

SCIENCE. SERVICE. SOLUTIONS.



# WALL INSULATION

## R2+® Polyiso Foam Board Wall Insulation



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## R2+ Wall Insulation

Energy efficiency is no longer a goal it's a standard—a standard that is constantly being raised. In fact, the provisions of the 2012 International Energy Conservation Code (IECC) are designed to produce buildings at least 30% more energy efficient than those built under the 2006 IECC. With building codes and standards constantly changing, the use of energy-efficient building products has never been more important.

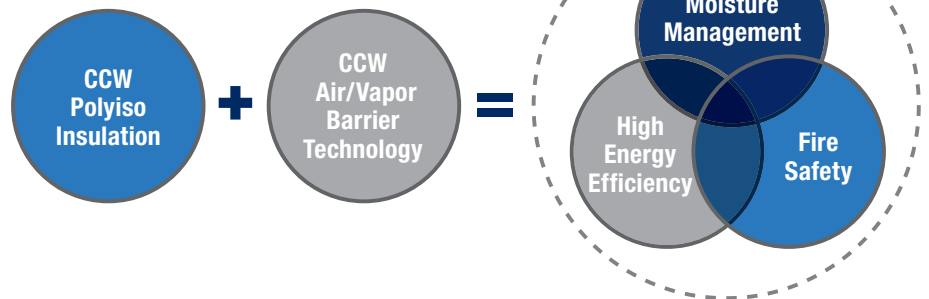
Since the beginning, Carlisle Coatings & Waterproofing Incorporated (CCW) has provided the commercial construction industry with the most high-performance, energy-efficient waterproofing and air and vapor barrier systems on the market.

While waterproofing membranes and air and vapor barriers play a significant role in the energy system of the building envelope, insulation is also vital to creating a total building envelope that will reduce long-term energy costs. That is why CCW is now offering a full product line of continuous insulation for use in interior and exterior wall structures.

Introducing R2+, a line of polyiso board foam products ideal for providing continuous insulation for wood frame, steel stud, CMU and masonry exterior wall construction.

# R2+

Insulation, Weatherization + More



### What is Continuous Insulation?

According to model energy codes, continuous insulation (ci) is “insulation that runs continuously over structural members and is free of significant thermal bridging”. Thermal bridging can rob insulation of more than half of its nominal R-value.

“Ci” can be installed on the interior or the exterior side of the wall assembly. Polyiso foam board insulation is an excellent choice for “ci” because of its high R-value per inch, excellent moisture resistance, rigidity and ease of installation. Building code also requires that wall assemblies in non-combustible (Type I-IV), multi-story construction be tested to NFPA 285.

Code requirements for continuous insulation are increasing. The ASHRAE 90.1 2010 Standard requires nonresidential wall insulation assemblies to include “continuous exterior insulation” across all climate zones. With these ever-increasing building codes and efficiency requirements, CCW’s R2+ product line offers a long-lasting energy-efficient solution for virtually any interior or exterior wall application.

### Energy Efficiency

CCW’s R2+ continuous wall insulation products will work together with CCW air and vapor barrier systems to create a total wall system that not only protects the interior of the building from moisture infiltration and water migration but also keeps the building well insulated, reducing the heating and cooling requirements and thereby minimizing long-term energy and operating costs.

CCW R2+ is a polyiso insulation, which has the highest R-value per inch of any insulation on the market. This significantly increases the thermal efficiency of the building while also reducing waste on the jobsite. Because of its high R-value per inch, polyiso requires less material than many other insulation products, reducing the cost of construction and the building’s environmental impact. An insulation with higher R-value per inch also facilitates compliance with building codes by making the best use of limited space in the wall cavity.

## Fire Resistance & NFPA 285

While foam insulation and membrane air barriers provide enhanced building envelope performance, they are also combustible. In commercial building construction of primarily non-combustible materials, the addition of combustible materials to the assembly prompts various fire tests by IBC, especially when the wall assembly in “non-combustible” multi-story wall construction (Type I-IV) contains combustible cladding, insulation or membrane. In this instance, the IBC requires an NFPA 285 full wall burn test.

CCW’s R2+ polyiso insulation and CCW’s Fire Resist membrane air barriers enable the addition of high R-value continuous insulation plus a generous 40-mil membrane to the wall assembly without compromising fire safety. CCW’s R2+ insulation and Fire Resist membrane air barriers have been vigorously tested to ensure they meet and exceed the industry standards and code requirements for commercial construction.

