MicroFiber®

GLASS WOOL

VS

STONE WOOL

PERFORMANCE COMPARISON

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CHILL FLOW ENERGY

บริษัท ชิวโฟล เอนเนอจี จำกัด

CHILLFLOW ENERGY CO., LTD.

+66 3 090 9717
+66 3 129 3949

info@chill-flow.com
sale1@chill-flow.com

199/611 ตำบลรังสิต
อำเภอธัญบุรี ปทุมธานี 12110
199/611 Rangsit,
Thanyaburi, PathumThani
12110 Thailand

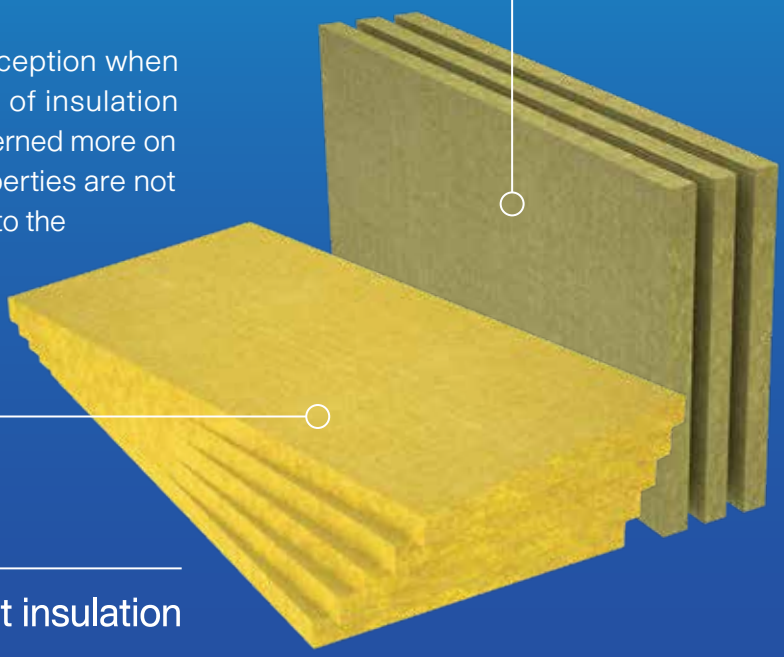
Common misconception about insulation

i

In Thailand, there's still a misconception when comparing across different type of insulation materials as people are often concerned more on density. In fact, key insulation properties are not entirely determined by density due to the different physical characteristics of raw material.

