

# Amiantit Rubber Industries

Rubber Products



**AMIAANTIT MATERIALS**

# General

## Amiantit Group of Companies

The Amiantit Group is a leading global industrial organization that manufactures high quality pipe systems, researches, develops, owns, and licenses advanced pipe technologies and provides water management services. The Group supports global infrastructure development projects and delivers to municipal, industrial, agricultural and energy markets worldwide.

Amiantit has a presence in more than 70 countries, including almost 30 wholly-owned or joint ventured manufacturing facilities in the Middle East, Europe, North America and Latin America, North Africa, The Far East, Central Asia, the India Subcontinent, and in Africa. Amiantit's manufacturing capabilities are supported by technology companies and sales offices around the globe.

Other members of the Group are predominantly limited liability companies – owned by the Amiantit Group in varying percentages and operating under individual commercial registrations.



## Amiantit Rubber Industries Ltd. (ARIL)

Amiantit Rubber Industries Ltd. (ARIL) was established in 1978 as a member of Saudi Arabian Amiantit Company. The company's aim is to provide quality rubber rings and seals to other group and non group companies who are leading pipe manufacturers in and outside the Kingdom. ARIL also supplies custom-made rubber products for various applications in the building & construction, industrial and air conditioning industries.

Since then, the company has expanded its manufacturing and marketing activities and today ARIL is considered to be among the leading rubber products manufacturers in the gulf region. ARIL is an ISO 9001:2000 certified company since 1994.

ARIL plant and office is located in Dammam, Kingdom of Saudi Arabia.



# Capabilities

## Manufacturing Capabilities

ARIL houses most modern machinery under one roof such as rubber compounding machines that execute molding, extrusion, and the final finishing operation to produce molded, extruded and mixed rubber compounds.

In-house mould making facilities include computerized CNC milling machine, wire cut, etc. which reduce the lead time for product development, as well as for fabrication of multi-cavity intricate moulds.

A full-fledged laboratory to carry out quality control inspection of raw material, in-process semi-finished compounds and the final inspection of finished goods.

A laboratory mixing mill to formulate and develop rubber compounds meeting client and international specifications.

## Production Line

All the products are strictly monitored during the various operations to ensure conforming to quality standards.

ARIL has full and scalable manufacturing capabilities to accommodate all kinds of demands. Its versatility and efficiency make it a reliable partner in quality rubber production.

ARIL has the following state of art manufacturing capabilities, a modern well maintained manufacturing plant located in Dammam, K.S.A.

- Comprehensive rubber mixing facilities.
- Extensive compression, injection and extrusion equipment capability and a complete machining facility including a tooling center.

ARIL has a 3-product line such as:

### Molded rubber products:

ARIL has both compression and injection molding machinery. Compression molding presses with single and multi platens of various sizes can directly mould rings up to a diameter of 2.0 m. Larger diameter rings are produced by a joining process. Injection molding presses are used in producing small rings, grommets, etc.

### Extruded rubber products:

ARIL has continuous curing extrusion lines to manufacture solid rubber and foam products. Various shapes of continuous profiles are manufactured for various applications such as rubber gaskets and rings that are either jointed or in continuous length. Other rubber profiles are available for construction, industry, etc. These lines are also used in producing ARIFLEX rubber insulation foam tubes and sheets.

### Masterbatch

ARIL has both internal and external mixing lines. Internal mixing lines include Banbury mixer, kneaders, etc. Rubber mixed compounds can be supplied as masterbatch or final batch with curatives to other rubber products manufacturing companies in a sheet or strip form of a required thickness.



# Quality Control

ARIL manufactures precision molded and extruded rubber products to finest tolerances using natural rubber, SBR, EPDM, CR, NBR, silicon, Viton, HNBR etc., meeting national and international standards such as BS-2494, ASTM 1869, ASTM C-443 ,DIN 4060, EN-681,etc. for rubber rings.

## Testing

ARIL has built a well-equipped laboratory where the required and specified properties are tested on regular basis.

