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CARLISLE COATINGS & WATERPROOFING

WALL INSULATION

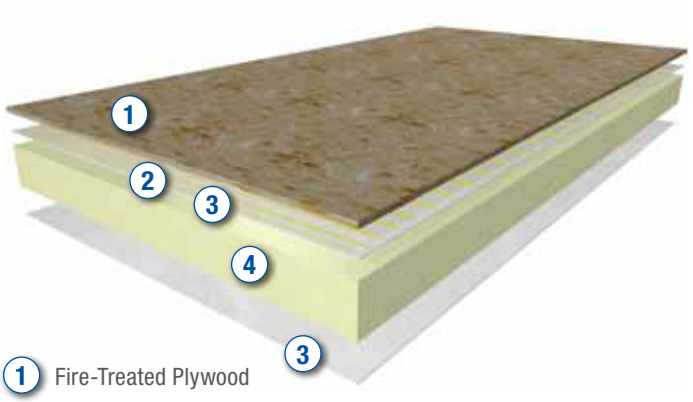
R2+® Base Commercial Grade Insulating Nail Base

Description

R2+ BASE is an insulating nail base designed for use in commercial construction above-grade wall applications. The product consists of a coated-glass-faced rigid polyisocyanurate insulation board of various thicknesses factory-laminated to a ⅝" fire-treated plywood facer. R2+ BASE is provided in 4' X 8' boards which are erected and fastened in place using common wood working tools and techniques. R2+ BASE provides continuous insulation and a nail base in one installation. The product is ideal for use under common thin-veneer cladding systems such as stucco, corrugated metal and fiber cement siding. R2+ BASE incorporates a kiln-dried, fire-treated plywood, making it a friendly surface for CCW's membrane air barriers. R2+ BASE has been fire-tested to NFPA 285 and passes this tough test in many wall assemblies. CCW provides R2+ BASE Insulating Nail Base, R2+ accessories and CCW air/vapor barrier membranes for a complete wall weatherization system.

Features and Benefits

- Passes NFPA 285 in many wall assemblies, including WRB membrane and practical window details
- Plywood facing can hold lightweight cladding systems, eliminating the need for cladding attachment all the way to stud or structure
- Simple solution to providing continuous insulation under thin veneer cladding systems
- Incorporates APA-TECO Rated Exposure Fire-treated Plywood - provides improved dimensional stability and fire performance
- Provides sheathing, nail base and thermal barrier in one installation
- High R-value per inch – enables thinner board to be used, while still meeting code requirements
- Meets wall assembly continuous insulation (ci) requirements prescribed by International Building Code
- Multiple thicknesses provide fine-tuned R-value
- Factory-controlled thickness and composition
- Requires no special tools or equipment for installation – cut to size and fasten boards in place with standard woodworking tools and techniques
- Manufactured in multiple plants across the U.S. – ready product availability and LEED® regionally sourced material
- Part of a full weatherization system by CCW – takes the guesswork out of installation procedures and product compatibility



1. Fire-Treated Plywood
2. Laminating Adhesive
3. Coated Glass Facer
4. Closed-cell Polyisocyanurate Foam Core

Typical Properties

Property	Method	Results
Compressive Strength	ASTM D1621	20 psi*
Thermal Resistance (R-value) [units: °F•ft²•h/ Btu]	Tested at 75°F mean temp as per ASTM C 518 according to the requirements of ASTM C 1289	1.6" – 6.6 2.1" – 9.6 2.6" – 12.7 3.1" – 15.9 3.6" – 19.1 4.1" – 22.3
Surface Burning, Polyiso Foam Core	ASTM E 84/ UL 723	Flame Spread <75, Smoke Generated <450
Surface Burning, Fire-Treated Plywood	ASTM E 84/ UL 723	Flame Spread <25, Smoke Generated <450
Water Vapor Permeance (1" thickness)	ASTM E96	<1 Perm
Resistance to Mold	ASTM D 3273	Passes (10)
Water Absorption	ASTM C209	<0.1% volume
Dimensional Stability	ASTM D2126	2% linear change (7 days)
Edge	—	Square
Service Temperature	—	-100°F to 250°F