Furthermore, NFPA 285 walls that incorporate R2+ insulation do not require fire blocking at the widow head condition. Due to its thermoset chemistry, polyiso burns slowly when exposed to fire but stays in place. This offers an advantage over thermoplastic foams, such as polystyrene, which typically require fire blocking at the window head because they melt and burn when exposed to flame. Fire blocking adds significant cost and complexity to construction, as shown here.

CCW currently offers more than 1,000 NFPA 285 compliant wall assemblies with R2+ insulation, and the selection continues to grow as testing continues. CCW’s experienced staff of design and technical experts are available to walk you through the options to determine which assembly is the right choice for your building.

## Potential LEED® Credits for Polyiso

### Energy and Atmosphere

Minimum Energy Performance, Optimize Energy Performance

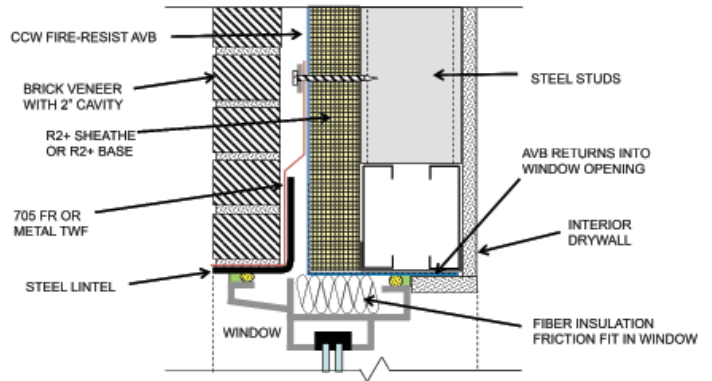
### Materials & Resources

Building Reuse, Construction Waste Management, Recycled Content, Local and Regional Materials, FSC Wood Products

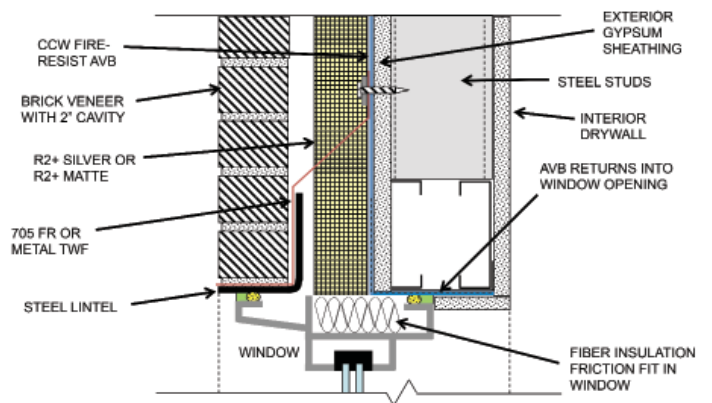
### Innovation and Design

## R2+ Window Head

### Insulating Sheathing Directly Over Steel Studs

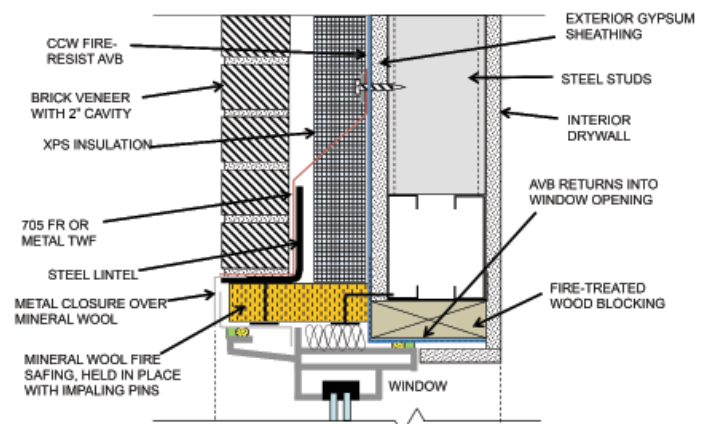


### Gypsum Sheathing Over Steel Studs



## XPS Window Head

### Fire Blocking Across Window Head



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### Why Choose CCW R2+?

