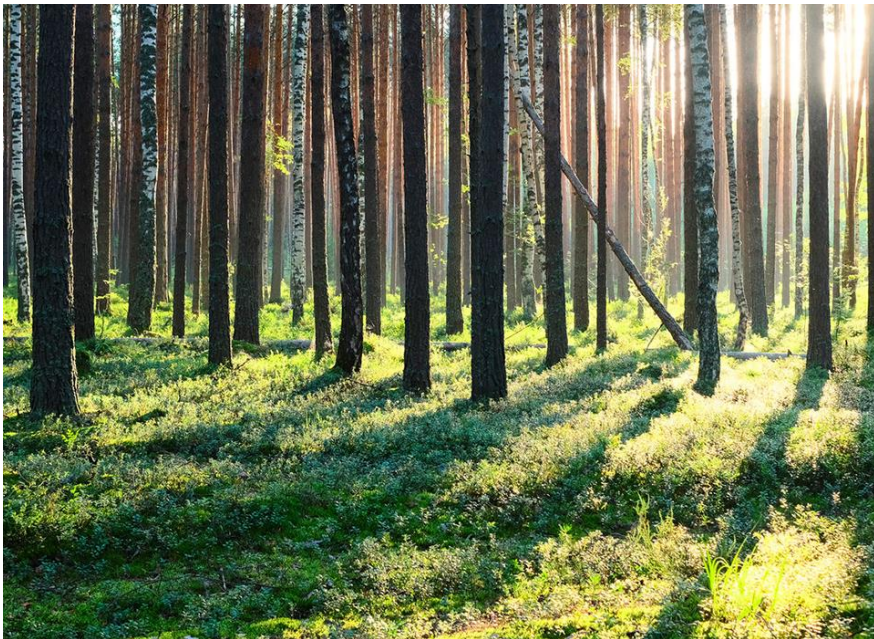


**WD** WALLS



**FSC CERTIFIED THERMO-CLAD SIDING & PANELING**

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**WD Walls.com**

# WHY USE THERMO-CLAD WOOD

## Non-toxic

Absolutely no chemicals added in the Thermal Modification process



## Installation

It has excellent milling, gluing, staining and painting characteristics



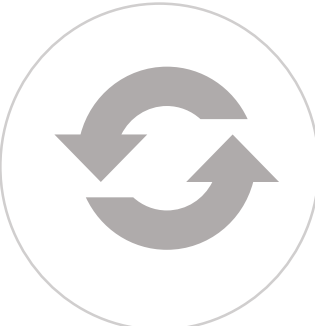
## Value

An affordable alternative to old growth cedar, redwood and hardwood



## Eco-Friendly

Our Radiata Pine, is FSC certified, making it one of the only eco-friendly natural wood siding products in the market



## Sustainable

Natural Alternative to Old Growth Cedar and Redwood. It is grown on FSC certified plantations for the express use as lumber. Plantation Radiata Pine trees are harvested at 26 years old. "You do not have to cut down a 400 year-old forest" to get this deep, richly colored wood, that is highly resistant to rot and decay



## Durability

The Thermal modification Process caramelizes the naturally occurring sugars and resins in wood thus, no food source for bacteria and insects: rendering the wood naturally resistant to rot and decay, very similar to "Old Growth" Cedar and Redwood



# QUALITIES OF THERMO-CLAD WOOD

## EXPOSURE

Exterior application-  
Rated for above ground  
Exposure



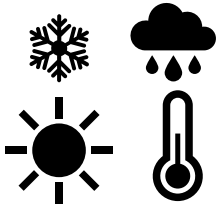
## LOGGING

Thermo-Clad is made from  
trees that are raised on  
FSC certified plantations,  
and are harvested at 26  
years old



## STABILITY

The Thermal Modification Process produces  
incredibly stable fiber that is highly resistant to  
crook, cupping, twisting and swelling



