



EPS Water Absorption

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The most common test method to evaluate moisture absorption of rigid board insulation is based on a submersion condition that uses a 12"x12" piece of material that is submerged underwater for 24 to 96 hours, and then evaluated for moisture absorption by volume. Extruded Polystyrene (XPS) and Expanded Polystyrene (EPS) are commonly compared for volume % water absorption using this method. However, this test method is not useful to predict water content of any construction material in actual installed conditions since continuous immersed conditions will eventually render any insulation system ineffective.

XPS products publish water absorption after 24 hour immersion of 0.3% by volume, while EPS can be as much as 3.0% by volume. Put another way, if EPS has 3% absorption, it is 97% dry. It is evident that the water absorption for both products is very small, therefore having no impact on practical design.

While 3% may sound like a lot to some, there are actually several common construction items that have much higher typical water contents, which are displayed in the table below.

Common Construction / Household items	Typical Water Content (Vol%)	Maximum Water Absorption (Vol%)
Asphalt Roof Shingle	0%	1.0%
EPS Coffee Cup	0%	2.0%
Oriented Strand Board Sheathing (OSB)	6%	30%
Common Wood Stud	11%	30%
EPS in Insulated Concrete Forms	0%	3.0%
Concrete	0.5%	6.0%
Water Resistant Gypsum Sheathing	0.4%	5.0%

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