GLASS WOOL

STONE WOOL



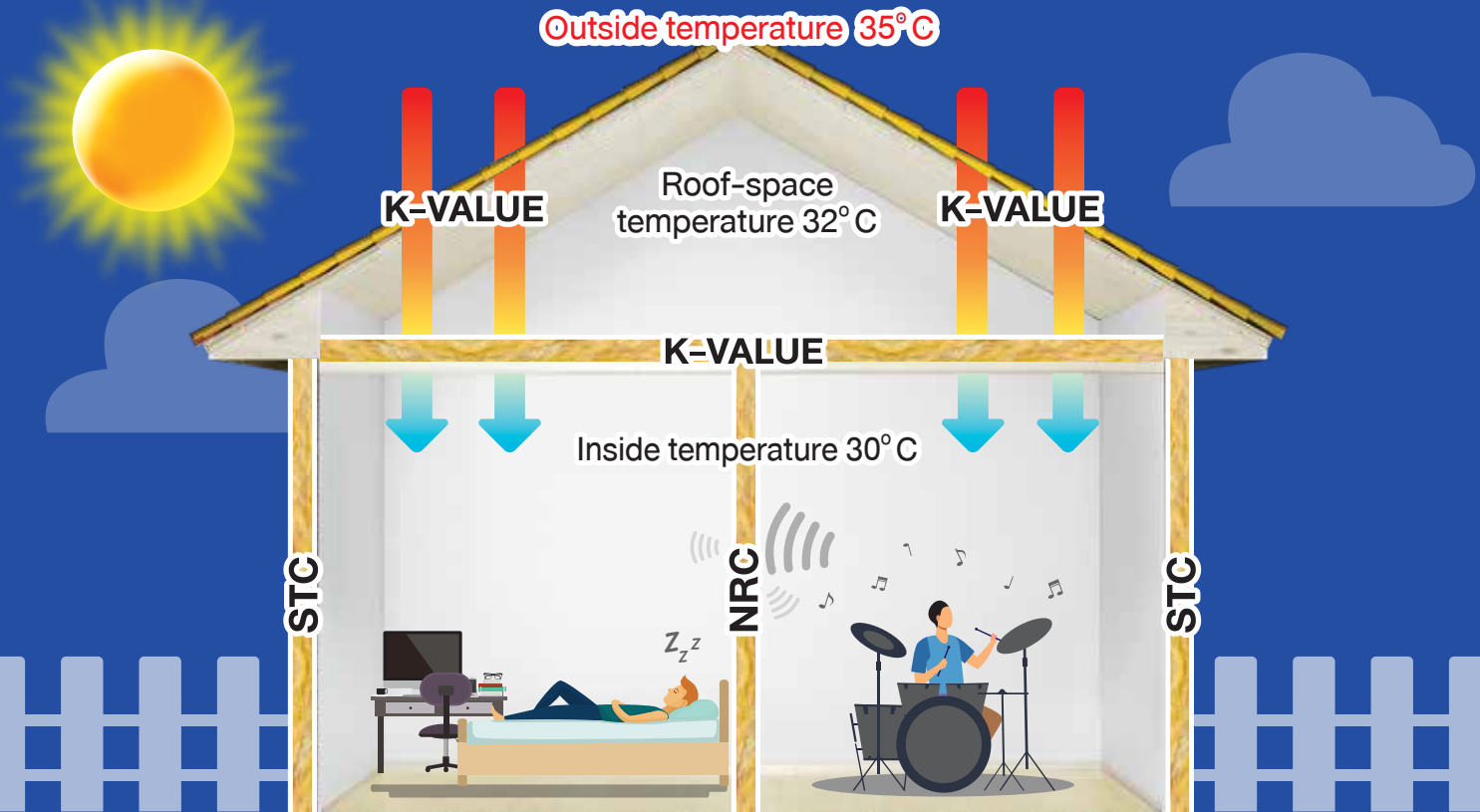
Key metrics on choosing the right insulation

ii K – VALUE

Thermal conductivity (k-value) can be used to compare thermal performance among insulation materials. The lower the k - value, the better the thermal performance as it prevents heat from entering the living areas. Insulation with low k - value can reduce the amount of heat entering the building, which helps save energy and electricity costs.

iii STC, NRC

Acoustic properties include sound absorption (NRC) and sound insulation (STC). NRC ranges between 0 to 1 and the higher the NRC, the better sound absorption performance. This reduces reverberation and controls room reflection. For the STC rating, it reflects how well an insulation attenuates airborne sound. The higher the STC, the better sound insulation performance.



