§ 173.417 Authorized fissile materials packages.

(a) Except as provided in §173.453, fissile materials containing not more than $A_1$ or $A_2$ as appropriate, must be packaged in one of the following packagings:

(1)(i) Any packaging listed in §173.415, limited to the Class 7 (radioactive) materials specified in 10 CFR part 71, subpart C;

(ii) Any Type AF, Type B(U)F, or Type B(M)F packaging that meets the applicable standards for fissile material packages in 10 CFR part 71; or

(iii) Any Type AF, Type B(U)F, or Type B(M)F packaging that meets the applicable requirements for fissile material packages in Section VI of the International Atomic Energy Agency “Regulations for the Safe Transport of Radioactive Material, No. TS-R-1 (IBR, see §171.7 of this subchapter),” and for which the foreign Competent Authority certificate has been revalidated by the U.S. Competent Authority, in accordance with §173.473. These packages are authorized only for export and import shipments.

(c) Continued use of an existing Type B packaging constructed to DOT Specification 6M, 20WC, or 21WC is authorized until October 1, 2008 if it conforms in all aspects to the requirements of this subchapter in effect on October 1, 2003.

[69 FR 3673, Jan. 26, 2004]

§ 173.417 Authorized fissile materials packages.

(a) Except as provided in §173.453, fissile materials containing not more than $A_1$ or $A_2$ as appropriate, must be packaged in one of the following packagings:

(1)(i) Any packaging listed in §173.415, limited to the Class 7 (radioactive) materials specified in 10 CFR part 71, subpart C;

(ii) Any Type AF, Type B(U)F, or Type B(M)F packaging that meets the applicable standards for fissile material packages in 10 CFR part 71; or

(iii) Any Type AF, Type B(U)F, or Type B(M)F packaging that meets the applicable requirements for fissile material packages in Section VI of the International Atomic Energy Agency “Regulations for the Safe Transport of Radioactive Material, No. TS-R-1 (IBR, see §171.7 of this subchapter),” and for which the foreign Competent Authority certificate has been revalidated by the U.S. Competent Authority, in accordance with §173.473. These packages are authorized only for export and import shipments.

(2) A residual “heel” of enriched solid uranium hexafluoride may be transported without a protective overpack in any metal cylinder that meets both the requirements of §173.415 and §178.350 of this subchapter for Specification 7A Type A packaging, and the requirements of §173.420 for packagings containing greater than 0.1 kg of uranium hexafluoride. Any such shipment must be made in accordance with Table 2, as follows:

<table>
<thead>
<tr>
<th>Cylinder diameter Centimeters</th>
<th>Cylinder volume Liters</th>
<th>Maximum Uranium-235 enrichment (percent)</th>
<th>Maximum “Heel” weight per cylinder UF$_6$ kg</th>
<th>Uranium-235 lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.7</td>
<td>8</td>
<td>8.8</td>
<td>0.311</td>
<td>0.045</td>
</tr>
<tr>
<td>20.3</td>
<td>8</td>
<td>39.0</td>
<td>1.359</td>
<td>0.227</td>
</tr>
<tr>
<td>30.5</td>
<td>12</td>
<td>68.0</td>
<td>2.410</td>
<td>0.454</td>
</tr>
<tr>
<td>76.0</td>
<td>30</td>
<td>725.0</td>
<td>23.64</td>
<td>11.3</td>
</tr>
<tr>
<td>122.0</td>
<td>48</td>
<td>3,084.0</td>
<td>108.9</td>
<td>22.7</td>
</tr>
</tbody>
</table>

Table 2—ALLOWABLE CONTENT OF URANIUM HEXAFLUORIDE (UF$_6$ “HEEL” IN A SPECIFICATION 7A CYLINDER)

<table>
<thead>
<tr>
<th>Cylinder diameter Centimeters</th>
<th>Cylinder volume Liters</th>
<th>Maximum Uranium-235 enrichment (percent)</th>
<th>Maximum “Heel” weight per cylinder UF$_6$ kg</th>
<th>Uranium-235 lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.7</td>
<td>8</td>
<td>8.8</td>
<td>0.311</td>
<td>0.045</td>
</tr>
<tr>
<td>20.3</td>
<td>8</td>
<td>39.0</td>
<td>1.359</td>
<td>0.227</td>
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<td>76.0</td>
<td>30</td>
<td>725.0</td>
<td>23.64</td>
<td>11.3</td>
</tr>
<tr>
<td>122.0</td>
<td>48</td>
<td>3,084.0</td>
<td>108.9</td>
<td>22.7</td>
</tr>
</tbody>
</table>

1 10 ton.
2 14 ton.

