

Internal Use Only

INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS

MATERIAL and PROPERTY STANDARD FOR

REMOTE FLOOR BOX INDUSTRIAL WATER SUPPLY, AIR SUPPLY, DRAINAGE

PS 114-99^{e1}

I. PURPOSE

- 1.1** The purpose of this standard is to establish generally acceptable guidelines for in-floor boxes for distribution of temporary supplies (including potable water, compressed air, and electrical) and drainage. Its purpose is to serve as a guide for producers, distributors, architects, engineers, contractors, installers, inspectors and users; to promote understanding regarding materials, manufacture and installation; and to provide for identifying in-floor distribution boxes that comply with this standard.
- 1.2** The provisions of this standard are not intended to prevent the use of any alternate materials or method of construction provided any such alternate meets the intent of this standard.

2. SCOPE

- 2.1** This standard covers requirements for temporary supplies (including potable water, compressed air, and electrical) and drainage for in floor boxes. This standard covers physical requirements and other significant properties, in addition to methods of marking and identification.

3. GENERAL REQUIREMENTS

- 3.1** All electrical components shall comply with UL-508 and all pertinent National Electrical Code requirements for below grade locations.
- 3.2** All parts shall be removable for service from the inside of the floor box without removing the installed floor box.
- 3.3** The floor box shall be constructed in such a manner as to allow the installed floor box to be removed.
- 3.4** **Box Material Requirements:** PVC plastic used to manufacture the box shall meet the following requirements.

Density	1.36 - 1.40 g/cm ³	ASTM D792
Tensile strength at yield	8,000 - 9,000 pounds	ASTM D638
Elongation at break	24 - 45%	ASTM D638
Flexural modulus	380,000 - 430,000 psi	ASTM D790
Flexural strength at yield	7,000 - 13,000 psi	ASTM D790
Izod impact (notched)	0.8 - 2.5 ft lbs/ in	ASTM 256

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Shore hardness (D)	75 - 84	ASTM 2240
Heat deflection temperature	145 - 155 °F	ASTM D645
Vertical burn test	V-O	UL 94

- 3.5 Water Supply:** When water is supplied to the box the supply line shall comply with Chapter 6 of the Uniform Plumbing Code.

4. TESTING REQUIREMENTS

- 4.1 Drainage Test:** Remove the 3 inch strainer from the main drain. Install a stopper on the inside of the drain. Fill the main drain compartment (with the 3 inch drain) with 10 pounds of water. Remove the stopper from the 3 inch drain and verify that 10-W pounds (where W is defined by equation 1) of water drains in one (1) minute. Apply the same test using 10 pounds of water in each of the other two compartments (total of 20 pounds of water). Remove the two stoppers from the 1-1/2 inch drains. Verify that both sections drain a total of 20-W pounds (where W is defined by equation 1) of water within 3 minutes. Provide slip fittings external to the box for each drain and verify the fittings do not overflow when the panels are drained.

$$W = \frac{H \times A \times D}{(1728 \text{ cu in/cu ft})} \quad (\text{equation 1}) \quad \text{where for PVC} \quad W_{\text{PVC}} = W$$

H = height of meniscus (in) A = area to be drained (in²) and D = density of water (lb/cu ft)

- 4.2 Load Test:** The lid assembly shall withstand a maximum load of 32,000 pounds (16 tons) when tested in accordance with section 4.2.1. The lid assembly consists of the trim, frame and cover.
- 4.2.1 Setup -** Support the cover in the frame and set the frame in the trim with the gasket installed as it would be in a completed installation. Rigidly support the trim on a level surface. Place three dial indicators under the cover to measure deflection to the nearest 0.001 inch. Place the indicators on each side of the cover, 1/2 inch inside the edge of the frame or 1 inch from the top edge of the cover), and at the center of the cover.
- 4.2.2** Apply the load to the geometric center of the cover using a 1 inch x 16 inch rectangular device to apply the load. Place the loading device such that the 16 inch side is perpendicular to the side of the cover with hinges.
- 4.2.3 Preload -** Apply a preload to seat the gasket material so as not to skew the test results. Apply the preload by increasing the load from zero to 8,000 ±50 pounds over a period of 20 seconds. Maintain the 8,000 pound load for two minutes (120 ±2 seconds). Gradually release the 8,000 pound load over a 20 second period.
- 4.2.4 Main Load -** Zero all dial indicators. Increase the load from zero to 32,000 ±300 pounds over a period of 20 seconds. Hold the load for 30 ±5 seconds while recording the deflection values. Release the load over a 20 second period.
- 4.2.5 Deflection Data -** Record the deflection values within 30 seconds after the load reaches zero. Record the deflection values again every thirty seconds for the first five minutes, every

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