TECHNICAL BULLETIN

STRUCTURAL BOARD ASSOCIATION

Representing the OSB Industry

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ORIENTED STRAND BOARD FIRE PERFORMANCE

Summary

It has been determined by testing that wood structural panels, **OSB and construction plywood, have equivalent fire performance, therefore OSB can replace plywood in published wall and floor assemblies.**

TABLE 1

Assembly	Rating	Gypsum Thickness	OSB Thickness
Partition Wall (a)	14 min.	N/A	19/32", 5/8" 15 mm
Exterior Wall (b)	45 min.	1/2" 12.5mm	3/8", 7/16" 11.0 mm
Exterior Wall (c)	1 hour	5/8" 15.5mm	7/16" 11.0mm
Exterior Wall (d)	1 hour	5/8" 15.5mm	7/16" 11.0mm
Floor (e)	1 hour	5/8" 15.5mm	5/8" 15.5mm

1. All Cavities insulated with 3-1/2" Mineral Wool insulation. Studs are 16" on center and OSB is installed parallel to studs.
2. Assembly (a) has OSB on both sides.
3. Assemblies (b) & (c) have fire on the inside.
4. Assembly (d) has OSB on both sides of studs and covered by gypsum board on both sides under siding.
5. All gypsum board is "Type X" or higher.

Background

The National Building Code of Canada (NBCC) and the U.S. Model Codes specify that structural sheathing panels installed in combustible construction have a fire resistance rating depending on the building occupancy and the spatial separation between buildings.

Test Procedure

Using the Warnock Hersey Fire Laboratory (now part of Intertek Group plc), the Structural Board Association conducted a series of fire performance comparison tests of OSB versus CSP and sanded plywood in various wall assemblies. **These comparative tests showed that OSB had an equivalent or better fire performance for the same thickness than CSP plywood commonly used in Canada. In addition, full wall tests in accordance with ULC-S101 and ASTM-E119 Standard Methods of Fire Tests of Building Construction and Materials** were done on load bearing walls providing data for a 45-minute and 1 hour rating.

APA – The Engineered Wood Association sponsored similar tests in accordance with ASTM-E119 on full wall systems with similar results. These tests have allowed Underwriters Laboratories Inc. to issue the wall Design No. U356 for fires originating inside a building and Design No. U344 for fires on either side of the wall.

Recently, the North American consortium of fire researchers conducted tests on wall and floor systems using OSB and plywood at the National Research Council's fire laboratory further substantiating the equivalent performance of the two structural panels.

Additional Information

Tables in Volume 2 of the 2005 NBCC list a number of acceptable assemblies incorporating OSB which provide the fire resistance rating, typical sound transmission class and typical impact insulation class.

Conclusion

The test results provide assurance to designers and builders that OSB structural panels can be interchanged with structural plywood panels where fire endurance is required.