



# FRF

مصنع الفجيرة للصوف الصخري  
**FUJAIRAH ROCKWOOL FACTORY**  
(Subsidiary of Fujairah Building Industries P.S.C.)

## FRF PIPES



-  ENERGY SAVING
-  MOLD RESISTANCE
-  SUSTAINABLE & ECO FRIENDLY
-  ASSET LONGEVITY
-  REDUCED CARBON FOOTPRINT
-  CORROSION PREVENTION
-  THERMAL INSULATION
-  SIMPLE APPLICATION
-  UV RESISTANCE
-  ASSET PROTECTION

## DESCRIPTION

Fujairah Rockwool Preformed Pipe section conforming to ASTM C-547 and equivalent BS 3958-4 is intended for the thermal, acoustic insulation and fire protection of pipe works operating at high temperatures.

The pipe insulation is manufactured from long non-combustible rock fibers with a high-performance binder. It is easy to cut, fit, handle and has levels of thermal efficiency and strength. Each section is split and hinged for easy, snap-on applications.

Designed for tough thermal and acoustic insulation pipe works, its combination of density, strength and excellent thermal conductivity at high operating temperatures offer efficient insulation. It is highly applicable for industrial steam and process pipelines in oil refineries, chemical plants and power stations. It also has the versatility to be used in heating and ventilating or other non-industrial applications.

## APPLICATION

Chemical and Petrochemical installations and their power plants are dependent on the process of piping for smooth and interrupted operations. Core components such as appliances, columns, vessels, boilers and turbines need to be properly connected with one another for uninterrupted flow of materials and energy.

### **Purpose of insulation**

The functions of proper thermal insulation for piping include:

- Reduction of heat losses
- Cost savings
- Reduction of CO<sub>2</sub> emissions
- Process control: ensuring the stability of the process temperature
- Noise reduction
- Prevention of condensation
- Personal Protection against high temperatures



## STANDARD AVAILABLE PRODUCTS

STANDARD SIZE [MTR]	STANDARD THICKNESS [MM]	STANDARD DENSITY [KG/M <sup>3</sup> ]
1.2	50,75,100	100,128

## FACING

CODE	DESCRIPTION
CXX	Unfaced Pipe section
C2XX	Pipe section with Aluminum Foil Facing

## NOMINAL THERMAL CONDUCTIVITY

Fujairah Rockwool Preformed Pipe Section shows remarkably low thermal conductivity values.

Typical figures are shown in accordance with ASTM C-335.

MEAN TEMPERATURE	THERMAL CONDUCTIVITY (W/MK) FOR THE FOLLOWING DENSITIES IN KG/M <sup>3</sup>	
	100	140-150
°C		
24	0.033	0.032
35	0.035	0.033
50	0.037	0.035
100	0.044	0.041
150	0.052	0.048
200	0.061	0.056
250	0.072	0.065
300	0.084	0.078

These are typical values subjected to normal manufacturing and testing variance.



## SOUND ABSORPTION COEFFICIENTS

Suitable for acoustical insulation as per BS-3638 and ISO 0354, and ASTM C423

## STANDARD DELIVERY

Nominal Pipe Size [inches]	Inner Diameter [mm]	Standard Thickness [mm]	Standard Density (Kg/m <sup>3</sup> )
1/2	21	50, 75, 100	100, 128
3/4	27	50, 75, 100	100, 128
1	34	50, 75, 100	100, 128
1 1/4	42	50, 75, 100	100, 128
1 1/2	48	50, 75, 100	100, 128
2	60	50, 75, 100	100, 128
2 1/2	76	50, 75, 100	100, 128
3	89	50, 75, 100	100, 128
3 1/2	102	50, 75, 100	100, 128
4	114	50, 75, 100	100, 128
5	140	50, 75, 100	100, 128
6	168	50, 75, 100	100, 128
7	194	50, 75, 100	100, 128
8	219	50, 75, 100	100, 128
9	244	50, 75, 100	100, 128
10	273	50, 75, 100	100, 128
12	324	50, 75, 100	100, 128
14	356	50, 75, 100	100, 128
16	406	50, 75, 100	100, 128
18	456	50, 75, 100	100, 128
20	508	50, 75, 100	100, 128
22	556	50, 75, 100	100, 128
24	610	50, 75, 100	100, 128

Density range from 80 - 180 kg/m<sup>3</sup>.  
180 kg/m<sup>3</sup> density is available up to 8" diameter  
Thickness range from 25-120 mm.  
Above 120mm can be in multi-layer

## COMPATIBILITY

Compatible with all other forms of material with which it is likely to come in contact with normal industrial and building applications.

