



**ARIA** INSULATION INDUSTRIAL GROUP

**Manufacturer of Hot and Cold Insulation**





# Aria Insulation Industrial Group

## Company Introduction

Aria Insulation Industrial Group was established in 2007 with private sector investment and the goal of serving various industries. It began its activities aiming to help reduce fossil fuel consumption and contribute to the country's development and prosperity.

For nearly 10 years, the company, with an annual capacity of 1,000 tons, has been producing various types of thermal, cryogenic, and acoustic insulation such as rock wool insulation (board, blanket, pipe, and matt), polyisocyanurate (PIR) cold insulation (board, pipe, injected, and spray forms), related mastics, anti-corrosion coatings (cellulosic and hydrocarbon), as well as producing various aluminum and galvanized sheets for the final cladding of insulation required by major national industries such as oil, gas, refining, petrochemicals, power plants, cement, and construction.

It is worth mentioning that besides producing the aforementioned insulation types, Aria Insulation Industrial Group has the capability to supply various other insulations such as elastomeric, foam glass, calcium silicate, and ceramic fiber insulation, along with all necessary insulation process materials including mastics, straps, clamps, screws, etc. Furthermore, utilizing its experienced workforce, the group can undertake the installation and execution of these materials on a project basis (EPC, EP, PC) in this field.



### **Company Mission**

Aria Insulation Industrial Group, in line with its lofty objectives of producing various rock wool and polyisocyanurate-based cold insulation, as well as high-quality, internationally-standard anti-corrosion coatings, has always endeavored to base its commercial conduct on honesty, responsibility, efficiency, passion for work, and entrepreneurship. Striving to deliver products on time based on customer needs and fulfilling legal and technical requirements to achieve customer satisfaction is the core belief of management. The company also employs its efforts to take a positive step in environmental protection by producing these products and preventing

### **Company Vision**

The goal of the managers and experts of this company, in addition to enhancing product quality and meeting customer requirements and demands, is to increase production and create diversity in insulation-related prod-



List of Products from Aria Insulation Industrial Group

**Thermal Insulation**



Loose Rock Wool



Rock Wool Board



Rock Wool Bulk



Hydrophilic Fibers



Rock Wool Matt



Rock Wool Blanket

**Cold Insulation**



Polyurethane Injection Foam



Prefabricated Polyurethane Pipe



Prefabricated Polyurethane Board



Mastic |



Sleeves



Spray Polyurethane Foam

### Aluminum Cladding



### Fireproof Coating (Fiberproof)



### Other Products



Ceramic Fiber Insulation



Foam Glass Insulation (Glass Foam)



Elastomeric Insulation



Calcium Silicate Insulation

### Insulation Accessories



Strap



Clip



Screw

## Approvals and Certifications

### Associations and organizations in which the company holds membership:

- Institute of Standards and Industrial Research of Iran (ISIRI)
- Iranian Oil Pipelines and Telecommunication Company (IOPTC) / Persian Gulf Oil & Gas Company (POGC)
- Iran Ministry of Petroleum's Long List (Approved Vendors List)
- National Petrochemical Company (NPC)
- Iranian Association of Oil Industry Equipment Manufacturers
- National Iranian Oil Engineering and Construction Company (NIOEC)
- Iranian Association of Facilities Engineering
- Oil Industries Engineering and Construction Company (OIEC)
- Petrochemical Industries Design and Engineering Company (PIDEC)
- Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)
- Supply of Petroleum Industry Equipment & Chemicals Company (SPEC)





**ROCK WOOL**

## Rock Wool



### Introduction

Rock wool is a mineral, non-metallic material produced from very fine fibers derived from igneous rocks such as diabase and basalt. Basalt and diabase rocks are melted in a cupola furnace at a temperature of 1400–1500°C. The molten material then flows onto high-speed rotating discs (spinners) at over 4000 RPM, where it is thrown and, due to the elastic properties of basalt, stretched into very fine fibers. Thus, rock wool is classified as a man-made fiber insulation and exhibits excellent thermal, acoustic, and fire-resistant properties. This interwoven network consists of fibers with a diameter of 4 to 7 microns and a length of 5 to 10 millimeters, making up about 97% of the product. The remaining 3% includes binders and oils necessary for shaping the fibers according to the product type. It is worth noting that rock wool products are manufactured in compliance with ASTM standards and come in various forms: single-side mesh blankets, double-side mesh blankets, loose-fill insulation, board insulation, pipe insulation, and raw fibers.



