



## SRW HVAC Insulation

(Duct Board, Duct Wrap, Duct Liner & Pipe Insulation)

- Non-Combustible, Fire Safe
- Zero Flame Spread Index
- Zero Smoke Develop Index
- Euro class Fire classification "A1"
- Meets ASHRAE 90.1 –2010
- Meets Thickness requirement BS 5422:2009
- Low VOC & Environmental friendly
- Insulation to last the life of Mechanical equipment





## Company Profile

Saudi Rockwool Factory (SRWF) is a subsidiary of Zamil Industrial Investment Company.

Since 1992, we are engaged in manufacturing of high Quality Rockwool insulation products catering the needs of building (Residential & Commercial) & industrial insulation market in the GCC region.

Our first manufacturing plant was established in 1992 with the facility of producing Gray Rockwool products and later Yellow Rockwool products were introduced by SRWF to cope with the latest technology of Cupola.

Currently SRWF has two manufacturing facilities in KSA (Central region) with the combined production capacity of 65,000 tons per annum. This makes us the Largest Manufacturer of Rockwool in the GCC region. SRWF has expertise in producing wide range of Rockwool insulation products like Panel/Slabs, blankets, Mattress with wire mesh, Pipe sections and loose wool.

SRWF Rockwool insulation products helps construction sector fulfill their LEED, Sustainability requirement as well achieving energy efficiency in the buildings and industrial operations.

SRWF has a wide sales network spread across the GCC through strong Dealer networks as well as dedicated SRWF offices in Riyadh, Dammam, Jeddah, Dubai & Qatar to serve the demand of Rockwool insulation of their respective regions.



## Quality Management

SRWF strive to provide reliable products, on-time delivery and dependable support to meet customer's highest expectations. We listen to our customer and convince them with our performance and innovation. We supply flawless products and services to ensure our customer's highest satisfaction.

The highly equipped in-house laboratory is utilized to perform most of raw material and product testing. SRWF products are tested at regular intervals by local and International third party laboratories.

SRWF products are tested & certified for Thermal, Acoustic & Fire properties and possess various certificates like UL, CE, FM Approval, UL Green guard, DCL, SASO, Warrington (Euro Fire Classification Class A1) and many more..

SRWF maintains ISO 9001 Quality system certification since 1998.

SRWF products are approved for use in buildings by Saudi Civil Defense, Dubai Civil Defense, Qatar Civil Defense and Bahrain Civil Defense.

Being an insulation manufacturer, we are committed to provide Eco-friendly insulation material to achieve Stainability requirement of a building and help to protect & preserve the environment for our future generations.



## Description

SRW Rockwool Insulation Products are manufactured by melting natural rocks (Basalt) at 1600°C, making it naturally durable and stable. Rockwool fibers are Natural inorganic mineral fibers which exhibits life cycle similar to a rock.



The unique physical structure of SRWF Rockwool keeps its shape and toughness, and it is not affected by changes in temperature or humidity.

SRWF Rockwool products provides excellent thermal, acoustic & fire performance. Thanks to its very low thermal conductivity, very high melting temperature and it's open cell structure.

SRWF offers a complete range of insulation products for HVAC applications to enhance the efficiency of the system.

SRWF offers Duct board, Duct wrap, Duct Liner and Pipe sections used for thermal insulation for Ducts, Pipes and equipments for both cold & hot applications.

SRWF Rockwool insulation are used under extreme conditions of temperature and it retains its insulation properties in both very low and very high (up to 750°C) temperature.

## Features & Benefits

- Reduces Energy Consumption
- Reduces Operating Cost
- Increases HVAC System Efficiency
- Excellent acoustical properties
- Non Combustible
- Chemically inert
- Water repellent
- Easy to handle and Install
- Durable

## Compliance

Standard	Description
ASTM C553	Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
ASTM C665	Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
ASTM C 612	Mineral Fiber Block and Board Thermal Insulation
BS-EN 13162	Thermal insulation products for buildings-Factory made mineral wool (MW) products Specification
ASTM C1104/C-1104M-00	Water Vapor sorption
ASTM E 96A	Water Vapor Permeability
UL 723 / ASTM E 84	Surface Burning Characteristics
NFPA 90A	Standard for the installation of air-conditioning and ventilating systems
NFPA 90B	Standard for the installation of warm air heating and air-conditioning systems
BS 476-4	Fire tests on building materials and structures. Non-combustibility test for materials
BS 476-6	Fire tests on building materials and structures. Method of test for fire propagation for products
BS 476-7	Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products
BS -2972	Methods of test for inorganic thermal insulating materials