## FIRE TEST

Our Wood Siding has been  
fire tested by a laboratory  
approved by the USDA



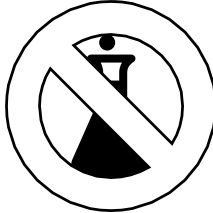
## FIRE RATING

Thermo-Clad has a higher fire resistance rating  
than either Redwood or Western Red Cedar

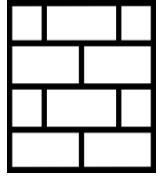


## NO ADDED CHEMICALS

Thermo-Clad is non corrosive to fasteners,  
unlike some chemically treated lumber



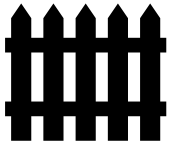
# POSSIBLE USES FOR THERMO-CLAD INCLUDES



**SIDING &  
ACCENT WALLS**



**WINDOW AND DOOR  
MANUFACTURING**



**FENCING**



**PANELING**



**FURNITURE**





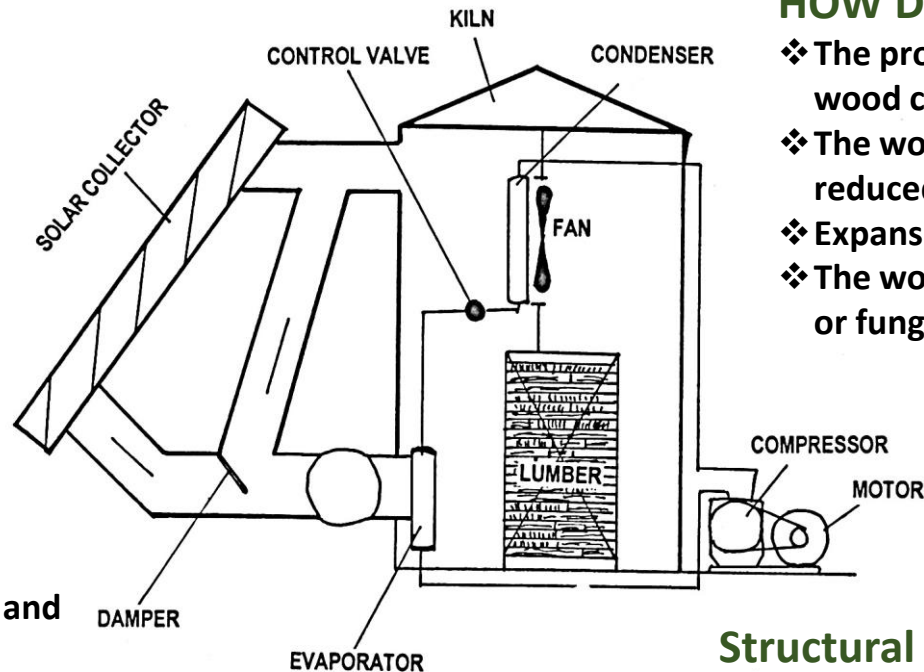
# THE THERMAL MODIFICATION PROCESS

## Heat

The thermal modification process involves the heating of the wood material to a temperature of over 400 degrees while at the same time protecting it with steam.

## Natural Process

The process is 100% natural- Only heat and steam are used



## HOW DOES IT PHYSICALLY CHANGE

- ❖ The process removes organic compounds from the wood cells
- ❖ The wood's ability to absorb water is greatly reduced
- ❖ Expansion and contraction is minimal
- ❖ The wood is left with no nutritional value for bugs or fungi making it naturally resistant

## Structural Change

Moisture is almost completely removed from the fiber which cooks the natural tannins and sugars in the cells of wood, permanently changing the structure of the wood

# The Result

## COLOR CHARACTERISTICS

The color darkens to a deep rich brown tone similar to old growth Cedar and Redwood or Tropical Wood species. This color change is throughout the fiber



## NO SUGARS

Thermally modified wood no longer contains sufficient sugars and nutrients to support insect or fungal attack, making Thermo-Clad very resistant

