



10 facts about

# The influence of moisture on stone wool



# Water is central to our very existence.

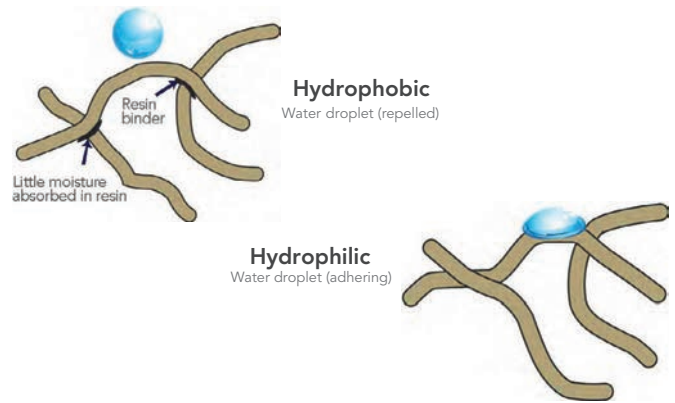
However, when it comes to buildings, it can often be the cause of major problems, including mold, rot and corrosion. In construction projects, it's essential that we select ceiling materials that do not absorb moisture if they are exposed to water. Stone wool is one of these materials. Water repellency is one of the key properties of stone wool ceiling products.

Here are 10 factors to consider around the influence of moisture on stone wool.

## 1

### Stone wool does not absorb moisture when exposed to water

Stone wool is water repellent, meaning it resists water absorption. Stone wool is defined as a **hydrophobic** material. Water repellency is one of the key properties of stone wool ceiling tiles. If a material is defined as **hydrophilic**, it absorbs water. This is illustrated to the right:



## 2

### Stone wool does not absorb moisture from humid environments

Stone wool is a **non-hygroscopic** material, meaning it does not take up and retain moisture from the air. As a result, moisture has no influence on the product's thermal and structural performance. At the same time, there is no influence on the product's durability either, so its ability to withstand wear and pressure remains unaffected.

## 3

### Stone wool is water repellent for a reason

A water repellent agent is mixed with the fibers during stone wool's production process, making it able to repel water. The inherent water-repellent properties of these ingredients provide stone wool with an excellent ability to resist water absorption and moisture effects.



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#### **Stone wool allows water vapour to pass through it**

Stone wool is 98 percent porous material, meaning it is an open material, unlike a closed-cell structure. This is why it is defined as vapor permeable, and is practically almost as permeable as still air.

This is similar to wearing a breathable and waterproof jacket instead of a regular plastic raincoat. The difference lies in the fact that, if you sweat, the fabric will allow the vapor to pass through and dry out. With a regular plastic raincoat however, you will remain sweaty unless you take it off. Please see point 7 for further details of how moisture behaves within stone wool.

6

#### **Stone wool contains no moisture when installed**

During the construction process, unexpected rain can lead to moisture being encapsulated into construction materials. However, when we use stone wool this moisture can pass through the product resulting in a quicker drying process (see point 4). Any moisture that may be inadvertently created during stone wool installation can easily be dried out before the assembly is completed.

5

#### **The importance of having air tight structures**

Building structures must be air tight. This is important in order to prevent air moving through a building exterior and avoid both unwanted heat losses and severe moisture damage from air moving outside the structure. Vapor retarders and wind barriers are often used to prevent this. An airtight structure assists in providing superior thermal comfort for its occupants, a little like wearing a wind jacket outdoors in windy conditions instead of just a sweater.

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#### **If moisture gets into stone wool, its performance will be unaffected**

Because stone wool does not absorb or hold moisture, it remains dimensionally stable, meaning the performance will not be affected by changes in temperature and humidity.

In high humidity environments, stone wool ceiling products do not sag, droop, or warp due to the moisture.



# 8

## What is the value of having an essentially dry product?

The presence of water in a ceiling product will significantly deteriorate its performance. Since there will be no moisture in stone wool, the structure will be unaffected. The tiles or panels will not warp, sag or fall out of the grid. Additionally, the ceiling will not have to be replaced because of mold or mildew issues.

# 9

## How much moisture can a stone wool product contain?

Take a 4 inch thick stone wool batt with a density of 2 lbs/ft<sup>3</sup>, for example. The moisture will create a thin layer of water on the external surface. In an extreme scenario of 10 percent moisture by weight, it would lead to a practically negligible 0.01 inch thick layer.

A more typical case would involve moisture content of just 1 percent by weight, resulting in a barely 0.01 inch thick film of water: less than the density of a human eyelash.

**When it comes to handling moisture, stone wool offers excellent water repellent properties, keeping the ceiling dry and resilient without any reduction in performance over time.**

# 10

## Can stone wool be soaked with water?

In buildings, soaked stone wool can only happen in instances where the material is subjected to flooding, or where there is a lack of draining options. This isn't due to the properties of stone wool itself, but to accidents, poor design or improper installation. Even in these circumstances, evidence shows that the material will work to the same standards after drying out.