## Performance

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### Non-Combustibility

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SRWF Duct wrap and Duct Board insulation products are classified with Euroclass fire rating "A1" and are Non-combustible as per ASTM E 136, BS EN ISO 1182 & BS EN ISO 1716.



### Surface Burning Characteristics

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When tested in accordance with UL 723, ASTM E 84, "0" Spread of Flame Index  
"0" Smoke developed Index.

Which makes it suitable for inside the building insulation application.

### Moisture Absorption:

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Less than 0.2% by volume when tested in accordance with ASTM C 1104, ASTM C 209 and EN 1609 & EN 12087. SRWF Rockwool insulations show no sign of absorbing water by capillary attraction.

SRWF Rockwool insulations are treated with special additives to improve their resistance to water and moisture absorption.



### Vapor Barrier:

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FSK/ FRK faced Saudi Rockwool products have very low vapor permeability and comply to the requirement of ASTM E 96.

### Non Toxic

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Saudi Rockwool products are certified by UL GREENGUARD for low volatile organic compounds. GREENGUARD Gold Certified products can be used to earn valuable credits for LEED certification. GREENGUARD products are broadly recognized and accepted by sustainable building programs and building codes around the world.

### pH Neutrality

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SRWF Rockwool insulation is chemically inert and compatible with all types of ducts, pipes, equipments and fittings. A typical extract of Rockwool insulation is neutral or slightly alkaline with pH 7 to 9.

### Biological

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SRWF Duct insulation is a naturally inert and rot proof material that does not encourage or support the growth of fungi, moulds or bacteria or offer sustenance to insects, when tested as per ASTM C 1338.

### Corrosion Resistant

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The presence of sodium and silicate ions in the rockwool insulation has been found to be inhibitory to the external stress corrosion cracking caused by chloride & fluoride ions.

The Concentration of these ions was measured according to the test method of ASTM C 871, it was found that the leachable ions are within the acceptable safe zone as per ASTM C 795. Thus Saudi Rockwool does not cause or initiate or promote any kind of corrosion.



### Sustainable & Environmental Friendly

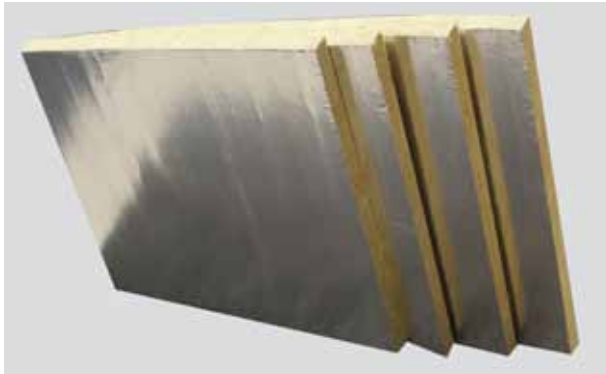
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Saudi Rockwool insulations are made from Natural Rock (Basalt), which has "Zero Ozone Depletion Potential" and "Zero Global Warming Potential".

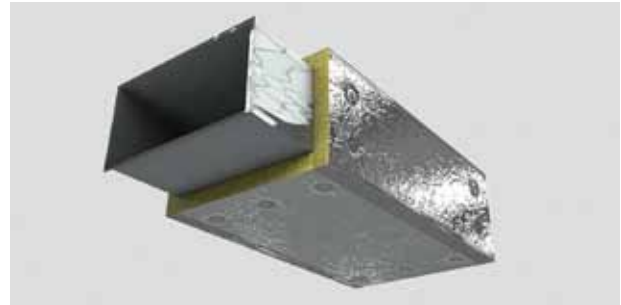


## SRW Duct Board

SRW Duct Board insulation are light weight rigid/semi-rigid insulation faced with reinforced aluminum foil in conformance with ASTM C 612. SRW Duct board are used for the thermal insulation of supply/ return air ducts concealed or exposed to condition areas as well as external exposed ducts.