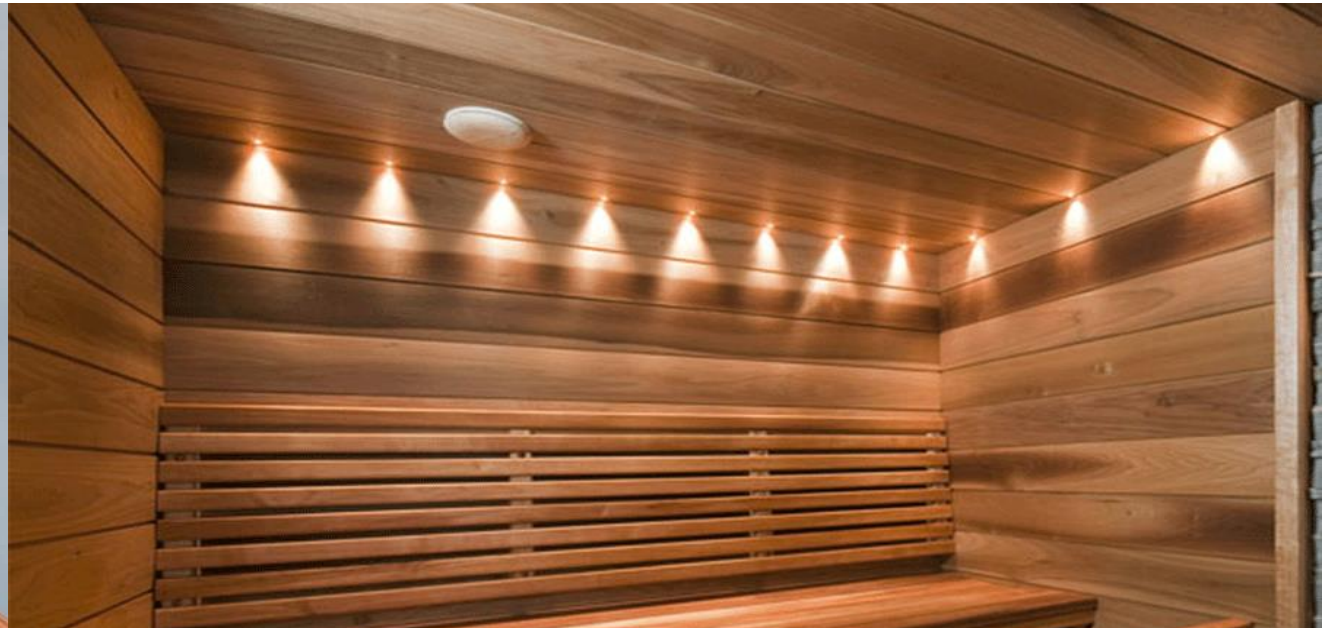
## RESISTANT

This also makes Thermo-Clad more resistant to rot and mold



## WOOD STRUCTURE

The wood cell walls are modified to the point of reducing its water absorption ability, making Thermo-Clad more dimensionally stable. Limiting cupping, expansion and contraction.



# CARE AND ATTENTION



## SCENT

Initially there is a slight smell of thermally modified wood, similar to charcoal, which some people find unusual. This aroma will fade away in 1-2 months and finished or “smooth” lumber rarely has any smell



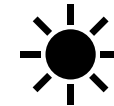
## PAINT AND STAINING

It is recommended that all Thermo-Clad products are pre-stained, or pre-primed, on all four sides, prior to shipment to the jobsite. Paint & stain recommendations are listed on the next page



## NATURAL

Thermo-Clad Thermally Modified Radiata Pine is a 100% natural wood product, that has the same grain patterns, texture and other naturally occurring characteristics, as Cedar and Redwood



## UV EXPOSURE

Like all natural wood products, Thermo-Clad will experience graying and possible checking when exposed to UV rays.



