(31) Abbas **Rashidi**. Date of EU designation: 24.4.2007 (UN: 3.3.2008). Other information: involved in enrichment work at Natanz.

(32) Morteza **Rezaie**. Title: Brigadier General. Function: Deputy Commander of IRGC. Date of UN designation: 24.3.2007.

(33) Morteza **Safari**. Title: Rear Admiral. Function: Commander of IRGC Navy. Date of UN designation: 24.3.2007.

(34) Yahya Rahim **Safavi**. Title: Maj Gen. Function: Commander, IRGC (Pasdaran). Date of UN designation: 23.12.2006. Other information: Person involved in both Iran's nuclear and ballistic missile programmes.

(35) Seyed Jaber **Safdari**. Date of UN designation: 24.3.2007. Other information: Manager of the Natanz Enrichment Facilities.

(36) Hosein **Salimi**. Title: General. Function: Commander of the Air Force, IRGC (Pasdaran). Date of UN designation: 23.12.2006. Other information: Person involved in Iran's ballistic missile programme.

(37) Qasem **Soleimani**. Title: Brigadier General. Function: Commander of Qods force. Date of UN designation: 24.3.2007.

(38) Ghasem **Soleymani**. Date of UN designation: 3.3.2008. Other information: Director of Uranium Mining Operations at the Saghand Uranium Mine.

(39) Mohammad Reza **Zahedi**. Title: Brigadier General. Function: Commander of IRGC Ground Forces. Date of UN designation: 24.3.2007.

(40) General **Zolqadr**. Function: Deputy Interior Minister for Security Affairs, IRGC officer. Date of UN designation: 24.3.2007.

**[**F9(41) Javad Rahiqi. Date of EU designation: 24.4.2007 (UN: 9.6.2010). Date of birth: 24.4.1954. Place of birth: Marshad. Function: Head of the Atomic Energy Organization of Iran (AEOI) Esfahan Nuclear Technology Center.**]]**

**[**F10ANNEX V

**Textual Amendments**

**F10** Substituted by Council Regulation (EC) No 1100/2009 of 17 November 2009 implementing Article 7(2) of Regulation (EC) No 423/2007 concerning restrictive measures against Iran and repealing Decision 2008/475/EC.

**List of persons, entities and bodies referred to in Article 7(2)**

A. **Natural persons**

| | Name | Identifying information | Reasons | Date of listing |
|---|---|---|---|---|
| 1. | Reza AGHAZADEH | DoB: 15/03/1949 Passport number: S4409483 valid 26/04/2000 – 27/04/2010 Issued: Tehran, Diplomatic passport number: D9001950, issued on 22/01/2008 valid until 21/01/2013, Place of birth: Khoy | Former Head of the Atomic Energy Organisation of Iran (AEOI). The AEOI oversees Iran's nuclear programme and is designated under UNSCR 1737 (2006). | 24.4.2007 |
| 2. | IRGC Brigadier-General Javad DARVISH-VAND | | MODAFL Deputy for Inspection. Responsible for all MODAFL facilities and installations | 24.6.2008 |
| 3. | IRGC Brigadier-General Seyyed Mahdi FARAHI | | Managing Director of the Defence Industries Organisation (DIO) which is designated under UNSCR 1737 (2006) | 24.6.2008 |
| 4. | Dr Hoseyn (Hossein) FAQIHIAN | Address of NFPC: AEOI-NFPD, P.O.Box: 11365-8486, Tehran / Iran | Deputy and Director-General of the Nuclear Fuel Production and Procurement Company (NFPC), part of the AEOI. The AEOI oversees Iran's nuclear programme and is designated under UNSCR 1737 (2006). The NFPC involved in enrichment- | 24.4.2007 |

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| | | | related activities that Iran is required by the IAEA Board and Security Council to suspend. | |
| 5. | Engineer Mojtaba HAERI | | MODAFL Deputy for Industry. Supervisory role over AIO and DIO | 24.6.2008 |
| 6. | IRGC Brigadier-General Ali HOSEYNITASH | | Head of the General Department of the Supreme National Security Council and involved in formulating policy on the nuclear issue | 24.6.2008 |
| 7. | Mohammad Ali JAFARI, IRGC | | Holds a command post at the IRGC | 24.6.2008 |
| 8. | Mahmood JANNATIAN | DoB 21/04/1946, passport number: T12838903 | Deputy Head of the Atomic Energy Organisation of Iran | 24.6.2008 |
| 9. | Said Esmail KHALILIPOUR (a.k.a.: LANGROUDI) | DoB: 24/11/1945, PoB: Langroud | Deputy Head of AEOI. The AEOI oversees Iran's nuclear programme and is designated under UNSCR 1737 (2006). | 24.4.2007 |
| 10. | Ali Reza KHANCHI | Address of NRC: AEOI-NRC P.O.Box: 11365-8486 Tehran/ Iran; Fax: (+9821) 8021412 | Head of AEOI's Tehran Nuclear Research Centre. The IAEA is continuing to seek clarification from Iran about plutonium separation experiments carried out at the TNRC, | 24.4.2007 |

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| | | | including about the presence of HEU particles in environmental samples taken at the Karaj Waste Storage Facility where containers used to store depleted uranium targets used in those experiments are located. The AEOI oversees Iran's nuclear programme and is designated under UNSCR 1737 (2006). | |
| 11. | Ebrahim MAHMUDZADEH | | Managing Director of Iran Electronic Industries | 24.6.2008 |
| 12. | Brigadier-General Beik MOHAMMADLU | | MODAFL Deputy for Supplies and Logistics | 24.6.2008 |
| 13. | Anis NACCACHE | | Administrator of Barzagani Tejarat Tavanmad Saccal companies; his company has attempted to procure sensitive goods for entities designated under Resolution 1737 (2006) | 24.6.2008 |
| 14. | Brigadier-General Mohammad NADERI | | Head of Aerospace Industries Organisation (AIO), AIO has taken part in sensitive Iranian programmes | 24.6.2008 |

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| 15. | IRGC Brigadier-General Mostafa Mohammad NAJJAR | | Minister for the Interior and former Minister of MODAFL, responsible for all military programmes, including ballistic missiles programmes. | 24.6.2008 |
| 16. | Dr Javad RAHIQI (RAHIGHI) | DoB: 21/04/1954, DoB according to old Iranian calendar: 1/05/1954, PoB: Mashad | Head of the Neutron Physics Group of the AEOI. AEOI oversees Iran's nuclear programme and is designated under UNSCR 1737 (2006). | 24.4.2007 |
| 17. | Ali Akbar SALEHI | | Head of the Atomic Energy Organisation of Iran (AEOI). The AEOI oversees Iran's nuclear programme and is designated under UNSCR 1737 (2006). | 17.11.2009 |
| 18. | Rear Admiral Mohammad SHAFI'I RUDSARI | | MODAFL Deputy for Coordination | 24.6.2008 |
| 19. | IRGC Brigadier-General Ali SHAMSHIRI | | MODAFL Deputy for Counter-Intelligence, responsible for security of MODAFL personnel and Installations | 24.6.2008 |
| 20. | Abdollah SOLAT SANA | | Managing Director of the Uranium Conversion Facility (UCF) in Esfahan. This | 24.4.2007 |

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| | | | is the facility that produces the feed material (UF6) for the enrichment facilities at Natanz. On 27 August 2006, Solat Sana received a special award from President Ahmadinejad for his role | |
| 21. | IRGC Brigadier-General Ahmad VAHIDI | | Minister of the MODAFL and former Deputy Head of MODAFL | 24.6.2008 |