A list of some of the tests:

1. Rheological properties.
2. Hardness.
3. Tensile strength and elongation at break.
4. Compression set.
5. Ageing properties.
6. Oil resistance.
7. Plasticity index.
8. Dispersion grading.
9. Water tightness test.
10. Water absorption test.etc.

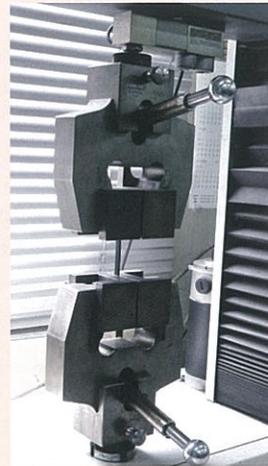
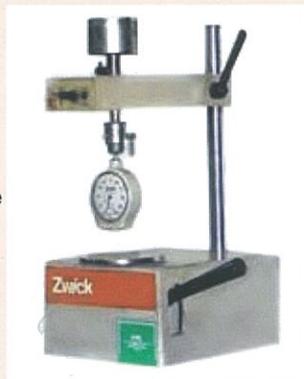


Rheological properties test

A rheometer is used to electronically analyze every batch of the rubber compound before the gasket is made. It records the exact physical and rheological properties of the materials.

## Hardness test

A Shore A durometer is used to determine the hardness of the rubber components. It's a significant test to determine the resistance to deformation.



Tensile strength and elongation at break test

Tensile & elongation tests are made to determine the tensile strength and ultimate strain. Testing is performed in accordance with international standards.

## Compression set test

This test indicates the ability of seals to regain their original shape after remaining for a long period under compression.



Ageing properties test

The accelerated ageing test elucidates the shelf and service life of the rubber products.



Oil resistance test

A test to evaluate the change of properties in contact with oils.

### Plasticity index test

The plastimeter measures the plasticity index of rubber compounds for consistent flow ability in the mould.

### Dispersion grading test

Dispersion grading determines the dispersion and distribution of compounding ingredients ensuring homogeneity for uniform properties.

### Water absorption test

The Water Absorption test is used to determine the affinity of rubber towards water.

## International Standards & Customer Specifications

BS 2494	Specifications for Elastomeric Seals for Joints in Pipe Works and Pipe Lines.
ASTM C443	Joints for Circular Concrete Sewer and Culvert Pipes using Rubber Gaskets.
ASTM F477	Elastomeric Seals for Joining Plastic Pipes.
ASTM 1330	Specifications for Flange Gaskets.
ISO 4633	Rubber Seals – Joint Rings for Water Supply, Drainage & Sewage Pipelines
DIN 4060	Elastomeric Seals for Pipe Joints in Drains & Sewers.
DIN 1230	Vitrified Clay wire for Sewer Socket Pipes & Fittings.
SIS 367611	Rubber Joints for Water Mains & Sewers.
25-SMSS-1	Specifications for Duct Seals by SCECO.
	Ford Specifications for Oil Seals for Automobile Fitters.

## Certifications

**KTW**  
CERTIFICATE

**WRC-NSF**  
Ltd

# Rubber Products

## Rubber Rings and Rubber Gaskets:

Rubber rings and gaskets are made in the Lip or Compression type according to the joint configuration of pipes at the point of contact. This is to prevent entry of outside liquid and gas into the pipeline. Gaskets are made for use in almost all kinds of pipes and fittings whether they are FRP pipes, ductile iron pipes, concrete pipes, PVC pipes etc. ARIL manufactures rubber rings and gaskets for all pipes as shown below.