## PRE-DRILLING

As with all high quality woods, pre-drilling prior to installation is recommended

## DIY PAINTS & PRIMERS

- ❖ Behr “Premium Plus Flat #4050”: Exterior Top Coat. 100% Acrylic latex (water base)
- ❖ Behr “Premium Plus ultra flat #4850”: Exterior Top Coat. 100% Acrylic Latex (water base)
- ❖ Behr “Marquee Flat # 4450”: Exterior Top Coat. 100% Acrylic Latex (water base)
- ❖ Behr “#436 Primer / Sealer”: Primer / Sealer Coat (water base)

## Commercial Two Coat Paint Systems

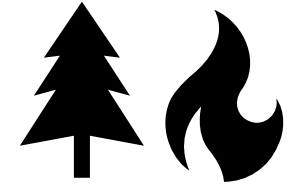
- ❖ Sherwin Williams “Super Paint machine Finish Alkyd Primer” (oil base)
- ❖ Sherwin Williams “Super Paint Exterior Latex Satin” (water base)
- ❖ Sherwin Williams “Super Paint machine Finish latex Primer” (water base)
- ❖ Sherwin Williams “Super Paint Exterior Latex” (water base)

## Commercial Stains

- ❖ Sherwin Williams “WoodScape Exterior Acrylic Solid Color Stain” (water base)
- ❖ Sherwin Williams “WoodScape Exterior Polyurethane Semi-Transparent Stain” (water base polyurethane)
- ❖ Sherwin Williams “SuperdeckOil Based Transparent Stain” (oil base)
- ❖ Penofin “Architectural Solid Acrylic Stain” (water base/ alkyd – urethane)



# CALIFORNIA FIRE STANDARDS AND EXTERIOR WOOD PRODUCTS



<b>Test Report No:</b> RJ3038-1	<b>Date: March 11, 2014</b>
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**Sample ID:** The Test Samples are identified as Thermo-Clad Siding, Thermally Modified, nominal 1" x 6".

**Sampling Detail:** Test Samples were submitted to the laboratory directly by the client. No special sampling Conditions or sample preparation were observed by QAI.

**Date of receipt:** Samples were received at QAI on March 6, 2014.

**Test Requested:** Perform standard flame spread and smoke density developed classification tests on the sample supplied by the Client in accordance With ASTM Designation E84-13a, "Standard Method of Test for Surface Burning Characteristics of Building Materials". The foregoing Test procedure is comparable to UL 723, ANSI/NFPA No. 255, and UBC No. 8-1.

**Test Results:** **Flame Spread : 50** **Smoke Developed: 175**  
Detailed test results are presented in the subsequent pages of this report and can be presented to you on request.

**Conclusion:** The submitted material meets the requirements for a "Class B" Flame Spread. See Classification requirements on page 2.

Summary of ASTM E84 RESULTS: Because of the possible variations, the results are adjusted to the nearest figure divisible by 5. Smoke Density values over 200 are rounded to the nearest figure divisible by 50. In order to obtain the Flame Spread Classification, the results should be compared to the following table:

## FLAME SPREAD RATINGS

Western lumber species flame-spread ratings tested in accordance with ASTM E84 Class B 26-75, Class C 76-200

**Port Orford Cedar - 60** **Redwood - 65**

**Incense Cedar- 65** **Western Red Cedar - 69**

## FLAME SPREAD

**IGNITION:** 37 seconds

**FLAME FRONT:** 16 feet maximum

**TIME TO MAXIMUM SPREAD:** 9 MINS., 36 SEC.

**TEST DURATION:** 10 minutes

**CALCULATION:**  $94.92 \times 0.515 = 48.88$

**SUMMARY:** **FLAME SPREAD: 50**



<u>NFPA CLASS</u>	<u>IBC CLASS</u>	<u>FLAME SPREAD</u>	<u>SMOKE DEVELOPED</u>
A	A	0 through 25	Less than or equal to 450
<b>B</b>	<b>B</b>	26 through 75	Less than or equal to 450
C	C	76 through 200	Less than or equal to 450



# LAB TEST OF THERMO-CLAD DURABILITY

## 1) SERVICE

Subject of the contract was a durability test of two variants of thermally modified Radiata pine against wood decay Basidiomycetes according to the laboratory test DIN CEN/TS 15083-1:2005.