B. **Legal persons, entities and bodies**

| | Name | Identifying information | Reasons | Date of listing |
|---|---|---|---|---|
| 1. | Aerospace Industries Organisation, AIO | AIO, 28 Shian 5, Lavizan, Tehran | AIO oversees Iran's production of missiles, including Shahid Hemmat Industrial Group, Shahid Bagheri Industrial Group and Fajr Industrial Group, which were all designated under UNSCR 1737 (2006). The head of AIO and two other senior officials were also designated under UNSCR 1737 (2006) | 24.4.2007 |
| 2. | Armament Industries | Pasdaran Av., PO Box 19585/ 777, Tehran | A subsidiary of the DIO (Defence Industries Organisation) | 24.4.2007 |

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| 3. | Armed Forces Geographical Organisation | | Assessed to provide geospatial data for the Ballistic Missile programme | 24.6.2008 |
| 4. | Bank Melli, Bank Melli Iran (including all branches) and subsidiaries: | Ferdowsi Avenue, PO Box 11365-171, Tehran | Providing or attempting to provide financial support for companies which are involved in or procure goods for Iran's nuclear and missile programmes (AIO, SHIG, SBIG, AEOI, Novin Energy Company, Mesbah Energy Company, Kalaye Electric Company and DIO). Bank Melli serves as a facilitator for Iran's sensitive activities. It has facilitated numerous purchases of sensitive materials for Iran's nuclear and missile programmes. It has provided a range of financial services on behalf of entities linked to Iran's nuclear and missile industries, including opening letters of credit and maintaining accounts. Many | 24.6.2008 |
| | (a) Melli Bank plc | London Wall, 11th floor, London EC2Y 5EA, United Kingdom | | |
| | (b) Bank Melli Iran Zao | Number 9/1, Ulitsa Mashkova, Moscow, 130064, Russia | | |

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| | | | of the above companies have been designated by UNSCRs 1737 (2006) and 1747 (2007). Bank Melli continues in this role, by engaging in a pattern of conduct which supports and facilitates Iran's sensitive activities. Using its banking relationships, it continues to provide support for, and financial services to, UN and EU listed entities in relation to such activities. It also acts on behalf of, and at the direction of such entities, including Bank Sepah, often operating through their subsidiaries and associates. | |
| 5. | Defence Technology and Science Research Centre (DTSRC) – also known as the Educational Research Institute/ Moassese Amozeh Va Tahgiaghati (ERI/MAVT Co.) | Pasdaran Av., PO Box 19585/777, Tehran | Responsible for R&D. A subsidiary of the DIO. The DTSRC handles much of the procurement for the DIO | 24.4.2007 |

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| 6. | Iran Electronic Industries | P. O. Box 18575-365, Tehran, Iran | Wholly-owned subsidiary of MODAFL (and therefore a sister-organisation to AIO, AvIO and DIO). Its role is to manufacture electronic components for Iranian weapons systems | 24.6.2008 |
| 7. | IRGC Air Force | | Operates Iran's inventory of short and medium range ballistic missiles. The head of the IRGC air force was designated by UNSCR 1737 (2006) | 24.6.2008 |
| 8. | Khatem-ol Anbiya Construction Organisation | Number 221, North Falamak-Zarafshan Intersection, 4th Phase, Shahkrak-E-Ghods, Tehran 14678, Iran | IRGC-owned group of companies. Uses IRGC engineering resources for construction acting as prime contractor on major projects including tunnelling, assessed to support the Iranian ballistic missile and nuclear programmes | 24.6.2008 |
| 9. | Malek Ashtar University | | Linked to the Ministry of Defence, set up a missiles training course in 2003, in close collaboration with the AIO | 24.6.2008 |

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| 10. | Marine Industries | Pasdaran Av., PO Box 19585/ 777, Tehran | A subsidiary of the DIO | 24.4.2007 |
| 11. | Mechanic Industries Group | | Took part in the production of components for the ballistics programme | 24.6.2008 |
| 12. | Ministry of Defence and Armed Forces Logistics (MODAFL) | West side of Dabestan Street, Abbas Abad District, Tehran | Responsible for Iran's defence research, development and manufacturing programmes, including support to missile and nuclear programmes | 24.6.2008 |
| 13. | Ministry of Defence Logistics Export (MODLEX) | P. O. Box 16315-189, Tehran, Iran | It is the export arm of MODAFL, and the agency used for exporting finished weapons in state-to-state transactions. Under UNSCR 1747 (2007) MODLEX should not be trading. | 24.6.2008 |
| 14. | 3M Mizan Machinery Manufacturing | | Front company for the AIO, taking part in ballistics procurement | 24.6.2008 |
| 15. | Nuclear Fuel Production and Procurement Company (NFPC) | AEOI-NFPD, P.O.Box: 11365-8486, Tehran / Iran | Nuclear Fuel Production Division (NFPD) of AEOI is research and development in the field of nuclear fuel cycle including: uranium exploration, mining, milling, | 24.4.2007 |

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| | | | conversion and nuclear waste management. The NFPC is the successor to the NFPD, the subsidiary company under the AEOI that runs research and development in the nuclear fuel cycle including conversion and enrichment | |
| 16. | Parchin Chemical Industries | | Worked on propulsion techniques for the Iranian ballistics programme | 24.6.2008 |
| 17. | Special Industries Group | Pasdaran Av., PO Box 19585/777, Tehran | A subsidiary of the DIO. | 24.4.2007 |
| 18. | State Purchasing Organisation (SPO) | | The SPO appears to facilitate the import of whole weapons. It appears to be a subsidiary of MODAFL | 24.6.2008 |

I. **[F11Persons, entities and bodies involved in nuclear or ballistic missiles activities**

A.

*NATURAL PERSONS*

| | **Name** | **Identifying information** | **Reasons** |
|---|---|---|---|
| 1. | Ali DAVANDARI | | Head of Bank Mellat |
| 2. | Fereydoun MAHMOUDIAN | Born on 7.11.1943 in Iran. Passport no 05HK31387 issued on 1.1.2002 in Iran, valid until 7.8.2010 | Director of Fulmen (see Part B, No 11) |

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| | | Granted French citizenship on 7.5.2008. | |
| 3. | Mohammad MOKHBER | | President of the Setad Ejraie foundation, an investment fund linked to Ali Khamenei, the supreme leader. Member of the board of directors of Sina Bank. |
| 4. | Mohammad Reza MOVASAGHNIA | | Head of Samen Al A'Emmeh Industries Group (SAIG) also known as the Cruise Missile Industry Group. This organisation was designated under UNSCR 1747 and listed in Annex IV to Regulation (EC) No 423/2007. |

B.

*LEGAL PERSONS, ENTITIES AND BODIES*

| | **Name** | **Identifying information** | **Reasons** |
|---|---|---|---|
| 1. | Azarab Industries | Ferdowsi Ave, PO Box 11365-171, Tehran, Iran | Energy sector firm that provides manufacturing support to the nuclear programme, including designated proliferation sensitive activities. Involved in the construction of the Arak heavy-water reactor. |
| 2. | Bank Mellat (including all branches) and subsidiaries: | Head Office Building, 327 Takeghani (Taleghani) | Bank Mellat is a state-owned Iranian bank. Bank Mellat engages in a |

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| | | | Avenue, Tehran 15817, Iran; P.O. Box 11365-5964, Tehran 15817, Iran; | pattern of conduct which supports and facilitates Iran's nuclear and ballistic missile programmes. It has provided banking services to UN and EU listed entities or to entities acting on their behalf or at their direction, or to entities owned or controlled by them. It is the parent bank of First East Export Bank which is designated under UNSCR 1929. |
| | (a) | Mellat Bank SB CJSC | P.O. Box 24, Yerevan 0010, Republic of Armenia | 100 % owned by Bank Mellat |
| | (b) | Persia International Bank Plc | Number 6 Lothbury, Post Code: EC2R 7HH, United Kingdom | 60 % owned by Bank Mellat |
| 3. | Subsidiaries of Bank Melli: | | | Bank Melli is listed in Annex V of Regulation (EC) No 423/2007, for providing or attempting to provide financial support for companies which are involved in or procure goods for Iran's nuclear and missile programmes. |
| | (a) | Arian Bank (a.k.a. Aryan Bank) | House 2, Street Number 13, Wazir Akbar Khan, Kabul, Afghanistan | Arian Bank is a joint-venture between Bank Melli and Bank Saderat. |
| | (b) | Assa Corporation | ASSA CORP, 650 (or 500) Fifth | Assa Corporation is a front company created and |