### آنالیز پشم سنگ

Component		Weight%
Silica	SiO <sub>2</sub>	35-45
Aluminum Oxide	Al <sub>2</sub> O <sub>3</sub>	9-12
Iron Oxides	Fe <sub>2</sub> O <sub>3</sub>	<2.5
Calcium Oxide	CaO	32-35
Magnesium Oxide	MgO	8-11
Sodium oxide +Potassium Oxide	Na <sub>2</sub> O+K <sub>2</sub> O	0-2
Titanium Oxide	TiO <sub>2</sub>	2-4
Manganese Oxide	MnO	<0.05

## Loose-Fill Insulation

### Introduction

This type of product is packaged in bulk directly after production, without the addition of any binding agents, and is ready for use.

### Product Application

Applications include irregular structures and industrial equipment, the cavity walls of furnaces, and as a suitable and harmless replacement for asbestos.

### Product Features

- Low thermal conductivity coefficient
- Good sound absorption
- Very low shot content (non-fibrous particles)
- High-temperature resistance
- Easy installation and reasonable price
- Non-toxic and environmentally friendly
- Neutral pH and non-corrosive
- Non-combustible and does not emit toxic gases

Standard: ASTM C794

-27 ~ 800 C°	Application Temperature
50-120 Kg/m <sup>3</sup>	Density
Resin-Impregnated Wool	Types
Raw Wool Without Resin	
Needled Raw Wool	
20kg Bags	Packaging



## Blanket Insulation

### Introduction

This product is manufactured in multiple compressed layers according to ASTM C591 standards using raw rock wool fibers mixed with a small percentage of resin. The process involves a curing oven to achieve the desired thickness and density. It then passes through a stitching machine where it is sewn with stainless steel wire onto a hot-dip galvanized mesh with a 3/4-inch aperture. Blanket insulation can also be produced with one-side mesh, two-side galvanized mesh, or with an aluminum foil facing.



### Product Application

The primary use is in oil, gas, refining, petrochemical, and power plant industries, as well as in tanks, process equipment, pipe jacketing, valves, flanges, pipelines above 1/2", cement and steel industries, steam boilers, turbines, and curved/flat surfaces.

### Product Features

Low thermal conductivity, resistance to severe vibrations, excellent thermal and acoustic insulation, and fire safety.



## Pipe Insulation

### Introduction

This insulation is made from rock wool fibers along with resin (binder) through a pressing process to achieve a density of 80-140 kg/m<sup>3</sup> and sizes from 1/2" to 20", in accordance with ASTM C547 standard. It is produced uncoated, or with aluminum foil or craft paper coating.

### Product Features

Thermal and acoustic insulation, easy installation, resistance to severe vibrations, stable chemical and physical properties over time.

### Product Application

Wide range of industries, especially oil, gas, refining, petrochemical, power plants, steel, cement, copper, industrial/residential facilities, and all pipelines.



### Technical Specifications

Standard: ASTM C547

Maximum Application Temperature: 650°C

temperature (c)	50	100	150	200	250	300	Mean Temp. (°C) Thermal Cond. (W/m-K)
W /m.c	0 /046	0 /052	0 /056	0 /062	0 /008	0 /092	

Size Range: 1/2" - 20"

Density Range: 100-140 kg/m<sup>3</sup>

Thickness Range: 25-100 mm

Length per Section: 500 mm

Packaging: Shrink Wrap

## Matt Insulation

### Introduction

This product is made from resin-impregnated fibers after passing through a curing oven, at densities of 50, 100, or 150 kg/m<sup>3</sup> and required thicknesses, with or without aluminum foil facing, pressed in accordance with ASTM C553 standard.

