

§ 178.800

49 CFR Ch. I (10–1–23 Edition)

(4) 13H4 woven plastic, coated and with liner.

(5) 13H5 plastic film.

(6) 13L1 textile without coating or liner.

(7) 13L2 textile, coated.

(8) 13L3 textile with liner.

(9) 13L4 textile, coated and with liner.

(10) 13M1 paper, multiwall.

(11) 13M2 paper, multiwall, water resistant.

(b) Definitions for flexible IBCs:

(1) *Flexible IBCs* consist of a body constructed of film, woven plastic, woven fabric, paper, or combination thereof, together with any appropriate service equipment and handling devices, and if necessary, an inner coating or liner.

(2) *Woven plastic* means a material made from stretched tapes or monofilaments.

(3) *Handling device* means any sling, loop, eye, or frame attached to the body of the IBC or formed from a continuation of the IBC body material.

(c) Construction requirements for flexible IBCs are as follows:

(1) The strength of the material and the construction of the flexible IBC must be appropriate to its capacity and its intended use.

(2) All materials used in the construction of flexible IBCs of types 13M1 and 13M2 must, after complete immersion in water for not less than 24 hours, retain at least 85 percent of the tensile strength as measured originally on the material conditioned to equilibrium at 67 percent relative humidity or less.

(3) Seams must be stitched or formed by heat sealing, gluing or any equivalent method. All stitched seam-ends must be secured.

(4) In addition to conformance with the requirements of §173.24 of this subchapter, flexible IBCs must be resistant to aging and degradation caused by ultraviolet radiation.

(5) For plastic flexible IBCs, if necessary, protection against ultraviolet radiation must be provided by the addition of pigments or inhibitors such as carbon black. These additives must be compatible with the contents and remain effective throughout the life of the container. Where use is made of carbon black, pigments, or inhibitors, other than those used in the manufac-

ture of the tested design type, re-testing may be omitted if the carbon black content, the pigment content or the inhibitor content does not adversely affect the physical properties of the material of construction. Additives may be included in the composition of the plastic material to improve resistance to aging, provided they do not adversely affect the physical or chemical properties of the material.

(6) No used material other than production residues or regrind from the same manufacturing process may be used in the manufacture of plastic flexible IBCs. This does not preclude the re-use of component parts such as fittings and pallet bases, provided such components have not in any way been damaged in previous use.

(7) When flexible IBCs are filled, the ratio of height to width may not be more than 2:1.

(d) Flexible IBCs: (1) May not have a volumetric capacity greater than 3,000 L (793 gallons) or less than 56 L (15 gallons); and

(2) Must be designed and tested to a capacity of no less than 50 kg (110 pounds).

[Amdt. 178–103, 59 FR 38068, July 26, 1994, as amended by Amdt. 178–108, 60 FR 40038, Aug. 4, 1995; 66 FR 45386, Aug. 28, 2001; 75 FR 5397, Feb. 2, 2010]

Subpart O—Testing of IBCs

§ 178.800 Purpose and scope.

This subpart prescribes certain testing requirements for IBCs identified in subpart N of this part.

[Amdt. 178–103, 59 FR 38074, July 26, 1994, as amended by 66 FR 45386, Aug. 28, 2001]

§ 178.801 General requirements.

(a) *General.* The test procedures prescribed in this subpart are intended to ensure that IBCs containing hazardous materials can withstand normal conditions of transportation and are considered minimum requirements. Each packaging must be manufactured and assembled so as to be capable of successfully passing the prescribed tests and of conforming to the requirements of §173.24 of this subchapter at all times while in transportation.

(b) *Responsibility.* It is the responsibility of the IBC manufacturer to assure that each IBC is capable of passing the prescribed tests. To the extent that an IBC assembly function, including final closure, is performed by the person who offers a hazardous material for transportation, that person is responsible for performing the function in accordance with §§ 173.22 and 178.2 of this subchapter.

(c) *Definitions.* For the purpose of this subpart:

(1) *IBC design type* refers to an IBC that does not differ in structural design, size, material of construction, wall thickness, manner of construction and representative service equipment.

(2) *Design qualification testing* is the performance of the drop, leakproofness, hydrostatic pressure, stacking, bottom-lift or top-lift, tear, topple, righting and vibration tests, as applicable, prescribed in this subpart, for each different IBC design type, at the start of production of that packaging.

(3) *Periodic design requalification test* is the performance of the applicable tests specified in paragraph (c)(2) of this section on an IBC design type, in order to requalify the design for continued production at the frequency specified in paragraph (e) of this section.

(4) *Production inspection* is the inspection that must initially be conducted on each newly manufactured IBC.