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| | | | Avenue, New York, USA; Tax ID No. 1368932 (United States) | controlled by Bank Melli. It was set up by Bank Melli to channel money from the United States to Iran. |
| | (c) | Assa Corporation Ltd | 6 Britannia Place, Bath Street, St Helier JE2 4SU, Jersey Channel Islands | Assa Corporation Ltd is the parent organization of Assa Corporation. Owned or controlled by Bank Melli |
| | (d) | Bank Kargoshaee (a.k.a. Kargosai Bank, a.k.a Kargosa'i Bank) | 587 Mohammadiye Square, Mowlavi St., Tehran 11986, Iran | Bank Kargoshaee is owned by Bank Melli. |
| | (e) | Bank Melli Iran Investment Company (BMIIC) | No.2, Nader Alley, Vali-Asr Str., Tehran, Iran, P.O. Box 3898-15875; Alt. Location: Bldg 2, Nader Alley after Beheshi Forked Road, P.O. Box 15875-3898, Tehran, Iran 15116; Alt., Location: Rafiee Alley, Nader Alley, 2 After Serahi Shahid Beheshti, Vali E Asr Avenue, Tehran, Iran; Business Registration Number: 89584. | Affiliated with entities sanctioned by the United States, the European Union or or the United Nations since 2000. Designated by the United States for being owned or controlled by Bank Melli. |
| | (f) | Bank Melli Printing And Publishing Company (BMPPC) | 18th Km Karaj Special Road, Tehran, Iran, P.O. Box 37515-183; Alt. Location: Km 16 Karaj Special Road, Tehran, Iran; | Designated by the United States for being owned or controlled by Bank Melli |

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| | | | Business Registration Number 382231 | |
| | (g) | Cement Investment and Development Company (CIDCO) (a.k.a.: Cement Industry Investment and Development Company, CIDCO, CIDCO Cement Holding) | No. 241, Mirdamad Street, Tehran, Iran | Wholly owned by Bank Melli Investment Co. Holding Company to manage all cement companies owned by BMIIC |
| | (h) | First Persian Equity Fund | Walker House, 87 Mary Street, George Town, Grand Cayman, KY1-9002, Cayman Islands; Alt. Location: Clifton House, 7z5 Fort Street, P.O. Box 190, Grand Cayman, KY1-1104; Cayman Islands; Alt. Location: Rafi Alley, Vali Asr Avenue, Nader Alley, Tehran, 15116, Iran, P.O.Box 15875-3898 | Cayman-based fund licensed by the Iranian Government for foreign investment in the Tehran Stock Exchange |
| | (i) | Future Bank BSC | Block 304, City Centre Building, Building 199, Government Avenue, Road 383, Manama, Bahrain; P.O. Box 785, City Centre Building, Government Avenue, Manama, Bahrain, | Bahrain-based joint-venture majority owned and controlled by Bank Melli and Bank Saderat. Chairman of Bank Melli was also chairman of Future Bank |

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| | | | and all branches worldwide; Business Registration Document: 54514-1 (Bahrain) expires 9 June 2009; Trade License No.: 13388 (Bahrain) | |
| | (j) | Mazandaran Cement Company | Africa Street, Sattari Street No. 40, P.O. Box 121, Tehran, Iran 19688; Alt Location: 40 Satari Ave. Afrigha Highway, P.O. Box 19688, Tehran, Iran | Tehran-based cement company majority-owned by CIDCO. Involved in large-scale construction projects |
| | (k) | Mazandaran Textile Company | Kendovan Alley 5, Vila Street, Enghelab Ave, P.O. Box 11365-9513, Tehran, Iran 11318; Alt. Location: 28 Candovan Cooy Enghelab Ave., P.O. Box 11318, Tehran, Iran; Alt. Location: Sari Ave., Ghaemshahr, Iran | Tehran-based textile company majority-owned by BMIIC and Bank Melli Investment Management Co. |
| | (l) | Mehr Cayman Ltd. | Cayman Islands; Commercial Registry Number 188926 (Cayman Islands) | Owned or controlled by Bank Melli |
| | (m) | Melli Agrochemical Company PJS (a.k.a: Melli Shimi Keshavarz) | Mola Sadra Street, 215 Khordad, Sadr Alley No. 13, Vanak Sq., P.O. Box 15875-1734, Tehran, Iran | Owned or controlled by Bank Melli |
| | (n) | Melli Investment Holding International | 514 Business Avenue Building, Deira, P.O. Box 181878, Dubai, | Owned or controlled by Bank Melli |

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| | | United Arab Emirates; Registration Certificate Number (Dubai) 0107 issued 30. Nov 2005. | |
| | (o) Shomal Cement Company (a.k.a: Siman Shomal) | Dr Beheshti Ave No. 289, Tehran, Iran 151446; Alt. Location: 289 Shahid Baheshti Ave., P.O. Box 15146, Tehran, Iran | Owned or controlled by, or acts on behalf of DIO |
| 4. | Bank Refah | 40, North Shiraz Street, Mollasadra Ave., Vanak Sq., Tehran, Iran | Banque Refah took over Bank Melli's outstanding transactions following the sanctions imposed on the latter bank by the European Union |
| 5. | Bank Saderat Iran (including all branches) and subsidiaries | Bank Saderat Tower, 43 Somayeh Ave, Tehran, Iran. | Bank Saderat is an Iranian state-owned bank (94 %-owned by IRN government). Bank Saderat has provided financial services for entities procuring on behalf of Iran's nuclear and ballistic missile programmes, including entities designated under UNSCR 1737. Bank Saderat handled DIO (sanctioned in UNSCR 1737) and Iran Electronics Industries payments and letters of credit as recently as March 2009. In 2003 Bank Saderat handled letter of |

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| | | | credit on behalf of IRN nuclear-related Mesbah Energy Company (subsequently sanctioned in UNSR 1737). |
| | (a) BankSaderat PLC (London) | 5 Lothbury, London, EC2R 7HD, UK | 100 % owned subsidiary of Bank Saderat |
| 6. | Banque Sina | 187, Avenue Motahari, Teheran, Iran | This bank is closely linked to the interests of the 'Daftar' (Leader's office: administration composed of around 500 officers). It thus contributes to the financing of the regime's strategic interests. |
| 7. | ESNICO (Equipment Supplier for Nuclear Industries Corporation) | No1, 37th Avenue, Asadabadi Street, Tehran, Iran | Procures industrial goods, specifically for the nuclear programme activities carried out by AEOI, Novin Energy and Kalaye Electric Company (all designated under UNSCR 1737). ESNICO's Director is Haleh Bakhtiar (designated in UNSCR 1803). |
| 8. | Etemad Amin Invest Co Mobin | Pasadaran Av. Tehran, Iran | Close to Naftar and to Bonyad-e Mostazafan, Etemad Amin Invest Co Mobin contributes to the financing of the strategic interests of the regime and of the Iranian parallel State. |