## 2) Test Material

Two variants of **Thermally Modified Radiata Pine** with the following treatment specifications were tested:

**TMT 1: 220 Degree, 2 hours, (200 x 22 x 494) mm<sup>3</sup>**

**TMT2: 230 Degree, 2 hours, (200 x 25 x 500) mm<sup>3</sup>**

For each variant 12 boards from 3 batches were delivered by the client. Specimens were taken from each 3 boards per batch.

## 3) Test Performance

Test Procedure:	Durability test according to CEN/TS 15083-1:2005
Test Fungi:	Coniophora puteana BAM Ebw. 15 (DSM 3085) Poria placenta BAM FPRL 280
Reference Wood:	Pinus sylvestris L. (Scots pine), mean raw density after kiln drying: 462 kg/m <sup>3</sup>
Replicates:	30 Specimens for each test fungus
Dimension of specimens:	30 specimens for each test fungus
Accelerated aging procedure:	Water leaching according to DIN EN 84:1997-05
Sterilization:	Water damp
Duration of the test (fungal attack):	16 weeks (09.03.17-29.06.17)

## 4) Validity of the test

Table 1 shows the mean dry mass losses of the reference specimens with the two test fungi. The corresponding single values are

given in the annex, table A5 and A6.

Table 1: Virulence values

Test fungus	Mean mass loss (n=20)	Demanded mass loss according to DIN CEN/TS 15083-1:2005
Coniophora puteana on Scots pine	32.1%	> = 30%
Poria placenta on Scots pine	26.4%	> = 20%

The test was valid, because values of the average mass losses were exceeded by all test fungi.

## 5) Results

The mean mass losses, caused by fungal attack, as well as the corresponding durability classes (DC) are given in table 2. Single values are listed in the annex, tables A1 to A4. The durability class was determined according to table 3

Table 2: Mass losses and corresponding durability classes of thermally modified Radiata pine

Prufmaterial	Results with <i>Coniophora puteana</i>			Results with <i>Poria placenta</i>		
	Mean dry mass loss [%]	Median value of dry mass loss [%]	Durability class	Mean dry mass loss [%]	Median value of dry mass loss [%]	Durability class
TMT 1: 220 degree c	2.54 (n=30)	1.84(n=30)	1	12.39 (n=30)	12.27 (n=30)	3
<b>TMT 2: 230 degree c</b>	0.04 (n=30)	0.00 (n=30)	1	2.48 (n=30)	2.98 (n=30)	1
reference wood (Scots pine)	32.12 (n=20)	30.70 (n=20)	1	26.44 (n=20)	25.06 (n=20)	4

Table 3: Classification of durability based on laboratory test

DC	Description	Median dry mass loss [%] according to Din CEN/TS 15083-1
<b>1</b>	<b>Very Durable</b>	<b>≤ 5</b>
2	Durable	> 5 bis ≤ 10
3	Moderately durable	> 10 bis ≤ 15
4	Slightly durable	> 15 bis ≤ 30
5	Not durable	> 30

## Results

Durability classification is based on the results with the fungus, which caused the highest mass loss. Due to the results listed in table 2, the material "TMT 1: 220°C" is classified as DC 3 (moderately durable) and material "TMT 2: 230°C" achieved **DC 1 (very durable)**.

# Thermo-CLad Storage & Handling

As with all natural wood siding, Thermo-Clad needs protection from direct sunlight, as well as direct contact with water, snow, ice, freezing rain, rain, dirt, and other elements. For best results, it should be stored in an enclosed building with a concrete or wood floor, such as a warehouse or garage, prior to coating and installation. In the event that your wood needs to be stored outside, it should be stacked flat, and the bottom layer should be at least 12" above of the ground. Use wood, metal or plastic stickers, with a moisture barrier between the wood and the stickers, so that moisture is not absorbed through the bottom boards of the stack, and to minimize the possibility of non-damaging organisms growing on the bottoms of the boards. Protect the unit of Thermo-Clad with a waterproof covering that is slightly raised in the center, so as to prevent water from pooling on the top of the cover. Make sure that the stack is not completely sealed, so as to allow sufficient air circulation.