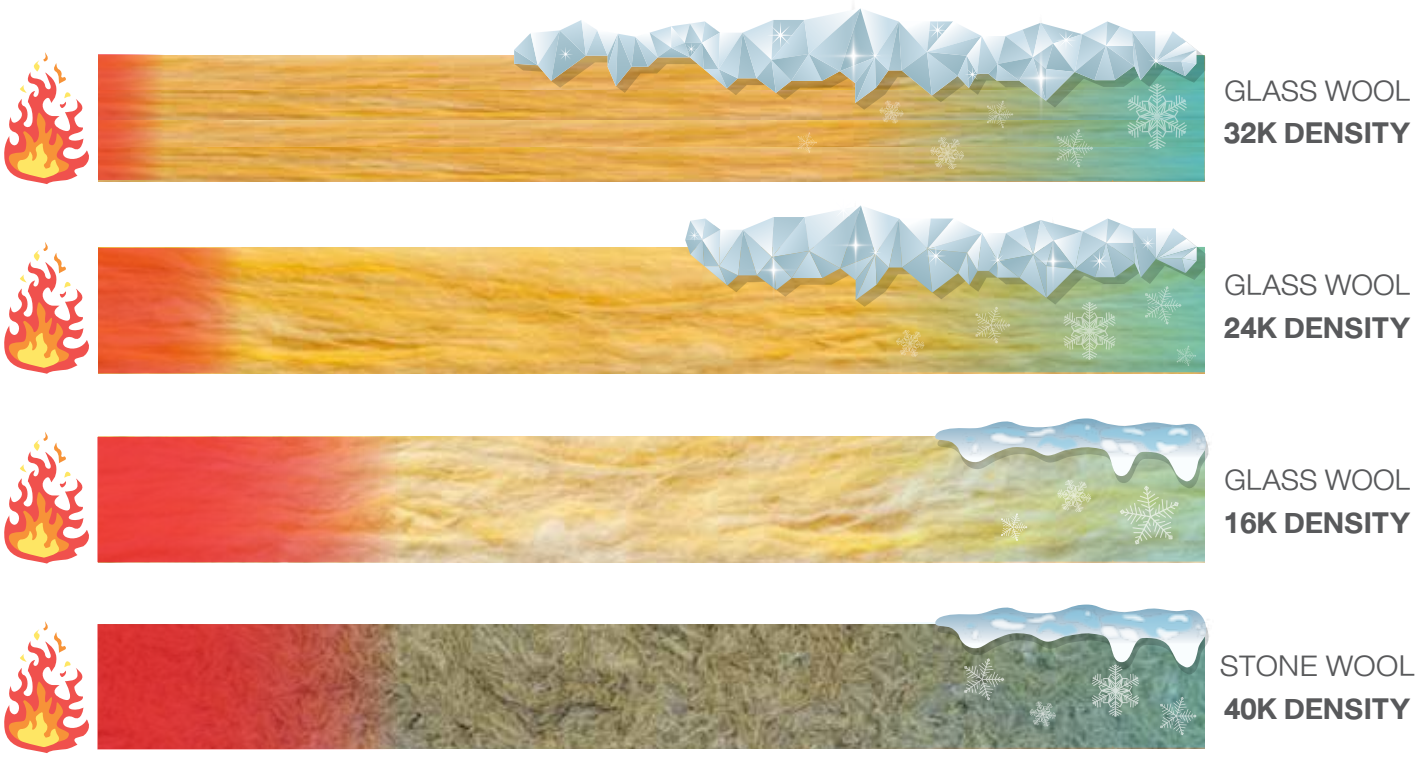
1 THERMAL PERFORMANCE

Thermal Conductivity

Glass wool has better thermal conductivity performance as compared to stone wool. Glass wool with lower density can yield the same thermal insulation properties as stone wool, making it the superior type of insulation when compared to stone wool. For example, glass wool with density of 16 kg/m^3 is equivalent to stone wool with density of 40 kg/m^3

Table summarizing glass wool and stone wool performance with different density based on thermal conductivity is as below:

THERMAL CONDUCTIVITY PERFORMANCE (@20°C)				
Glass wool		VS	Stone wool	
Density (kg/m^3)	K-Value		Density (kg/m^3)	K-Value
16	0.035	=	40	0.036
24	0.033	>	60	0.035
32	0.032	>	80	0.034