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| 9. | Export Development Bank of Iran (EDBI) (including all branches) and subsidiaries: | Export Development Building, Next to the 15th Alley, Bokharest Street, Argentina Square, Tehran, Iran;<br>Tose'e Tower, Corner of 15th St., Ahmad Qasir Ave., Argentine Square, Tehran, Iran;<br>No. 129, 21 's Khaled Eslamboli, No. 1 Building, Tehran, Iran;<br>C.R. No. 86936 (Iran) | The Export Development Bank of Iran (EDBI) has been involved in the provision of financial services to companies connected to Iran's programmes of proliferation concern and has helped UN-designated entities to circumvent and breach sanctions. It provides financial services to MODAFL-subordinate entities and to their front companies which support Iran's nuclear and ballistic missile programmes. It has continued to handle payments for Bank Sepah, post-designation by the UN, including payments related to Iran's nuclear and ballistic missile programmes. EDBI has handled transactions linked to Iran's defence and missile entities, many of which have been sanctioned by UNSC. EDBI served as a leading intermediary handling Bank Sepah's (sanctioned by UNSC since 2007) financing, including WMD-related payments. EDBI provides financial services |

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| | | | | to various MODAFL entities and has facilitated ongoing procurement activities of front companies associated with MODAFL entities. |
| | (a) | EDBI Exchange Company | Tose'e Tower, Corner of 15th St., Ahmad Qasir Ave.; Argentine Square, Tehran, Iran | Tehran-based EDBI Exchange Company is 70 %-owned by Export Development Bank of Iran (EDBI). It was designated by the United States in October 2008 for being owned or controlled by EDBI. |
| | (b) | EDBI Stock Brokerage Company | Tose'e Tower, Corner of 15th St., Ahmad Qasir Ave.; Argentine Square, Tehran, Iran | Tehran-based EDBI Stock Brokerage Company is a wholly owned subsidiary of Export Development Bank of Iran (EDBI). It was designated by the United States in October 2008 for being owned or controlled by EDBI. |
| | (c) | Banco Internacional De Desarrollo CA | Urb. El Rosal, Avenida Francesco de Miranda, Edificio Dozsa, Piso 8, Caracas C.P. 1060, Venezuela | Banco Internacional De Desarrollo CA is owned by the Export Development Bank of Iran. |
| 10. | Fajr Aviation Composite Industries | | Mehrabad Airport, PO Box 13445-885, Tehran, Iran | A subsidiary of the IAIO within MODAFL (listed in the EU Common Position 2007/140/ CFSP), which primarily produces composite |

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| | | | materials for the aircraft industry, but also linked to the development of carbon fibre capabilities for nuclear and missile applications. Linked to the Technology Cooperation Office. Iran has recently announced its intention to mass produce new generation centrifuges which will require FACI carbon fibre production capabilities. |
| 11. | Fulmen | 167 Darya boulevard - Shahrak Ghods, 14669 - 8356 Tehran. | Fulmen was involved in the installation of electrical equipment on the Qom/Fordoo site at a time when the existence of the site had not yet been revealed. |
| | (a) Arya Niroo Nik | Suite 5 - 11th floor - Nahid Bldg, Shahnazari Street – Mohseni Square Tehran | Arya Niroo Nik is a shell company used by Fulmen for some of its operations. |
| 12. | Future Bank BSC | Block 304. City Centre Building. Building 199, Government Avenue, Road 383, Manama, Bahrain. PO Box 785; Business Registration 2kDocument: 54514-1 (Bahrain) expires 9 Jun 2009; Trade License No 13388 (Bahrain) | Two-thirds of Bahrain-based Future Bank are owned by Iranian state banks. EU-designated Bank Melli and Bank Saderat each own one-third of the shares, the remaining third being held by Ahli United Bank (AUB) of Bahrain. Although |

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| | | | AUB still owns its shares of Future Bank, according to its 2007 annual report, AUB no longer exercises significant influence over the bank which is effectively controlled by its Iranian parents both of which are singled out in UNSCR 1803 as Iranian banks requiring particular 'vigilance'. The tight links between Future Bank and Iran are further evidenced by the fact that the Chairman of Bank Melli has also held concurrently the position of Chairman of Future Bank. |
| 13. | Industrial Development & Renovation Organization (IDRO) | | Government body responsible for acceleration of Iran's industrialisation. Controls various companies involved in work for the nuclear and missile programmes and involved in the foreign procurement advanced manufacturing technology in order to support them. |
| 14. | Iran Aircraft Industries (IACI) | | A subsidiary of the IAIO within MODAFL (listed in the EU Common Position |

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| | | | 2007/140/CFSP). Manufactures, repairs, and conducts overhauls of airplanes and aircraft engines and procures aviation-related parts often of US-origin typically via foreign intermediaries. IACI and its subsidiaries also have been detected using a worldwide network of brokers seeking to procure aviation-related goods. |
| 15. | Iran Aircraft Manufacturing Company (a.k.a: HESA, HESA Trade Center, HTC, IAMCO, IAMI, Iran Aircraft Manufacturing Company, Iran Aircraft Manufacturing Industries, Karkhanejate Sanaye Havapaymaie Iran, Hava Peyma Sazi-e Iran, Havapeyma Sazhran, Havapeyma Sazi Iran, Hevapeimasazi) | P.O. Box 83145-311, 28 km Esfahan – Tehran Freeway, Shahin Shahr, Esfahan, Iran; P.O. Box 14155-5568, No. 27 Ahahamat Aave., Vallie Asr Square, Tehran 15946, Iran; P.O. Box 81465-935, Esfahan, Iran; Shahih Shar Industrial Zone, Isfahan, Iran; P.O. Box 8140, No. 107 Sepahbod Gharany Ave., Tehran, Iran | Owned or controlled by, or acts on behalf of MODAFL (listed in the EU Common Position 2007/140/CFSP) |
| 16. | Iran Centrifuge Technology Company (a.k.a. TSA or TESA) | | TESA has taken over the activities of Farayand Technique (designated under UNSCR 1737). It manufactures uranium enrichment centrifuge parts, and is directly |

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| | | | supporting proliferation sensitive activity that Iran is required to suspend by UNSCRs. Carries out work for Kalaye Electric Company (designated under UNSCR 1737). |
| 17. | Iran Communications Industries (ICI) | PO Box 19295-4731, Pasdaran Avenue, Tehran, Iran; Alternative address: PO Box 19575-131, 34 Apadana Avenue, Tehran, Iran; Alternative address: Shahid Langary Street, Nobonyad Square Ave, Pasdaran, Tehran | Iran Communications Industries, a subsidiary of Iran Electronics Industries (listed in the EU Common Position 2007/140/CFSP), produces various items including communication systems, avionics, optics and electro-optics devices, micro-electronics, information technology, test and measurement, telecommunication security, electronic warfare, radar tube manufacture and refurbishment, and missile launchers. These items can be used in programmes that are under sanction per UNSCR 1737. |
| 18. | Iran Insurance Company (a.k.a. Bimeh Iran) | P.O. Box 14155-6363, 107 Fatemi Ave., Tehran, Iran | Iran Insurance Company has insured the purchase of various items that can be used in programs that are sanctioned by UNSCR 1737. Purchased items insured include helicopter spare |

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| | | | parts, electronics, and computers with applications in aircraft and missile navigation. |
| 19. | Iranian Aviation Industries Organization (IAIO) | 107 Sepahbod Gharani Avenue, Tehran, Iran | A MODAFL (listed in the EU Common Position 2007/140/CFSP) organisation responsible for planning and managing Iran's military aviation industry |
| 20. | Isfahan Optics | P.O. Box 81465-117, Isfahan, Iran | Owned or controlled by, or acts on behalf of Iran Electronics Industries (listed in the EU Common Position 2007/140/CFSP) |
| 21. | Javedan Mehr Toos | | Engineering firm that procures for the Atomic Energy Organisation of Iran which was designated under UNSCR 1737 |
| 22. | Kala Naft | Kala Naft Tehran Co, P.O. Box 15815/1775, Gharani Avenue, Tehran, Iran;<br>No 242 Shahid Kalantri Street - Near Karim Khan Bridge - Sepahbod Gharani Avenue, Teheran;<br>Kish Free Zone, Trade Center, Kish Island, Iran;<br>Kala Ltd., NIOC House, 4 Victoria Street, London Sw1H1 | Trades equipment for oil and gas sector that can be used for Iran's nuclear program. Attempted to procure material (very hard-wearing alloy gates) which have no use outside the nuclear industry. Has links to companies involved in Iran's nuclear program. |