(3) DOT Specification 20PF–1, 20PF–2, or 20PF–3 (see §178.356 of this subchapter), or Specification 21PF–1A, 21PF–1B, or 21PF–2 (see §178.358 of this subchapter) phenolic-foam insulated overpack with snug fittings inner metal cylinders, meeting all requirements of §§173.24, 173.410, 173.412, and 173.420 and the following:

(i) Handling procedures and packaging criteria must be in accordance with United States Enrichment Corporation Report No. USEC-651 or ANSI N41.1 (IBR, see §171.7 of this subchapter); and

(ii) Quantities of uranium hexafluoride are authorized as shown in Table 3 of this section, with each package assigned a minimum criticality safety index as also shown.

(b) Fissile Class 7 (radioactive) materials with radioactive content exceeding $A_1$ or $A_2$ must be packaged in one of the following packagings:

(1) Type B(U), or Type B(M) packaging that meets the standards for
packaging of fissile materials in 10 CFR part 71, and is approved by the U.S. Nuclear Regulatory Commission and used in accordance with §173.471;
(2) Type B(U) or Type B(M) packaging that also meets the applicable requirements for fissile material pack-
aging in Section VI of the International Atomic Energy Agency “Reg-
ulations for the Safe Transport of Ra-
dioactive Material, No. TS-R-1,” and
for which the foreign Competent Au-
thority certificate has been revalidated
by the U.S. Competent Authority in ac-
cordance with §173.473. These pack-
agings are authorized only for import
and export shipments; or
(3) DOT Specifications 20PF–1, 20PF–2, or 20PF–3 (see §178.356 of this sub-
chapter), for DOT Specifications 21PF–1A or 21PF–1B (see §178.356 of this sub-
chapter) phenolic-foam insulated over-
pack with snug fitting inner metal cy-
linders, meeting all requirements of
§§ 173.24, 173.410, and 173.412, and the follow-
ing:
(i) Handling procedures and pack-
aging criteria must be in accordance
with United States Enrichment Cor-
poration Report No. USEC–651 or ANSI
N14.1; and
(ii) Quantities of uranium hexafluoride are authorized as shown in Table 3, with each package assigned a minimum criticality safety index as also shown:

| TABLE 3—AUTHORIZED QUANTITIES OF URANIUM HEXAFLUORIDE |
|----------------------------------|------------------|------------------|------------------|------------------|------------------|
| Protective overpack specification number | Maximum inner cylinder diameter | Maximum weight of UF6 contents | Maximum U–235 enrich- ment (weight/ percent) | Minimum criti-
cality safety index |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20PF–1</td>
<td>12.7</td>
<td>5</td>
<td>25</td>
<td>55</td>
<td>100.0</td>
</tr>
<tr>
<td>20PF–2</td>
<td>20.3</td>
<td>8</td>
<td>116</td>
<td>255</td>
<td>12.5</td>
</tr>
<tr>
<td>20PF–3</td>
<td>30.5</td>
<td>12</td>
<td>209</td>
<td>460</td>
<td>5.0</td>
</tr>
<tr>
<td>21PF–1A or 21PF–1B</td>
<td>76.0</td>
<td>30</td>
<td>2,250</td>
<td>4,950</td>
<td>0.0</td>
</tr>
<tr>
<td>21PF–1A or 21PF–1B</td>
<td>2,282</td>
<td>5,020</td>
<td>5.0</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>21PF–2A or 21PF–1B</td>
<td>2,282</td>
<td>5,020</td>
<td>5.0</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>21PF–2B</td>
<td>76.0</td>
<td>30</td>
<td>2,250</td>
<td>4,950</td>
<td>0.0</td>
</tr>
<tr>
<td>21PF–2B</td>
<td>2,282</td>
<td>5,020</td>
<td>5.0</td>
<td>5.0</td>
<td></td>
</tr>
</tbody>
</table>

For 76 cm (30 in) cylinders, the maximum U/S atomic ratio is 0.088.
Model 30A inner cylinder (reference USEC–651).
Model 30B inner cylinder (reference USEC–651).

(c) Continued use of an existing fissile material packaging constructed to DOT Specification 6L, 6M, or 1A2, is authorized until October 1, 2008 if it conforms in all respects to the require-
ments of this subchapter in effect on October 1, 2003.


§ 173.418 Authorized packages— pyrophoric Class 7 (radioactive) materials.

Pyrophoric Class 7 (radioactive) ma-
terials, as referenced in the §172.101 table of this subchapter, in quantities not exceeding 20 per package must be trans-
ported in DOT Specification 7A packagings constructed of materials that will not react with, or be decom-
posed by, the contents. Contents of the package must be—

(a) In solid form and must not be fissile unless excepted by §173.453;

(b) Contained in sealed and corrosion resistant receptacles with positive clos-
ures (friction or slip-fit covers or stop-
ners are not authorized);

(c) Free of water and contaminants that would increase the reactivity of the material; and

(d) Inerted to prevent self-ignition during transport by either—

(1) Mixing with large volumes of inerting materials, such as graphite, dry sand, or other suitable inerting material, or blended into a matrix of hardened concrete; or

(2) Filling the innermost receptacle with an appropriate inert gas or liquid.