

Appendix B to Part 178—Alternative Leakproofness Test Methods

In addition to the method prescribed in §178.604 of this subchapter, the following leakproofness test methods are authorized:

- (1) *Helium test.* The packaging must be filled with at least 1 L inert helium gas, air tight closed, and placed in a testing chamber. The testing chamber must be evacuated down to a pressure of 5 kPa which equals an over-pressure inside the packaging of 95 kPa. The air in the testing chamber must be analyzed for traces of helium gas by means of a mass spectrograph. The test must be conducted for a period of time sufficient to evacuate the chamber and to determine if there is leakage into or out of the packaging. If helium gas is detected, the leaking packaging must be automatically separated from non-leaking drums and the leaking area determined according to the method prescribed in §178.604(d) of this subchapter. A packaging passes the test if there is no leakage of helium.
- (2) *Pressure differential test.* The packaging shall be restrained while either pressure or a vacuum is applied internally. The packaging must be pressurized to the pressure required by §178.604(e) of this subchapter for the appropriate packing group. The method of restraint must not affect the results of the test. The test must be conducted for a period of time sufficient to appropriately pressurize or evacuate the interior of the packaging and to determine if there is leakage into or out of the packaging. A packaging passes the pressure differential test if there is no change in measured internal pressure.
- (3) *Solution over seams.* The packaging must be restrained while an internal air pressure is applied; the method of restraint may not affect the results of the test. The exterior surface of all seams and welds must be coated with a solution of soap suds or a water and oil mixture. The test must be conducted for a period of time sufficient to pressurize the interior of the packaging to the specified air pressure and to determine if there is leakage of air from the packaging. A packaging passes the test if there is no leakage of air from the packaging.
- (4) *Solution over partial seams test.* For other than design qualification testing, the following test may be used for metal drums: The packaging must be restrained while an internal air pressure of 48 kPa (7.0 psig) is applied; the method of restraint may not affect the results of the test. The packaging must be coated with a soap solution over the entire side seam and a distance of not less than eight inches on each side of the side seam along the chime seam(s). The test must be conducted for a period of time sufficient to pressurize the interior of the packaging to the specified air pressure and to determine if there is leakage of air from the packaging. A packaging passes the test if there is no leakage of air from the packaging. Chime cuts must be made on the initial drum at the beginning of each production run and on the initial drum after any adjustment to the chime seamer. Chime cuts must be maintained on file in date order for not less than six months and be made available to a representative of the Department of Transportation on request.

[Amdt. 178–97, 55 FR 52728, Dec. 21, 1990, as amended at 56 FR 66287, Dec. 20, 1991; 57 FR 45466, Oct. 1, 1992]