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| 23. | Machine Sazi Arak | 4th km Tehran Road, PO Box 148, Arak, Iran | Energy sector firm affiliated with IDRO that provides manufacturing support to the nuclear programme, including designated proliferation sensitive activities. Involved in the construction of the Arak heavy-water reactor. UK distributed an export denial notice in July 2009 against Machine Sazi Arak for an 'alumina graphite stopper rod.' In May 2009 Sweden denied the export to Machine Sazi Arak of 'cladding of dish ends for pressure vessels'. |
| 24. | MASNA (Moierat Saakht Niroogahye Atomi Iran) Managing Company for the Construction of Nuclear Power Plants | | Subordinate to AEOI and Novin Energy (both designated under UNSCR 1737). Involved in the development of nuclear reactors. |
| 25. | Parto Sanat Co | No. 1281 Valiasr Ave., Next to 14th St., Tehran, Iran. | Manufacturer of frequency changers and it is capable of developing/ modifying imported foreign frequency changers in a way that makes them usable in gas centrifuge enrichment. It is deemed to be involved in nuclear proliferation activities. |

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| 26. | Passive Defense Organization | | Responsible for the selection and construction of strategic facilities, including – according to Iranian statements - the uranium enrichment site at Fordow (Qom) built without being declared to the IAEA contrary to Iran's obligations (affirmed in a resolution by the IAEA Board of Governors). Brigadier General Gholam-Reza Jalali, former IRGC is PDO's chairman. |
| 27. | Post Bank | 237, Motahari Ave., Tehran, Iran 1587618118 | Post Bank has evolved from being an Iranian domestic bank to a bank which facilitates Iran's international trade. Acts on behalf of Bank Sepah (designated under UNSCR 1747), carrying out Bank Sepah's transactions and hiding Bank Sepah's connection with transactions in order to circumvent sanctions. In 2009 Post Bank facilitated business on behalf of Bank Sepah between Iran's defence industries and overseas beneficiaries. Has facilitated business with front company for |

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| | | | DPRK's Tranchon Commercial Bank, known for facilitating proliferation-related-related business between Iran and the DPRK. |
| 28. | Raka | | A department of Kalaye Electric Company (designated under UNSCR 1737). Established in late 2006, it was responsible for the construction of the Uranium enrichment plant at Fordow(Qom). |
| 29. | Research Institute of Nuclear Science & Technology (a.k.a. Nuclear Science & Technology Research Institute) | | Subordinate to the AEOI and continuing the work of its former Research Division. Its managing director is AEOI Vice President Mohammad Ghannadi (designated in UNSCR 1737). |
| 30. | Schiller Novin | Gheytariyeh Avenue - no153 - 3rd Floor - PO BOX 17665/153 6 19389 Teheran | Acting on behalf of Defense Industries Organisation (DIO). |
| 31. | Shahid Ahmad Kazemi Industrial Group | | SAKIG develops and produces surface-to-air missiles systems for Iran's military. It maintains military, missile, and air defense projects and procures goods from Russia, |

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| | | | Belarus, and North Korea. |
| 32. | Shakhese Behbud Sanat | | Involved in the production of equipment and parts for the nuclear fuel cycle. |
| 33. | Technology Cooperation Office (TCO) of the Iranian President's Office | Tehran, Iran | Responsible for Iran's technological advancement through relevant foreign procurement and training links. Supports the nuclear and missile programmes. |
| 34. | Yasa Part, (including all branches) and subsidiaries: | | Company dealing with procurement activities related to the purchase of materials and technologies necessary to nuclear and ballistic programmes. |
| | (a) Arfa Paint Company | | Acting on behalf of Yasa Part. |
| | (b) Arfeh Company | | Acting on behalf of Yasa Part. |
| | (c) Farasepehr Engineering Company | | Acting on behalf of Yasa Part. |
| | (d) Hosseini Nejad Trading Co. | | Acting on behalf of Yasa Part. |
| | (e) Iran Saffron Company or Iransaffron Co. | | Acting on behalf of Yasa Part. |

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| | (f) Shetab G. | | Acting on behalf of Yasa Part. |
| | (g) Shetab Gaman | | Acting on behalf of Yasa Part. |
| | (h) Shetab Trading | | Acting on behalf of Yasa Part. |
| | (i) Y.A.S. Co. Ltd | | Acting on behalf of Yasa Part. |

II. **Islamic Revolutionary Guard Corps (IRGC)**

A.

*NATURAL PERSONS*

| | **Name** | **Identifying information** | **Reasons** |
|---|---|---|---|
| 1. | Rear Admiral Ali FADAVI | | Commander of IRGC Navy |
| 2. | Parviz FATAH | Born in 1961 | Deputy Commander of Khatam al Anbiya |
| 3. | BrigGen Mohammad Reza NAQDI | Born in 1953, Nadjaf (Iraq) | Commander of Basij Resistance Force |
| 4. | BrigGen Mohammad PAKPUR | | Commander of IRGC Ground Forces |
| 5. | Rostam QASEMI (a.k.a. Rostam GHASEMI) | Born in 1961 | Commander of Khatam al-Anbiya |
| 6. | BrigGen Hossein SALAMI | | Deputy Commander of IRGC |

B.

*LEGAL PERSONS, ENTITIES AND BODIES*

| | **Name** | **Identifying information** | **Reasons** |
|---|---|---|---|
| 1. | Islamic Revolutionary Guard Corps (IRGC) | Tehran, Iran | Responsible for Iran's nuclear programme. Has operational |

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| | | | control for Iran's ballistic missile programme. Has undertaken procurement attempts for to support Irans ballistic missiles and nuclear programmes |
| 2. | IRGC-Air Force Al-Ghadir Missile Command | | The IRGC-Air Force Al-Ghadir Missile Command is a specific element within the IRGC Air Force that has been working with SBIG (designated under UNSCR 1737) with the FATEH 110, short range ballistic missile as well as the Ashura medium range ballistic missile. This command appears to be the entity that actually has the operational control of the missiles. |
| 3. | Naserin Vahid | | Naserin Vahid produces weapons parts on behalf of the IRGC. An IRGC front company. |
| 4. | IRGC Qods Force | Tehran, Iran | Iran's Islamic Revolutionary Guard Corps (IRGC) Qods Force is responsible for operations outside Iran and is Tehran's principal foreign policy tool for special operations and support to terrorists and |

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| | | | Islamic militants abroad. Hizballah used Qods Force-supplied rockets, anti-ship cruise missiles (ASCMs), man-portable air defense systems (MANPADS), and unmanned aerial vehicles (UAVs) in the 2006 conflict with Israel and benefited from Qods Force training on these systems, according to press reporting. According to a variety of reporting, the Qods Force continues to re-supply and train Hizballah on advanced weaponry, anti-aircraft missiles, and long-range rockets. The Qods Force continues to provide limited lethal support, training, and funding to Taliban fighters in southern and western Afghanistan including small arms, ammunition, mortars, and short-range battlefield rockets. Commander has been sanctioned under UNSCR |
| 5. | Sepanir Oil and Gas Energy Engineering Company (a.k.a. Sepah Nir) | | A subsidiary of Khatam al-Anbya Construction Headquarters which was designated under UNSCR 1929. |

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| | | | Sepanir Oil and Gas Engineering Company is participating in Iran's South Pars offshore Phase 15-16 gas field development project. |