* Also available in 25 psi compressive strength

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FIRE RESIST

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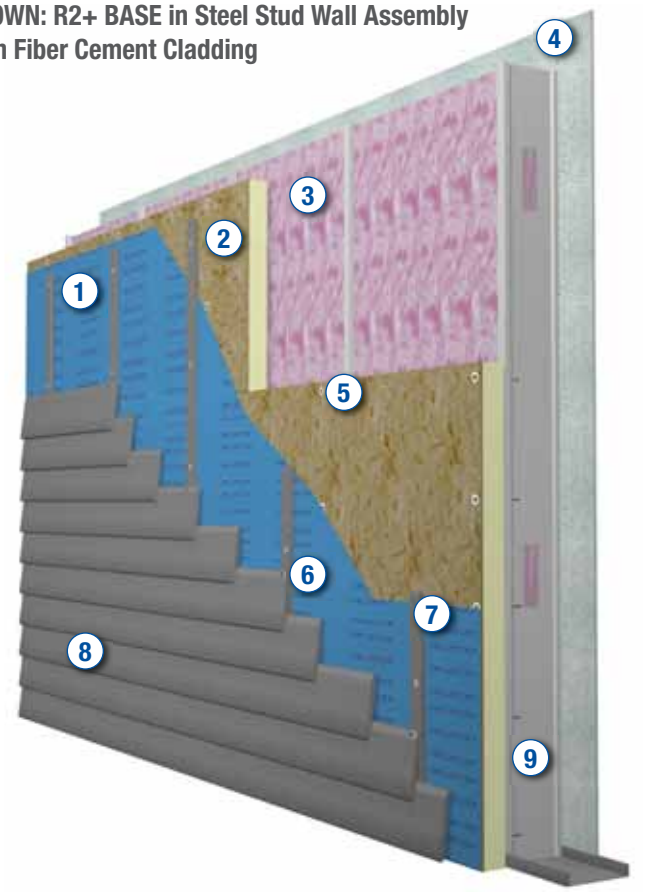
SHOWN: R2+ BASE in Steel Stud Wall Assembly with Fiber Cement Cladding



1. CCW Membrane Air Barrier
2. R2+ BASE Commercial Grade Insulating Nail Base
3. Stud Cavity Insulation
4. Interior Finish
5. Approved Fasteners and Spacing (Into Studs)
6. Furring Strips and Siding Fastened to Plywood Nail Base
7. Furring Strip to Provide Drainage Space Behind Siding
8. Fiber Cement Siding or Other Thin Veneer Non-Combustible Cladding
9. Steel Stud

Installation

Install R2+ BASE in accordance with these instructions and CCW's published R2+ BASE detail drawings.

Inspection:

- Wall surfaces shall be sound, dry, plumb and free of irregularities that would prevent snug fastening of R2+ BASE to substrate.
- Studs shall be sound, dry plumb. Studs shall be spaced and braced laterally according to code and project requirements.

Erecting R2+ Base Panels:

- Provide separation of the edge of R2+ BASE from concrete at grade with pressure-treated lumber sill plate, sill gasket or non-permeable flashing material.
- Begin at base of wall from firm, permanent support.
- Fasten R2+ BASE with proper fasteners and spacing to accommodate the design. Fasten R2+ BASE to the structure using CCW approved SIPs fasteners or similar hardware driven into steel studs, wood studs, concrete or CMU substrate. Fastening shall be approved by a structural engineer, as the fastening method must be sufficient to secure both the weight of the R2+ BASE and the weight of the cladding for the project conditions.
- Apply R2+ BASE in 4' or 8' lengths running horizontally. Offset board joints between rows at a 6" minimum (no 4-corner intersections).
- Saddle cut or L cut R2+ BASE to fit openings and projections. R2+ BASE boards can be cut with a table saw and other standard wood-working tools.
- Allow a minimum ⅛" and maximum ¼" gaps between boards (to accommodate hygric movement of wood). Fasten boards tightly to provide a flush, level surface.