(5) *Production testing* is the performance of the leakproofness test in accordance with paragraph (f) of this section on each IBC intended to contain solids discharged by pressure or intended to contain liquids.

(6) *Periodic retest and inspection* is performance of the applicable test and inspections on each IBC at the frequency specified in § 180.352 of this subchapter.

(7) *Different IBC design type* is one that differs from a previously qualified IBC design type in structural design, size, material of construction, wall thickness, or manner of construction, but does not include:

(i) A packaging which differs in surface treatment;

(ii) A rigid plastic IBC or composite IBC which differs with regard to additives used to comply with §§ 178.706(c), 178.707(c) or 178.710(c);

(iii) A packaging which differs only in its lesser external dimensions (*i.e.*, height, width, length) provided materials of construction and material thicknesses or fabric weight remain the same;

(iv) A packaging which differs in service equipment.

(d) *Design qualification testing.* The packaging manufacturer shall achieve successful test results for the design qualification testing at the start of production of each new or different IBC design type. The service equipment selected for this design qualification testing shall be representative of the type of service equipment that will be fitted to any finished IBC body under the design. Application of the certification mark by the manufacturer shall constitute certification that the IBC design type passed the prescribed tests in this subpart.

(e) *Periodic design requalification testing.* (1) Periodic design requalification must be conducted on each qualified IBC design type if the manufacturer is to maintain authorization for continued production. The IBC manufacturer shall achieve successful test results for the periodic design requalification at sufficient frequency to ensure each packaging produced by the manufacturer is capable of passing the design qualification tests. Design requalification tests must be conducted at least once every 12 months.

(2) Changes in the frequency of design requalification testing specified in paragraph (e)(1) of this section are authorized if approved by the Associate Administrator. These requests must be based on:

(i) Detailed quality assurance programs that assure that proposed decreases in test frequency maintain the integrity of originally tested IBC design types; and

(ii) Demonstrations that each IBC produced is capable of withstanding higher standards (*e.g.*, increased drop height, hydrostatic pressure, wall thickness, fabric weight).

(f) *Production testing and inspection.* (1) Production testing consists of the leakproofness test prescribed in § 178.813 of this subpart and must be performed on each IBC intended to contain solids discharged by pressure or

intended to contain liquids. For this test:

(i) The IBC need not have its closures fitted, except that the IBC must be fitted with its primary bottom closure.

(ii) The inner receptacle of a composite IBC may be tested without the outer IBC body, provided the test results are not affected.

(2) Applicable inspection requirements in §180.352 of this subchapter must be performed on each IBC initially after production.

(g) *Test samples.* The IBC manufacturer shall conduct the design qualification and periodic design requalification tests prescribed in this subpart using random samples of IBCs, according to the appropriate test section.

(h) *Selective testing of IBCs.* Variation of a tested IBC design type is permitted without further testing, provided selective testing demonstrates an equivalent or greater level of safety than the design type tested and which has been approved by the Associate Administrator.

(i) *Approval of equivalent packagings.* An IBC differing from the standards in subpart N of this part, or tested using methods other than those specified in this subpart, may be used if approved by the Associate Administrator. Such IBCs must be shown to be equally effective, and testing methods used must be equivalent.

(j) *Proof of compliance.* Notwithstanding the periodic design requali-

fication testing intervals specified in paragraph (e) of this section, the Associate Administrator, or a designated representative, may at any time require demonstration of compliance by a manufacturer, through testing in accordance with this subpart, that packagings meet the requirements of this subpart. As required by the Associate Administrator, or a designated representative, the manufacturer shall either:

(1) Conduct performance tests or have tests conducted by an independent testing facility, in accordance with this subpart; or

(2) Make a sample IBC available to the Associate Administrator, or a designated representative, for testing in accordance with this subpart.

(k) *Coatings.* If an inner treatment or coating of an IBC is required for safety reasons, the manufacturer shall design the IBC so that the treatment or coating retains its protective properties even after withstanding the tests prescribed by this subpart.

(l) *Record retention.* Following each design qualification test and each periodic retest on an IBC, a test report must be prepared.

(1) The test report must be maintained at each location where the packaging is manufactured, certified, and a design qualification test or periodic retest is conducted as follows:

Responsible party	Duration
Person manufacturing the packaging	As long as manufactured and two years thereafter.
Person performing design testing	Design test maintained for a single or composite packaging for six years after the test is successfully performed and for a combination packaging or packaging intended for infectious substances for seven years after the test is successfully performed.
Person performing periodic retesting	Performance test maintained for a single or composite packaging for one year after the test is successfully performed and for a combination packaging or packaging intended for infectious substances for two years after the test is successfully performed.

