

CAHP Master Builder

Product Catalogue



Table of Contents

1 INTRODUCTION	1
1.1 About This Catalogue	1
1.2 Workforce Instruction for Standards and Efficiency.....	1
1.3 Disclaimers	1
2 TYPES OF RIGID FOAM INSULATION	2
2.1 Expanded Polystyrene Foam	2
2.2 Extruded Polystyrene Foam	2
2.3 Polyisocyanurate	2
3 HIGH PERFORMANCE ATTIC PRODUCTS AND ASSEMBLIES	3
3.1 Above Deck Roofing Products	3
<i>Green Hybrid Roofing</i>	<i>3</i>
<i>EternaTile.....</i>	<i>3</i>
<i>Wedge-It.....</i>	<i>4</i>
<i>THERMAX by Dow.....</i>	<i>4</i>
3.2 Below Deck Insulation Products.....	5
<i>Johns Manville Unfaced Fiberglass Batts</i>	<i>5</i>
<i>Owens Corning Boxed Netting.....</i>	<i>5</i>
4 HIGH PERFORMANCE WALLS PRODUCTS AND ASSEMBLIES	6
4.1 Full Wall Assemblies.....	6
<i>Owens Corning Wall Products</i>	<i>6</i>
<i>Johns Manville Wall Products.....</i>	<i>6</i>
<i>Dow Wall Products</i>	<i>7</i>
4.2 External Rigid Insulation.....	7
<i>C-SIS Sheathing System.....</i>	<i>7</i>
<i>Insulfoam’s Continuous Insulated Panel.....</i>	<i>8</i>
<i>Huber Engineered Woods’ Zip System R-Sheathing</i>	<i>8</i>
<i>ThermaCork</i>	<i>9</i>
4.3 Insulated Cladding Products.....	9

	<i>HardiPlank Lap Siding with Insulation</i>	9
	<i>Crane Insulated Siding by AXIALL</i>	10
	<i>U-Stucco</i>	10
4.4	SIPS	11
	<i>Insulfoam’s Structurally Insulated Panel</i>	11
4.5	Exterior Insulation Finish System (EIFS)	11
	<i>Dryvit</i>	12
	<i>One Coat Stucco</i>	12
4.6	Insulated House Wrap.....	13
	<i>DuPont™ Tyvek® ThermaWrap® R5.0</i>	13
5	PRODUCT AND MANUFACTURER RESOURCE LISTING	14

I INTRODUCTION

1.1 About This Catalogue

TRC Energy Services, implementers of the California Advanced Homes Program (CAHP) Master Builder initiative for Pacific Gas and Electric, San Diego Gas and Electric, Southern California Edison and Southern California Gas Company, created this catalogue to assist builders in planning, designing, and constructing *high performance attics* and *high performance walls*. This catalogue lists products and building assemblies that builders could use to comply with Title 24 standards—specifically for high performance attics and walls. We do not intend for this catalogue to be a complete list of available products, and we will add new manufacturers, products, and assemblies as they become available. Please contact us at BBaxter@trcsolutions.com for any questions, or to alert us to new product information.

On January 1, 2017, the 2016 building energy efficiency standards contained in California’s Title 24 new construction building codes go into effect. These new codes include requirements for meeting greater levels of energy efficiency; builders can achieve the necessary building envelope efficiency by incorporating high performance attics and high performance walls into the design and construction of new single family homes. CAHP Master Builder recognizes early adopters of advanced design and building practice, and provides one-on-one assistance and cash incentives for constructing both high-performance attics and high performance walls in advance of the effective 2016 code change.

1.2 Workforce Instruction for Standards and Efficiency

CAHP Master Builder works alongside the [Workforce Instruction for Standards and Efficiency](#) (WISE) program to support the transition of California’s new residential building standards. WISE provides training for homebuilders, contractors, and manufacturers to help to drive code compliance and successful implementation of high performance attics and walls. The California Energy Commission has chosen the California Homebuilding Foundation, along with ConSol and a team of industry experts, to implement WISE. The project launched in 2016 and will continue through 2019. For more information about WISE, please contact John Morton at JMorton@ConSol.ws.