These products are recommended for the service temperature of up to 450° C.



**Density range:** 35, 48, 64 & 96 Kg/m<sup>3</sup>

**Dimensions\*:** 1.2m x 0.6m (L x W)

\*Other dimensions are available upon request

**Facing:** Online factory applied glass reinforced aluminum foil / kraft laminated facing (FSK/FRK).

Standard Product Range									R- Value @ 24 °C
Product	Density		Thickness		Width		Length / Bag		m <sup>2</sup> . K/W
	Kg/m <sup>3</sup>	lb/ft <sup>3</sup>	mm	inch	m	ft	m	ft	
DB-35	35	2.2	25	1	1.2	4	0.6	1.98	0.658
			38	1 1/2					1.000
			50	2					1.316
DB-48	48	3	25	1	1.2	4	0.6	1.98	0.694
			38	1 1/2					1.056
			50	2					1.389
DB-64	64	4	25	1	1.2	4	0.6	1.98	0.735
			38	1 1/2					1.118
			50	2					1.471
DB-96	96	6	25	1	1.2	4	0.6	1.98	0.758
			38	1 1/2					1.152
			50	2					1.515

## Thermal Conductivity

It is an ability of a material to conduct heat, lower the thermal conductivity better the insulation performance.

Saudi Rockwool insulations has a stable thermal conductivity value even at high mean temperatures

compare to other Insulation materials. Saudi Rockwool products are tested for thermal performance as per ASTM C 177 & ASTM C 518.

Thermal Conductivity (W/m.K)							
Product	Density Kg/m <sup>3</sup>	Mean Temperature (°C)					
		-4	10	24	50	100	200
DB-35	35	0.03	0.034	0.038	0.043	0.051	0.083
DB-48	48	0.029	0.033	0.036	0.039	0.049	0.063
DB-64	64	0.029	0.033	0.035	0.039	0.048	0.062
DB-96	96	0.028	0.032	0.033	0.037	0.044	0.060

Thermal Conductivity (Btu.in/ft <sup>2</sup> h.F)							
Product	Density lbs/ft <sup>3</sup>	Mean Temperature (°F)					
		25	50	75	122	212	392
DB-35	2.2	0.21	0.24	0.26	0.3	0.36	0.58
DB-48	3	0.2	0.23	0.25	0.27	0.34	0.44
DB-64	4	0.2	0.23	0.24	0.27	0.33	0.43
DB-96	6	0.19	0.22	0.23	0.26	0.31	0.42

## SRW Duct Wrap

SRW Duct Wrap insulation are light weight flexible insulation faced with reinforced aluminum foil in conformance with ASTM C 553/ ASTM C 665. SRW Duct wrap are used for the thermal insulation of supply/ return air ducts concealed or exposed to condition areas.

These products are recommended for the service temperature of up to 450° C.



**Density range:** 35, 48 & 64 Kg/m<sup>3</sup>

**Dimensions\*:** 1.2m x 4, 6, 8, 10 m (W x L)

\*Other dimensions may be available upon request

**Facing:** Online factory applied fiber glass reinforced aluminum foil / kraft laminated facing (FSK/FRK).

Standard Product Range									R- Value '@ 24°C
Product	Density		Thickness		Width		Length / Bag		m <sup>2</sup> . K/W
	Kg/m <sup>3</sup>	lb/ft <sup>3</sup>	mm	inch	m	ft	m	ft	
DW-35	35	2.2	25	1	1.2	4	12*	40	0.658
			38	1 1/2			12*	40	1.000
			50	2			10	33	1.316
DW-48	48	3	25	1	1.2	4	12*	40	0.694
			38	1 1/2			12*	40	1.056
			50	2			10	33	1.389
DW-64	64	4	25	1	1.2	4	12	40	0.735
			38	1 1/2			12	40	1.118
			50	2			10	33	1.471

\* Products supplied two rolls of 6 meter in one bag.