#### Product Application

Areas with moderate temperature ranges such as sloped roofs, conference hall ceilings, industrial/prefab buildings, home HVAC systems, air conditioning ducts, or behind curtain walls.

#### Product Features

Acoustic and thermal insulation, flexibility, lightweight, cost-effective.



#### Technical Specifications

Standard: ASTM C553				
Max. Application Temp.: 450°C (except for foil or craft paper facing)				
Density (kg/m <sup>3</sup> )	25	30	50	Thermal Cond
50	0/044	0/042	0/040	
100	0/053	0/053	0/051	
150	-	0/067	0/065	
Standard Roll Dimensions: Width 100/120 cm, Length 10 m				
Coating Types: Aluminum Foil or Craft Paper				
Density Range: 30-50 kg/m <sup>3</sup>				
Thickness Range: 30-100 mm				
Packaging: Shrink Wrap				

## Board Insulation



### Introduction

Board insulation panels are produced by compressing and pressing rock wool fibers with resin in a press machine, followed by curing at appropriate temperatures, in accordance with ASTM C612 standard, in various thicknesses and densities.

### Usage Guide for Board Insulation

Product Features	Applications	Dimensions(cm)	Thickness (mm)	Density (kg/m <sup>3</sup> )
<ul style="list-style-type: none"> <li>_ Thermal insulation</li> <li>_ Fireproof</li> <li>_ Good sound insulation</li> <li>_ Low thermal transmittance</li> </ul>	<ul style="list-style-type: none"> <li>_ Building exterior spaces</li> <li>_ External wall/ceiling surfaces</li> </ul>	60x120	30-80	80-100
<ul style="list-style-type: none"> <li>_ Low heat transfer coefficient</li> <li>_ Appropriate compressive strength</li> <li>_ Effective sound resistance</li> </ul>	<ul style="list-style-type: none"> <li>_ Panels for building floors</li> <li>_ On concrete between floors</li> <li>_ Sandwich panels</li> </ul>	60x120	50-150	100-150
<ul style="list-style-type: none"> <li>_ Excellent sound insulation</li> <li>_ Suitable thermal insulation</li> <li>_ Prevents fire spread</li> </ul>	<ul style="list-style-type: none"> <li>_ Acoustic panels</li> <li>_ Between walls and partitions</li> <li>_ Studios and educational centers</li> </ul>	60x120	50-180	100-150
<ul style="list-style-type: none"> <li>_ High fire resistance</li> <li>_ Prevents fire propagation</li> <li>_ Very good thermal insulation</li> </ul>	<ul style="list-style-type: none"> <li>_ Fire-rated panels</li> <li>_ Industrial boilers and furnaces</li> </ul>	60x120	50-100	100-120

Custom-sized board insulation can be produced according to customer requirements.