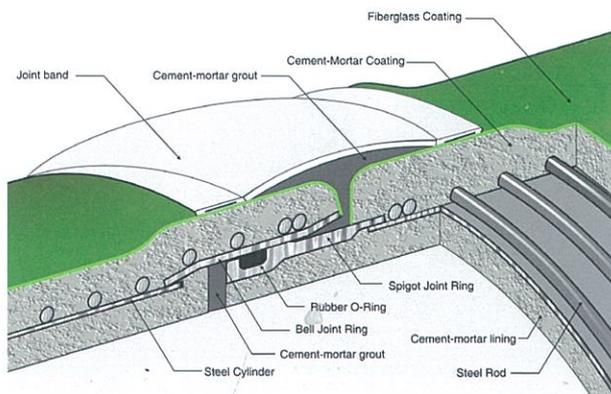
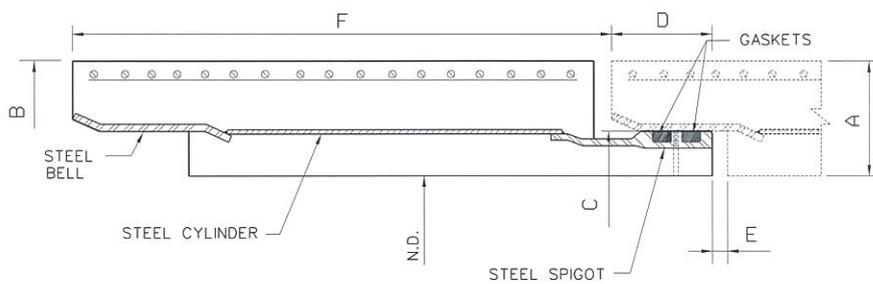
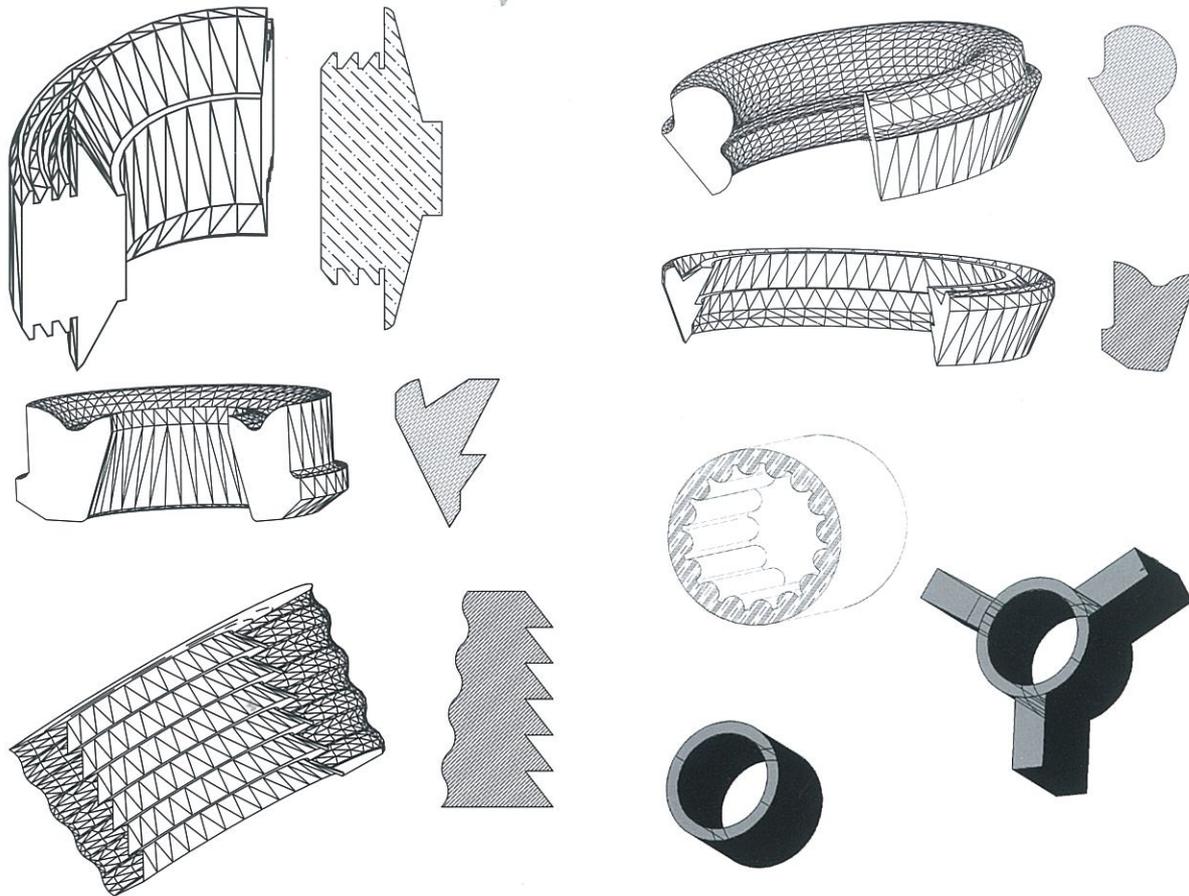
- Fiberglass pipes gasket including C-Tech, filament winding pipes and rubber stoppers. Sizes: DN 100 – DN 4000.
- Ductile iron pipes (Std. 2-GS gaskets, Tyton push on type gaskets and flange gaskets). Sizes: DN80 – 1000 mm.
- RTR pipes (o-ring for various sizes). Sizes: 2" – 42"
- PVC pipes (lip seals, angle joint rubber rings and 3-S rubber joints). Sizes : 40-250 L/S, 63-630 A/J & 3' S.
- Corrugated polyethylene PP pipes gaskets.
- Vetrified clay pipes (l-ring, p-ring and u-ring)