## Thermal Conductivity

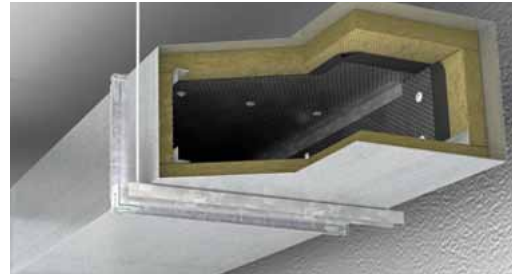
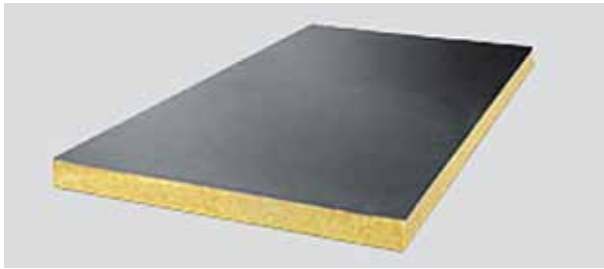
Thermal Conductivity (W/m.K)							
Product	Density Kg/m <sup>3</sup>	Mean Temperature (°C)					
		-4	10	24	50	100	200
DW-35	35	0.030	0.034	0.038	0.043	0.051	0.083
DW-48	48	0.029	0.033	0.036	0.039	0.049	0.063
DW-64	64	0.029	0.033	0.035	0.039	0.048	0.062

Thermal Conductivity (Btu.in/ft <sup>2</sup> h.F)							
Product	Density lbs/ft <sup>3</sup>	Mean Temperature (°F)					
		25	50	75	122	212	392
DW-35	2.2	0.21	0.24	0.26	0.3	0.36	0.58
DW-48	3	0.20	0.23	0.25	0.27	0.34	0.44
DW-64	4	0.20	0.23	0.24	0.27	0.33	0.43

## SRW Duct Liner

SRW Duct Liner insulation are light weight rigid/ semi-rigid insulation faced with Woven black fiber glass (WBFG) in conformance with ASTM C 612. SRW Duct Liner are used for acoustic insulation of air conditioning ducts and plenums.

These products are recommended for the service temperature of up to 450° C.



**Density range:** 35, 48, 64 & 96 Kg/m<sup>3</sup>

**Dimensions\*:** 1.2m x 0.6m (L x W)

\*Other dimensions are available upon request

**Facing:** Online factory applied stable Woven black Fiber Glass fabric facing (WBFG).

**Noise Reduction Co-efficient (NRC):**

Standard Product Range									R- Value @ 24 °C
Product	Density		Thickness		Width		Length / Bag		m <sup>2</sup> . K/W
	Kg/m <sup>3</sup>	lb/ft <sup>3</sup>	mm	inch	m	ft	m	ft	
DL-35	35	2.2	25	1	1.2	4	0.6	1.98	0.658
			38	1 1/2					1.000
			50	2					1.316
DL-48	48	3	25	1	1.2	4	0.6	1.98	0.694
			38	1 1/2					1.056
			50	2					1.389
DL-64	64	4	25	1	1.2	4	0.6	1.98	0.735
			38	1 1/2					1.118
			50	2					1.471
DL-96	96	6	25	1	1.2	4	0.6	1.98	0.758
			38	1 1/2					1.152
			50	2					1.515

Noise Reduction Co-efficient								
Density Kg/m <sup>3</sup>	Thickness (mm)	Octave Frequencies (Hz)						NRC
		125	250	500	1000	2000	4000	
48	25	0.13	0.46	0.79	0.95	0.58	0.36	0.70
	35	0.20	0.55	0.75	0.80	0.95	0.90	0.80
	50	0.28	0.72	1.01	1.02	0.98	0.98	0.95
	75	0.52	0.96	1.18	1.07	1.05	1.05	1.00
64	25	0.14	0.25	0.65	0.98	1.01	1.01	0.75
	30	0.10	0.40	0.87	0.97	0.90	0.90	0.80
	50	0.28	0.72	1.09	1.09	1.07	1.07	1.00
96	25	0.10	0.40	0.80	0.95	0.94	0.90	0.80
	30	0.11	0.41	0.94	1.01	1.02	1.01	0.85
	50	0.33	0.86	1.10	1.09	1.05	0.98	1.00

