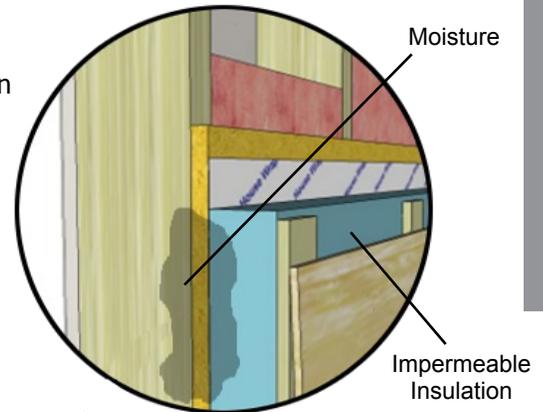


Moisture Absorption - in Exterior Continuous Insulations

Mineral Wool Ci on the Exterior of Buildings

Mineral Wool Ci. is an exterior continuous insulation system which has been used in a variety of building applications to provide additional thermal resistance to walls when required. The theory; being permeable, Mineral Wool allows walls to “breathe” and dry to the outside. This is considered an advantage over impermeable exterior insulation systems which do not allow walls to dry to the exterior.



Mineral Wool Ci and Water Absorption

Dow Chemical states: *"In only 5 minutes, mineral wool absorbs far more moisture than typical plastic foam insulation does in 2 hours. With such sensitivity to water, should such a product be used in rain screen applications where exposure to water is inevitable?"*

This raises a variety of questions, a few of which being:

- What are the consequences of installing permeable insulation on exterior walls that are guaranteed to get wet?
- What happens when wet Mineral Wool freezes?
- How much R-value is lost?
- Does moisture cause degradation of building materials and fasteners?
- What about mold?

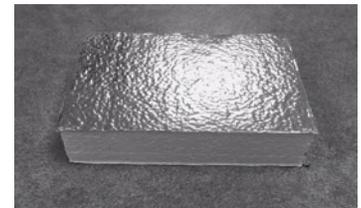
Comparing Quik-Therm Systems to Mineral Wool Ci

Quik-Therm conducted a simple test to illustrate the relative effects of moisture on both mineral wool Ci and Quik-Therm products (EPS core covered with polymer facers).

NOTE: *When properly installed, the polymer facers will prevent moisture from reaching the EPS core of Quik-Therm. As such, the test configuration represents a worst case scenario for the Quik-Therm sample wherein the edges are exposed to consistent wetting. This would not be the case under normal installation conditions.*

Test Procedure:

1. Cut 4" x 5" and 12" x 12" samples of 1.5" thick Quik-Therm and mineral wool Ci (Four samples total).
2. Weigh the 12" x 12" sample of each product.
3. Fill a sink/basin with 3 or more inches of water.
4. Place Solar Dry samples in water. On top of each sample, lay something just heavy enough to keep the samples submerged. Leave submerged for 2 hours. Remove from water and lightly pat samples dry with paper towel. Place 4" x 5" sample in sealed container. Immediately weigh the 12" x 12" sample.
5. Place Mineral wool samples in water. On top of each sample, lay something just heavy enough to keep samples submerged. Leave submerged for 5 minutes. Remove samples from water and lightly pat dry with paper towel. Do not squeeze Mineral wool samples. Place 4" x 5" sample in sealed container. Immediately weigh 12" x 12" sample.
6. Place both 4" x 5" samples in freezer. Leave for approximately two hours. Observe.



Quik-Therm



Mineral Wool Ci

Please see Reverse for Test Observations and Comments

Moisture Absorption - Comparing QuikTherm to Mineral Wool Ci

Water Absorbed:

This comparative test was conducted to assess the amount of water that could potentially absorb into each insulating material as well as the amount of time required for the material to dry to its starting weight. Note that Quik-Therm SDI was submerged in water 24 times longer than the mineral wool sample to obtain an appreciable change in weight.

Quik-Therm Solar Dry



1.5" Thick by 12" x 12"
Dry Sample Weight : 2.4 oz.

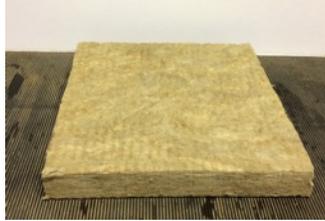
Submerged in Water for 2 Hours

Wet Sample Weight : 2.5 oz.

Drying Time Required*: ~22 Hours

* To return to original dry sample weight.

Mineral Wool Ci



1.5" Thick by 12" x 12"
Dry Sample Weight : 13.5 oz.

Submerged in Water for 5 mins

Wet Sample Weight : 18 oz.

Drying Time Required*: ~40 Hours

Observations & Notes

1. Quik-Therm SDI absorbed 98% less moisture than Mineral Wool, even though it was submerged 24 times longer.
2. When submerged for 5 mins, absorbed water increased mineral wool weight by 33%. When submerged for 1 hour, the total amount of water absorbed by MW increased its dry weight by 85%.
3. SDI returned to its original dry sample weight in half the time as the mineral wool sample.
4. Note that when properly installed, the eps core of the Quik-Therm product is protected from moisture ingress by the polymer facers and tape.

Freezing Effects:

This comparative test was conducted to assess the potential physical effects of freezing on wetted samples of Quik-Therm SDI and Mineral Wool Ci. Note that Quik-Therm SDI was submerged in water 24 times longer than the mineral wool sample to obtain an appreciable amount of water absorption.

Quik-Therm Solar Dry



1.5" Thick by 4" x 5"

Submerged in Water for 2 Hours

Placed in Freezer for 2 Hours



Mineral Wool Ci



1.5" Thick by 4" x 5"

Submerged in Water for 5 mins

Placed in Freezer for 2 Hours



Observations & Notes

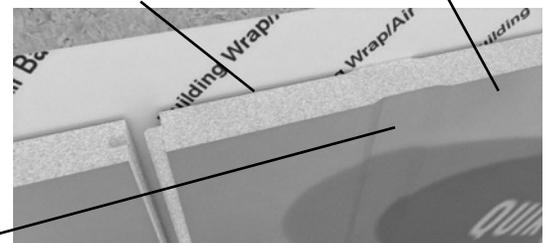
1. After 2 hours in freezer, wet Quik-Therm SDI sample and container showed minimal evidence of condensation.
2. After 2 hours in freezer, wet Mineral wool container showed significant condensation.
3. Mineral wool sample was frozen to the bottom of the container.
4. Note that when properly installed, the eps core of the Quik-Therm product is protected from moisture ingress by the polymer facers and tape. As such, product freezing should not be an issue.

Quik-Therm SDI: Engineered Specifically for Exterior Continuous Insulation & Rainscreen Applications

Quik-Therm SDI is an impermeable insulation system, engineered to provide a continuous cover of thermal resistance to the exterior of walls, while not trapping moisture in the wall assembly. Located on the inboard side of SDI are drainage cavities that occupy 75% of its surface. These cavities allow walls to drain, dry and disperse moisture. Advanced polymer facers on both the inboard and outboard surfaces of SDI will not allow moisture ingress into the insulation core, making it ideal for applications which require both drying capability, as well as a rain screen.

Drying/drainage channels allow walls to breathe, dry and drain

Impermeable facers prevent moisture ingress



Furring strip channels help to pre-align furring strips over wall studs to establish a code compliant rain screen