(2) The test report must be made available to a user of a packaging or a representative of the Department upon request. The test report, at a minimum, must contain the following information:

(i) Name and address of test facility;

(ii) Name and address of the person certifying the IBC;

(iii) A unique test report identification;

(iv) Date of test report;

(v) Manufacturer of the IBC;

(vi) Description of the IBC design type (e.g., dimensions, materials, closures, thickness, representative service equipment, etc.);

(vii) Maximum IBC capacity;

(viii) Characteristics of test contents, including for rigid plastics and composite IBCs subject to the hydrostatic pressure test in § 178.814 of this subpart, the temperature of the water used;

(ix) Test descriptions and results (including drop heights, hydrostatic pressures, tear propagation length, etc.); and

(x) The signature of the person conducting the test, and name of the person responsible for testing.

[Amdt. 178-103, 59 FR 38074, July 26, 1994, as amended by Amdt. 178-108, 60 FR 40038, Aug. 4, 1995; 66 FR 45386, Aug. 28, 2001; 66 FR 33452, June 21, 2001; 68 FR 75758, Dec. 31, 2003; 73 FR 57008, Oct. 1, 2008; 74 FR 2269, Jan. 14, 2009; 75 FR 5397, Feb. 2, 2010; 78 FR 14715, Mar. 7, 2013; 78 FR 65487, Oct. 31, 2013; 80 FR 72929, Nov. 23, 2015; 85 FR 27901, May 11, 2020]

§ 178.802 Preparation of fiberboard IBCs for testing.

(a) Fiberboard IBCs and composite IBCs with fiberboard outer packagings must be conditioned for at least 24 hours in an atmosphere maintained:

(1) At 50 percent ± 2 percent relative humidity, and at a temperature of $23^{\circ} \pm 2^{\circ} \text{C}$ ($73^{\circ} \text{F} \pm 4^{\circ} \text{F}$); or

(2) At 65 percent ± 2 percent relative humidity, and at a temperature of $20^{\circ} \pm 2^{\circ} \text{C}$ ($68^{\circ} \text{F} \pm 4^{\circ} \text{F}$), or $27^{\circ} \text{C} \pm 2^{\circ} \text{C}$ ($81^{\circ} \text{F} \pm 4^{\circ} \text{F}$).

(b) Average values for temperature and humidity must fall within the limits in paragraph (a) of this section. Short-term fluctuations and measurement limitations may cause individual measurements to vary by up to ± 5 percent relative humidity without significant impairment of test reproducibility.

(c) For purposes of periodic design requalification only, fiberboard IBCs or composite IBCs with fiberboard outer packagings may be at ambient conditions.

[Amdt. 178-103, 59 FR 38074, July 26, 1994, as amended at 66 FR 45386, Aug. 28, 2001]

§ 178.803 Testing and certification of IBCs.

Tests required for the certification of each IBC design type are specified in the following table. The letter X indicates that one IBC (except where noted) of each design type must be subjected to the tests in the order presented:

Performance test	IBC type					
	Metal IBCs	Rigid plastic IBCs	Composite IBCs	Fiber-board IBCs	Wooden IBCs	Flexible IBCs
Vibration	⁶ X	⁶ X	⁶ X	⁶ X	⁶ X	^{1,5} X
Bottom lift	² X	X	X	X	X	
Top lift	² X	² X	² X			^{2,5} X
Stacking	⁷ X	⁷ X	⁷ X	⁷ X	⁷ X	⁵ X
Leakproofness	³ X	³ X	³ X			
Hydrostatic	³ X	³ X	³ X			
Drop	⁴ X	⁴ X	⁴ X	⁴ X	⁴ X	⁵ X
Topple						⁵ X
Righting						^{2,5} X
Tear						⁵ X

¹ Flexible IBCs must be capable of withstanding the vibration test.

² This test must be performed only if IBCs are designed to be handled this way. For metal IBCs, at least one of the bottom lift or top lift tests must be performed.

³ The leakproofness and hydrostatic pressure tests are required only for IBCs intended to contain liquids or intended to contain solids loaded or discharged under pressure.

⁴ Another IBC of the same design type may be used for the drop test set forth in § 178.810 of this subchapter.

⁵ Another different flexible IBC of the same design type may be used for each test.

⁶ The vibration test may be performed in another order for IBCs manufactured and tested under provisions of an exemption before October 1, 1994 and for non-DOT specification portable tanks tested before October 1, 1994, intended for export.

⁷ This test must be performed only if the IBC is designed to be stacked.

[Amdt. 178-108, 60 FR 40039, Aug. 4, 1995, as amended at 64 FR 51919, Sept. 27, 1999; 66 FR 45386, 45390, Aug. 28, 2001]