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Safety factor test on FIBC with 4-point suspension

Sources

- EN ISO 21898:2005 –Packaging - flexible intermediate bulk containers (FIBCs) for non-hazardous goods
- ISO 12048 of April 2001 -
  Packaging – ready for dispatch – compression and stacking test using a compression tester
- RID/ADR chapter 6.5

1. Purpose

The test serves the determination of the strength of FIBCs in the top lifting test in order to establish the safety factor. The test applies for FIBCs with standard format of 870 x 870 up to 100 x 1100 mm, any optional height, with four-point suspension.

2. Preparation

In variation to or in addition to the test standard, the following is recommended:

2.1 The lid / spout of the FIBC being tested is to be detached as far as possible.

2.2 In the case of FIBCs with inliner, the inliner is to be removed.

2.3 In the case of dimensionally stable FIBCs, any interior reinforcements / binders present are to be severed.

2.4 The FIBCs being tested are to be suspended so that the straps hang vertically in the loaded state. The straps are to be attached concentrically to the suspension frame; they are to be evenly and functionally spaced.

3. Procedure

- The test is performed on single suspended FIBCs that have been filled brimful with plastic resin granules with a granular size of 2 – 5 mm. The test is to be carried out at room temperature.
- The pressure plate must be round and flat on the underside. A pressure plate of 900 mm diameter is to be used.
- An upward or downward force is applied. It is to be applied at a rate of load increase of 70 ± 20 kN/min until the predetermined test load is reached.
- The test is carried out according to 3.1 or 3.2.
- After the performance of these tests no damages must be recognizable on the FIBCs.
- In order to obtain additional information after the test has been completed, another load can be applied up to the break of the FIBC. In that case, the breaking load is to be recorded along with other relevant test data in the test report.

3.1 The test for FIBCs for non-hazardous goods is performed in cycles, with and without load.
- Before the next respective load cycle an interval of maximally 30 sec is permitted. The test cycle is to be repeated until the required number of load cycles is reached. After that, another load is to be applied up to the load required for the last cycle. The following load cycles are to be performed:
- Heavy duty FIBC:
  70 cycles or alternatively 10 cycles up to a test load of 6 x SWL (safe working load) and a final cycle up to a test load of 8 x SWL.
- Standard duty FIBC:
  70 cycles or alternatively 10 cycles up to a test load of 4 x SWL and a final cycle up to a test load of 6 x SWL.
- Single-trip FIBC: 30 cycles or alternatively 10 cycles up to a test load of 2 x SWL and a final cycle up to a test load of 5 x SWL.

3.2 The test for FIBCs for hazardous goods is performed according to RID/ADR with a steady load, i.e. no cycles with and without load.
- The FIBC for hazardous goods is loaded with 6 x SWL for 5 minutes

4. Test report

Test report according to ISO 12048.