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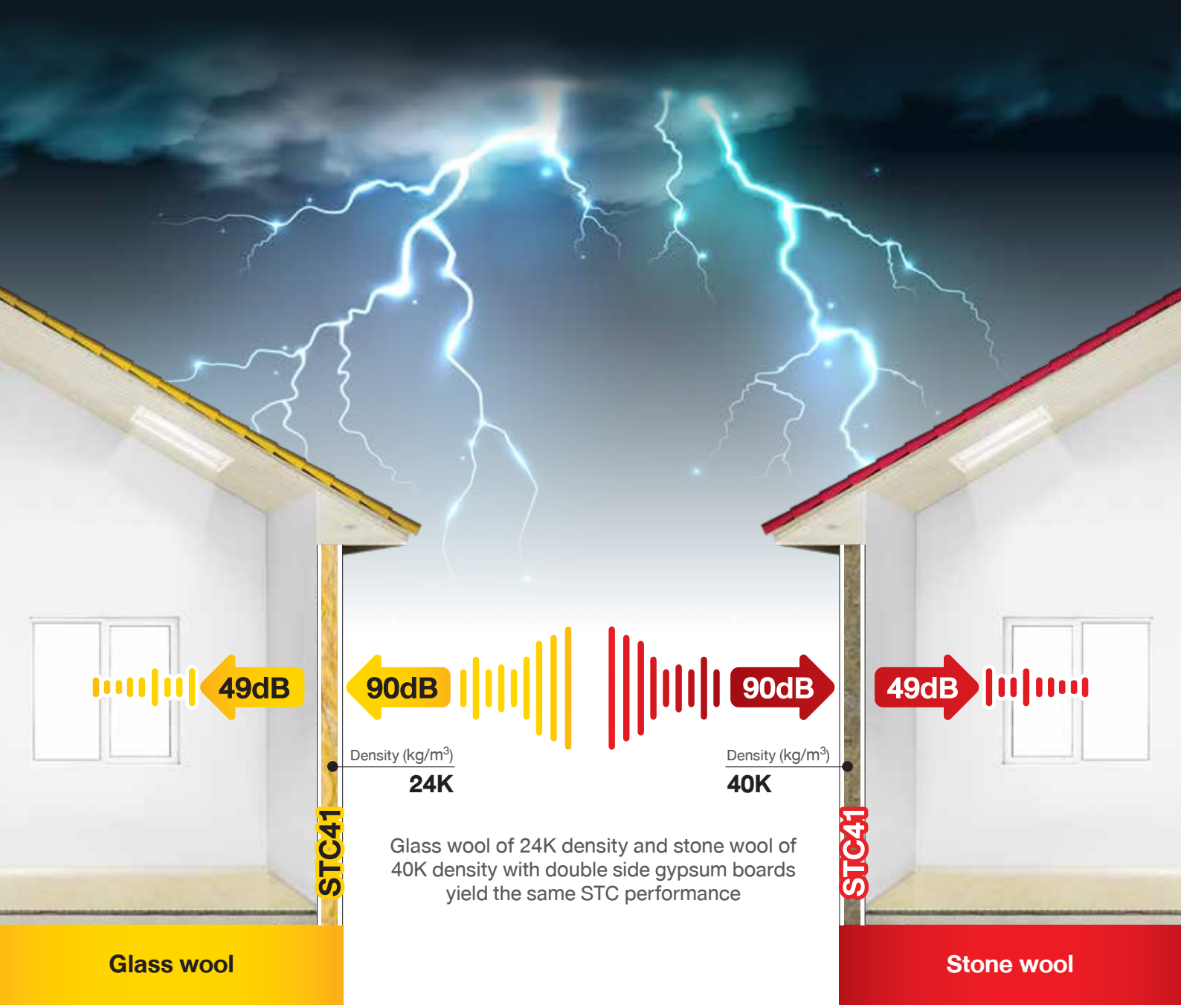
2 SOUND PERFORMANCE

Sound Transmission

Not only it is the perfect material for sound dampening, but Glass wool also makes a great sound barrier for your home and building as well. With half the density of Stone Wool, Glass Wool of 24kg/m^3 is able to yield similar dB reduction performance to Stone Wool of 40kg/m^3 at STC41



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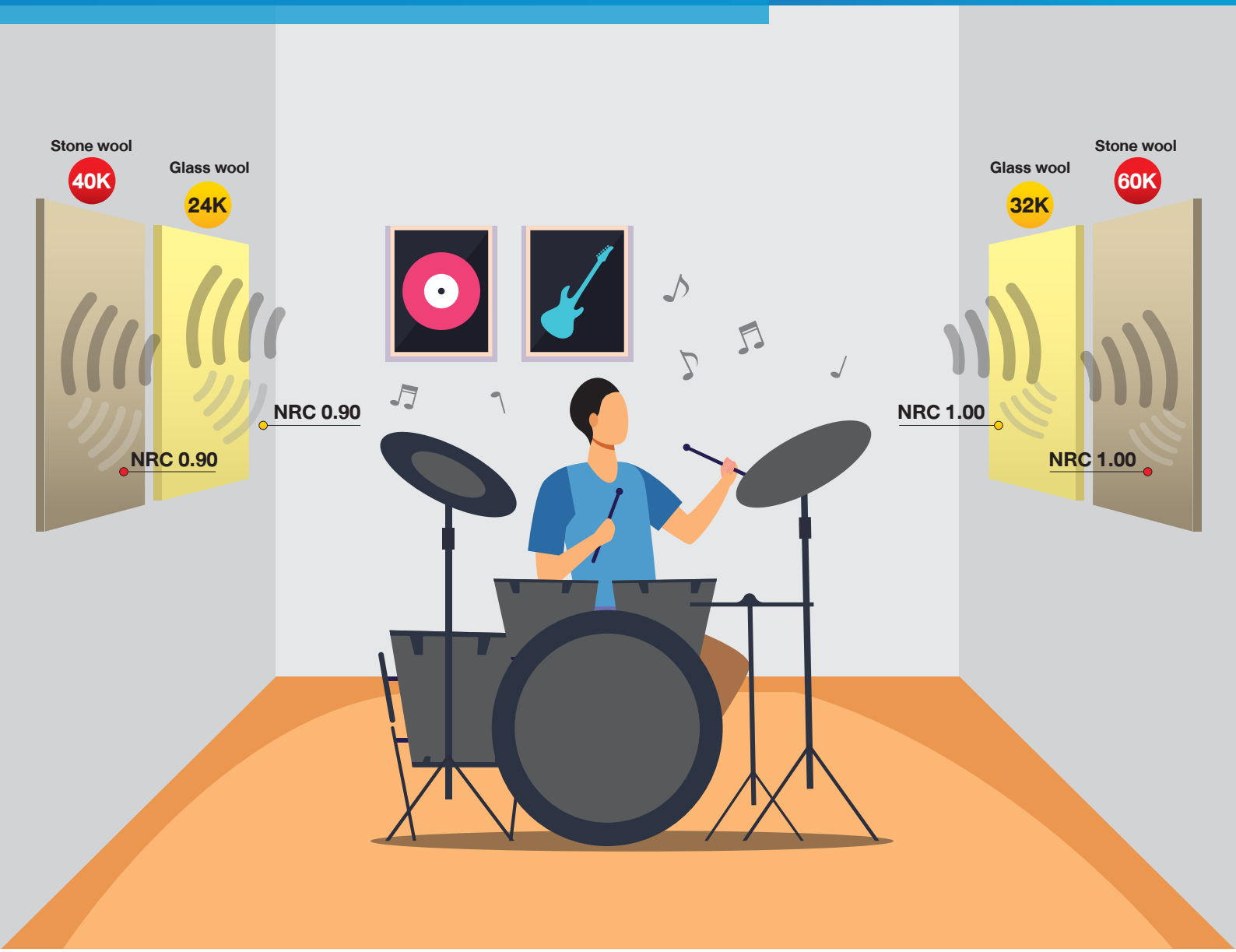
2 SOUND PERFORMANCE