# Thermo-Clad Installation

Please refer to [realcedar.com](http://realcedar.com) for all Siding, Trim and Board installation instructions

# Thermo-Clad Limited 25 year Warranty



This Warranty extends only to the original owner ("Qualified Owner") of the structure to which, any Thermo-Clad wood products have been installed. This warranty does not transfer with new ownership of the original structure.

All warranties are offered under the condition that Thermo-Clad Installation Guidelines, Coating Guidelines, User Maintenance Guidelines, and any other recommended Thermo-Clad product Guidelines are observed and followed for the handling, storage, installation, coating and use of any Thermo-Clad products. Failure to install Thermo-Clad in accordance with the product's printed instructions may invalidate this Warranty.

In the event of a properly submitted claim, we will inspect and test the wood products in question. If we determine that the claim is valid, we will furnish new replacement Thermo-Clad products, free of charge, to replace each defective piece included in the claim.

This Warranty does not cover any costs or labor associated with removal of damaged Thermo-Clad wood products, installation of replacement wood products, or any associated re-manufacturing costs. This Warranty also does not cover products manufactured by others, accessory materials, or installation labor provided by others.

We warrant to the Qualified Owner that Thermo-Clad wood products, if installed per the printed guidelines, will (A) not decay, or degrade due to rot, (B) will not excessively swell because of moisture, and **(C) will not be damaged by termites to the point that a piece is unusable.** The duration of this Warranty is twenty five (25) years from the date of purchase. This warranty is conditioned on, and subject to the additional terms and conditions set forth below.

To make a Warranty claim, the Qualified Owner must notify us in writing within thirty (30) days after the facts on which the claim is based, become known by the Qualified Owner. All submitted claims must be accompanied by this original Certificate of Warranty, copies of the relevant purchase receipt(s), a statement describing the extent and nature of the suspected damage, and discernible photographs showing the suspected damaged area. Continues...



# Thermo-Clad Limited 25 year Warranty



The Qualified Owner must provide us an opportunity to investigate any claim, within thirty (30) days of being properly notified by the Qualified Owner of a claim. The Qualified Owner must allow us an opportunity to inspect and test the products in question, in order to verify that said products were installed properly, that said products had been coated properly, that said products had been handled properly prior to installation, and to see the environment in which said products were used. Removal of any of the products included in the Qualified Owner's claim, prior to our inspection, will cause this warranty to be null and void.

When the Qualified Owner discovers that a potential claim is detected, the claimant must take all reasonable steps to protect the the wood from further damage, and must take all reasonable steps to minimize potential losses caused by the suspected damaged wood to other areas of the structure.

Contamination or damage caused by non-destroying organisms such as moss, ivy, surface mold, mildew, algae, etc., will not be covered by this Warranty.

We are not liable for any financial, incidental, special / unique, punitive or consequential damage. The statements and stipulations in this Warranty constitute the only warranties offered by us.

Any damage or degradation to any Thermo-Clad wood product that has been modified, or impregnated by any foreign substance, after it's purchase, without the prior written approval of us, will not be covered by this Warranty.

Any damage or degradation that is attributable to the causes listed below, will not be covered by this Warranty:

- The settling or movement by the original structure to which Thermo-Clad products have been installed
- Any movement of materials on, or in the original structure, to which Thermo-Clad products have been installed
- Any "Acts of God", such as Fire, Tornado, Earthquake, Flooding, Severe Weather, etc.

Any claims must be submitted to: **WD Walls**

**PO Box 2222**

**Lake Oswego, Oregon 97035**