## Thermal Conductivity

Thermal conductivity (W/m.K)							
Product	Density Kg/m <sup>3</sup>	Mean Temperature (°C)					
		-4	10	24	50	100	200
DL-35	35	0.03	0.034	0.038	0.043	0.051	0.083
DL-48	48	0.029	0.033	0.036	0.039	0.049	0.063
DL-64	64	0.029	0.033	0.035	0.039	0.048	0.062
DL-96	96	0.028	0.032	0.033	0.037	0.044	0.060

Thermal conductivity (Btu.in/ft <sup>2</sup> h.F)							
Product	Density lbs/ft <sup>3</sup>	Mean Temperature (°F)					
		25	50	75	122	212	392
DL-35	2.2	0.21	0.24	0.26	0.3	0.36	0.58
DL-48	3	0.2	0.23	0.25	0.27	0.34	0.44
DL-64	4	0.2	0.23	0.24	0.27	0.33	0.43
DL-96	6	0.19	0.22	0.23	0.26	0.31	0.42

## SRW Pipe Section

SRW Pipe Sections are pre-formed insulation with factory applied reinforced aluminum foil facing in accordance with ASTM C 547. SRW Pipe section provide excellent thermal performance and sound attenuation for steel, copper or plastic pipes operating at temperature up to 650° C.



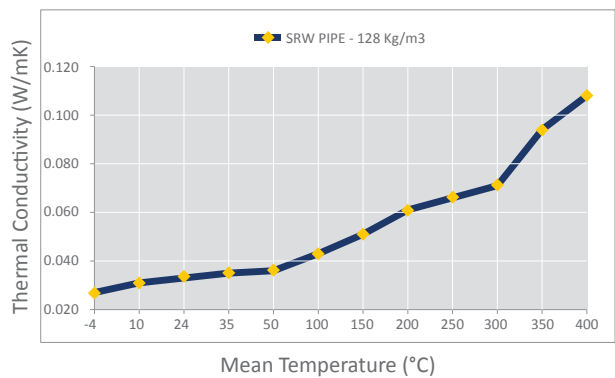
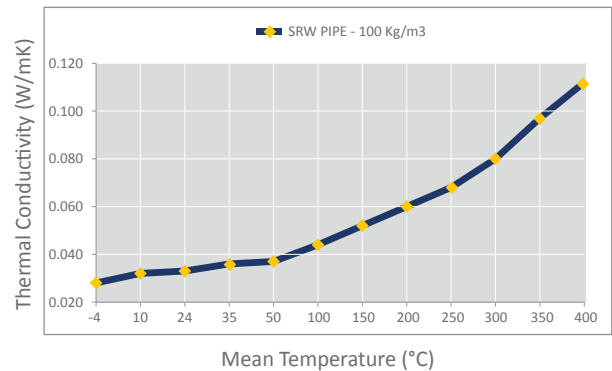
### Product Range

Density (Kg/m <sup>3</sup> )	Pipe Size inch	Pipe insu- lation ID (mm)	Thickness (mm)		Length (mm)
			Min	Max	
100 - 150	1/2	22	25	70	1000/ 1200
	3/4	27	25	70	
	1	34	25	80	
	1 1/4	43	25	80	
	1 1/2	49	25	80	
	2	61	25	80	
	2 1/2	74	25	80	
	3	90	25	80	
	4	115	25	90	
	5	143	30	150	
	6	170	30	150	
	8	221	30	150	
	10	275	40	150	
	12	326	40	150	
	14	358	40	150	
	16	409	40	150	
	18	460	40	150	
	20	510	40	150	
22	561	40	150		
24	612	40	150		

\* ID - Inner Diameter

Other dimensions are available upon request.

### Thermal Conductivity



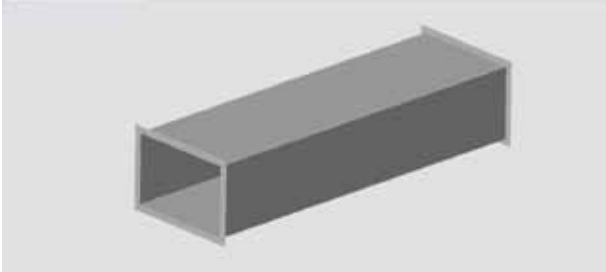


## Installation – Duct Board – Duct Liner

### SRWF Duct Wrap or Duct Board Insulation

The following guidelines are in general to install the Duct Wrap and Duct Board.