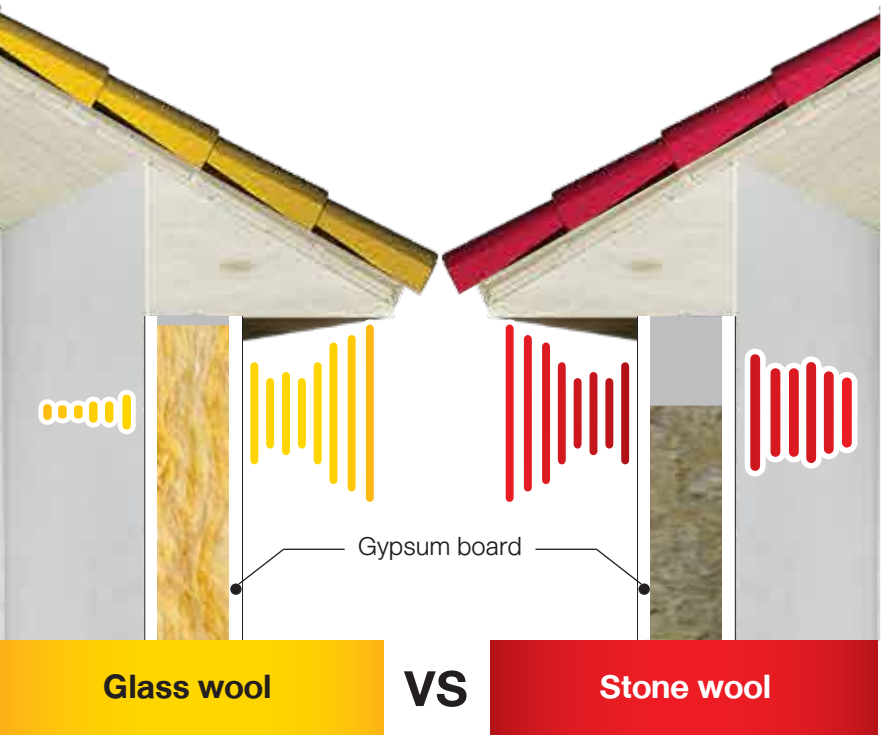


Sound Absorption

Glass wool achieves similar sound absorption performance (NRC) as stone wool at a lower density, making it a more cost - effective solution for sound dampening purposes. Not only it is the perfect material for sound dampening, but Glass wool also makes a great sound barrier for your home and building as well.