III. **Islamic Republic of Iran Shipping Lines (IRISL)**

| | Name | Identifying information | Reasons |
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| 1. | Islamic Republic of Iran Shipping Lines (IRISL) (including all branches) and subsidiaries: | No. 37, Aseman Tower, Sayyade Shirazee Square, Pasdaran Ave., PO Box 19395-1311. Tehran. Iran;<br>No. 37, Corner of 7th Narenjestan, Sayad Shirazi Square, After Noboyand Square, Pasdaran Ave., Tehran, Iran | IRISL has been involved in the shipment of military-related cargo, including proscribed cargo from Iran. Three such incidents involved clear violations that were reported to the UN Security Council Iran Sanctions Committee. IRISL's connection to proliferation was such that the UNSC called on states to conduct inspections of IRISL vessels, provided there are reasonable grounds to believe that the vessel is transporting proscribed goods, in UNSCRs 1803 and 1929. |
| | (a) Bushehr Shipping Company Limited (Tehran) | 143/1 Tower Road Sliema, Slm 1604, Malta;<br>c/o Hafiz Darya Shipping Company, Ehteshamiyeh Square 60, Neyestani 7, | Owned or controlled by IRISL |

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| | | | Pasdaran, Tehran, Iran | |
| | (b) | CISCO Shipping Company Ltd (a.k.a IRISL Korea Ltd) | Has offices in Seoul and Busan, South Korea. | Acts on behalf of IRISL in South Korea |
| | (c) | Hafize Darya Shipping Lines (HDSL) (a.k.a HDS Lines) | No. 60 Ehteshamiyeh Square, 7th Neyestan Street, Pasdaran Avenue, Tehran, Iran; Alternative Address: Third Floor of IRISL's Aseman Tower | Acts on behalf of IRISL performing container operations using vessels owned by IRISL. |
| | (d) | Hanseatic Trade Trust & Shipping (HTTS) GmbH | Schottweg 7, 22087 Hamburg, Germany; Opp 7th Alley, Zarafshan St, Eivanak St, Qods Township; HTTS GmbH, | Acts on behalf of HDSL in Europe. |
| | (e) | Irano Misr Shipping Company | No 41, 3rd Floor, Corner of 6th Alley, Sunaei Street, Karim Khan Zand Ave, Tehran; 265, Next to Mehrshad, Sedaghat St., Opposite of Mellat Park, Vali Asr Ave., Tehran 1A001, Iran; 18 Mehrshad Street, Sadaghat St., Opposite of Mellat Park, Vali Asr Ave., Tehran 1A001, Iran | Acts on behalf of IRISL, along the Suez Canal and in Alexandria and Port Said. 51 %-owned by IRISL. |
| | (f) | Irinvestship Ltd | Global House, 61 Petty France, London SW1H | Owned by IRISL. Provides financial, legal, and insurance services |

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| | | | 9EU, United Kingdom; Business Registration Document # 4110179 (United Kingdom) | for IRISL as well as marketing, chartering, and crew management. |
| | (g) | IRISL (Malta) Ltd | Flat 1, 181 Tower Road, Sliema SLM 1605, Malta | Acts on behalf of IRISL in Malta. A joint venture with German and Maltese shareholding. IRISL has been using the Malta route since 2004 and uses Freeport as a trans-shipment hub between the Persian Gulf and Europe. |
| | (h) | IRISL (UK) Ltd (Barking, Felixstowe) | Business Registration Document # 4765305 2 Abbey Rd., Baring, Essex IG11 7 AX, United Kingdom; IRISL (UK) Ltd., Walton Ave., Felixstowe, Suffolk, IP11 3HG, United Kingdom | 50 % owned by Irinvestship Ltd and 50 % by British Company Johnson Stevens Agencies Ltd. Provides coverage of a cargo and container service between Europe and the Middle East and also two separate services between the Far East and the Middle East |
| | (i) | IRISL Club | No 60 Ehteshamiyeh Square, 7th Neyestan Street, Pasdaran Avenue, Tehran | Owned by IRISL. |
| | (j) | IRISL Europe GmbH (Hamburg) | Schottweg 5, 22087 Hamburg, Germany V.A.T. Number DE217283818 (Germany) | IRISL's agent in Germany. |

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| | (k) | IRISL Marine Services and Engineering Company | Sarbandar Gas Station PO Box 199, Bandar Imam Khomeini, Iran; Karim Khan Zand Ave, Iran Shahr Shomai, No 221, Tehran, Iran; No 221, Northern Iranshahr Street, Karim Khan Ave, Tehran, Iran | Owned by IRISL. Provides fuel, bunkers, water, paint, lubricating oil and chemicals required by IRISL's vessels. The company also provides maintenance supervision of ships as well as facilities and services for the crew members. IRISL subsidiaries have used US dollar-denominated bank accounts registered under cover-names in Europe and the Middle East to facilitate routine fund transfers. IRISL has facilitated repeated violations of provisions of UNSCR 1747. |
| | (l) | IRISL Multimodal Transport Company | No 25, Shahid Arabi Line, Sanaei St, Karim Khan Zand Zand St Tehran. Iran | Owned by IRISL. Responsible for the transporting of cargo by rail. It is a wholly controlled subsidiary of IRISL. |
| | (m) | IRITAL Shipping SRL | Commercial Registry Number: GE 426505 (Italy); Italian Fiscal Code: 03329300101 (Italy); V.A.T. Number: 12869140157 (Italy) Ponte Francesco Morosini 59, 16126 Genova (GE), Italy; | Point of contact for ECL and PCL services. Used by the DIO subsidiary Marine Industries Group (MIG; now known as Marine Industries Organization, MIO) which is responsible for the design and construction of various marine |

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| | | | | structures and both military and non -military vessels. DIO was designated under UNSCR 1737. |
| | (n) | ISI Maritime Limited (Malta) | 147/1 St. Lucia Street, Valetta, Vlt 1185, Malta; c/o IranoHind Shipping Co. Ltd., Mehrshad Street, PO Box 15875, Tehran, Iran | Owned or controlled by IRISL |
| | (o) | Khazer Shipping Lines (Bandar Anzali) | No. 1; End of Shahid Mostafa Khomeini St., Tohid Square, O.O. Box 43145, Bandar Anzali 1711-324, Iran; M. Khomeini St., Ghazian, Bandar Anzali, Gilan, Iran | 100 % owned subsidiary of IRISL. Total fleet of six vessels. Operates in the Caspian Sea. Has facilitated shipments involving UN- and US-designated entities, such as Bank Mellli, by shipping cargo of proliferation concern from countries like Russia and Kazakhstan to Iran. |
| | (p) | Leadmarine (a.k.a. Asia Marine Network Pte Ltd aka IRISL Asia Pte Ltd) | 200 Middle Road #14-01 Prime Centre Singapore 188980 (alt. 199090) | Leadmarine, acts on behalf of HDSL in Singapore. Previously known as Asia Marine Network Pte Ltd and IRISL Asia Pte Ltd, and acted on behalf of IRISL in Singapore. |
| | (q) | Marble Shipping Limited (Malta) | 143/1 Tower Road, Sliema, Slm 1604, Malta | Owned or controlled by IRISL. |
| | (r) | Oasis Freight | Al Meena Street, Opposite Dubai Ports & Customs, | A joint venture company between IRISL and the |

