



AMERICAN NATIONAL
STANDARD

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DISCONTINUED

Standard Practice for DETERMINATION OF EFFECT OF IMMERSION OF SYNTACTIC FOAM AT PRESSURE¹

This Standard is issued under the fixed designation D 2735; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.

1. Scope

1.1 This practice covers the determination of the effect of cyclic immersion at pressure on syntactic foam (Note 2) buoyancy materials.

NOTE 1—The values stated in SI units are to be regarded as the standard.

NOTE 2—Syntactic foam is a material consisting of hollow sphere fillers in a resin matrix.

2. Applicable Documents

2.1 ASTM Standard:

D 695 Test for Compressive Properties of Rigid Plastics²

D 1898 Recommended Practice for Sampling of Plastics²

3. Summary of Practice

3.1 The practice consists of exposing specimens to water immersion (or other test media), then increasing the pressure to a predetermined maximum, holding at this maximum pressure, then reducing the pressure to atmospheric pressure, and repeating the cycle (Note 3). The amount of absorbed water is determined periodically. After the cyclic test is complete and the water absorption is determined, the compression properties of the specimen are measured, and the percentage of retention of original strength properties are determined.

NOTE 3—In addition to tap water, other immersion media such as mineral oil may be used. The immersion media may completely replace the water in the pressure vessel. Alternatively the specimen may be placed in a plastic bag containing the immersion media. The bags are then placed in the water.

4. Significance and Use

4.1 This practice for immersion of specimens in water during repeated cycles of changes in pressure represents an accelerated service test for syntactic foam buoyancy material. It has two principal functions: first, as a guide to the amount of water absorbed by the syntactic foam and consequently as a guide to loss in buoyancy due to cyclic pressure exposure, and second, as a guide to the effects of cyclic pressure exposure in water on the compressive strength retention properties.

5. Apparatus

5.1 *Immersion Chamber*—A pressure vessel capable of the required allowable working pressure with auxiliary pressure tubing; a water pump, and on-off timers and relays for cycling.

5.2 *Analytical Balance*.

5.3 *Micrometer*.

6. Sampling

The material shall be sampled in accordance with the standard methods of sampling prescribed in Sections 10 and 13 of Recommended Practice D 1898.

7. Test Specimens

7.1 The test specimen shall be a right circular cylinder 25.4 ± 1.25 mm in diameter by

¹ This practice is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D 20.22 on Cellular Plastics.

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² *Annual Book of ASTM Standards*, Part 35.