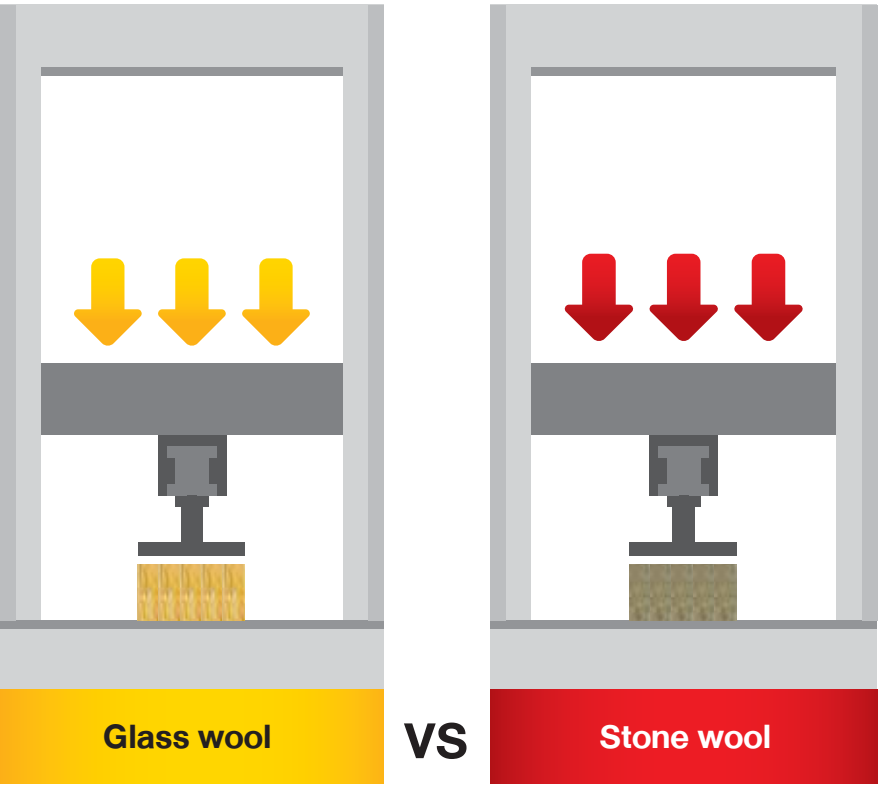
SOUND ABSORPTION (NRC)			
Glass wool		Stone wool	
Density (kg/m^3)	NRC	Density (kg/m^3)	NRC
24	0.90	40	0.90
32	1.00	60	1.00

2 SOUND PERFORMANCE



Effect of SAG to performance

How an insulation board sag when placed vertically plays a part in determining the effectiveness of the insulation board. As the insulation board sags, an air gap is created between the vertically stacked insulation, allowing permeation of heat and noise.

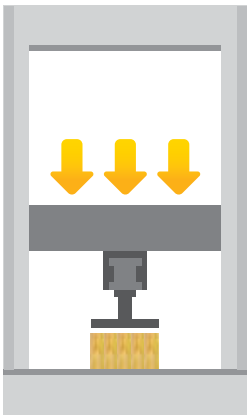


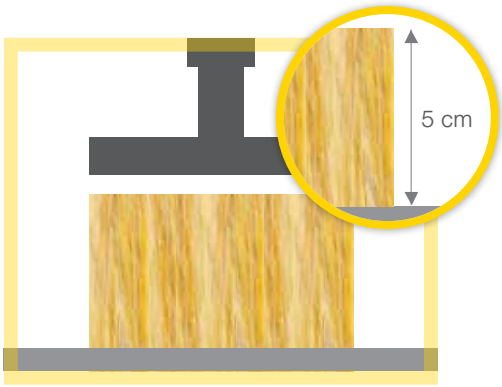
All samples of Glass wool and Stone wool (for all testing methods) are being applied with the same pressure and controlled within the same environment.