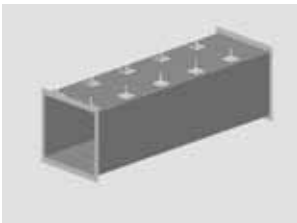
1. Ensure for dry surface is free from dust, rust, or grease etc.



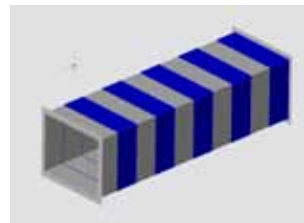
2. Adhesive to be applied either complete surface of the metal duct or 150mm wide strip of adhesive at 300mm C/C. Underside/bottom of the duct adhesive shall be applied throughout the surface.

Or

Self Adhesive/tack welded Insulation Pins to be provided at 300 -450mm C/C longitudinal and transverse direction. At least two rows of insulation pin to be provided on vertical surface of the ducts of size less than 450mm.



Insulation with adhesive



Insulation with Pins

3. Duct Wrap To be cut to full length from the roll to be wrap around the complete circumference of the duct. Length of the duct wrap shall be cut as below..



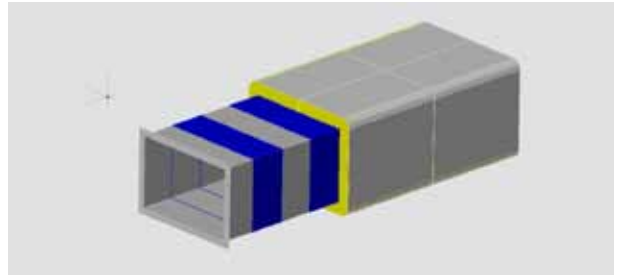
Regular Ducts:  $L = 2a \times 2b \times 8t$

Circular Ducts:  $L = 3.14 \times (O.D. + 2t)$

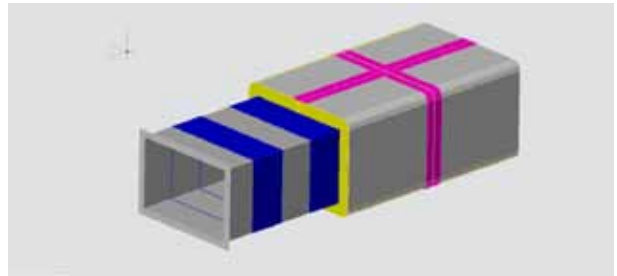
T= Thickness of Insulation.

Duct Board to be cut to the size respect to the width and side height of the ducts with margin of Insulation thickness as below

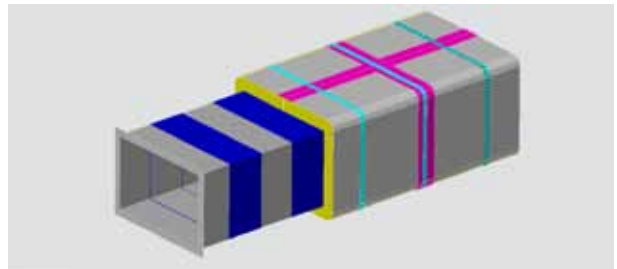
4. Al. Foil faced SRWF Duct wrap or Duct Board to be applied to the surface designated to be insulated adhered to the duct surface. In case of using insulation pins pierced Insulation through the insulation pin and pressed gently adhere to the surface of the metal duct bonded with adhesive. 38-40mm wide Speed washer to be provided on the insulation pins to hold the insulation in place.