Rubber rings and gaskets are used in sealing the pipes at the point of contact. Seals are manufactured according to national and international standards using elastomers based on NR, SBR, EPDM, CR, NBR, Viton etc. as required based on application. Special features of ARIL seals are:

- Molded precisely in accordance with the joint specification of user.
- Available in various shapes and sizes for a variety of pipes covering FRP/GRP, ductile iron, RTR, concrete, PVC, clay pipe etc.
- Produced in various polymers like NR, SBR, EPDM, NBR, CR, viton etc. based on application.
- Designed to withstand pressure, temperature, various fluids and harsh environment.
- Rubber rings produced in accordance with national and international standards like EN 681, ASTM C 1869, C 443, DIN 4060, BS 2494, AWWA and ISO 1398. ARIL special seals meet the requirements of potable water application according to the recommendations of NSF (USA), WRC (UK) and KTW (Germany).



Cross section of rubber profiles



## Grommets and bushes

Widely used in air conditioners for anti-vibration isolation and for compressor mountings. Rubber grommets and bushes are manufactured according to customer specifications for anti-vibration, isolation, sealing grommets, etc. Special features of ARIL rubber grommets and bushes are:

- Special formulation to withstand environmental conditions.
- Enough flexibility to absorb vibration.
- Noise reduction.
- Achieving required isolation.
- Availability in various polymers depending on application.

Grommets are manufactured according to the ASTM D-2000 standard or according to customer specifications. The polymer is chosen to withstand heat, ozone or oil resistance as required.



## Duct Sealing Units (DSU)

Duct sealing units are used in sealing empty or occupied ducts to prevent entry of foreign materials, seal and serve as an anchorage subduct. They are used successfully in power cables, fibre cables and other communication ducts.

The duct plugs are made of specially compounded NR with the required properties. The compression plates and bolts made of stainless steel material A2/304 or A4/316 and fibreglass plates are resistant to accommodate environmental conditions.

Special features of these plugs are:

- Reusability.
- Ease of installation and removal that can be performed with basic tools.
- The fact that it is unaffected by water, salt, most chemicals, etc.
- Sealing ducts at 10 PSI water pressure in continuous use.
- Availability in standard sizes 50, 100, 150, 200 mm or the custom made type in circular configuration.