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| | | Agencies (a.k.a. Pacific Shipping Company | 2nd Floor, Sharaf Building, Dubai UAE; Sharaf Building, 1st Floor, Al Mankhool St., Bur Dubai, P.O. Box 5562, Dubai, United Arab Emirates; Sharaf Building, No. 4, 2nd Floor, Al Meena Road, Opposite Customs, Dubai, United Arab Emirates, Kayed Ahli Building, Jamal Abdul Nasser Road (Parallel to Al Wahda St.), P.O. Box 4840, Sharjah, United Arab Emirates | UAE-based firm Sharif Shipping Company. Acts on behalf of IRISL in the UAE providing fuel and stores, equipment, spare parts, and ship repairs. Now known as Pacific Shipping Company who act on behalf of HDSL. |
| | (s) | Safiran Payam Darya Shipping Lines (SAPID) | 33 Eigth Narenjestan, Artesh Street, PO Box 19635-1116, Tehran, Iran; Alternative Address: Third Floor of IRISL's Aseman Tower | Acts on behalf of IRISL performing bulk services |
| | (t) | Santexlines (a.k.a. IRISL China Shipping Company Ltd, a.k.a. Yi Hang Shipping Company) | Suite 1501, Shanghai Zhongrong Plaza, 1088, Pudong(S) road, Shanghai 200122, Shanghai, China Alternative Address: F23A-D, Times Plaza No. 1, Taizi Road, Shekou, Shenzhen 518067, China | Santexlines act on behalf of HDSL. Previously known as IRISL China shipping Company, it acted on behalf of IRISL in China. |
| | (u) | Shipping Computer Services Company (SCSCOL) | No37 Asseman Shahid Sayyad Shirazee sq., Pasdaran ave., | Owned or controlled by, or acts on behalf of IRISL |

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| | | | P.O. Box 1587553 1351, Tehran, Iran; No13, 1st Floor, Abgan Alley, Aban ave., Karimkhan Zand Blvd, Tehran 15976, Iran. | |
| | (v) | Soroush Saramin Asatir (SSA) | No 14 (alt. 5) Shabnam Alley, Fajr Street, Shahid Motahhari Avenue, PO Box 196365-1114, Tehran Iran | Acts on behalf of IRISL. A Tehran-based ship management company acts as technical manager for many of SAPID's vessels |
| | (w) | South Way Shipping Agency Co Ltd | No. 101, Shabnam Alley, Ghaem Magham Street, Tehran, Iran | Controlled by IRISL and acts for IRISL in Iranian ports overseeing such tasks as loading and unloading. |
| | (x) | Valfajr 8th Shipping Line Co. (a.k.a. Valfajr) | Abyar Alley, Corner of Shahid Azodi St. & Karim Khan Zand Ave. Tehran, Iran; Shahid Azodi St. Karim Khan Zand Zand Ave., Abiar Alley. PO Box 4155, Tehran, Iran | A 100 % owned subsidiary of IRISL. It conducts transfers between Iran and the Gulf States such as Kuwait, Qatar, Bahrain, UAE, and Saudi Arabia. Valfajr is a Dubai-based subsidiary of Islamic Republic of Iran Shipping Lines (IRISL) that provides ferry and feeder services, and sometimes couriers freight and passengers across the Persian Gulf. Valfajr in Dubai booked ship crews, booked supply vessel services, prepared ships for arrival and departure and for loading and unloading in port. |

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| | | | Valfajr has port calls in the Persian Gulf and India. As of mid-June 2009, Valfajr shared the same building with IRISL in Port Rashid in Dubai, United Arab Emirates (UAE), and also shared the same building with IRISL in Tehran, Iran.**]]** |

**Textual Amendments**

**F11** Inserted by Council implementing Regulation (EU) No 668/2010 of 26 July 2010 implementing Article 7(2) of Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

## [F2ANNEX VI

List of credit and financial institutions referred to in Article 11a(2)

Branches and subsidiaries, where they come within the scope of Article 18, of credit and financial institutions domiciled in Iran as referred to in Article 11a(2)(b)(11)

1. BANK MELLI IRAN*
France

43 Avenue Montaigne, 75008 Paris

BIC: MELIFRPP
Germany

Holzbrücke 2, D-20459, Hamburg

BIC: MELIDEHH
United Kingdom

Melli Bank plc

One London Wall, 11th Floor, London EC2Y 5EA

BIC: MELIGB2L

2. BANK SEPAH*
France

64 rue de Miromesnil, 75008 Paris

BIC: SEPBFRPP
Germany

Hafenstraße 54, D-60327 Frankfurt am Main

BIC: SEPBDEFF
Italy

Via Barberini 50, 00187 Rome

BIC: SEPBITR1
United Kingdom

Bank Sepah International plc

5/7 Eastcheap, London EC3M 1JT

BIC: SEPBGB2L

3. BANK SADERAT IRAN
France

Bank Saderat Iran

16 Rue de la Paix, 75002 Paris

BIC: BSIRFRPP

TELEX: 220287 SADER A / SADER B
Germany

Hamburg Branch

P.O. Box 112227, Deichstraße 11, D-20459 Hamburg

BIC: BSIRDEHH

TELEX: 215175 SADBK D

Frankfurt Branch

P.O. Box 160151, Friedensstraße 4, D-60311 Frankfurt am Main

BIC: BSIRDEFF
Greece

Athens Branch

PO Box 4308, 25-29 Venizelou St, GR 105 64 Athens

BIC: BSIRGRAA

TELEX: 218385 SABK GR
United Kingdom

Bank Saderat plc

5 Lothbury, London EC2R 7HD

BIC: BSPLGB2L

TELEX: 883382 SADER G

4. BANK TEJARAT
France

Bank Tejarat

124-126 Rue de Provence, 75008 Paris

BIC: BTEJFRPP

TELEX: 281972 F, 281973 F BKTEJ

5. PERSIA INTERNATIONAL BANK plc
United Kingdom

Head Office and Main Branch

6 Lothbury, London EC2R 7HH

BIC: PIBPGB2L

TELEX: 885426

Branches and subsidiaries, where they do not come within the scope of Article 18, of credit and financial institutions domiciled in Iran and credit and financial institutions that are neither domiciled in Iran nor come within the scope of Article 18 but are controlled by persons and entities domiciled in Iran, as referred to in Article 11a(2)(c) and (d)[(12)]

1. BANK MELLI*
Azerbaijan

Bank Melli Iran Baku Branch

Nobel Ave. 14, Baku

BIC: MELIAZ22
Iraq

No.111-27 Alley – 929 District – Arasat Street, Baghdad

BIC: MELIIQBA
Oman

Oman Muscat Branch

P.O. Box 5643, Mossa Abdul Rehman Hassan Building, 238 Al Burj St., Ruwi, Muscat, Oman 8 /

P.O. BOX 2643 PC 112

BIC: MELIOMR
China

Melli Bank HK (branch of Melli Bank PLC)

Unit 1703-04, Hong Kong Club Building, 3A Chater Road, Central Hong Kong

BIC: MELIHKHH
Egypt

Representative Office

P.O. Box 2654, First Floor, Flat No 1, Al Sad el Aaly Dokhi.

Tel.: 2700605 / Fax: 92633

United Arab Emirates

Regional Office

P.O. Box: 1894, Dubai

BIC: MELIAEAD

Abu Dhabi branch

Post box No 2656 Street name: Hamdan Street

BIC: MELIAEADADH

Al Ain branch

Post box No 1888 Street name: Clock Tower, Industrial Road

BIC: MELIAEADALN

Bur Dubai branch

Post box No 3093 Street name: Khalid Bin Waleed Street

BIC: MELIAEADBR2

Dubai Main branch

Post box No 1894 Street name: Beniyas Street

BIC: MELIAEAD

Fujairah branch

Post box No 248 Street name: Al Marash R/A, Hamad Bin Abdullah Street

BIC: MELIAEADFUJ

Ras al-Khaimah branch

Post box No 5270 Street name: Oman Street, Al Nakheel

BIC: MELIAEADRAK

Sharjah branch

Post box No 459 Street name: Al Burj Street

BIC: MELIAEADSHJ
Russian Federation

No 9/1 ul. Mashkova, 103064 Moscow

BIC: MELIRUMM
Japan

Representative Office

333 New Tokyo Bldg, 3-1 Marunouchi, 3 Chome, Chiyoda-ku.

Tel.: 332162631. Fax (3)32162638. TELEX: J296687

2. BANK MELLAT

South Korea

Bank Mellat Seoul Branch

Keumkang Tower 13/14th Floor, Tehran road 889-13, Daechi-dong Gangnam-Ku, 135 280, Seoul