## SERVICE TEMPERATURE

Rockwool Insulation has a service temperature of 780°C when tested in accordance with DIN 52271 for 80mm thickness and 100 kg/m<sup>3</sup> density.

FRF rock wool can withstand more than 1000°C without melting.

## FIRE PROPERTIES

Non-combustible when tested in accordance with BS-476 part 4, ASTM E-136 and BS EN ISO 1182. The products have been tested following BS EN ISO 1182 and BS EN ISO 1716 and shown a reaction to fire performance of Class A1 following BS EN 13501-1 and can be considered as non-combustible.

B.S. 476 PART 4 – Non-Combustible

B.S. 476 PART 6 – Fire Propagation

B.S. 476 PART 7 – Surface Spread of Flame

Class A, when tested in accordance with ASTM E-84.

FRF Rockwool fibres can withstand more than 1000°C without melting. When the temperature rises above 250°C, the binder will evaporate in the zone which is exposed to 250°C or more. But the fibres will remain intact as their inbuilt cohesiveness and layering will keep the fibres together, ensuring that the material will retain its rigidity and protect the material beneath it from being affected by the fire.



## BIOLOGICAL PROPERTIES

Rot-proof, non-hygroscopic, will not sustain vermin and will not encourage growth of bacteria, mold or fungi.

No fungi growth observed when tested as per ASTM C1338



# PHYSICAL PROPERTIES

Asbestos-free and shot content is very low when tested as per ASTM C-1335 and BS 2972: Section 14.

# CHEMICAL NEUTRALITY

Chemically neutral with a pH value of 7-8 when tested in accordance with BS 2972: Section 22. It will neither cause nor promote corrosion. It meets the requirements of ASTM C-795 the standard specification for thermal insulation for use in contact with austenitic stainless steel when measured according to standard methods of ASTM C - 692 (Corrosion Test) and ASTM C - 871 (Chemical Analysis). It contains low level of chlorides when tested in accordance with BS 2972: Section 21, ASTM C-871 and AGI Q 135

# CORROSIVENESS

Corrosiveness in accordance with ASTM C665. FRF insulation material does not show corrosion when in contact with steel, greater than that observed with comparative cotton.

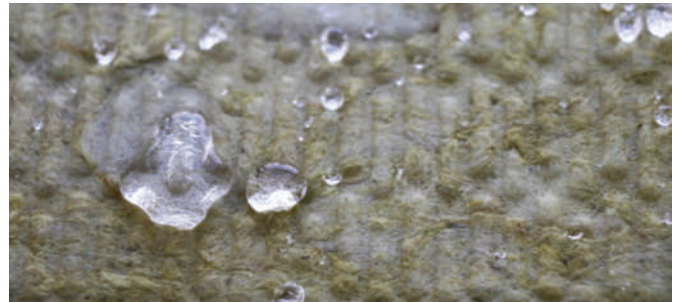


Pipe corrosion without Rockwool Pipe Insulation

# WATER ABSORPTION

Water repellent, non-hygroscopic, non-capillary. It does not absorb any moisture from the air. Water absorption test certificates conducted under BS 2972 : Section 12 ASTM C-209 are available upon request.

