

§ 178.816

49 CFR Ch. I (10-1-08 Edition)

at room temperature on an empty, unsealed packaging. The test sample must be centered on the bottom platen of the testing machine. The top platen must be lowered until it comes in contact with the test sample. Compression must be applied end to end. The speed of the compression tester must be one-half inch plus or minus one-fourth inch per minute. An initial preload of 50 pounds must be applied to ensure a definite contact between the test sample and the platens. The distance between the platens at this time must be recorded as zero deformation. The force "A" to then be applied must be calculated using the applicable formula:

Liquids: A = (n - 1) [w+ (s × v × 8.3 × .98)] × 1.5; or

Solids: A = (n - 1) [w+ (s × v × 8.3 × .95)] × 1.5

Where:

- A = applied load in pounds.
n = minimum number of containers that, when stacked, reach a height of 3 m.
s = specific gravity of lading.
w = maximum weight of one empty container in pounds.
v = actual capacity of container (rated capacity + outage) in gallons.

And:

8.3 corresponds to the weight in pounds of 1.0 gallon of water.

1.5 is a compensation factor that converts the static load of the stacking test into a load suitable for dynamic compression testing.

(d) Calculation of superimposed test load. For all IBCs, the load to be placed on the IBC must be 1.8 times the combined maximum permissible gross mass of the number of similar IBCs that may be stacked on top of the IBC during transportation.

(e) Criteria for passing the test. (1) For metal, rigid plastic, and composite IBCs there may be no permanent deformation which renders the IBC unsafe for transportation and no loss of contents.

(2) For fiberboard and wooden IBCs there may be no loss of contents and no permanent deformation which renders the whole IBC, including the base pallet, unsafe for transportation.

(3) For flexible IBCs, there may be no deterioration which renders the IBC

unsafe for transportation and no loss of contents.

[Amdt. 178-103, 59 FR 38074, July 26, 1994, as amended by Amdt. 178-119, 62 FR 24743, May 6, 1997; 65 FR 50462, 50463, Aug. 18, 2000; 66 FR 45386, Aug. 28, 2001]

§ 178.816 Topple test.

(a) General. The topple test must be conducted for the qualification of all flexible IBC design types.

(b) Special preparation for the topple test. The flexible IBC must be filled to not less than 95 percent of its capacity and to its maximum net mass, with the load being evenly distributed.

(c) Test method. A flexible IBC must be toppled onto any part of its top upon a rigid, non-resilient, smooth, flat, and horizontal surface.

(d) Topple height. For all flexible IBCs, the topple height is specified as follows:

- (1) Packing Group I: 1.8 m (5.9 feet).
(2) Packing Group II: 1.2 m (3.9 feet).
(3) Packing Group III: 0.8 m (2.6 feet).

(e) Criteria for passing the test. For all flexible IBCs, there may be no loss of contents. A slight discharge (e.g., from closures or stitch holes) upon impact is not considered to be a failure, provided no further leakage occurs.

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

§ 178.817 Righting test.

(a) General. The righting test must be conducted for the qualification of all flexible IBCs designed to be lifted from the top or side.

(b) Special preparation for the righting test. The flexible IBC must be filled to not less than 95 percent of its capacity and to its maximum net mass, with the load being evenly distributed.

(c) Test method. The flexible IBC, lying on its side, must be lifted at a speed of at least 0.1 m/second (0.33 ft/s) to an upright position, clear of the floor, by one lifting device, or by two lifting devices when four are provided.

(d) Criterion for passing the test. For all flexible IBCs, there may be no damage to the IBC or its lifting devices which renders the IBC unsafe for transportation or handling.

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