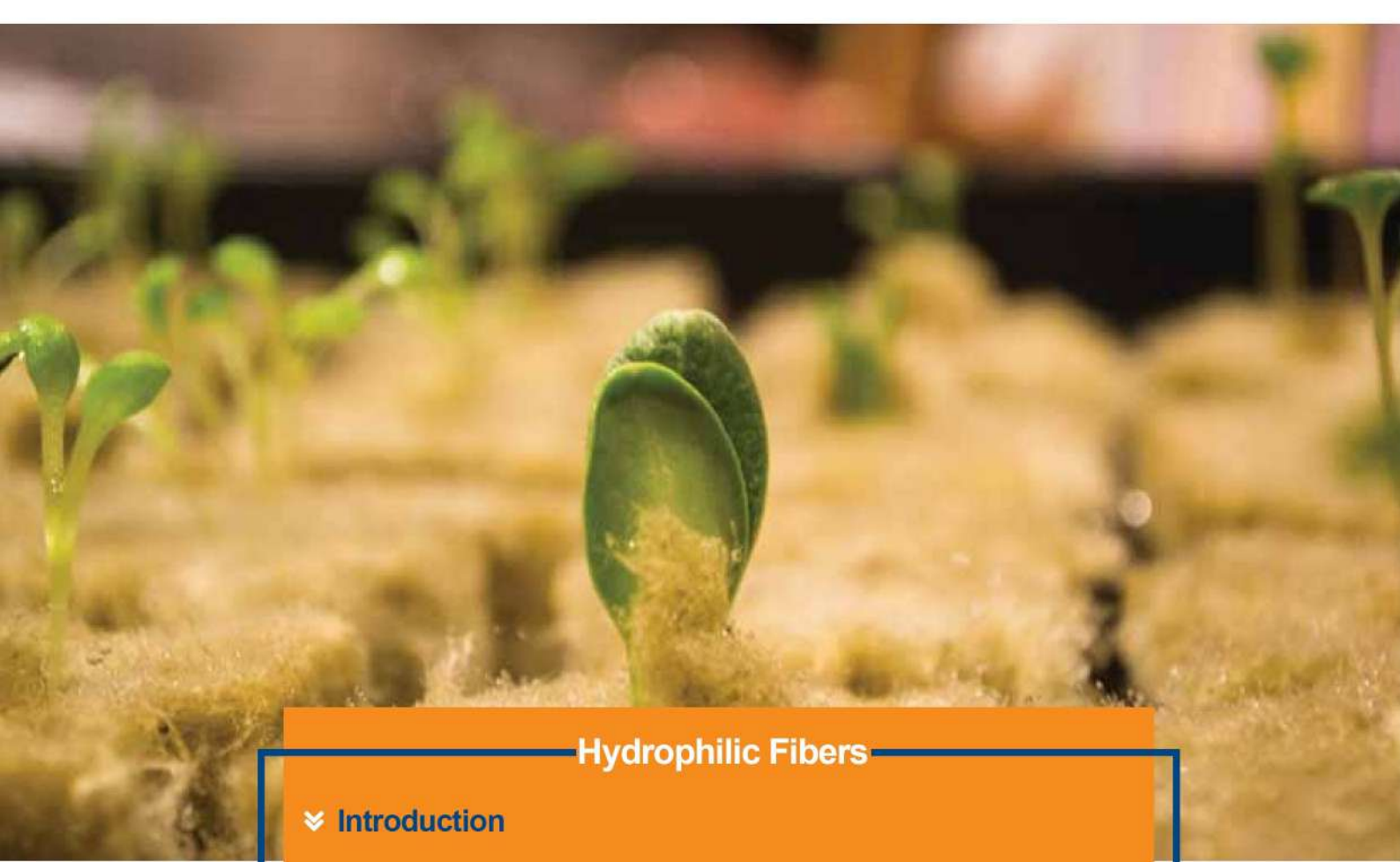




### Acoustic Insulation

Another function of rock wool board insulation is its use as acoustic insulation. The performance of acoustic insulation is determined by its sound absorption coefficient (a number between 0 and 1). Given that noise pollution is a prevalent issue, this product is suitable for sound absorption in residential buildings, studios, educational centers, conference halls, airports, and urban railways.





## Hydrophilic Fibers

### » Introduction

Hydroponics is a method of cultivating plants without soil. In this method, the plant's nutritional needs are met by adding macro and micro elements to water and supplying it to a growing medium (like rock wool). Rock wool, due to containing beneficial compounds like molybdenum oxide, can help improve soil and increase agricultural production. Hydroponic cultivation allows for higher yields with less labor and time.



### Product Application

Today, worldwide, rock wool slabs are widely used in hydroponics for cultivating vegetables like tomatoes, greenhouse cucumbers, and producing cut flowers (roses, lilies, chrysanthemums). The special properties of rock wool make it one of the preferred choices for hydroponic growing media.