2 SOUND PERFORMANCE

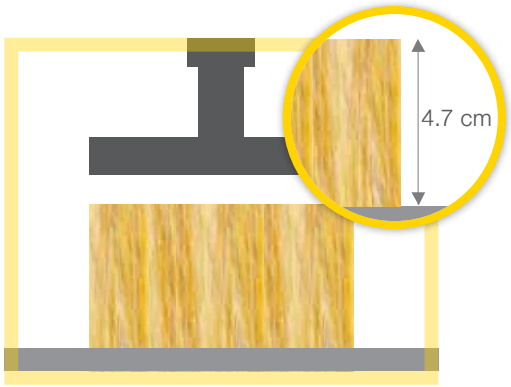
Vertical Compression Test

Glass wool's Sample : 24K



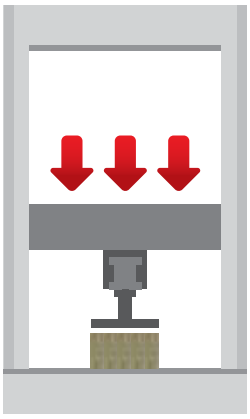


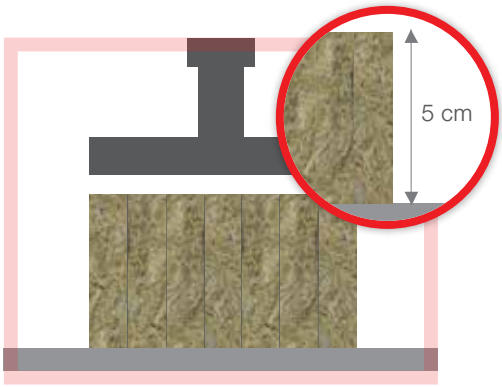
BEFORE : 50 mm



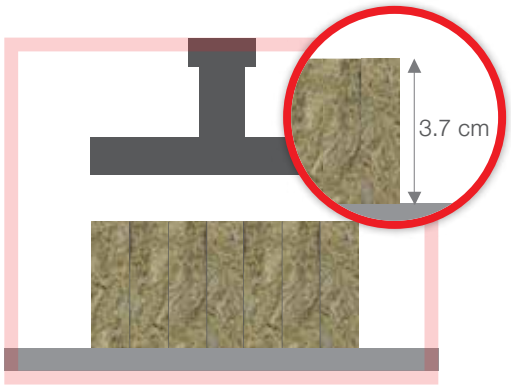
AFTER : 47 mm

Stone wool's Sample : 40K





BEFORE : 50 mm



AFTER : 37 mm

How the insulation material recovers from being compressed should be considered when choosing insulation material. Due to its fiber toughness and porous fiber structure, Glass Wool has higher tendency to revert to its old form when being compressed by heavy force.

SAMPLE	BEFORE	AFTER
24K 50mm	50	47
32K 50mm	50	49
40K 50mm	50	37

3 FLEXURE / BENDING

Flexure / bending

Like Thickness recovery, Glass wool also has better resistance to bending from its fiber toughness, porous fiber structure and its low bulk density. This makes Glass Wool less susceptible to deformation, maintaining its shape throughout its lifetime.

FLEXURE TEST (MM.) (AFTER ONE-WEEK)		
24K 50mm	VS	40K 50mm
5.1		10.5

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4 HIGH TEMPERATURE USAGE

High temperature insulation usage is commonly found among industrial sites installed on storage tanks, steam pipes and boiler systems. It is used to preserve energy in industrial processes and protect passerby from exposure to extreme heat.

Glass Wool

Suitable for Low-Medium Temp Factory

Low to Medium Temp (0 – 400 °C)

Achieving similar results as Stone Wool at a lower cost, Glass Wool enjoys popularity among low to medium temp. (0 - 400 °c) industries such as pulp & paper, sugar millsand food processing plants.

Stone Wool

Suitable for High Temp Power Plant

High Temp (400 – 800 °C)

On the contrary, Stone Wool usage is highly concentrated in specific industries with operating temperature range of 400 °c - 800 °c such as Oil & Gas, Power Plant and other Chemical Refinery Plants.

5 RECYCLED PROPERTIES

GLASS WOOL

MicroFiber used up to 90% recycled glass as a raw material for glass wool insulation. The more glass wool produced, the more we help the world reduce garbage with approval of green label certification. MicroFiber main concern is sustainability not only the from raw material, but also from the production process, packaging, to the actual property of glass wool insulation.

STONE WOOL

The primary materials used producing stone wool insulation are natural stone like basalt and diabase which are the virgin materials needed to be mined.Thus, the more stone wool produced, the more basalt mine need to be built, and the more resources are used.

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บริษัท ชิวโฟล เอนเนอจี จำกัด

CHILLFLOW ENERGY CO., LTD.

+66 3 090 9717
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info@chill-flow.com
sale1@chill-flow.com

199/611 ตำบลรังสิต
อำเภอธัญบุรี ปทุมธานี 12110
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