

TECHNICAL SPECIFICATIONS

ROCK WOOL

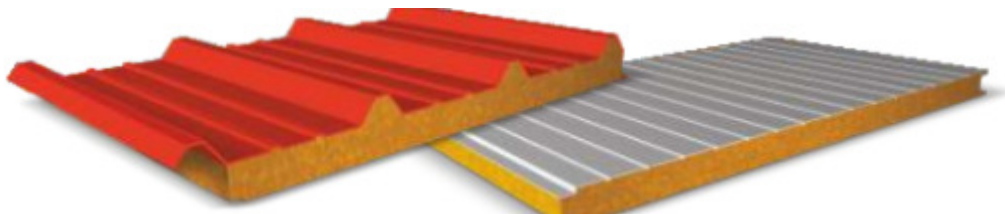
FOR FIRE RESISTANT SANDWICH PANELS

1 Subject

These technical specifications describes the features of the mineral wool/Rockwool used as insulating layer in flat or Profile sandwich panels with fire resistance features.

2 General features

The processing of the Rockwool/Mineral wool panels using TUFF- INSUL rockwool slabs which are in multiples to meet the required thickness & specifications of insulation panels. The top and bottom of the panels are provided with 0.5 mm Galvalume sheets



3 Metal surfaces

Steel

Thickness – BMT / TCT 0.4mm, 0.5mm, 0.6mm, 0.8mm

Metal coating – Galvalume(GL) – AZ 150gsm/ Galvanised (GI)- Zn – 90/120

Paint coating - Polyester based paint

Polyester primer – 5 microns standard colour gray

RMP coating/ SMP coating/ PVDF coating-20microns

as per RAL colour system

Back coat – 5 microns standard colour off white

Resistance to saline mist >/ 500 h

Resistance to moisture >/ 1000 h

4 Dimensions

Length, width and thickness of the mineral wool/ Rock wool panels are

Thickness: 50/75/80/100 mm

Width : 1000 mm

Length: Max. 12000 mm

5 Diameter of the fibres

This is determined according to UNI 6484.

Average diameter: 5 ± 1 micron

Maximum waste type: 2 micron

6 Density

This is determined according to UNI 6485. Materials with the following density values will be used:

Minimum density: 100 ± 8 kg/m³

7 Loss to fire

This is determined according to UNI 10522. For both densities expected, the value is as follows:

Loss to fire: 3.5 ± 0.5 %

8 Size stability at high temperatures

The mineral wool/ Rock wool panels with stand upto 1000 deg C and have the dimensional / size stability up to 2 hrs.

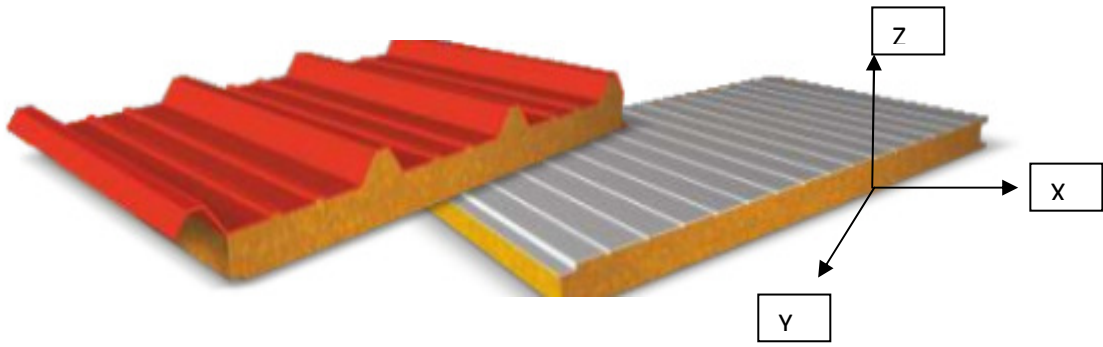
9 Compression

As it is an anisotropic material, the compression features in three directions in the panel are show below.