### Product Advantages

- Neutral environment
- Moisture retention in the medium
- Prevents fungal growth
- No chemical decomposition
- No emission of toxic vapors
- Proper aeration and moisture for roots
- Suitable physical and chemical properties for cultivation





**Polyisocyanurate &  
Polyurethane**

## Polyisocyanurate & Polyurethane



### Introduction

Polyurethane insulation results from the polymerization reaction between a compound containing isocyanate groups and a compound with active hydrogen in the presence of a catalyst. This process is carried out mechanically at specific temperature and pressure according to ASTM C591 standard to produce Polyurethane (PUR) and Polyisocyanurate (PIR) insulation. Rigid polyurethane foams have a service life of over 30 years and maintain their very low thermal conductivity due to their closed-cell structure. With an operational temperature range of  $-140^{\circ}\text{C}$  to  $+140^{\circ}\text{C}$ , they are considered cold insulation. Unique physical properties like low thermal conductivity, high compressive/tensile strength, excellent adhesion, and chemical resistance have increased its use in recent years. It can be used as prefabricated boards/pipes, injection foam, and spray foam.



### Features

- Resistance to water vapor permeability
- Resistance to abrasion and corrosion
- Resistance to chemicals and solvents
- Ability to modify mechanical properties by changing density
- Low thermal conductivity
- Fire resistance
- Excellent dimensional stability
- High adhesion and coverage
- High compressive and tensile strength

### Applications

- Oil, gas, refining, petrochemical industries
- Pipelines and tanks containing cold fluids
- Residential, commercial, institutional construction
- Wall and ceiling surfaces of warehouses and cold storages
- Wall and ceiling surfaces of sloped roofs in humid areas



## Application Methods for PIR & PUR Foam Insulation

### Prefabricated PIR Foam

In this method, polyurethane foams are first produced as blocks in specific densities using molds. They are then cut into various sizes and shapes (elbows, tees, reducers, valves, flanges, etc.) using CNC machines to produce pipe insulation and panels.



### PIR & PUR Foam Injection Method

Polyol and isocyanate materials are injected into the desired location using specialized equipment. After the required curing time, the foam hardens into a rigid form at the specified density.



### PUR Foam Spray Method

Spray polyurethane foam is used for insulating walls, ceilings, surfaces, gaps, and open joints in buildings, factories, industrial sheds, as well as for insulating pipelines and low-temperature equipment. The foam is applied using specialized equipment that mixes polyol and isocyanate on-site and exhibits excellent adhesion to all surfaces.





## High-Density Sleeves

### Introduction

To secure equipment and pipelines containing fluids below 0°C, and for all pipelines using polyurethane insulation, using a suitable support sleeve matching the required thickness is a key design parameter. Polyurethane, with its very low thermal conductivity, excellent moldability, and high compressive strength, is ideal for manufacturing pipe and equipment support sleeves.