- Highest R-value per inch of any insulation
- Best fire resistance of any plastic foam board insulation
- More than 1,000 assemblies that are NFPA 285 compliant
- Lightweight and easy to install
- Enhanced moisture resistance – closed-cell foam core with moisture-resistant facers
- Part of a complete wall protection package by CCW - tailored to provide the right insulation, weatherization and fire safety compliance on your project

### Manufacturing Locations

Manufactured in seven plants throughout the USA by Carlisle Construction Materials, the largest manufacturer of polyiso foam in North America.

1. Kingston, NY
2. Smithfield, PA
3. Franklin Park, IL
4. Lake City, FL
5. Terrell, TX
6. Tooele, UT
7. Puyallup, WA





## Code Compliance

- CSI Masterformat™ 2004 Sections
  - 04 27 23 Masonry Cavity Wall Insulation (R2+ SILVER & R2+ MATTE)
  - 06 16 13 Insulating Nail Base (R2+ BASE)
  - 07 21 13 Foam Board Insulation (R2+ SILVER, R2+ MATTE, R2+ SHEATHE)
  - 07 27 23 Board Product Air Barriers (R2+ SILVER, R2+ SHEATHE w/joints sealed and details flashed)
- Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board ASTM C1289, Grade 2 (20 psi) and Grade 3 (25 psi)
- 2012 International Building Code (IBC) Section 2603 Plastic Foam Insulation
- 2012 International Energy Conservation Code (IECC)
  - Table C402.2 walls above-grade continuous insulation “ci”
  - Section C402.4.1 Air Barriers
- 2010 ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings
  - Tables 5.5-1 through 5.5-8 walls above-grade continuous insulation “ci”
  - Section 5.4.3.1 Continuous Air Barrier

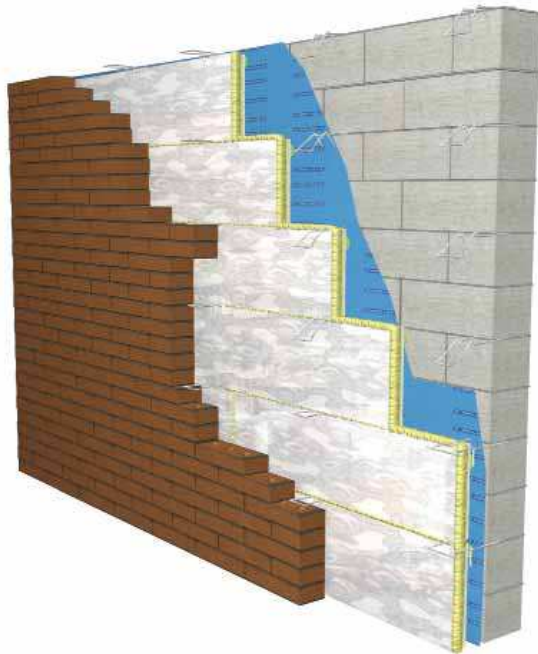
# WALL INSULATION

## R2+ Wall Insulation

### R2+ Insulation Wall Assemblies

#### R2+ Silver

##### Foil-Faced Polyiso Insulation



- Closed-cell polyiso foam core with tri-laminate foil facers on both sides
- Continuous insulation suitable for many wall assemblies
- Qualifies as an “air barrier material” according to IECC 2012 and 2010 ASHRAE 90.1
- R-values of 6.7–24.6
- Available thicknesses: 1”–3.5”
- Offered in 4' x 8', 16" x 8' and 24" x 8' boards
- Suitable for masonry cavity wall applications
- Flame spread <75, Smoke Generation <450 (burn test of polyiso core), ASTM E84