1.3 Disclaimers

This catalogue does not review, nor endorse any product listed. It serves as a reference for builders, architects, and planners when developing new construction projects and considering Title 24 requirements. Through conversations with manufacturers’ company representatives and a literature review of manufacturer documents, TRC obtained the majority of the content in the catalogue. TRC does not claim that the information is accurate, and we strongly recommended that builders thoroughly vet listed products before use.

2 TYPES OF RIGID FOAM INSULATION

Type	R-value/inch	Permeance (Perms)	Climate Use
Expanded Polystyrene (EPS)	3.2 – 4.4	2.0 – 5.0	All climate, cold climate
Extruded Polystyrene (XPS)	4.6 – 5	1.0	All climate, cold climate
Unfaced Polyisocyanurate	6.0	2.8 – 4.5	All climates
Foil Faced Polyisocyanurate	6.5	0.0	All climate, hot humid

Table 1: Rigid Foam Insulation Types

2.1 Expanded Polystyrene Foam

Expanded polystyrene foam (EPS) is the material used for Styrofoam™ cups. It has an R-value of R-4 per inch. To manufacture EPS, polystyrene balls are placed into a mold, and then heat and pressure are applied to expand the balls so they fuse together, producing a smooth surface. EPS provides a good substrate for adhering stucco, and is not moisture resistant. EPS is usually less expensive than other types of foam insulation, and is widely used by California builders.

Many companies, including (but not limited to) Owens Corning and Insulfoam, manufacture EPS. Builders can find EPS most anywhere building supplies are available, as a number of manufacturers produce EPS.

2.2 Extruded Polystyrene Foam

Extruded polystyrene foam (XPS) has an R-value of R-5 per inch. XPS is manufactured when hot polystyrene enters an extruding machine and produces a homogenous closed cell cross section. Its surface is not as smooth as EPS, and may need some sanding before adhering stucco. XPS is moisture resistant, and in the right locations and used in the right way, can be counted as a vapor barrier. XPS is more expensive than EPS and is commonly used on the inside walls of basements.

The following companies make products from XPS: Owens Corning, Dow, Kingspan, and Arkema. These companies do not make EPS—usually, a company makes one or the other.

2.3 Polyisocyanurate

Polyisocyanurate, or Polyiso, is a thermoset plastic typically produced as a foam and used as rigid thermal insulation. It has an R-value of R-5-6 per inch, the highest R-value for foam insulation, and also the most expensive. Polyiso must be used with a skin as it needs to adhere to a material. The facing material must be on both sides and can be made of a variety of materials. Sometimes the facing material also works as a radiant barrier.

The following companies make products from Polyiso: Owens Corning, Dow, Kingspan, and Arkema. More information on polyiso is available at www.polyiso.org.

3 HIGH PERFORMANCE ATTIC PRODUCTS AND ASSEMBLIES

3.1 Above Deck Roofing Products

Green Hybrid Roofing



Figure 1: Green Hybrid Roofing

<http://ensoltisghr.com/>

Green Hybrid Roofing is an insulating foam core roofing material. It is an EPS polystyrene core wrapped with a fiberglass scrim and covered with a 1/8 inch thick cementitious base coat and a 1/16 inch cementitious top coat. It has virtually identical aesthetic characteristics to conventional concrete and clay tiles, but provides better heat and cold temperature insulation than conventional tiles. This roofing material is half the weight of conventional roof tile and five times as durable. When installed using standard roofing components, Hybrid Roofing materials will have an R-value of 7 for the product and R-4 per inch.

This product is currently on the market and is available for installation.