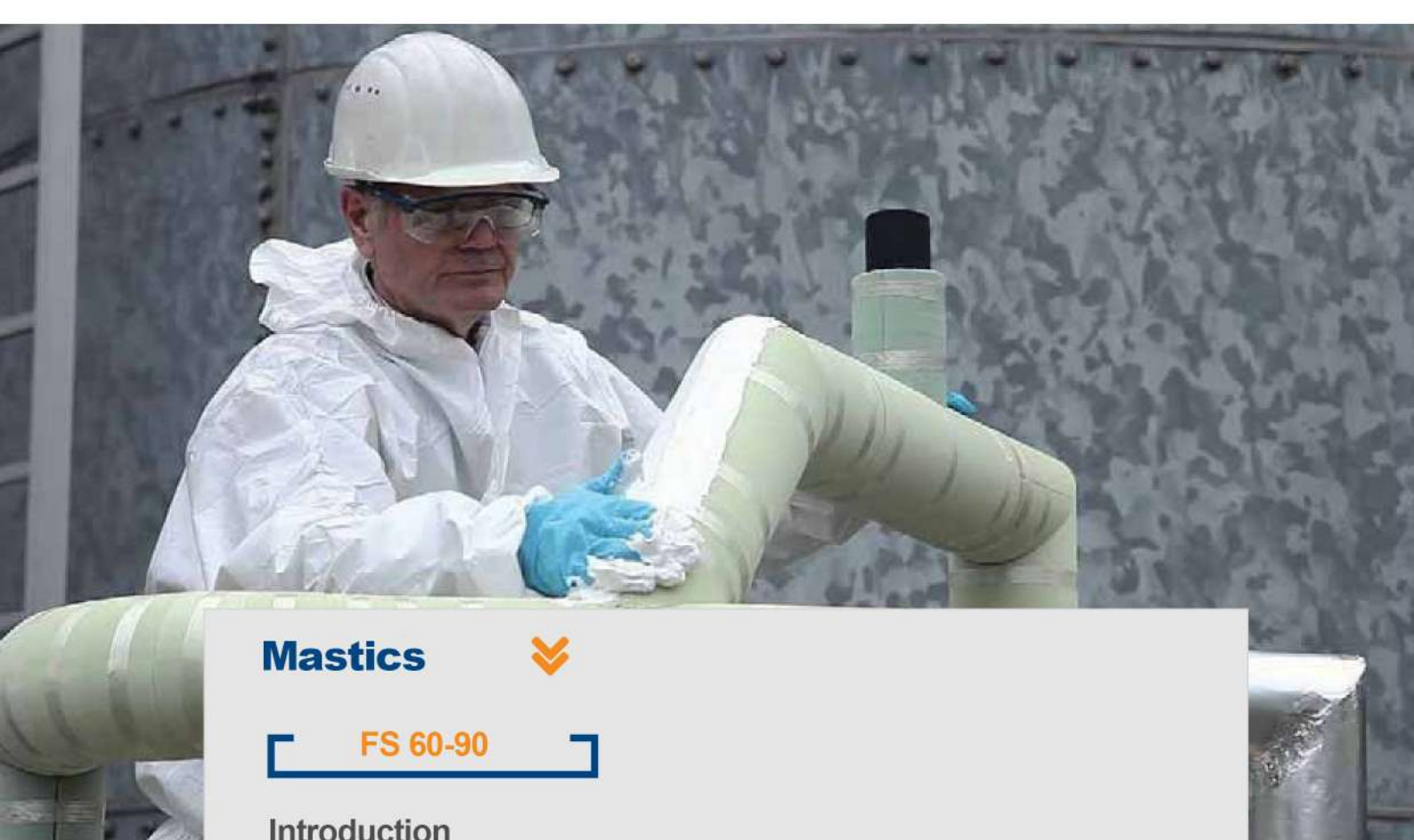
### Product Features

Low thermal conductivity, minimum 95% closed-cell content, resistance to moisture/water vapor absorption, and very high compressive strength.

### Technical Specifications

Polyurethane sleeves are typically molded or CNC-cut from larger blocks. They are produced in pipe and slab shapes, in various sizes and densities from 100-140 kg/m<sup>3</sup> per customer order, with best quality and competitive prices, complying with ASTM C591 standard.





## Mastics



### FS 60-90

#### Introduction

Mastic (Vapor Barrier) FS 60-90 is used for the final sealing of polyurethane and polyisocyanurate cold insulation to prevent moisture and environmental particle penetration. When using multiple layers, it can be applied only to the final layer. This single-component mastic has an operating range of  $-130^{\circ}\text{C}$  to  $+120^{\circ}\text{C}$ . It is also used for sealing during concrete expansion due to its flexibility.



#### Product Features

- Excellent adhesion
- Flexible at various temperatures
- Resistant to environmental factors
- Resistant to sunlight
- Can be painted
- Uniform coverage without shrinkage/sag

## Mastic FS 80

Mastic FS 80 is used for bonding pieces of polyurethane and polyisocyanurate insulation. During installation, all joints along the length and circumference are covered. This two-component product has appropriate curing time, excellent adhesion between PU pieces and to metal, and is highly resistant to moisture penetration and heat loss through joints.

### Product Features

- Excellent adhesion | Resistant to environmental factors
- No shrinkage or chemical change | Non-toxic with appropriate curing time



# Fireproof Coating



## Fireproof Coating

The R&D unit, through extensive research since 2016, has succeeded in producing a mineral-based vermiculite fireproof coating. Aria FP 100 fireproof material (mineral vermiculite-based) was tested at the Road, Housing & Urban Development Research Center in accordance with BS EN 13381-3 standard on a steel column (IPB 100) for fire resistance.