5. All joints shall be staggered, closely butted, and sealed with 75-100mm. wide Aluminum foil self adhesive tape.



6. Insulation to be secured with the help of al. band at 300mm C/C.



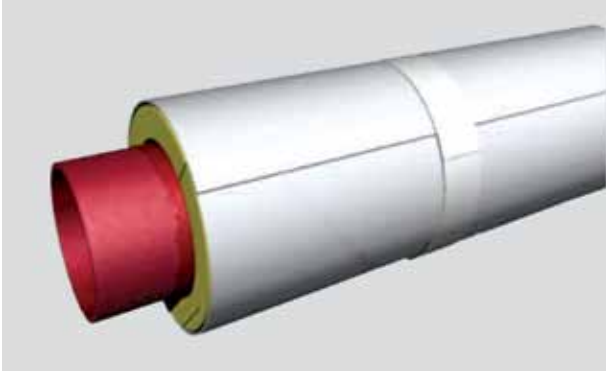
In case G.I. Wire is used to secure the insulation, light gauge steel strip to be used at all corners/ edges to prevent cutting of insulation by wire.

\* Installation guidelines are in general and for guidance purpose only.

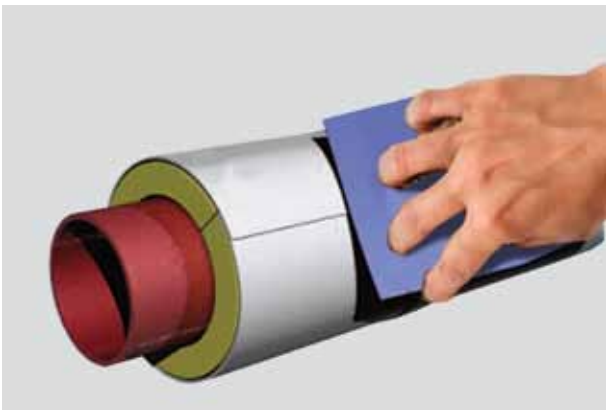
## Installation – Pipe Section

1. Once the pipe are ready after leak/hydro tests and primer or suitable protective coatings are done, shall be insulated with SRW Rockwool Pipe sections.

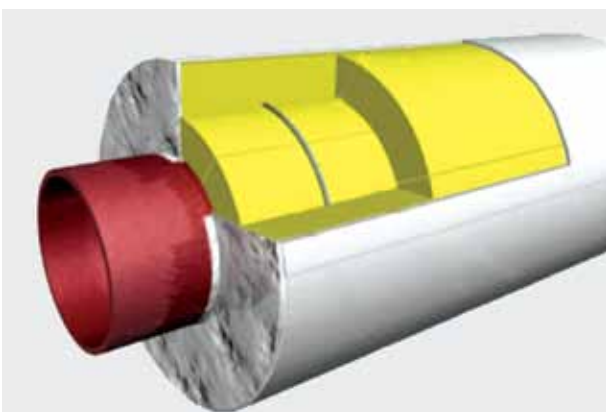
Clean the surface thoroughly and should be free from dust rust and grease and oil etc.



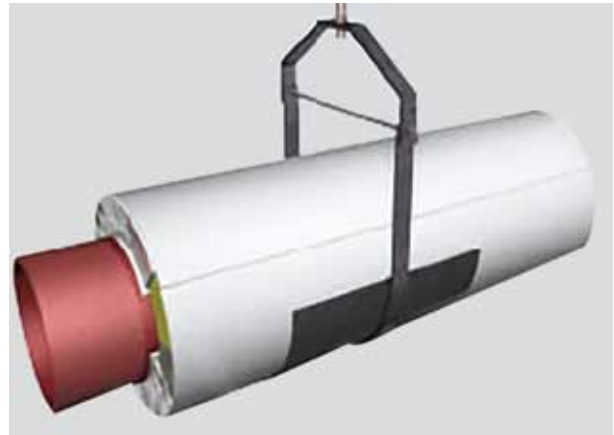
- 2 SRW Rockwool pipe section shall be installed directly to the pipes surface of similar size pipe section. Joints of the adjacent pipe sections shall be butted closely leaving no air gap.



- 3 Longitudinal joints shall be turned downside such that facing overlap shall be top to down for water flush over.



4. Joints of the pipe sections shall be sealed with Self-adhesive Aluminum Tape.



- 5 Each Pipe shall be secured with at least two Aluminum / Steel Bands at a distance of 450mm c/c. In case pipes are exposed to atmosphere or prone to mechanical damage.

Shall be cladded with Aluminum Cladding. Vertical Pipes shall have Insulation Supports Rings at every 3 meter.





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