EternaTile

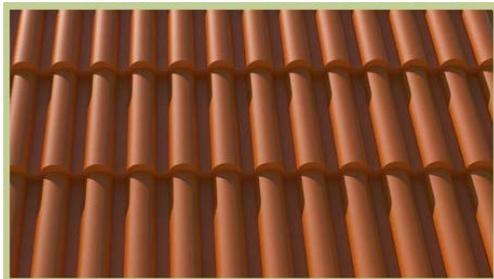


Figure 2: EternaTile

www.ternatile.com

EternaTile is an insulating polyurethane foam roofing system. Its core is comprised of 3-lb. or 4-lb. polyurethane closed cell foam with an average thickness of 2.5 inches, equivalent to an R-value of R-14 or R-17, respectively. It is wedge shaped and there are no gaps underneath the tile; it does not break or crack when stepped on and it is easy to repair. It is 1/10th the weight of slate, cement and asphalt tiles. EternaTile is available in four different styles and a variety of colors and comes with a lifetime warranty.

A new product, EternaTile is expected to be available summer, 2016.

Wedge-It

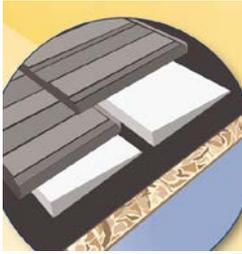


Figure 3: Wedge It

www.gowedge.com

Wedge-It is a wedge of EPS installed under roof tiles. Wedge-It has an R-value of R-4 per inch. Designed by a roofer to increase the roof's load-bearing capacity, when properly installed under tile roofs it can more than double the load-bearing capacity of that roof. It is installed over the top of the tar paper between battens, no fasteners are required as the roofing tile holds the Wedge-It in place. Wedge-It requires a 1"-2" clearance between each batten to allow proper water drainage and, therefore, does not provide fully continuous insulation. The CEC has approved Title 24 energy modeling for this product by specifying the weighted area average R-Value (including Wedge-It tiles, battens, and air gaps) as a continuous rigid layer.

This product is currently on the market and is available for installation.

THERMAX by Dow



Figure 4: Thermax Sheathing

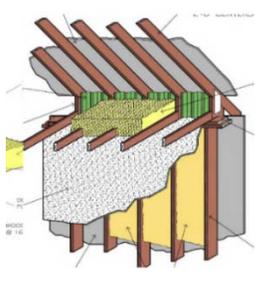


Figure 5: Thermax Sheathing Suggested Assembly

<http://building.dow.com/en-us/products/thermax-sheathing>

THERMAX™ Sheathing is a rigid foam insulation that has nominal 1.0 mil, smooth aluminum foil facers on both sides. THERMAX is a polyiso insulation product with R-value shown in the table below. A rigid foam insulation with a Class A fire rating, THERMAX is used in a range of concealed and exposed applications, above and below grade. Used in many applications including walls, crawl spaces, and basements, builders often install Thermax above the roof line as a component of a high-performance attic.

THERMAX's R-value range depends upon its size:

Nominal Board Thickness ⁽¹⁾ , in	R-value ⁽²⁾⁽³⁾	Board Size, ft
.50	3.3	4 x 8, 4 x 9, 4 x 10
.75	5.0	4 x 8, 4 x 9, 4 x 10
1.0	6.5	4 x 8, 4 x 9, 4 x 10
1.5	9.8	4 x 8, 4 x 9, 4 x 10
2.0	13.0	4 x 8, 4 x 9, 4 x 10

This product is currently on the market and is available for installation.

3.2 Below Deck Insulation Products

Johns Manville Unfaced Fiberglass Batts



Figure 6: Johns Manville Unfaced Fiberglass Batts

www.jm.com

Johns Manville makes a fiberglass batt that can be used in high performance unvented attics. The batts cover the attic's framing and trusses and are wired into place on the underside of the roof deck. The wiring keeps the batts from sagging or falling, and creates a layer of insulation below the roofline. The batts come in a number of widths and depths. R-values range from R-11 to R-38 (R-value of R-3.2 per inch).

For the purpose of building high-performance attics, builders have been using 24" wide batts to fit around framing and trusses. The batts are formaldehyde-free, unfaced and provide a level of sound protection.

This product is currently on the market and is available for installation.