### Test Results:

- Against cellulosic fire: Reached 143°C at 30 min and 616°C at 120 min.
- Against hydrocarbon fire: Reached 100°C at 30 min and 617°C at 120 min.

Furthermore, FP 100 material was tested at Niroo Research Institute (NRI) in accordance with UL 1709 standard and successfully passed after 120 min. It is used per National Building Regulations and oil industry codes.

This product is produced at 800 kg/m<sup>3</sup> in two grades for hydrocarbon/cellulosic fire protection on steel/concrete structures. It can delay heat transfer to structures, preventing them from reaching critical temperatures for up to 4 hours depending on



### Specifications of Aria Fireproof Coating

Property / Performance	Standard Test Method	Value
Density	ASTM E605	800 kg/m <sup>3</sup>
Compressive Strength	ASTM E761	600 kPa
Corrosion Resistance	ASTM E937	Does not cause steel corrosion
Surface Spread of Flame	ASTM E84	Class A
Fire Resistance	UL1709	Flame 0 Smoke 0
Combustibility	ASTM E1354	Up to 4 hours depending on thickness
Physical Resistance	ASTM E759	Refractory, No change, cracking, or peeling



## Applications of Aria Fireproof Coating

- Industrial plants and chemical centers
- Concrete/steel structures in power, petrochemical, refining industries
- Construction, residential/commercial/office complexes, hospitals

## Application Methods

- Manual tools - roller - brush
- Spray
- Pump

## Tests Conducted

- Heat endurance & resistance against hydrocarbon/cellulosic fire - Road, Housing & Urban Development Research Center
- Heat endurance & resistance against hydrocarbon/cellulosic fire - Niroo Research Institute (NRI)
- Thermal shock resistance test
- Coating reparability and endurance against subsequent fires test





### Advantages of Aria Mineral Fireproof Coating

- Cost-effective
- Lightweight and high durability
- Repairable and refurbishable
- Easy application and good coverage
- Good adhesion to steel/concrete
- High fire resistance
- High compressive strength
- Low thermal conductivity
- Resistant to corrosion and abrasion
- Resistant to high-pressure water jet

# Aluminum Cladding



## Aluminum Cladding



### Introduction

A major economic issue in large facilities (refineries, power plants, cement, steel, copper industries) is preventing thermal/cooling energy waste. While various insulations address this, protecting the insulation itself from environmental factors and mechanical damage, and maintaining its efficiency long-term, requires protective aluminum cladding.



## Aluminum Sheet

Aluminum sheet is widely used due to its light weight, high formability, shiny appearance, and high resistance to rust, corrosion, and oxidation. It can be produced with or without a craft paper backing. In moist environments, the craft paper absorbs moisture, preventing galvanic corrosion on pipes/equipment. Aluminum sheet can be plain, corrugated (with different corrugation lengths), or embossed, in roll or sheet form, various sizes per EN/ASTM B209 standards. Claddings are produced in thicknesses from 0.45 to 1.5 mm and used per project specifications.



# Other Products



## Foam Glass Insulation

### Introduction



Lightweight cellular glass (foam glass) insulation is a hard, rigid insulation composed of millions of glass cells. This structure provides ideal physical properties for above/below-ground pipes and equipment in a temperature range of -260°C to 480°C. It is available as boards, pipes, elbows, tees, etc.



### Unique Features



- Exceptional stability
- Excellent environmental compatibility
- High resistance to moisture/particle penetration
- High resistance to chemical solvents
- High compressive strength
- Fire resistance, no toxic gas emission
- Wide operational temperature range
- Resistance to fungal/biological contamination
- Resistance to rodents/insects





**ARIA ROCKWOOL CO.**  
 شرکت پشم سنگ آریا  
 Manufacturer of hot and cold insulation



## Ceramic Fiber

### Introduction

Ceramic fiber is a synthetic aluminum silicate fiber with high refractoriness, produced by melting and blowing a mixture of alumina and silica powder (and zirconia for specific grades) in electric arc furnaces. The white, amorphous fiber can be used as refractory insulation in various forms up to 1600°C.