WRB and Cladding:

After installation, R2+ base shall be covered with a CCW membrane air barrier, or with an approved water resistive barrier (WRB) by others. Cladding can be secured by fastening into the fire-treated plywood face of R2+ BASE. If stucco, cultured stone or other thin, adhered veneer is installed over R2+ BASE, follow APA guidelines to prevent cracking of cladding.

Limitations

- R2+ BASE is not a structural sheathing and cannot be used for bracing or adding shear strength to walls.
- Not intended as a wear-resistant or traffic-resistant surface – cover with approved cladding system.
- Combustible, not rated for permanent exposure. Must be covered with approved cladding or thermal barrier.
- Do not use on exterior side of below-grade construction, on plaza decks or or in areas where contact with ponding water is expected.
- In termite-infested areas, maintain separation of R2+ BASE from grade according to code requirements.
- Do not leave exposed to sunlight longer than 60 days without installation of WRB.
- Do not install CCW membrane air barriers over plywood surface if wood moisture content is 20% or higher.
- R2+ BASE must not be exposed to open flame.

Storage

Keep product clean and dry during storage to facilitate installation. Store R2+ BASE pallets in an area protected from moisture and direct sunlight. For outdoor storage exceeding 60 days, cover pallets with breathable, waterproof tarpaulins and elevate pallets above ground level a minimum of 4".

Packaging

R2+ BASE is provided in 4' X 8' boards with 5/8"-thick fire-treated plywood. R2+ BASE is also available with 3/4" plywood on special order. CCW R2+ BASE boards are stacked on 4' X 8' pallets and double-packaged in UV-resistant polyethylene bags.

R2+ BASE 4' X 8' Boards, Square Edge

Thickness			R-value	Grade	PCS/Pallet	SQ FT/Pallet	LB/SQ FT	LB/4X8 BD	Weight/Pallet
ISO	PLY	TOT							
1"	0.625"	1.625"	6.6	20 or 25 psi	30	960	2.18	70	2,093
1.5"	0.625"	2.125"	9.6	20 or 25 psi	22	704	2.27	72	1,593
2"	0.625"	2.625"	12.7	20 or 25 psi	18	576	2.36	76	1,359
2.5"	0.625"	3.125"	15.9	20 or 25 psi	15	480	2.44	78	1,171
3.0"	0.625"	3.625"	19.1	20 or 25 psi	13	416	2.52	81	1,047
3.5"	0.625”	4.125”	22.3	20 or 25 psi	11	352	2.62	84	922

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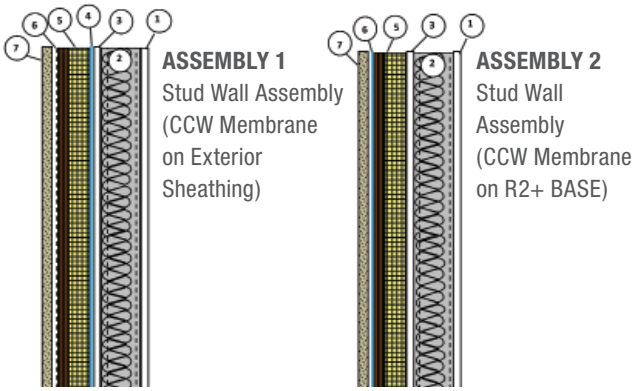
Codes and Compliances

- ASTM C 1289 Type V
- 2012 International Energy Conservation Code Table C402.2 Opaque Thermal Envelope Requirements and Section C402.4.1.2.1 Air Barrier Materials
- International Building Code Chapter 26, Plastic Foam Insulation
- DRJ Engineering TER 1407-1. Suitable for Type I-IV construction
- 2010 ASHRAE 90.1 Table 5.5.1 through Table 5.5.8 Building Envelope Requirements by Climate Zone and Section 5.4.3.1.3 Acceptable Air barrier Materials and Assemblies
- Passes NFPA 285 full wall burn test in several configurations. Summary of approved assemblies appears in Figures 3 and 4 and in Tables 1 and 2.

