



M4-EXTERIOR SHEATHING

STRUCTURAL AND NON COMBUSTIBLE

COMPLYING WITH ICC-ES AC 386, AC376 AND AC269.2

ICC ES Report ESR 3840 – Florida Approved Building Product

Overview

M4 Exterior Sheathing formulation are with multiple layers of high strength premium alkali free glass fibre mesh, cement, proprietary composite materials and agents. Our raw materials are with the highest % purity and each batch is 3th part QC tested before shipped. Our unique and continuous R&D and extensive 3th. part testing allows us to be the leading producer of structural non-combustible sheathing. The board appears in grey or in off white colour as standard and has a hard and durable surface.

Stick Built:

Wood studs - Fire Rated, load bearing construction

The M4 ½" thickness has achieved a 1 hour load bearing fire resistance rating according ASTM E 119-15 on nominal 2" x 4" wood framing.



Wood studs - Racking Shear

The Allowable Racking Shear for M4 ½" sheathing according ASTM E 72, when installed on wood framing constructed from nominal 2x4 Douglas-fir Southern Grade No. 1 at stud spacing of 16" on center, fastened to the framing with 10D Common Nails, and installed per testing, was 458 plf. This allowable load was governed by the drift limit of 0.200 inches.

SIPs Built:

M4 as Thermal Fire Barrier for SIPs

M4 ½" thickness has been tested to K1 10 A2-s1,d0 (EN 14135) and CAN/ULC S124-06, Standard Method for the Evaluation of Protective Coverings for Foamed Plastic and M4 has Classification B.

Classification range A – D, If the temperature rise at the interface of the protective cover and the foamed plastic at the end of 10 min has not exceeded 140°C average or 180°C at any one of the thermocouples specified in the test standard, the protective cover shall be accorded a classification of B.

M4 Racking, Transverse, Axial loads for SIPs

Testing was conducted in accordance with ICC-ES AC04 Acceptance Criteria for Sandwich Panels, reference ASTM E 72. For the sampled ½" M4 7.25 foam core.

Racking Shear testing:

The Allowable Racking Shear was determined to be 552 lbs/ft.

Allowable load limited by Ultimate Load Achieved with a safety factor of 3.0 Applied.

Transverse load testing

10' Span, 1.5" Bearing L/360 Deflection (54 psf) L/240 Deflection (57 psf) L/120 Deflection (57 psf).

Average / 3 taken as allowable based on ultimate.

Axial load testing

Allowable Axial Compression based on Ultimate (6029 lbs/ft). Minimum of Test Values.



M4 Other testing:

Moisture resistant

The board can absorb and release moisture an unlimited number of times, without major softening changes in the board strength properties and the board has less than 0.15% moisture movement according ASTM D1037-99.

The board is vapor permeable.

Moisture absorption rate

The M4 samples was tested in a controlled climate with 94% RH and 72 F over 720 hours (30 days). Testing was performed together with samples from two significant boards suppliers. The test result of moist absorption rate was:

M4 after 3 days 15% other board suppliers 32%. equal to more than 100% higher moist absorption. After 10 days absorption, result were 22% for the M4.

M4 can be factory antiwater coated (as WRB) for exterior application so water absorption is below < 5%.

Resistant to Mold and Termites

According ASTM D3273-12 resistance to growth of Mold, the M4-Exterior Sheathing achieved a rating of 10 on a scale of 0 – 10, where 10 is the best possible result. Thus concluding the PH value makes the M4 board very resistant to attack by Termites, and Mold.

Corrosion Resistance to Metal

The M4-Exterior Sheathing is 100% Chloride ion free and does not have halogenide as a problem as for some other sheathing product like most Mgo boards and does not corrode aluminum, copper metals and steel screws and steel. Corrosiveness test was performed per section 13.8 of ASTM C665-12 and was performed over 720 hours insted of the standard of 96 hours, none of the metals had any corrosion sign compared to the control samples not connected to the M4 after the extended 720 hours testing.