### » Product Types

- Ceramic Fiber Bulk: Blanket, Module
- Ceramic Fiber Board: High-temp adhesive/coating, Filling/sealing pastes
- Refractory Paper & Ceramic Felt: Rope, Cloth

### » Thermal Classification

Grade		Standard Service Temp	Chemical Composition	
STD-Standard	1260 °C	12/5 × 610 × 14400	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>
HA-High Alumina	1400 °C	25 × 610 × 7200	SiO <sub>2</sub>	K <sub>2</sub> O
HZ-High Zirconia	1450 °C	50 × 610 × 3600	ZrO <sub>2</sub>	Na <sub>2</sub> O



### » Properties & Advantages

- Lightweight, density 96-128 kg/m<sup>3</sup>
- Flexibility with high tensile strength
- Very low thermal conductivity
- Heat resistance up to 1600°C

### » Applications

- Oil, Gas, Refining, Petrochemical: Reactors, furnaces, burners, boilers.
- Automotive/Transportation: Exhaust systems, catalytic converters.
- Steel Industry: Annealing furnaces, re-heating furnaces.
- Chemical, Foundry, Ceramic, Non-Ferrous industries.

## Elastomer insulation

### introduction



Elastomeric insulation is an ideal product to replace traditional insulation and has a wide range of applications for insulating duct piping systems, fluid and gas pipelines, tanks and equipment. It can also be used in various industries such as HVAC, construction, oil, gas, petrochemical, power plant, chemical, food, healthcare and auto repair.

It is worth noting that this type of product can be produced in various types of tubes and blankets (rolls), including labeled backs, plain and reinforced aluminum coatings with a thickness of 1300-4002 mm.

### Unique features of elastomeric insulation



- Non-flammable
- Density 45-65Kg/m
- Resistant to temperatures of 105+400
- High resistance to water vapor absorption
- Low thermal conductivity coefficient 0.033w/m.k
- No corrosion under the insulation
- Has a closed cell structure of over 95
- Inability to grow fungi and bacteria
- The equipment required for installing and using elastomeric insulation includes adhesive sealing tape, aluminum sealing tape, and tarpaulin or polymer sealing tape.





**Insulation  
Accessories**

## Other Accessories

### Introduction

During insulation installation (hot/cold), other accessories like straps, clips, screws, aluminum foil, binding wire, washers, sealing tape, fiberglass mesh, adhesive tape, etc., are used. To complete its product portfolio and serve customers, the company supplies these items.



### Straps

(galvanized or stainless steel 304/316) in thicknesses 0.5, 0.6, 0.8 mm and various widths secure insulation.



### Screws

(stainless or galvanized) in various sizes are available.



### Galvanized

stainless steel wire provides strength to the final insulation layer.



### Fiberglass mesh

in cold insulation holds pieces and creates space for mastic.



### Clips

(galvanized or stainless 304/316) match strap thickness.

All accessories (metal cladding thickness, straps, clips, screws, aluminum foil, etc.) are specified per project installation instructions and can be supplied alongside main products.

### ❖ Laboratory

The laboratory, complying with Iranian standards and ASTM requirements for thermal/cold/acoustic insulation production, is equipped with specialized testing equipment for rock wool, PUR/PIR insulation, and other products. Daily tests on raw materials, in-process, and finished goods guarantee product quality and integrity. Tests include: XRF, moisture content, density, chloride content, mechanical (tensile/compressive), fiber impurity/shot content, sound absorption, tension, NCO content measurement for PIR raw materials, etc.



### ❖ Quality Control

A quality management system based on ISO 9001:2015 is established and maintained. Documentation is clear and deficiency-free. Corrective action is taken for any deviations. The system (policy, manual, procedures, instructions, external documents) is controlled to ensure requirements are met.

## Insulation Installation & Execution



Since thermal, cold, and fireproof insulation require specific installation conditions, Aria Insulation Industrial Group uses an experienced professional team for extensive installation/execution activities across oil, gas, refining, petrochemical, and construction projects.

### Thermal Insulation Installation



### Cold Insulation Installation



### Fireproof Material Application