Owens Corning Boxed Netting

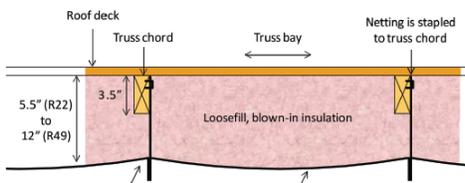


Figure 7: Owens Corning Boxed Netting

The Boxed Netting System by Owens Corning is blown in fiberglass held with netting installed on the underside of the roof deck. Builders use Owens Corning's Boxed Netting, in conjunction with Owens Corning's foam sealant and ProPink® EcoTouch® Loosefill blown-in insulation, to create high-performance, unvented attics. The netting is designed to hang from the truss top chord or rafter and deliver a cavity depth that creates a uniform insulation layer.

It does this by enveloping the framing members in insulation. It is available in a wide range of R-values (R-22 through R-49 per inch), independent of the size of the roof deck framing.

The netting includes an integrated vapor retarder to provide moisture management for California climate zones 1,2,3,11,12, and 16.

Owens Corning has an installation guide describing their high performance attic systems called *PROPINK® High Performance Conditioned Attic System*:

<http://www2.owenscorning.com/literature/pdfs/HPCA%20Installation%20Instructions.pdf>

This product is currently on the market and is available for installation.

4 HIGH PERFORMANCE WALLS PRODUCTS AND ASSEMBLIES

4.1 Full Wall Assemblies

Owens Corning Wall Products



Figure 8: Owens Corning Fiberglass Insulation

<http://insulation.owenscorning.com/professionals/insulation>

Owens Corning offers a portfolio of products designed to help builders create high performance walls.

For wall cavities, Owens Corning has ProPink Eco Touch Products, which is a line of pink fiberglass insulation batts and rolls, available in R-values of R-13, R-15, R-19, R-21, R-30 and R-38 per inch.

For the exterior of the house, Owens Corning offers the Foamular series, an XPS rigid foam insulation. It is available in a wide variety of sizes and thicknesses, has an R-value of R-5 per inch. It can be used as part of a high performance roof as well.

Owens Corning has a manual describing their recommended wall systems called *Builder's Guide: Owens Corning Residential Complete Wall Systems*: <https://www.highperformancebuildingexchange.com/builders-guide-owens-corning-residential-complete-wall-systems>

These products are currently on the market and are available for installation.

Johns Manville Wall Products



Figure 9: Johns Manville Spray Foam Wall Insulation

www.jm.com

Johns Manville offers a portfolio of products designed to help builders create high performance walls. The products are chosen to meet builders' budget, skill level, thermal and moisture needs when creating high performance walls.

Wall products available include:

- Blown in mineral wool: R-3.14 per inch
- Fiberglass batts and blown in fiberglass: R-3.14 per inch
- Open cell spray foam: R-3.6 per inch
- Closed cell spray foam: R-6.5 per inch
- Polyiso insulation board for the outside of the walls: R-6 per inch. Also available in R-.25-4 per inch.

These products are currently on the market and are available for installation.

Dow Wall Products

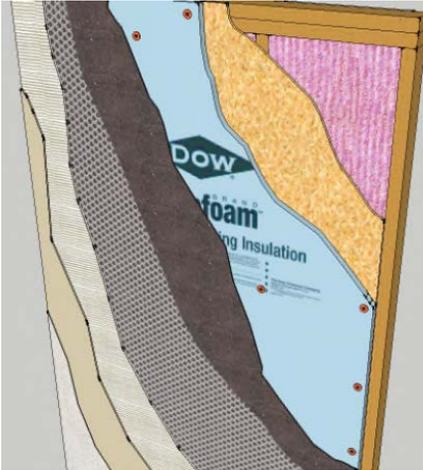


Figure 10: Dow Wall Products

<http://building.dow.com/en-us/products/styrofoam-brand-residential-sheathing-us-only>

Dow offers a portfolio of products to help builders create high performance walls. They suggest insulating the interior cavity and then adding continuous insulation over the OSB on the outside. Styrofoam™ Brand Residential Sheathing is an XPS foam board with plastic film facers on both sides. It is available in different sizes and R-values, as shown in the table below. Builders can cut the sheathing to any size with a score and a snap, and place it directly over uninsulated studs or over wood panel sheathings such as OSB or plywood. The table below details available sizes.

