

**4731.0410 GENERAL LICENSE; FISSILE MATERIAL.**

Subpart 1. **License to transport or deliver fissile material.** A general license is issued to any licensee of the commissioner to transport fissile material, or to deliver fissile material to a carrier for transport, if the material is shipped according to this part. The fissile material need not be contained in a package that meets the standards of part 4731.0412 and Code of Federal Regulations, title 10, sections 71.41 to 71.77, if the material is shipped according to this part. However, the material must be contained in a Type A package. The Type A package must also meet the DOT requirements in Code of Federal Regulations, title 49, section 173.417(a).

Subp. 2. **Approved quality assurance program.** The general license issued under subpart 1 applies only to a licensee who has a quality assurance program approved by the NRC as complying with Code of Federal Regulations, title 10, part 71, subpart H.

Subp. 3. **Type A quantity limits.** The general license issued under subpart 1 applies only when a package's contents:

- A. contain less than a Type A quantity of fissile material; and
- B. contain less than 500 total grams of beryllium, graphite, or hydrogenous material enriched in deuterium.

Subp. 4. **Fissile material labeled with a criticality safety index.**

A. The general license applies only to packages containing fissile material that are labeled with a criticality safety index that:

- (1) has been determined according to subpart 7; and
- (2) has a value less than or equal to ten.

B. For a shipment of multiple packages containing fissile material, the sum of the criticality safety indices must be less than or equal to 50 for shipment on a nonexclusive use conveyance and less than or equal to 100 for shipment on an exclusive use conveyance.

Subp. 5. [Repealed, 32 SR 831]

Subp. 6. [Repealed, 32 SR 831]

Subp. 7. **Criticality safety index values.**

A. The value for the criticality safety index must be greater than or equal to the number calculated by the following equation:

$$\text{CSI} = 10 \left[ \frac{\text{grams of } ^{235}\text{U}}{X} + \frac{\text{grams of } ^{233}\text{U}}{Y} + \frac{\text{grams of Pu}}{Z} \right]$$

B. The calculated criticality safety index must be rounded up to the first decimal place.

C. The values of X, Y, and Z used in the criticality safety index equation must be taken from subpart 8 or 9, as appropriate.

D. If subpart 9 is used to obtain the value of X, then the values for the terms in the equation for uranium-233 and plutonium must be assumed to be zero.

E. The values in subpart 8 for X, Y, and Z must be used to determine the criticality safety index if:

- (1) uranium-233 is present in the package;
- (2) the mass of plutonium exceeds one percent of the mass of uranium-235;
- (3) the uranium is of unknown uranium-235 enrichment or greater than 24 weight percent enrichment; or
- (4) substances having a moderating effectiveness, that is, an average hydrogen density greater than  $H_2O$ , for example certain hydrocarbon oils or plastics, are present in any form, except as polyethylene used for packing or wrapping.

**Subp. 8. Mass limits for general license packages containing mixed quantities of fissile material of uranium-235 of unknown enrichment.**

	Fissile material mass mixed with moderating substances having an average hydrogen density less than or equal to $H_2O$ (grams)	Fissile material mass mixed with moderating substances having an average hydrogen density greater than $H_2O^a$ (grams)
$^{235}U$ (X)	60	38
$^{233}U$ (Y)	43	27
$^{239}Pu$ or $^{241}Pu$ (Z)	37	24

<sup>a</sup>When mixtures of moderating substances are present, the lower mass limits shall be used if more than 15 percent of the moderating substance has an average hydrogen density greater than  $H_2O$ .

**Subp. 9. Mass limits for general license packages containing uranium-235 of known enrichment.**

Uranium enrichment in weight percent of $^{235}U$ not exceeding	Fissile material mass of $^{235}U$ (X) (grams)
24	60
20	63
15	67

11	72
10	76
9.5	78
9	81
8.5	82
8	85
7.5	88
7	90
6.5	93
6	97
5.5	102
5	108
4.5	114
4	120
3.5	132
3	150
2.5	180
2	246
1.5	408
1.35	480
1	1,020
0.92	1,800

**Statutory Authority:** *MS s 144.1202; 144.1203*

**History:** *29 SR 755; 32 SR 831*

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