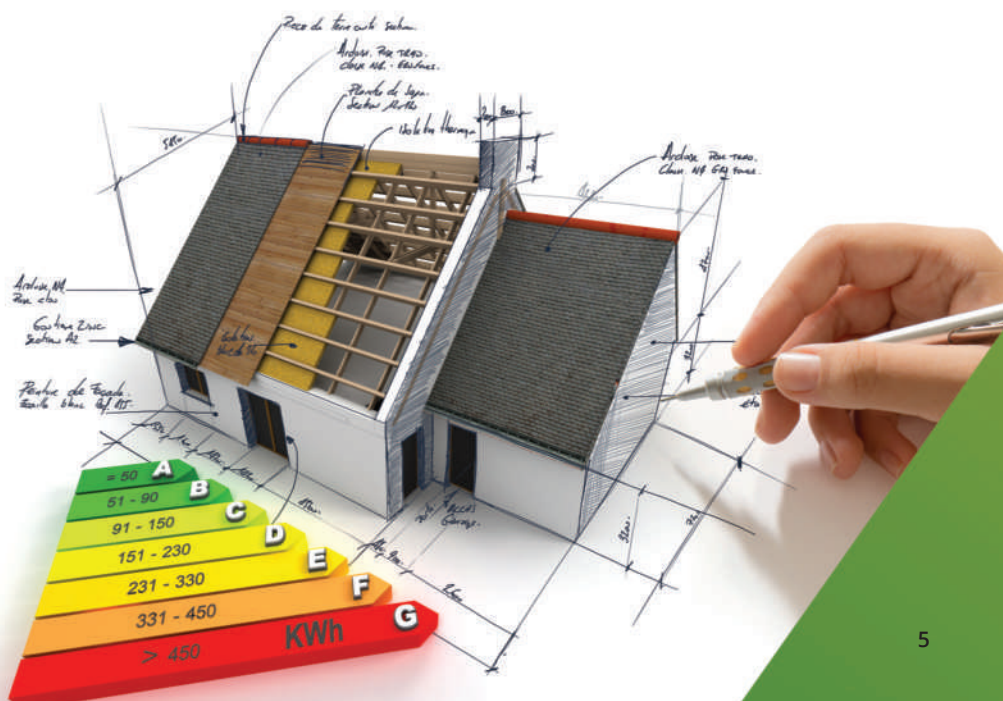
Water absorption <1 Kg/m<sup>2</sup> as per BS 2972 Part 2  
Water Vapor Sorption -1 % maximum



# ENERGY EFFICIENCY & BUILDING SUSTAINABILITY

Green Building Concept is based on three chief elements that are Building Sustainability, Energy Efficiency and Health & Safety. At FRF Rockwool, we duly comply and support all such initiatives. Our expertise in this field enables credit point accumulation for our customers through LEED and Estidama, the two of the leading building accreditation systems in UAE.

- Green Star Compliant (VOC)
- No CFCs or HCFCs
- Zero Ozone Depletion Potential
- Low GWP
- Superior thermal insulation
- Non-Allergenic Properties
- Dubai Central Laboratories (DCL)

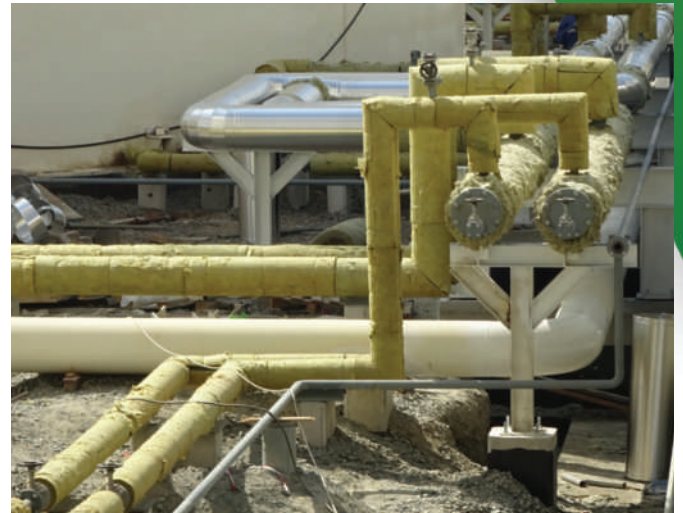


# INDUSTRIAL APPLICATIONS

Fujairah Rockwool Factory manufactures Rockwool Preformed Pipes to meet the stringent process parameters & operating conditions of the diversified Industrial segments.

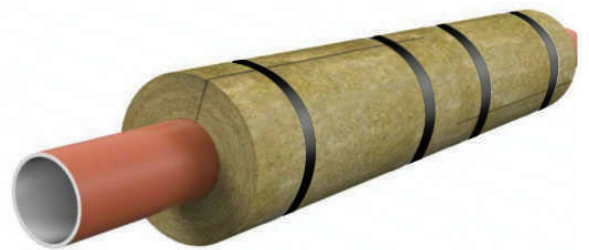
The Oil & Gas , Refining , Petrochemical , Power & other Industrial Plants across Middle East have been catered by FRF Rockwool products for more than three decades and FRF earned the reputation as **The Industry's preferred choice.**

Pipes sections that can be applied in a single layer is a big advantage that you will get by opting for FRF pipes. By using FRF pipe sections we can avoid the formation of thermal bridges and their negative effects. As a result, the number of thermal bridges is reduced.