Board Thickness	R-value	Board Size, ft	Edge Treatment
.50	3.0	4x8/4x9	Square Edge
.75	4.0	4x8/4x9	Tongue and Groove
1.0	5.0	4x8/4x9	Tongue and Groove

When combined with interior cavity insulation, it can create the following R-values for high performance walls. Listed below are four suggested wall assemblies using Dow Styrofoam and cavity insulation.

Option	Frame	Continuous Insulation	Cavity	U-Value
1	2x4	1.5" R-7.5 Styrofoam	R-15	0.050
2	2x4	2" R-10 Styrofoam	R-11	0.050
3	2x4	.75" R-4 Styrofoam + 1-Coat R4 Stucco	R-15	0.050
4	2x6	1" R-5 Styrofoam	R-19	0.050

These products are currently on the market and are available for installation.

4.2 External Rigid Insulation

C-SIS Sheathing System



Figure 11 C-SIS Sheathing

compositepanelbuildingsystems.com

Composite Structural Insulated Sheathing, or C-SIS, is a closed cell polyurethane insulation. Offered as an alternative to plywood or OSB sheathing, it has a fiberglass reinforced thermoset (FRT) composite skin that provides water-resistant vapor and air barriers, as well as a structural sheathing. Manufactured without adhesives, C-SIS Sheathing's FRT skin is bonded by a chemical reaction to the polyurethane foam insulation during manufacturing so the risk of delamination is eliminated. Two product lines are available:

- 1-1/8" thick has an R-value of R-6 per inch
- 2-1/8" thick has an R-value of R-12 per inch

This product is currently on the market and is available for installation.

Insulfoam's Continuous Insulated Panel

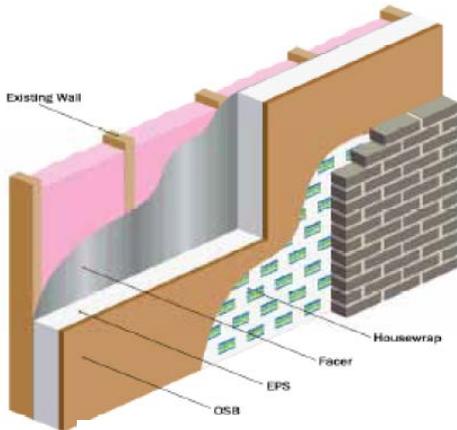


Figure 12 Insulfoam's Continuous Insulated Panel

<http://insulfoam.com/insulwall-wall-insulation>

Insulfoam's Continuous Insulated Panel (CI Panel) by Carlisle Construction Material Company, is EPS insulation *and* an OSB for cladding attachment. Combining continuous insulation and nail base sheathing, it installs over stick framing.

The 2" panels work for new construction and retrofits, and have an R-value of 7.8 (3.9 per inch). OSB or plywood is laminated to the foam, allowing builders to install one product instead of two, and providing a suitable substrate for cladding attachment.

CI Panels install with a standard nail gun (using min. 3" nails), no additional tools are required. Builders can hang siding and house wrap/weather barriers directly on standard 4' x 8' Panels. The CI Panels add structural shear capacity and multiple substrates are available including plywood, gypsum, T1-11 and more.

This product is currently on the market and is available for installation.

Huber Engineered Woods' Zip System R-Sheathing



Figure 13: Zip System

<http://www.huberwood.com/zipsystem/products/zip-system-rsheathing>

Huber Engineered Woods' Zip System R-Sheathing is an all-in-one sheathing panel that has thermal, air and moisture resistance—replacing individual sheathing, insulation, and house wrap. It has a continuous Polyiso foam insulation layer with an engineering wood. The panels arrive assembled already to size. The product is approved by the manufacturer for use under stucco and has been requested by builders because of its humidity protection. The Zip System can be used with the construction of 2x4 walls, as well as 2x6. Sizes available are listed below.

Components	R-value
½" insulation + 7/16" engineered wood	R-3.6
1" insulation + 7/16" engineered wood	R-6.1

Note: R-Sheathing is currently approved for CA earthquake zones A, B and C. However, Huber is working to get R-Sheathing approved for all of California's zones.