Axis y: parallel to length

Axis z: parallel to thickness

Axis x: parallel to width



The minimum reference values, determined according to regulation EN 826, are the following for the given density:

Resistance to compression

Axis x (yield load) $R_{cs} = 40 \text{ kPa} = 0.040 \text{ N/mm}^2$

Axis y (load at 10% of deform.) $R_{cs} = 15 \text{ kPa} = 0.015 \text{ N/mm}^2$

Axis z (yield load) $R_{cs} = 60 \text{ kPa} = 0.060 \text{ N/mm}^2$

Modulo di Young

Axis x $E = 2000 \text{ kPa} = 2 \text{ N/mm}^2$

Axis y $E = 150 \text{ kPa} = 0,15 \text{ N/mm}^2$

Axis z $E = 4000 \text{ kPa} = 4 \text{ N/mm}^2$

10 Percentage of infibrato

The content of infibrato material will be determined according to the indications of the regulation ASTM-C-612, taking into account that two measurements will be made with sieves of $250 \mu\text{m}$ and $63 \mu\text{m}$ instead one measurement with a $150 \mu\text{m}$ sieve as set out in the regulation. The following percentages of infibrato must not exceed.

with $250 \mu\text{m}$ sieve 5 %

with $63 \mu\text{m}$ sieve 25 %

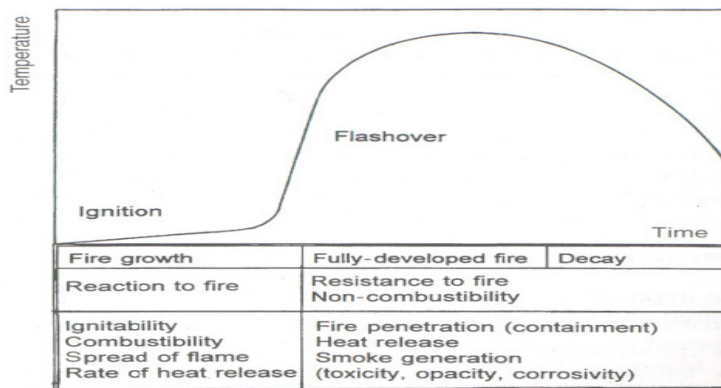
11 Thermal dynamic features

The thermal conductivity of the material must be measured along the fibre (λ_z), thus taking into account the exact orientation of the final sandwich. The ASTM C-518 method is used. The test temperatures must be 10°C and 36°C respectively for the cold and hot plates. They must have the following values.

Minimum density – 100 kg/m^3

$$0.045 \text{ W/m } ^\circ\text{C} \geq \lambda_z \geq 0.043 \text{ W/m } ^\circ\text{C}$$

12 Reaction to fire



Development of a fire.

Reaction to fire is the degree in which a material resists combustion.

The materials are classifiable as belonging to each of the following classes of reaction to fire or a higher one:

- **Italian** law (Ministerial Decree (M.D.) dated 26.6.84): class **1**
- **German** law (DIN 4102, part 1): class **A.1**
- **French** law (NF 92-501 - Oct. 1975): class **M0**

thicknesses 50 - 80 -100 mm, tested:

- According to EN 13823 (single burning test) and EN 11925-2(ignitability test) for reaction to fire, have been classified as A₂ S₁ D₀. Since the panel consists of two steel sheets with a layer of rockwool in between.

Mineral wool core panel class – A₂S₁D₀

PIR panel - BS₁D₀

PUR – B2 panel - BS₃D₀

PUR – B3 panel - CS₃D₀

Where, A1 & A2 – Noncombustable material, B,C,D- moderately combust able material, E,F – Combust able material, S1,S2,S3 – smoke production, D0,D1,D2 – release of flame droplets.

13 Resistance to fire

Capacity of the panel to maintain its mechanical structure, not participate in the fire – act (1000 °C), and keep the thermal insulation for a time X.

THE CLASSIFICATIONS ARE:

- R (MECHANICAL STABILITY)
- E (FLAME RETARDEND)
- I (THERMAL INSULATION)

14 Chemical composition

The panels does not contain lead, crystalline silica or asbestos fibre in any form.

Technical Support Manager

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