TECHNICAL SPECIFICATIONS



Testing reports available upon request

DIMENSION

Length standard	Feet	8' 9' 10'
Width standard/max	Feet	3' 4'
Thickness standard	Inches	¼" 3/8" ½" 5/8" ¾"
Colors standard		Off white
Glass fiber mesh standard/max	fibre glass mesh	2 layer < 3/8"/> 3/8" 3–6 layers
Tolerance Thickness	ASTM C 1186-02	+/- 0.5%
Tolerance Length	ASTM C 1186-02	+/- 0.5%
Tolerance Width	ASTM C 1186-02	+/- 0.5%
Density, dry	ASTM C 1186-99	53 lb/ft3

FIRE PROPERTIES

Fire class material	ASTM E 84	Flame spread - index 10 or less
Fire class material	ASTM E 84	Smoke- index 5 or less
Fire class material	ASTM E 136	Non combustible
Load Rated Construction	ASTM E 119-15/CAN/ULC S101-07	1 hour on 2" x 4" wood studs

MOLD RESISTANCE 90 F +/- 2 RH 95-98% EXPOSED FOR 720 HOURS

5/8" thickness	ASTM D3273-12, scale 1-10 and 10 best	10
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FLEXURAL STRENGTH MODULUS OF ELASTICITY

¼" M4 Wet	ASTM C 1185-99	1632 psi
¼" M4 Dry	ASTM C 1185-99	1871 psi
5/8" M4 Wet	ASTM C 1185-99	1059 psi
5/8" M4 Dry	ASTM C 1185-99	1150 psi

WATER VAPOR TRANSMISSION (72F +/- 5% RH)

Z value 7/16"	EN 12572	0.351
Z value 5/8"	EN 12572	0.884

HYGROSCOPIC PROPERTIES

Absorption of humidity from air	72F – 94% RH exposed for 720 Hours	< 28%
Expansion from dry to wet	ASTM D 1037-99	< 0.15 %
Moisture content by delivery	ASTM 1185-99	< 20 %

CHLORIDE CONTENT

Content of Chloride	EN 14582: 2007	< 1 %
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THERMAL PROPERTIES

R value	m2xK/W	0.104
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SHEAR BOND STRENGTH

Dry set Portland cement	ANSI A118.1-99	54.8 psi
Latex-Portland Cement Mortar	ANSI A118.4-99	108.9 psi

BENDING STRENGTH

Bending strength	ASTM D 1037-99	> 7,2 MPa (>1050 psi)
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FASTENERS PULL THROUGH

¼" M4	ASTM D 1037-99	108.3 lbs
3/8" M4	ASTM D 1037-99	149.5 lbs
½" M4	ASTM D 1037-99	216.8 lbs
5/8" M4	ASTM D 1037-99	225.5 lbs

RACKING SHEAR RESISTANCE FOR ½" THICKNESS ACCORDING ASTM E72-14A AND LIMITING FACTOR OF DRIFT 0,200 "

Staple 0.5 crown with 16 in. o.c on 2" x 4 " lumber	Ultimate Load	5738 lbs
Staple 0.5 crown with 16 in. o.c on 2" x 4 " lumber	Safety factor 3/drift 0,200"	190 lbs/ft
S-12 Rock on with 16 in. o.c on 1 5/8" x 3.5" 18 Gauge	Ultimate Load	7805 lbs
S-12 Rock on with 16 in. o.c on 1 5/8" x 3.5" 18 Gauge	Safety factor 3/drift 0,200"	243 lbs/ft
10 D nails 16 in. o.c. on 2"x 4" lumber	Ultimate Load	13180 lbs
10 D nails 16 in. o.c. on 2"x 4" lumber	Safety factor, drift 0,200"	3667 lbs

HUMIDITY DEFLECTION

ASTM C 1396-02	< 1/16"
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COMPRESSION INDENTATION

ASTM D2394-83	0.01" (1/4") – 0.02" (5/8")
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FALLING BALL IMPACT

ASTM D1037-99	Pass
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FREEZE THAW RESISTANCE

ASTM C666-97	Pass
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SOUND INSULATION

>43dB if using: ½" M4 Exterior Sheathing + 1.97" Rockwool + : ½" M4 Exterior Sheathing