This product is currently on the market and is available for installation.

ThermaCork



Figure 14: ThermaCork Insulation Plus Siding

www.thermacork.com

ThermaCork is a cork product that builders use as both insulation and an all-in-one wood siding. The latter is achieved by adding a denser version of Thermacork to the outside of the house. Thermacork has an R-value of 4.2 per inch and is a natural and renewable material. The industrial process is 100% natural, requiring no additives or any kind of treatment.

Cork is stable and can cope with major thermal variations, between (-) 292 °F to (+) 248 °F. It is hypoallergenic and free of all domestic toxins, and helps to prevent mold by its ability to dry through layers. Its thermal resistance does not decrease over time. It has excellent sound isolation, is dimensionally stable, and resistant to compression. ThermaCork can be cut to size at the factory and is available in a range of sizes, from 1/2" to 12" and has an R-value of 4.2 per inch.

This product is currently on the market and is available for installation.

4.3 Insulated Cladding Products

HardiPlank Lap Siding with Insulation



Figure 15: Hardi Plank Lap Siding with Insulation

https://www.jameshardie.com/JamesHardieMainSite/media/Products-Catalog/HS14156_FoamBacker_SS_HR.pdf

HardiPlank Lap Siding with Insulation is an exterior siding that has built-in foam EPS insulation. It is available in 8.25 inch-width elect Cedarmill, and has an R-value of R-3. A product with increased insulation and an R-value of R-5 is due out in spring, 2016. James Hardie does support the use of its exterior siding products installed over rigid foam insulation.

Two products are designed to match different climate zones:

- HZ 10 is for areas of the country where it does not freeze often. It is commercially available now, and was tested extensively in Texas.
- HZ 5 is for areas that are subject to freezing on a continual basis and is not yet on the market.

Lap Siding with Insulation helps to diminish outside noise, enhances strength and impact resistance, reduces appearance of minor framing imperfections, and is faster and easier to install. The added insulation allows the installer to stack the planks during installation. The stacking method can be accomplished by one installer instead of two.

The R-3 product is currently on the market and available for installation, and the R-5 product is coming soon.

Crane Insulated Siding by AXIALL



Figure 16: Crane Insulated Siding

<http://www.exteriorportfolio.com/our-products/insulated-siding/>

Crane Insulated Siding is a vinyl siding product line with an EPS back. The EPS is Neopour which they call a GPS, Graphite Polystyrene. See table below for R-values. Crane products are made by Royal Building Products who is owned by AXIALL. This product has been available 20 years and they have over 100,000 installations in the US.

There are four different products to cover vertical and horizontal styles and they have different size exposures and 27 color options. Crane offers an accessory package that goes with the product that includes: corners, window surrounds, soffits, and more.

The product comes with a lifetime warranty. 100% material and labor warranty on the life of the home. Four products are available:

Product	R-value
Craneboard Board & Batten	R-Value of 2.5
Craneboard 6	R-Value of 2.5
Craneboard 7	R-Value of 2.5
Oracle 4.5" shiplap	R-Value of 3

This product is currently on the market and available for installation.

U-Stucco



Figure 17 U-Stucco

www.ustucco.com

U-Stucco is one coat stucco with insulating properties. It is a light-weight, ready-to-use powder mix which is blended with water to provide fire resistance, thermal insulation (R-value of R-2.2 per inch), water insulation, and sound insulation to buildings with one single coat. It can be applied up to 1" thickness at a time.

U-Stucco features the following specifications:

- Class 1 non-flammable material
- Made of breathable materials, which prevents mold
- Can be used in both new construction and renovation projects
- Can be used inside or outside
- Can be applied on various substrates including OSB and plywood
- 700% lighter than conventional 3 coat stucco
- Made of 99% inorganic and recycled materials

This product is currently on the market and available for installation.