BIC: BKMTKRSE

TELEX: K36019 MELLAT
Turkey

Istanbul Branch

1 Binbircicek Sokak, Buyukdere Caddessi Levent -Istanbul

BIC: BKMTTRIS

TELEX: 26023 MELT TR

Ankara Branch

Ziya Gokalp Bulvari No: 12 06425 Kizilay-Ankara

BIC: BKMTTRIS100

TELEX: 46915 BMEL TR

Izmir Branch

Cumhuriyet Bulvari No: 88/A P.K 71035210 Konak-Izmir

BIC: BKMTTRIS 200

TELEX: 53053 BMIZ TR
Armenia

Yerevan Branch

6 Amiryan Str. P.O. Box: 375010 P/H 24 Yerevan

BIC: BKMTAM 22

TELEX: 243303 MLTAR AM 243110 BMTRAM

3. PERSIA INTERNATIONAL BANK plc
United Arab Emirates

Dubai Branch

The Gate Building, 4th Floor, P.O.BOX 119871, Dubai

BIC: PIBPAEAD

4. BANK SADERAT IRAN
Lebanon

Regional Office

Mar Elias – Mteco Center, PO BOX 5126, Beirut

BIC: BSIRLBBE

Beirut Main Branch

Verdun street – Alrose building

P.O. BOX 5126 Beirut / P.O. BOX 6717 Hamra

BIC: BSIRLBBE

TELEX: 48602 – 20738, 21205 – SADBNK

Alghobeiri Branch

No 3528, Alghobeiry BLVD, Jawhara BLDG Abdallah El Hajje str. –Ghobeiri BLVD, Alghobeiri

BIC: BSIRLBBE

Baalbak Branch

No 3418, Ras Elein str., Baalbak

BIC: BSIRLBBE

Borj al Barajneh Branch

No 4280, Al Holam BLDG, Al Kafaat cross, Al Maamoura str., Sahat Mreyjeh, 1st Floor

BIC: BSIRLBBE

Saida Branch

No 4338, Saida – Riad Elsoleh BLVD. Ali Ahmad BLG.

BIC: BSIRLBBE
Oman

BLDG 606, Way 4543, 145 Complex, Ruwi High Street, Ruwi, P.O. BOX 1269, Muscat

BIC: BSIROMR

TELEX: 3146
Qatar

Doha branch

No 2623, Grand Hamad ave., P.O. BOX 2256, Doha

BIC: BSIR QA QA

TELEX: 4225
Turkmenistan

Bank Saderat Iran Ashkhabad branch

Makhtoomgholi ave., No 181, Ashkhabad

TELEX: 1161134-86278
United Arab Emirates

Regional office Dubai

Al Maktoum road, PO BOX 4182 Deira, Dubai

BIC: BSIRAEAD / BSIRAEADDLR / BSIRAEADLCD

TELEX: 45456 SADERBANK

Murshid Bazar Branch

Murshid Bazar P.O. Box 4182

Deira, Dubai

BIC: BSIRAEAD

TELEX: 45456 SADERBANK

Bur Dubai Branch

Al Fahidi Road

P.O.Box 4182 Dubai

BIC: BSIRAEAD

TELEX: 45456 SADERBANK

Ajman Branch

No 2900 Liwara street, PO BOX 16, Ajman, Dubai

BIC: BSIRAEAD

TELEX: 45456 SADERBANK

Shaykh Zayed Road Branch

Shaykh Road, Dubai

BIC: BSIRAEAD

TELEX: 45456 SADERBANK

Abu Dhabi Branch

No 2690 Hamdan street, PO BOX 2656, Abu Dhabi

BIC: BSIRAEAD

TELEX: 22263

Al Ein Branch

No 1741, Al Am Road, PO BOX 1140, Al Ein, Abu Dhabi

BIC: BSIRAEAD

TELEX: 45456 SADERBANK

Sharjah Branch

No 2776 Alaroda road, PO BOX 316, Sharjah

BIC: BSIRAEAD

TELEX: 45456 SADERBANK

Bahrain

Bahrein branch

106 Government Road; P.O. Box 825, Block No 316; Entrance No 3; Manama Center; Manama

TELEX: 8363 SADER BANK

OBU

P.O. Box 825 – Manama

TELEX: 8688 SADER BANK
Uzbekian

Bank Saderat Iran Tashkent

10 Tchekhov street, Mirabad district, 100060 Tashkent

BIC: BSIRUZ21

TELEX: 116134 BSITA UZ

5. TEJARAT BANK
Tajikistan

No 70, Rudaki Ave., Dushanbe

P.O. Box: 734001

BIC: BTEJTJ22XXX

TELEX: 201135 BTDIR TJ
China

Representative Office China

Office C208 Beijing Lufthansa Center No 50 Liangmaqiao Road Chaoyang District Beijing 100016

6. ARIAN BANK (also known as Aryan Bank)
Afghanistan

Head Office

House No 2, Street No 13, Wazir Akbar Khan, Kabul

BIC: AFABAFKA

Harat branch

No 14301(2), Business Room Building, Banke Khoon road, Harat

BIC: AFABAFKA

7. FUTURE BANK
Bahrain

Future Bank

P.O. Box 785, Government Avenue 304, Manama

Shop 57, Block No 624 Shaikh Jaber Al Ahmed Al Sabah Avenue-Road No 4203, Sitra

BIC: FUBBBHBM / FUBBBHBMOBU / FUBBBHBMXXX / FUBBBHBMSIT

8. BANCO INTERNACIONAL DE DESARROLLO, SA
Venezuela

Banco internacional de Desarrollo, Banco Universal

Avenida Francisco de Miranda, Torre Dosza, Piso 8, El Rosal, Chacao, Caracas

BIC: IDUNVECAXXX]

(**1**) OJ L 61, 28.2.2007, p. 49.

(**2**) OJ L 159, 30.6.2000, p. 1. Regulation as last amended by Regulation (EC) No 394/2006 (OJ L 74, 13.3.2006, p. 1).

(**3**) **[**[F3]OJ L 88, 29.3.2007, p. 58.**]**

(**4**) **[**[F4]OJ L 134, 29.5.2009, p. 1.**]**

(**5**) OJ L 82, 22.3.1997, p. 1. Regulation as last amended by Regulation (EC) No 807/2003 (OJ L 122, 16.5.2003, p. 36).

(**6**) **[**[F2]OJ L 117, 4.5.2005, p. 13.

(**7**) OJ L 360, 19.12.2006, p. 64.**]**

(**8**) **[**[F7]OJ L 278, 22.10.2007, p. 1.

(**9**) OJ L 88, 29.3.2007, p. 58.

(**10**) OJ L 61, 28.2.2007, p. 49. Common Position as last amended by Common Position 2007/246/CFSP (OJ L 106, 24.4.2007, p. 67).**]**

(**11**) **[**[F2]Entities marked * are also subject to asset freezing within the meaning of Article 5(1)(a) and (b) of Common Position 2007/140/CFSP.

(**12**) See footnote 1.**]**

**Textual Amendments**

**F2** Inserted by Council Regulation (EC) No 1110/2008 of 10 November 2008 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

**F3** Inserted by Council Regulation (EC) No 618/2007 of 5 June 2007 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

**F4** Substituted by Council Regulation (EU) No 1228/2009 of 15 December 2009 amending Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

**F7** Substituted by Commission Regulation (EC) No 116/2008 of 28 January 2008 amending Council Regulation (EC) No 423/2007 concerning restrictive measures against Iran.

**Status:**
Point in time view as at 27/07/2010.

**Changes to legislation:**
There are currently no known outstanding effects for the Council Regulation (EC) No 423/2007 (repealed).