

Air leakage test and hydraulic pressure test for liquids packages and static leakage test on lidded containers for solids**Applicable standards and codes**

RID ADR, Chapter 6

IATA-DGR/ICAO-TI, Chapter 5

IMDG Code, Chapter 6

1. Purpose

The leak-tightness of approved packages for liquid dangerous goods must be demonstrated for each package in accordance with RID ADR, Chapter 6, and IATA/ICAO, Chapter, 5. The leak-tightness of the inner packages of multi-unit packages for air transport must also be demonstrated. Packages with ventilation devices must remain liquid-tight up to the specified pressure. For solids, the leak-tightness of lidded containers with suitable sealing must be demonstrated in a simplified test to prevent the penetration of moisture and product leakage.

The type approval test methods contained in the dangerous goods regulations are not adequately described for the inspection of random samples of packages on goods arrival. Alternatives/additions to the specified methods are presented below.

The following methods must be applied:

- Air leakage test
- Hydraulic pressure test
- Static leakage test.

2. Air leakage test

Air leakage tests for land and sea transport must be carried out with a test pressure of 20 or 30 kPa.

For air transport, tests must be carried out with a test pressure of 75 or 95 kPa.

2.1 Test equipment

Required is a water bath with a device for fully immersing the package in the water. A compressed air connection point must be available which can be set to 20/30 kPa or 75/95 kPa and which keeps this pressure constant for the duration of testing. The water bath must have a light-colored coating on the inside and be well lit.

2.2 Specimen preparation

The packages to be tested must be sealed with the supplied closures in accordance with the manufacturer's instructions. Any ventilation devices must be sealed in a suitable fashion. Plastics packages must be acclimatized at room temperature. The test pressure is introduced at a neutral point that does not affect the closures, e.g. with a tightly sealing plug gauge.

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The package is fully immersed by the device and the closures must remain visible. Compressed air is introduced at a constant 20/30 kPa or 75/95 kPa. The package is held in this position for 5 minutes and observed throughout this time. When air bubbles adhering to the exterior have been removed, no further bubbles may form. The package is then regarded as having passed the test. If air escapes, the test must be repeated with 3 samples from the same series. If no leakages are detected, the package is regarded as having passed the test.

3. Hydraulic pressure test

The hydraulic pressure test is carried out in accordance with the dangerous goods regulations. The packaging manufacturer's closure-related instructions, e.g. tightening torque, must be complied with. If liquid escapes, the test must be repeated with 3 samples from the same series. If no leakages are detected, the package is regarded as having passed the test.

4. Static leakage test

For the static leakage test, the package is filled with tap water to 98% of its capacity. The package is sealed with the original closure parts in accordance with the manufacturer's instructions and laid on its side without impact. The closure device must remain exposed and must not be loaded.

The package is left for 1 hour in this position. If no water escapes during this time, the package is regarded as having passed the test. If liquid escapes, the test must be repeated with 3 samples from the same series. If no leakages are detected, the package is regarded as having passed the test.

5. Test report

The following details must be given in the test report with reference to these test instructions:

- Type of test specimen, e.g. package type, package number, date of manufacture, tool, serial number, shape etc.
- Type of test
- Test result
- Place, date of test and name of tester.