

Flexible Bulk Container or a representative of the Department upon request. The test report, at a minimum, must contain the following information:

- (1) Name and address of test facility;
- (2) Name and address of applicant (where appropriate);
- (3) A unique test report identification;
- (4) Date of the test report;
- (5) Manufacturer of the packaging;
- (6) Description of the flexible bulk container design type (e.g., dimensions, materials, closures, thickness, etc.), including methods of manufacture (e.g., blow molding) and which may include drawing(s) and/or photograph(s);
- (7) Maximum capacity;
- (8) Characteristics of test contents (e.g., particle size for solids);
- (9) Mathematical calculations performed to conduct and document testing (e.g., drop height, test capacity, outage requirements, etc.);
- (10) Test descriptions and results; and
- (11) Signature with the name and title of signatory.

§ 178.1040 Preparation of Flexible Bulk Containers for testing.

(a) Except as otherwise provided in this subchapter, each Flexible Bulk Container must be closed in preparation for testing and tests must be carried out in the same manner as if prepared for transportation. All closures must be installed using proper techniques and torques.

(b) If the material to be transported is replaced for test purposes by a non-hazardous material, the physical properties (grain, size, viscosity) of the replacement material used that might influence the results of the required tests must correspond as closely as possible to those of the hazardous material to be transported. It is permissible to use additives, such as bags of lead shot, to achieve the requisite total package mass, so long as they do not affect the test results.

§ 178.1045 Drop test.

(a) *General.* The drop test must be conducted for the qualification of all Flexible Bulk Container design types and performed periodically as specified in § 178.1035(e) of this subpart.

(b) *Special preparation for the drop test.* Flexible Bulk Containers must be filled to their maximum permissible gross mass.

(c) *Test method.* (1) A sample of all Flexible Bulk Container design types must be dropped onto a rigid, non-resilient, smooth, flat and horizontal surface. This test surface must be large enough to be immovable during testing and sufficiently large enough to ensure that the test Flexible Bulk Container falls entirely upon the surface. The test surface must be kept free from local defects capable of influencing the test results.

(2) Following the drop, the Flexible Bulk Container must be restored to the upright position for observation.

(d) *Drop height.* (1) For all Flexible Bulk Containers, drop heights are specified as follows: Packing group III: 0.8 m (2.6 feet)

(2) Drop tests are to be performed with the solid to be transported or with a non-hazardous material having essentially the same physical characteristics.

(e) *Criteria for passing the test.* For all Flexible Bulk Container design types there may be no loss of the filling substance. However a slight discharge (e.g., from closures or stitch holes) upon impact is not considered a failure of the Flexible Bulk Container provided that no further leakage occurs after the container has been restored to the upright position.

§ 178.1050 Top lift test.

(a) *General.* The top lift test must be conducted for the qualification of all of Flexible Bulk Containers design types to be lifted from the top.

(b) *Special preparation for the top lift test.* Flexible Bulk Container design types must be filled to six times the maximum permissible gross mass, the load being evenly distributed.

(c) *Test method.* (1) A Flexible Bulk Container must be lifted in the manner for which it is designed until clear of the floor and maintained in that position for a period of five minutes.

(2) If not tested as indicated in paragraph (c)(1) of this section, a Flexible Bulk Container design type must be tested as follows:

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(i) Fill the Flexible Bulk Container to 95% full with a material representative of the product to be shipped.

(ii) Suspend the Flexible Bulk Container by its lifting devices.

(iii) Apply a constant downward force through a specially designed platen. The platen will be a minimum of 60 percent and a maximum of 80 percent of the cross sectional surface area of the Flexible Bulk Container.

(iv) The combination of the mass of the filled Flexible Bulk Container and the force applied through the platen must be a minimum of six times the maximum net mass of the Flexible Bulk Container. The test must be conducted for a period of five minutes.

(v) Other equally effective methods of top lift testing and preparation may be used with approval of the Associate Administrator.

(d) *Criteria for passing the test.* For all Flexible Bulk Containers design types designed to be lifted from the top, there may be no damage to the Flexible Bulk Container or its lifting devices that renders the Flexible Bulk Container unsafe for transport, and no loss of contents.

§ 178.1055 Stacking test.

(a) *General.* The stacking test must be conducted for the qualification of all Flexible Bulk Containers design types.

(b) *Special preparation for the stacking test.* All Flexible Bulk Containers design types must be loaded to their maximum permissible gross mass.

(c) *Test method.* (1) All Flexible Bulk Containers must be placed on their base on level, hard ground and subjected to a uniformly distributed superimposed test load that is four times the design type maximum gross weight for a period of at least twenty-four hours.

(2) For all Flexible Bulk Containers, the load must be applied by one of the following methods:

(i) Four Flexible Bulk Containers of the same type loaded to their maximum permissible gross mass and stacked on the test Flexible Bulk Container;

(ii) The calculated superimposed test load weight loaded on either a flat plate or a reproduction of the base of the Flexible Bulk Container, which is

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stacked on the test Flexible Bulk Container.

(d) *Criteria for passing the test.* There may be no deterioration that renders the Flexible Bulk Container unsafe for transportation and no loss of contents during the test or after removal of the test load.

§ 178.1060 Topple test.

(a) *General.* The topple test must be conducted for the qualification of all Flexible Bulk Containers design types.

(b) *Special preparation for the topple test.* Flexible Bulk Container design types must be filled to their maximum permissible gross mass, the load being evenly distributed.

(c) *Test method.* Samples of all Flexible Bulk Container design types must be toppled onto any part of its top by lifting the side furthest from the drop edge upon a rigid, non-resilient, smooth, flat and horizontal surface. This test surface must be large enough to be immovable during testing and sufficiently large enough to ensure that the test Flexible Bulk Container falls entirely upon the surface. The test surface must be kept free from local defects capable of influencing the test results.

(d) *Topple height.* (1) For all Flexible Bulk Containers, topple heights are specified as follows: Packing group III: 0.8 m (2.6 feet).

(e) *Criterion for passing the test.* For all Flexible Bulk Container design types there may be no loss of the filling substance. However a slight discharge (e.g., from closures or stitch holes) upon impact is not considered a failure of the Flexible Bulk Container.

§ 178.1065 Righting test.

(a) *General.* The righting test must be conducted for the qualification of all Flexible Bulk Containers design types designed to be lifted from the top or side.

(b) *Special preparation for the righting test.* Flexible Bulk Container design types must be filled to not less than 95% of their capacity and to their maximum permissible gross mass, the load being evenly distributed.

(c) *Test method.* A sample Flexible Bulk Container design type must be tested; the Flexible Bulk Container