7 facts about

# Durability and stone wool insulation

ROCKWOOL®



If a product is durable, it can endure continued use over a long period, maintaining a constant performance[1].

Durability is an important factor when selecting a construction material for your house. A durable construction product will last the lifetime of the building, and will not require maintenance.

## 1

### There are two main aspects of durability

If a construction product is durable, it should:

- Maintain a constant performance in all important aspects (such as thermal, mechanical, or fire resistance).
- Have a long duration, according to its function (for example, a lifespan of as much as 50 years or more should be considered for insulation products[2]).

As buildings can remain standing for many decades, it's essential that the materials used to construct them will last as well. Stone wool products do just that.

## 2

### A durable product offers more than just a long lifespan

A durable construction product that maintains a strong performance throughout its lifetime does not need maintenance or regular replacement. A durable construction product thus consumes less resources, creates less waste and its manufacturing impact is spread over long periods of time. Durability supports eco-efficiency and secures progress towards sustainable consumption and production.

## 3

### Durability is important when it comes to insulation

Insulation materials installed during construction usually remain in place for decades. While one can renovate a building for energy efficiency by adding or replacing insulation in some parts, it can be challenging to replace in others (such as cavity walls or below ground). It is therefore important to use a durable insulation product that will perform consistently throughout the building's lifetime.

The main purpose of insulation is to deliver a comfortable indoor environment and low heating and cooling costs. The performance of insulation products is determined by its thermal resistance (R-value).

This represents how well the insulation product can resist the heat that goes through it. Stone wool's constant R-value helps avoid unexpected increasing heating and cooling expenses caused by insulation capabilities degrading over time.

Another important parameter for selecting durable insulation products is fire safety. Insulation products can have a significant impact on the fire safety of a construction. It is thus important that the fire safety properties of insulation do not deteriorate over time. Non-combustible stone wool will improve the fire resistance of construction elements, which can result in extra time for safe escape in case of a fire. The fire resistance properties will remain unchanged during the life of the building.

1 - The Durability of Products: Standard assessment for the circular economy under the Eco-Innovation Action Plan, EU Commission, 2015
2 - EN 16783:2017: "Thermal insulation products - Product category rules (PCR) for factory made and in-situ formed products for preparing environmental product declarations

# 4

## How can the durability of thermal performance be measured?

The thermal performance of an insulation product over time can best be measured by real-life sampling. This refers to extracting samples from existing buildings and measuring the thermal resistance (R-value). Should the product continue to have the same value as before installation, its thermal performance should be deemed as durable. In some cases, different types of accelerated aging tests can be used to determine durability. Data from such tests should always be treated with caution as the quality of data from such tests can vary widely and may be unreliable.

# 5

## Stone wool is a durable insulation material

Real-life sampling has proven that stone wool's thermal performance remains constant over time[3]. This is particularly important when it comes to investing in a house. The consistent thermal performance of walls, floors and the roof is crucial to ensuring that you do not suddenly face increased bills for heating or cooling after several years of use.

# 6

## Stone wool's thermal performance compares well versus other insulation products

Stone wool might have a slightly higher thickness than some other materials in order to reach the same R-value. The most important aspect, however, is that its thermal performance does not decrease over time. The R-value of stone wool insulation will remain stable over the lifetime of the building.

# 7

## Stone wool insulation does not promote corrosion, and is resistant to mould and mildew

Corrosion is defined as the destructive and unintentional degradation of a material caused by its environment[4]. A common type of corrosion is rust, which affects iron and steel structures. When exposed to moisture, some types of insulation products can release components that increase corrosion on metal surfaces.

Corrosion of metal structures (e.g. steel deck roofs) can lead to extensive damage, sometimes even resulting in the collapse of the structure. Stone wool does not promote corrosion, and will not be impacted by corrosion.

A non-organic, vapour permeable insulation with excellent drying potential such as stone wool also helps avoid mould and mildew, caused by high humidity levels, particularly in moist rooms such as bathrooms and kitchens. This excellent "breathable" capability of stone wool is again coupled with its durability performance which does not suffer from humidity as samples collected from real buildings have proven.

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It is clear that stone wool is a material available for construction projects that features excellent and stable performance, no deterioration or corrosion issues and the longevity to remain in your building for as long as it stands.

The energy-saving power of stone wool insulation is as strong as the day it was installed even after 60 years of use!

3 - FIW, Durability Project Mineral Wool (2016), "Conclusions and Outlook." Available via EURIMA (European Insulation Manufacturers Association) at https://www.eurima.org/uploads/ModuleXtender/Publications/168/2017-02-21_EURIMA-55YearsOfUse_Info_Sheet_V08_final.pdf

4 - UNSW Sydney, School of Materials Science and Engineering, Faculty of Science, definition of corrosion, available via http://www.materials.unsw.edu.au/tutorials/online-tutorials/1-what-corrosion, accessed at 23 Jan.2020

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