4.4 SIPS

Insulfoam's Structurally Insulated Panel



Figure 18: Insulfoam's Structurally Insulated Panel

http://premiersips.com/wp-content/uploads/2014/05/PSIPS_MasterBroch_10-2012_lo.pdf

Insulfoam's Structural Insulated Panel Premier (SIP) consists of an insulating EPS foam core laminated between two sheets of oriented strand board (OSB) using a structural adhesive. R-values are shown in the table below. This system provides a strong building panel that needs no additional frame or skeleton for support. Premier's large, pre-fabricated SIPs make the framing process faster than other building methods and enable a more airtight, well insulated building for high energy efficiency. Premier SIPs are rigorously tested to meet and exceed building code standards and energy efficiency requirements, helping them achieve some of the highest insulation/R-values (and load capacities) in the SIPs industry. They are cut to size in the factory and then trucked to the location.

Core Thickness	SIPs R-value @ 75"	SIPs R-value @ 40"	SIPs R-value @ 25"
3-½"	15	16	17
5 ½"	23	25	26
7-¾"	30	32	33
9-¾"	37	40	42
11-¾"	45	49	51

This product is currently on the market and available for installation.

4.5 Exterior Insulation Finish System (EIFS)

The International Building Code and ASTM International defines an Exterior Insulation and Finish System (EIFS) as a non-load bearing, exterior wall cladding system that consists of an insulation board attached either adhesively or mechanically, or both, to the substrate; an integrally reinforced base coat; and a textured protective finish coat.

An EIFS typically consists of the following components:

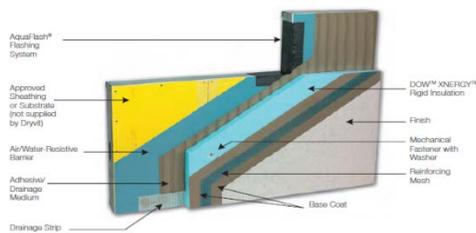
- An optional water-resistive barrier (WRB) that covers the substrate.
- Has a drainage plane between the WRB and the insulation board that is most commonly achieved with vertical ribbons of adhesive applied over the WRB.
- Insulation board typically made from expanded polystyrene (EPS), but can also be XPS or polyisocyanurate.
- An insulation board is attached with an adhesive or mechanically to the substrate.
- Glass-fiber reinforcing mesh embedded in the base coat.
- A water-resistant base coat that is applied on top of the insulation to serve as a weather barrier.
- A finish coat that typically uses colorfast and crack-resistant acrylic co-polymer technology.

Dryvit



Figure 19: Dryvit

<http://www.dryvit.com>



Dryvit is an exterior insulation and finish system (EIFS) product. It combines both continuous insulation (CI) and design-flexible aesthetics into a single exterior wall system, called “Outsulation.” Dryvit Systems, Inc. provides all components of the Outsulation System from ‘flashing to finish’ and the Outsulation System components are installed by a single sub-contractor.

Dryvit’s insulation is available in EPS with an R-value of R-4 per inch, or XPS with an R-value of R-5 per inch. It comes in varying levels of insulation that are achieved by increasing the amount of EPS or XPS in each system. The product arrives as one piece. Dryvit can be special ordered, allowing builders to choose between different exterior finishes. The continuous insulation (CI) component of the Outsulation Systems can be shaped, cut, and grooved to create multiple and diverse architectural styles. Using acrylic copolymer, UV resistant, and hydrophobic chemistry, a Dryvit finish can provide a variety of high performance characteristics with the appearance of stucco, limestone, granite, brick, and metal.

This product is currently on the market and available for installation.

One Coat Stucco



Figure 20: Finished Stucco

One Coat Stucco is an exterior wall treatment for residential, commercial, institutional or industrial buildings. One Coat Stucco consists of a blend of Portland cement, sand, fibers and special chemicals. One Coat Stucco provides design flexibility, durability, water management, versatility as well as cost savings and it can be finished in a variety of ways including premixed colored cement stucco finish coats, elastomeric coatings, and paints or even acrylic textured finishes.

The individual products are pre-blended at the manufacturer's facility. The only additional materials that need to be added to the base are sand and water. The base coat is applied in a single application (combining the scratch and brown coat) to a minimum thickness of 3/8-inch (9.5 mm), unless otherwise noted. The maximum thickness, including the finish coat, is 1/2-inch (12.7 mm). Thickness around penetrations, such as doors and windows is a nominal 3/8-inch (9.5 mm), backed by framing and blocking. The base coat is applied over lath and over flashing or weather-resistive systems.

