Permeability of OSB Structural Panels

The water vapor permeability or permeance of a structural wood panel is the rate at which water vapor will pass through the panel in the presence of a pressure gradient. The Structural Board Association\(^1\) contracted with Forintek Canada Corp to undertake a series of “wet cup” tests on oriented strand board (OSB) and waferboard panels in accordance with test procedures in ASTM E96, *Standard Test Methods for Water Vapor Transmission of Materials*. The chart below gives the permeance for a range of thicknesses from 7.5 mm (5/16”) to 15.5 mm (5/8”).

Panels with a water vapor permeance of 60 ng/Pa.s.m\(^2\) (1.0 perm) or less are permitted to be used as vapor barriers, while panels with a permeance of 120 ng/Pa.s.m\(^2\) (2 perms) or more are considered to pass sufficient water vapor that a wall cavity will dry out when constructed with green lumber. For example, nominal 15.5 mm (5/8”) or thicker OSB panels can be installed as subfloor over unheated spaces without the need of a separate vapor barrier\(^2\), while nominal 11 mm (7/16”) or thinner wall sheathing panels will allow a wall cavity containing green stud lumber and glass fiber insulation to reach an equilibrium moisture content below 19% in about 60 days.

This information was taken from a comparative study of wall sheathing performance by the University of Waterloo Building Engineering Group. (Waterloo, Ontario, Canada)

![Permeance of OSB vs. Panel Thickness](chart.png)

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1. The assets of the Structural Board Association were purchased by TECO in 2008, and included a series of Technical Bulletins like this one, the contents of which are provided here in their entirety.

2. Per the requirement in the 2005 National Building Code of Canada. The requirement is for “dry cup” results, which are typically lower than the tabulated “wet cup” results.