(e) *Transitional provisions.* The Class 3 classification criteria in effect on December 31, 2006, may continue to be used until January 1, 2012.

[Amdt. 173–224, 55 FR 52634 Dec. 21, 1990, as amended by Amdt. 173–227, 56 FR 49989, Oct. 2, 1991; 56 FR 66268, Dec. 20, 1991; 57 FR 45461, Oct. 1, 1992; Amdt. 173–241, 59 FR 67506, 67507, Dec. 29, 1994; Amdt. 173–255, 61 FR 50625, Sept. 26, 1996; Amdt. 173–261, 62 FR 24731, May 6, 1997; 66 FR 45379, 45381, Aug. 28, 2001; 68 FR 75743, Dec. 31, 2003; 71 FR 78631, Dec. 29, 2006; 76 FR 3371, Jan. 19, 2011; 76 FR 43529, July 20, 2011; 76 FR 56316, Sept. 13, 2011]

§ 173.121 Class 3—Assignment of packing group.

(a)(1) The packing group of a Class 3 material is as assigned in column 5 of the § 172.101 Table. When the § 172.101 Table provides more than one packing group for a hazardous material, the packing group must be determined by applying the following criteria:

Packing group	Flash point (closed-cup)	Initial boiling point
I		≤35 °C (95 °F)
II	<23 °C (73 °F)	>35 °C (95 °F)
III	≥23 °C, ≤60 °C (≥73 °F, ≤140 °F)	>35 °C (95 °F)

(2) The initial boiling point of a Class 3 material may be determined by using one of the following test methods:

(i) Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure (ASTM D 86) (IBR; *see* § 171.7 of this subchapter);

(ii) Standard Test Method for Distillation Range of Volatile Organic Liquids (ASTM D 1078) (IBR; *see* § 171.7 of this subchapter);

(iii) Petroleum Products—Determination of Distillation Characteristics at Atmospheric Pressure (ISO 3405) (IBR; *see* § 171.7 of this subchapter);

(iv) Petroleum Products—Determination of Boiling Range Distribution—Gas Chromatography Method (ISO 3924) (IBR; *see* § 171.7 of this subchapter);

(v) Volatile Organic Liquids—Determination of Boiling Range of Organic Solvents Used as Raw Materials (ISO 4626) (IBR; *see* § 171.7 of this subchapter); or

(vi) Petroleum products containing known flammable gases—Standard Test Method for Determination of Light Hydrocarbons in Stabilized Crude Oils by Gas Chromatography (ASTM D7900) (IBR; see § 171.7 of this subchapter) where the initial boiling point is the temperature at which 0.5 weight percent is eluted when determining the boiling range distribution.

(b) *Criteria for inclusion of viscous Class 3 materials in Packing Group III.* (1) Viscous Class 3 materials in Packing Group II with a flash point of less than 23 °C (73 °F) may be grouped in Packing Group III provided that—

(i) Less than 3 percent of the clear solvent layer separates in the solvent separation test;

(ii) The mixture or any separated solvent does not contain any substances with a primary or a subsidiary risk of Division 6.1 or Class 8;

(iii) The capacity of the packaging is not more than 450 L (119 gallons); except that for transportation by passenger aircraft, the capacity of the packaging is not more than 30 L (7.9 gallons) and for transportation by cargo aircraft, the capacity of the packaging is not more than 100 L (26.3 gallons); and

(iv) The viscosity[1] and flash point are in accordance with the following table:

[1] *Viscosity determination:* Where the substance concerned is non-Newtonian, or where a flow-cup method of viscosity determination is otherwise unsuitable, a variable shear-rate viscometer shall be used to determine the dynamic viscosity coefficient of the substance, at 23 °C (73.4 °F), at a number of shear rates. The values obtained are plotted against shear rate and then extrapolated to zero shear rate. The dynamic viscosity thus obtained, divided by the density, gives the apparent kinematic viscosity at near-zero shear rate.

Kinematic viscosity (extrapolated) v (at near-zero shear rate) mm2/s at 23 °C (73.4 °F)	Flow-time t in seconds	Jet diameter in mm	Flash point c.c.
20 < v ≤ 80	20 < t ≤ 60	4	above 17 °C (62.6 °F).
80 < v ≤ 135	60 < t ≤ 100	4	above 10 °C (50 °F).
135 < v ≤ 220	20 < t ≤ 32	6	above 5 °C (41 °F).
220 < v ≤ 300	32 < t ≤ 44	6	above −1 °C (31.2 °F).
300 < v ≤ 700	44 < t ≤ 100	6	above −5 °C (23 °F).
700 < v	100 < t	6	No limit.

(2) The methods by which the tests referred to in paragraph (b)(1) of this section shall be performed are as follows:

(i) *Viscosity test.* The flow time in seconds is determined at 23 °C (73.4 °F) using the ISO standard cup with a 4 mm (0.16 inch) jet as set forth in ISO 2431 (IBR, see §171.7 of this subchapter). Where the flow time exceeds 100 seconds, a further test is carried out using the ISO standard cup with a 6 mm (0.24 inch) jet.

(ii) *Solvent Separation Test.* This test is carried out at 23 °C (73 °F) using a 100.0 mL(3 ounces) measuring cylinder of the stoppered type of approximately 25.0 cm (9.8 inches) total height and of a uniform internal diameter of approximately 30 mm (1.2 inches) over the calibrated section. The sample should be stirred to obtain a uniform consistency, and poured in up to the 100 mL (3 ounces) mark. The stopper should be inserted and the cylinder left standing undisturbed for 24 hours. After 24 hours, the height of the upper separated layer should be measured and the percentage of this layer as compared with the total height of the sample calculated.

[Amdt. 173–224, 55 FR 52634, Dec. 21, 1990]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §173.121, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.govinfo.gov.

§ 173.124 Class 4, Divisions 4.1, 4.2 and 4.3—Definitions.

(a) *Division 4.1 (Flammable Solid).* For the purposes of this subchapter, *flammable solid* (Division 4.1) means any of the following four types of materials:

(1) Desensitized explosives that—

(i) When dry are Explosives of Class 1 other than those of compatibility group A, which are wetted with sufficient water, alcohol, or plasticizer to suppress explosive properties; and

(ii) Are specifically authorized by name either in the Hazardous Materials Table in §172.101 of this subchapter or have been assigned a shipping name and hazard class by the Associate Administrator under the provisions of—

(A) A special permit issued under subchapter A of this chapter; or

(B) An approval issued under §173.56(i).

(2)(i) Self-reactive materials that are thermally unstable and can undergo an exothermic decomposition even without participation of oxygen (air). A material is excluded from this definition if any of the following applies:

(A) The material meets the definition of an explosive as prescribed in subpart C of this part, in which case it must be classed as an explosive;

(B) The material is forbidden from being offered for transportation according to §172.101 of this subchapter or §173.21;

(C) The material meets the definition of an oxidizer or organic peroxide as prescribed in this subpart, in which case it must be so classed;

(D) The material meets one of the following conditions:

(*1*) Its heat of decomposition is less than 300 J/g; or

(*2*) Its self-accelerating decomposition temperature (SADT) is greater than 75 °C (167 °F) for a 50 kg package; or

(*3*) It is an oxidizing substance in Division 5.1 containing less than 5.0% combustible organic substances; or

(E) The Associate Administrator has determined that the material does not present a hazard which is associated with a Division 4.1 material.