Figure 3

R2+ BASE Stud Wall Systems



ASSEMBLY 1
Stud Wall Assembly (CCW Membrane on Exterior Sheathing)

ASSEMBLY 2
Stud Wall Assembly (CCW Membrane on R2+ BASE)

Table 1

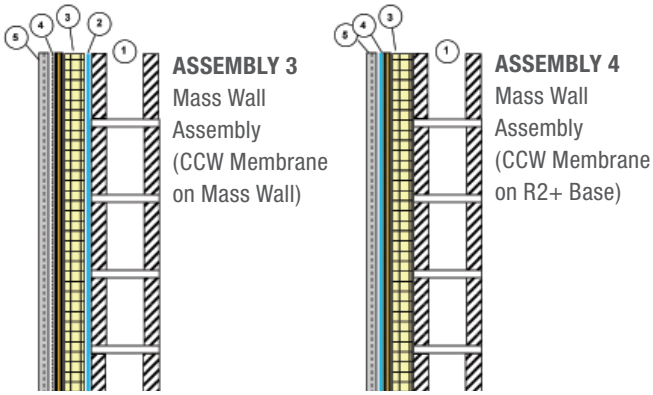
NFPA 285 Walls - R2+ BASE Steel or Fire Retardent Treated Wood (FRTW) Stud Wall Systems

Layer	Assembly 1	Assembly 2
1. Base Wall System	Steel or FRTW studs, 16" or 24" o.c. minimum nominal 2' X 4' dimension 5/8" type X gypsum wallboard on interior	
2. Stud Cavity Insulation	Fiber glass, mineral wool, Bayer EcoBay™ CC or BASF® Walltite spray foam up to depth of stud or none	
3. Ext. Sheathing	1/2" or 5/8" exterior grade gypsum. OR FRTW structural panel	1/2" or 5/8" grade exterior gypsum sheathing, FRTW structural panel or none
4. Membrane Air Barrier over Exterior Gypsum Sheathing*	Fire Resist 705FR-A, Fire Resist Barritech VP, Fire Resist Barritech NP, Fire Resist 705 VP	
5. Insulating Nail Base	R2+ BASE, minimum 1 5/8", maximum 4 1/4" thick	
6. WRB over Insulating Nail Base*	Mechanically attached building wrap or paper	Fire Resist 705FR-A, Fire Resist Barritech VP, Fire-Resist Barritech NP Fire Resist 705 VP
7. Exterior Cladding	Cement Stucco, Cultured Stone, Thin Brick, Fiber Cement Siding, Aluminum Composite Panels, Terra Cotta Rainscreen, Sheet Metal, Aluminum Honeycomb Core Stone Veneer, Autoclave Aerated Concrete, Natural and Artificial Stone, Concrete or Clay Brick	

* Consult CCW for approval of other WRB products

Figure 4

R2+ BASE Mass Wall Systems



ASSEMBLY 3
Mass Wall Assembly (CCW Membrane on Mass Wall)

ASSEMBLY 4
Mass Wall Assembly (CCW Membrane on R2+ Base)

Table 2

NFPA 285 Walls - R2+ BASE Mass Wall Systems

Layer	Assembly 3	Assembly 4
1. Base Wall System	Cast-in-place concrete, tilt-up concrete or concrete masonry unit (CMU)	
2. Membrane Air Barrier on Exterior side of Mass Wall*	Fire Resist 705FR-A, Fire Resist Barritech VP, Fire Resist Barritech NP Fire Resist 705 VP	None
3. Insulating Nail Base	R2+ BASE, minimum 1 5/8", maximum 4 1/4" thick	
4. WRB over Insulating Nail Base*	Mechanically-attached building wrap or paper	Fire Resist 705FR-A, Fire Resist Barritech VP, Fire Resist Barritech NP Fire Resist 705 VP
5. Exterior Cladding	Cement Stucco, Cultured Stone, Thin Brick, Fiber Cement Siding, Aluminum Composite Panels, Terra Cotta Rainscreen, Sheet Metal, Aluminum Honeycomb Core Stone Veneer, Autoclave Aerated Concrete, Natural and Artificial Stone, Concrete or Clay Brick	

* Consult CCW for approval of other WRB products

Note: Not all approved materials and products are shown in Tables 1 & 2. Full list appears in CCW's Wall Assembly Design Guide and in R2+ BASE Detail Drawings

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