## BANDING

Our engineers recommend that you get the best quality in banding to secure pipes by applying three steel bands per section length with the end being 100 mm from the lateral joints. In the case of wire ties or spiral binding, pipe sections with an outer surface diameter of 200 mm or less are ideal.



## MULTIPLE LAYERS

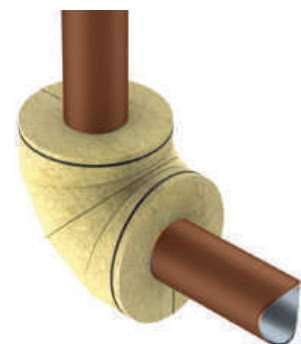
In the pipe section, when there is the requirement for more than one layer by our customers, we recommend that both layers must be banded to ensure a consistently tight fit for the insulation. In this scenario, the outer layers of the section should be applied with staggered joints, laterally and longitudinally.



## ELBOWS/BENDS

In order to get insulated elbows with pipe section, the section is cut at angles to form segments. Segments primarily depend upon the size of the pipe and angle of the elbow. Steel banding or wire ties per section are used when the pipe section segments are fit around the pipe.

With any type of FRF insulation, customers can fill any minor gaps between the segments easily.



## INSTALLATION RECOMMENDATION

All contact surfaces should be clean, dry and free from dust. Manual handling of the material to be done only using the suitable protective equipment.

Fit the Preformed pipe sections closely around the pipe , with the lengthwise joint turned towards the bottom side. The lengthwise joints must be staggered at an angle of at least 30 degrees to each other. The pipe sections are secured with binding wire (thickness 0.5mm ) at least 3 bands per meter. For insulation thickness above 100mm or temperatures above 250° C, the insulation should be applied in 2 layers. In case of multi-layer insulation it is recommended that the lengthwise and crosswise joints are staggered.

## MAINTENANCE

No maintenance is required. FRF pipes have a high resistance to accidental damage from knocks and handling during installation and maintenance. Dimensionally stable under varying conditions of temperature and humidity, rot-proof, odorless, non-hygroscopic and will not sustain vermin or fungus due to its inorganic and mineral compositions.

The product will maintain its thermal properties throughout the lifetime of the construction and will not age. FRF Rockwool is non-toxic and not hazardous to health.

## STORAGE

To avoid moisture in the building construction, FRF Rockwool insulation products stored outside must be kept dry.

We recommend products to be always stored in covered and dry areas. Fujairah Rockwool is not liable for the damage resulting from inadequate utilization, loading and offloading and mishandling of its products.

## WARRANTY

With no control over installation design, workmanship and accessory materials and conditions of application, Fujairah Rockwool Factory in no way warrants the results or performance of any installation containing their products. All implied warranties including the warranties of merchantability and fitness for a particular purpose is also included in this warranty disclaimer. We reserve the right and can alter product specifications without prior notice as it is based on the policy of Fujairah Rockwool Factory for continued research and development to improve our products.

We strongly urge not to apply the installation methods described in this brochure without proper consultation and according to your specific requirements. The final decision about the particular FRF material and installation methods should be made only by specifier, consultant or contractor.

## AVAILABILITY

Manufactured by Fujairah Rockwool Factory [FRF], a subsidiary of Fujairah Building Industries [FBI] with headquarters and production facilities located in Al Hayl, Fujairah, United Arab Emirates.

FRF products are available directly from FRF as well as through a vast and reliable network of local distributors.

**Special products are manufactured on request.**

## PACKING

Supplied in shrink wrapped polyethylene sheet.



## PRICING & TECHNICAL ADVICE

For further details of information on technical data, specialist product information, applications, heat loss calculations or optimum thickness, our Sales Office can be approached.

For details on price, our Sales Office can be contacted.

**Call/Mail to Inquire:**

Tel: +971 9 222 2297, Email: sales@frf.ae



مجلس أبوظبي للجودة والمطابقة  
ABU DHABI QUALITY & CONFORMITY COUNCIL



الإدارة العامة للدفاع المدني - عجمان



بلدية دبي  
DUBAI MUNICIPALITY



INSULATION FOR SECURING OUR **FUTURE**



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