## Other Moulded, Extruded, and Speciality Products

- Oil seals are used in oil filters industry.
- Rubber straps are used as separators for use in resin coated pipes.
- Pump parts like spiders ,tube caps ,bearing bush, duplex bearing etc.
- Rubber to metal bonded products like rubber tiles, bronze bush etc.
- Rubber sheets
- Expansion joints.
- Rubber extruded profiles.
- Specialty rubber products for petroleum industries based on viton, HNBR ,silicon etc.



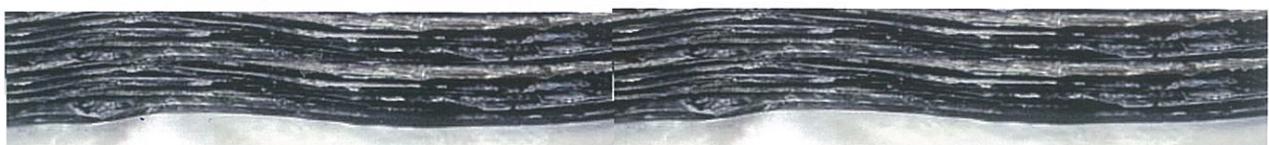
## Masterbatch

Masterbatch is the raw material required for manufacturing various rubber products. NR, synthetic rubber or their blends are compounded using inhouse advanced technology to suit the requirements of customers and the final product specifications.

Buying custom made compounds relieves the user from:

- Investment in expensive mixing equipment.
- Extra cost of compounds development.
- Inventory of a vast range of ingredients.
- Pollution of work environment.
- More manpower.

Compound	Property	Application
EPDM	Excellent resistance to weather, ozone, heat ageing and electrical conductivity	Architectural solid/sponge profiles, automobile weather strips, hoses, belts, etc.
NBR & PVC	Excellent resistance to oil and heat. Antistatic in nature.	Safety shoe soles (antistatic, oil-resistant hose, o-rings, gaskets, seals, foam tubes, sponge profiles & sheets, etc.
NR, SBR, BR	Excellent mechanical strength and elasticity. Easy processing. Good abrasion and low temperature resistance.	Shoe soles, tyres, conveyor & power transmission belts, rubber mats, gaskets, seals for pipes and many other mechanical goods.
CR	Flame retardant and moderate oil and gas resistance.	Automobile dust covers, gaskets, gas tubings, rubber bushing, power transmission belts etc.
FKM Silicone	Heat & weather resistant as well as hygienic.	Anti-vibration rubber, high heat resistant rubber components and rubber parts for health care.



## Rubber Insulation Foam Tubes and Sheets -ARIFLEX-

ARIL Manufactures rubber insulation foam tubes and sheets to fine tolerance and consistency, meeting national and international specifications such as ASTM D 1667, ASTM D1056 etc. under the brand name "ARIFLEX":

### Size:

ARIL supplies ARIFLEX rubber insulation foam tubes in the following sizes;

**Foam tube:** ID 6 mm ( 1/4") to 89 mm (3-1/2") X wall thickness 6 mm (1/4") to 38 mm (1-1/2") X Length 1.83 Mtr.(6') , 2.0 Mtr., 50 Mtr. or as required by customer.

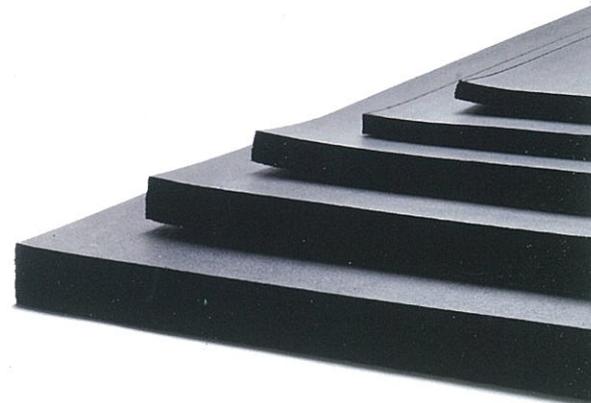
**Foam sheet:** Thickness 6 mm ( 1/4") to 38 mm(1-1/2") X width 0.914 Mtr.(3') X Length 1.22 Mtr.(4') , 9.14 Mtr.(30') , or as required by customer.