This system can be hand troweled or machine sprayed to almost any common weather-protected wall substrate including foam plastic sheathing, insulation foam, exterior grade gypsum sheathing, glass mat-faced sheathing, fiberboard sheathing, asphalt impregnated sheathing, plywood or OSB exterior sheathing. It can

also be used over masonry and brick without lath reinforcements. Each manufacturer has code approval through their individual evaluation reports.

There are a wide variety of one coat stucco systems available on the market today. The R-Value of the one coat stucco wall assembly depends upon the type and width of the insulation specified in the system. Please discuss with your preferred stucco installer. Listed below are some of the prominent one coat stucco manufacturers:

- Merlex Stucco
- Eagle Building Materials
- Kwik Kote
- Omega Products International
- CEMCO

4.6 Insulated House Wrap

DuPont™ Tyvek® ThermaWrap® R5.0

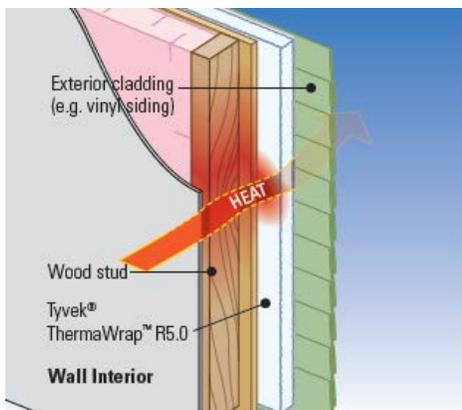


Figure 21: Tyvek ThermaWrap

www.dupont.com

DuPont's™ Tyvek® ThermaWrap® R5.0 is a house wrap product that has insulation built in. ThermaWrap R5.0 uses a blanket insulation made of polyester and polyolefin fibers and has a thickness of 1.5 inches. It has an R-value of R-5 and provides breathable air, water, and thermal protection in one product. The structure of Tyvek ThermaWrap allows any moisture that may get inside the wall to dry and escape to the outside, helping to prevent the accumulation of water in the wall.

DuPont™ Tyvek® ThermaWrap® R5.0 is a breathable alternative to other exterior insulation products, like XPS, EPS, and Polyisocyanurate foam exterior insulation.

This product is currently on the market and available for installation.

5 PRODUCT AND MANUFACTURER RESOURCE LISTING

Product	Manufacturer	Website
Green Hybrid Roofing	Green Hybrid Roofing	ensoltisghr.com
Eterna Tile	Eterna Tile	www.eterнатile.com
Wedge-It	Wedge-It	www.gowedge.com/about.htm
Thermax and Thermax Sheathing	Dow	building.dow.com/en-us
Unfaced Fiberglass Batts	Johns Manville	www.jm.com/en/building-materials/building-insulation/commercial-residentialbuildinginsulation/unfaced-batts-androlls
Boxed Netting	Owens Corning	www.owenscorning.com
Wall Products	Owens Corning	www.owenscorning.com
Wall Products	Johns Manville	www.jm.com/en/building-materials/building-insulation
C-SIS Sheathing System	Composite Panel Building Systems	compositepanelbuildingsystems.com
Continuous Insulated Panel	Insulfoam	insulfoam.com/insulwall-wall-insulation
NeoPor Continuous Insulation Sheathing	BASF	www.neopor.basf.us
R Sheathing Huber Engineered Woods	Zip System	www.huberwood.com/zipsystem/products/zip-system-rsheathing
ThermaCork	ThermaCork	www.thermacork.com
Block-It House Wrap	Kimberly-Clark	www.kimberly-clarkbuildingmaterials.com
Tyvek ThermaWrap R5.0	DuPont	www.dupont.com
Dryvit	Dryvit	www.dryvit.com
Lap Siding with Insulation	HardiPlank	www.jameshardie.com
U-Stucco	U-Stucco	www.ustucco.com