*Note: R2+ Silver is not suitable for exposed interior applications.*

#### R2+ Matte

##### Coated-Glass-Faced Polyiso Insulation

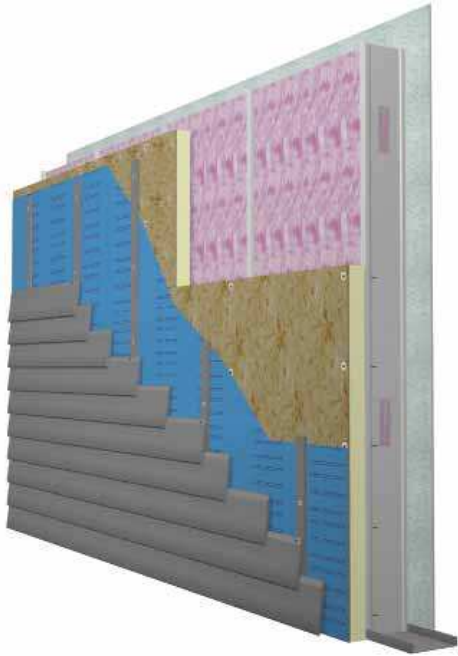


- Closed-cell polyiso foam core with coated glass facers on both sides
- Continuous insulation suitable for many commercial wall assemblies
- R-values of 6.0–21.7
- Available thicknesses: 1”–3.5”
- Offered in 4' x 8', 16" x 8' and 24" x 8' boards
- Flame spread <75, Smoke Generation <450 (burn test of polyiso core), ASTM E84

*Note: R2+ Matte is not suitable for exposed interior applications.*

## R2+ Base

### Commercial Grade Insulating Nail Base



- Closed-cell polyiso foam core with coated glass facers, laminated to fire-treated plywood
- Optimal substrate for mechanically attaching cladding materials
- Insulating nail base, suitable for many commercial wall assemblies
- Polyiso foam core: Flame Spread <75, Smoke Generation <450, ASTM E84
- Fire-treated plywood: Flame Spread <25, Smoke Generation <450, ASTM E84
- R-values of 6.6–19.1
- Available thicknesses of 1.6"–3.7" (5/8" fire-treated plywood with 1"–3"-thick polyiso)
- FSC Certified wood available
- R2+ BASE is not suitable for exposed interior applications

## R2+ Sheathe

### Foil-Faced Polyiso Insulating Sheathing



- Enhanced fire-resist, closed-cell polyiso foam core with embossed aluminum facers, one side silver, one side white
- Continuous insulated sheathing, suitable for many commercial wall assemblies
- Qualifies as an "air barrier material" according to IECC 2012 and 2010 ASHRAE 90.1
- Provides an air barrier and water resistant barrier with secure fastening, taping of joints and flashing of details
- Can be installed directly on steel studs in a variety of wall assemblies without the need for exterior gypsum sheathing
- Can be installed with the reflective or the matte side facing the exterior
- Flame Spread <25, Smoke Generation < 450, ASTM E84
- R-values of 6.3–19.5
- Available thicknesses: 1'–3.1', optimized thicknesses available for compliance with local code requirements
- UL Classified

*Note: R2+ Sheathe is not suitable for exposed interior applications.*

## R2+ Accessories

- Insulation Adhesive: CCW LM-800XL solvent-based synthetic rubber
- Insulation Joint Tape: CCW FOIL-GRIP™ 1402 17-mil foil/butyl tape
- Detail flashing: Fire Resist CCW-705FR 40-mil glass-backed foil/butyl
- Transition Membrane: CCW Sure-Seal® Pressure-Sensitive Uncured Elastoform
- Fasteners: Plastic Capped Screws as recommended by CCW\*
- Portable Can Foam: as recommended by CCW\*

*\*CCW has tested and verified of these components by other manufacturers. Consult CCW specifications and details for latest list of approved products.*

## CCW Fire Resist Membrane Air Barriers

- CCW-705FR 40-mil Self-Adhered Sheet Air & Vapor Barrier
- Barritech NP™ 40-mil Spray/Roller-Applied Air & Vapor Barrier
- Barritech VP 40-mil Spray/Roller-Applied Vapor-Permeable Air Barrier

## Limited Warranty

Carlisle Coatings & Waterproofing, Incorporated (Carlisle) warrants this product to be free of defects in workmanship and materials only at the time of shipment from our factory. If any Carlisle materials prove to contain manufacturing defects that substantially affect their performance, Carlisle will, at its option, replace the materials or refund its purchase price.

This limited warranty is the only warranty extended by Carlisle with respect to its materials. There are no other warranties including the implied warranties of merchantability and fitness for a particular purpose.

Carlisle specifically disclaims liability for any incidental, consequential or other damages including, but not limited to, loss of profits or damages to a structure or its contents arising under any theory of law whatsoever.

The dollar value of Carlisle's liability and buyer's remedy under this limited warranty shall not exceed the purchase price of the Carlisle material in question.

## Carlisle Coatings & Waterproofing

900 Hensley Lane | Wylie, TX 75098 | 800.527.7092 | [www.carlisleccw.com](http://www.carlisleccw.com)