### Applications:

These are specially designed to cater to the specific needs and applications of thermal insulation of air-conditioning, refrigeration and hot water lines. The products are highly efficient for thermal insulation applications varying from -40° C to + 125° C.

### Characteristics and advantages:

- Low thermal conductivity (K value) makes it highly efficient and effective in the insulation of cooling and heating systems.
- The thermal blister close to the cell structure forms an impermeable layer which in itself is a good vapor barrier.
- It is suitable for application within a temperature range of -40°C to 125°C.
- The material has been specially compounded to self-extinguish in nature.
- ARIFLEX has excellent ozone and ultraviolet resistance.
- It is CFC, asbestos, chlorine and fiber free and does not cause skin allergy.
- It is inert to most chemical agents and neutral to pipe metals.
- The extreme flexibility of the materials makes installation fast, easy and economical.
- It is capable of withstanding tearing, rough handling and severe site conditions.
- Much lesser space is needed for ARIFLEX as a thinner wall is required due to its low K value compared to other types of insulation.
- The smooth surface of ARIFLEX material gives the finished installation a neat and aesthetic appearance. No coating is necessary for most indoor installations.



# Main Properties of Selected Rubbers

ASTM D1418 Classification		General Purpose Rubbers			Special Purpose Rubber					
		Natural	Styrene-Butadiene	Polybutadiene	Ethylene-Propylene Terpolymer	Isobutylene Isoprene	Chloroprene	Acrylonitrile Butadiene	Silicone	Fluorocarbon
		NR	SBR	BR	EPDM	IIR	CR	NBR	MQ	FKM
Polymer Properties	Specific Gravity	0.93	0.94	0.93	0.86	0.92	1.23-1.25	0.98-1.00	0.95-0.98	1.40-1.95
	Glass Transition Temp. (°C)	-75	-60	-85	-60	-80	-50	-40 to -25	-120	-20
Mechanical Properties	Hardness, Shore A/IRHD	25-95	30-95	40-95	40-95	40-80	30-95	30-95	30-90	50-80
	Tensile Strength, Mpa (max)	30	25	20	115	20	25	25	10	15
	Elongation at Break, %	500-700	450	450	400	400	600	500	300	400
	Resistance to Tear	4	2	2	2	2	3/4	2/3	1/2	3/4
	Resistance to Abrasion	3/4	3/4	4	2/3	2/3	3/4	2/3	2	3
	Resistance to Cut & Cut Growth	3/4	2/3	2/3	2	2	2/3	2/3	1/2	2/3
	Resistance to Flexing & Fatigue	3/4	3	4	3	3	2/3	2/3	2/3	2/3
	Resistance to heat ageing	2/3	2/3	2/3	3	3	2/3	3	4	5
	Rebound Resilience	4	3	5	3	1	3	1/2	3	1
Environmental Resistance	Ozone	2/3	2	2	5	4	3	2	5	5
	Oxidation	3	3	2/3	4	3/4	3/4	4	4/5	5
	Weathering	2/3	2/3	2/3	5	4	3	3/4	4	5
	Flame	2	2	2	2	2	3/4	2	2	4
Fluid Resistance	Aqueous (Water)	3	2/3	3	3	3	2	4	4	3
	Alkalies	2/3	2/3	2/3	3/4	3	3	2/3	3/4	2/4
	ACIDS									
	Dilute	2/3	2/3	2/3	4	3/4	3/4	2/3	2	3/4
	Concentrated	1/2	1/2	1/2	3/4	2/3	1/2	1/2	1	3
	HYDROCARBONS									
	Aliphatic	1	1	1	1	1	3	3	2	3
	Aromatic	1	1	1	1	1	1	2	2	3
	Animal & Veg. Oil	1	1	1	3	3	3	4	3	2

Rating for Mechanical Properties: 1=Poor; 2=Moderate; 3=Good; 4=Excellent; 5=Outstanding

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