

(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 manufacture of the tested design type, retesting 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.

[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]

Subpart O—Testing of IBCs

SOURCE: Amdt. 178–103, 59 FR 38074, July 26, 1994, unless otherwise noted.

§ 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 IBC which 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.

(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 which differs from the standards in subpart N of this part, or which is 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. A large packaging, as defined in §171.8 of this subchapter, may be used if approved by the Associate Administrator. The large packaging must conform to the construction standards, performance testing and packaging marking requirements specified in the UN Recommendations.

(j) *Proof of compliance.* Notwithstanding the periodic design requalification testing intervals specified in

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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.* (1) The person who certifies an IBC design type shall keep records of design qualification tests for each IBC design type and for each periodic design requalification as specified in this part. These records must be maintained at each location where the IBC is manufactured and at each location where design qualification and periodic design requalification testing is performed. These records must be maintained for as long as IBCs are manufactured in accordance with each qualified design type and for at least 2.5 years thereafter. These records must include the following information: name and address of test facility; name and address of the person certifying the IBC; a unique test report identification; date of test report; manufacturer of the IBC; description of the IBC design type (e.g., dimensions, materials, closures, thickness, representative service equipment, etc.); maximum IBC capacity; characteristics of test contents; test descriptions and results (including drop heights, hydrostatic pressures, tear propagation length, etc.). Each test report must be

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signed with the name of the person conducting the test, and name of the person responsible for testing.

(2) The person who certifies each IBC must make all records of design qualification tests and periodic design requalification tests available for inspection by a representative of the Department upon request.

[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]

§ 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 \pm 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 \pm 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 \pm 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: