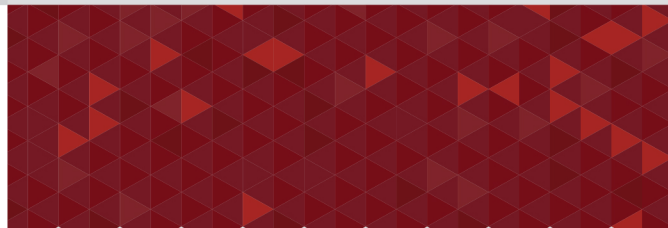




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ABOUT KETROWA

Providing materials and equipment for construction projects is always one of the most important concerns of builders and project managers. The importance of this issue stems from its direct impact on the project schedule, construction cost, and final building value. With the aim of facilitating the process of providing construction goods and taking into account its social responsibility, Ketrowa team has created a comprehensive and online system. In this system, builders will be able to prepare the schedule for the supply of materials and equipment for their construction projects and order the supply of goods based on the plan. These orders are made by comparing various products available in the system. Mass builders are the most important target customers of Ketrowa, and Ketrowa tries to supply and deliver goods on time to the consumer by logical planning for manufacturers and by providing cash and credit purchase model. Also, due to the reception and request for the supply of construction products for foreign markets, the supply of construction products for export markets is another main goal of Ketrowa. Ketrowa plans to transform the traditional and opaque market into a modern, high-speed and accurate market where buyers can get the quality goods they want at the most appropriate price .



MECHANICAL, HEATING
& COOLING FACILITIES

ELECTRICAL
FACILITIES

SANITARY

STRUCTURE

JOINERY &
FINISHING

Products are produced and
supplied in five branches:
Structure, Electrical
Facilities, Mechanical, Heating &
Cooling Facilities, Sanitary, Joinery &
Finishing., combining art and industry.

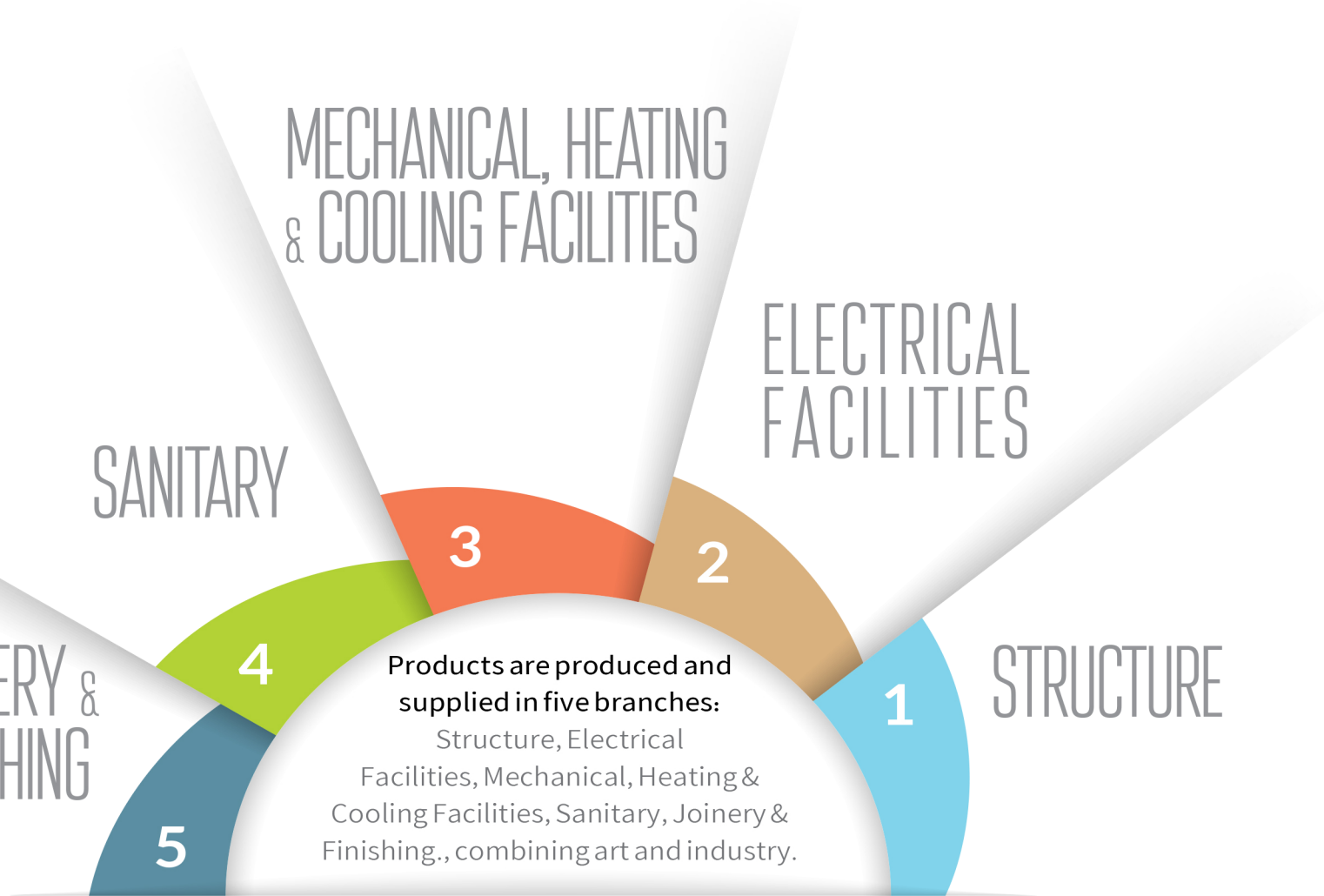
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Elastomeric Insulation



Elastomeric Insulation

Elastomeric insulation is one of the types of thermal, cold and sound insulation that has a closed cell structure and is a very suitable choice for insulating heating and cooling pipes, channels and air conditioning systems, installation devices, tanks, etc. The use of this type of insulation has many advantages, such as optimizing energy consumption due to having a suitable heat transfer coefficient, preventing pipe corrosion and rusting, ease of installation and flexibility, adhesion and color ability, preventing condensation, etc. This type of insulation is based on NBR (Nitrile Butadiene Rubber) or EPDM (Ethylene Propylene Diene Monomer) as well as PVC (Polyvinyl Chloride) and is produced and marketed in three forms: pipe, roll and acoustic. These types of insulation, have a great advantage over other thermal and cold insulations such as stone wool, glass wool, polyurethane, etc.

Comparison Table of Elastomeric Insulation and Traditional Insulation

Technical Specifications	Elastomeric Foam	Glass Wool	Stone Wool	Polyurethane
Heat Conduction Coefficient at Zero-Degree Temperature (w/m.k)	0.032-0.036	0.041	0.039	0.032-0.036
Resistance to Water Vapor Penetration	$\mu \geq 10000$	$\mu \geq 1$	$\mu \geq 1$	$\mu \geq 2000$
Energy Saving Percentage	70%~94%	Max.45%	Max.50%	70%~94%
Reaction to Fire	Slow burning and extinguishing	Non-flammable	Non-flammable	Highly flammable
Corrosion Under Insulation	No corrosion	Severe corrosion	Moderate corrosion	Low corrosion

Ketrowa Elastomeric Insulation Specifications

Material	Density (Kg/m3)	Thermal conductivity Coefficient (W/m ² K)	Compressive Strength (kPa)	Tensile Strength (Pa)	Burning Sest	Release of Toxic Gases During Fire (ppm)	The Amount of Water Absorption (%PW)
NBR	54	0.0376	166	0.167*106	Self-extinguishing without producing flame and flammable droplets	48 (Less than warning range)	18.2





Insulation with Special Properties





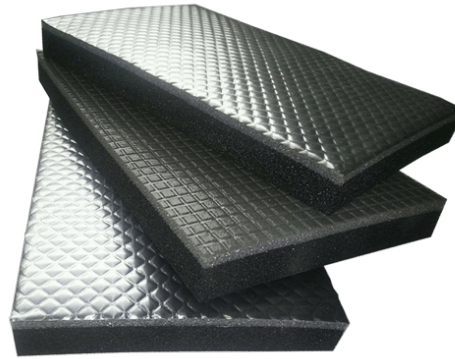
INSPIRE Roll Insulation

INSPIRE roll insulations with the latest technology and having a special structure and special formulation for use in high sensitivity projects such as medical and pharmaceutical industries, oil and gas and petrochemical industries, refineries, downstream oil industries, power plants. It is suitable for underground and tunnel facilities, subway, etc. Also, red and blue insulators are used to separate the return and return pipes of the facility.



Acoustic Insulation

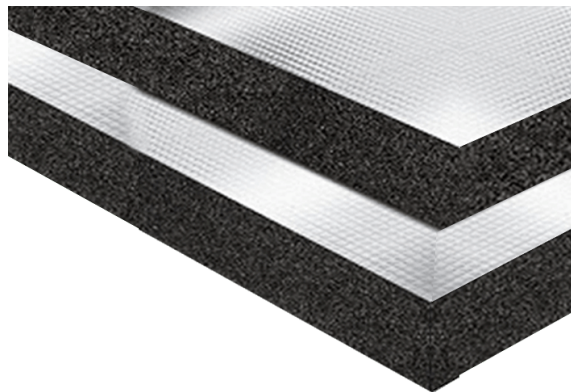
This type of insulation is used as sound insulation with high sound absorption performance and can be used in floors, walls, ceilings, pipelines, air conditioners and other facilities. Due to its high mechanical resistance, acoustic insulations have more durability and strength than other installation insulations and can be used in infrastructures of construction and industrial projects with suitable mechanical resistance.



Aluminum Panel Insulation

For the spaces outside the building, due to the changing weather conditions, coated panel insulation is used to insulate building facilities. They have high resistance to atmospheric changes and UV rays of the sun, mechanical shocks and corrosive substances. Elastomeric insulation with aluminum coating is used in insulating tanks and air channels (round and foursquare), heating and cooling systems, and hot and cold pipes. These insulators are sold in the market in two forms, simple and with adhesive backing, with coating thickness of 130 microns, 170 microns and 230 microns.

Title	Thickness (mm)	Panel Width (m)	Panel Length (m)	The Number of Panels in the Package	The Area of the Panel in the Package (m2)
Aluminum Panel Insulation	6	1	2	15	30
	9			10	20
	13			7	14
	16			6	12
	19			5	10
	25			4	8
	32			3	6
	40			2	4
	50			2	4



Panel Insulation With Protect Black Coating

In order to prevent physical damage to elastomeric insulations and also to prevent the effects of weather conditions, protect black coated panel insulations are used in the necessary cases for insulating building facilities. Elastomeric insulation with Protect Black coating is used in insulating tanks and air channels (round and foursquare), heating and cooling systems, and hot and cold pipes. These insulators are sold in two ways: simple and adhesive.

Title	Thickness (mm)	Panel Width (m)	Panel Length (m)	The Number of Panels in the Package	The Area of the Panel in the Package (m2)
Panel insulation with Protect Black coating	6	1	2	15	30
	9			10	20
	13			7	14
	16			6	12
	19			5	10
	25			4	8
	32			3	6
	40			2	4
	50			2	4



Corrugated Panel Sound Insulation (ISW)

Elastomeric sound insulation, which is also known as sound insulation in short, is used in a completely specialized way to absorb high sound. And it can be used in buildings and equipment where there is a need for sound control. It is worth noting that the performance of sound level reduction in sound insulation is different according to the frequency of the sound source.

Title	Thickness (mm)	Panel Width (m)	Panel Length (m)	The Number of Panels in the Package	The Area of the Panel in the Package (m2)
Corrugated Panel Sound Insulation (ISW)	6	1	2	15	30
	9			10	20
	13			7	14
	16			6	12
	19			5	10
	25			4	8
	32			3	6
	40			2	4
	50			2	4



INSPIRE

In addition to its unique beauty and colorful appearance, INSPIRE pipe insulation also has more special mechanical properties than simple elastomeric pipe insulation. In addition, they also make storage easier. All Inspire pipe insulation colors are environmentally friendly and, in addition to halogen-free properties, they have Class C fire reaction certification. One of the most obvious characteristics of red and blue pipe insulation can be mentioned the ability to separate the return and return pipes of facilities.



Thermal Pipe Insulation





Simple Pipe Elastomeric Insulation

Prefabricated pipe thermal and cold insulation with a closed cell structure is used to insulate all types of pipes with different applications and materials, such as hot water pipes, cooling and heating pipes related to fan coils, air conditioning systems and facility pipes, and causes energy is saved in these systems. Also, elastomeric pipe insulation prevents rusting of metal pipes exposed to unfavorable weather conditions.

Simple Pipe Elastomeric Insulation

Pipe Insulation

Inner Diameter of Insulated Pipe (mm)	Pipe Size			Insulation Thickness (mm)					
	Steel Pipes (inch)	Copper Pipes (inch)	5-layer Pipes (mm)	9	13	16	19	25	32
				Meterage of Simple Pipe Elastomeric Insulation (m)					
6	-	1.4	-	352	150	120	100	64	-
8	-	-	-	266	130	110	98	58	-
10	1.8	3.8	-	266	130	110	98	58	-
12	-	1.2	-	234	110	100	88	54	-
15	1.4	5.8	16	192	92	88	78	52	-
18	3.8	3.4	-	166	88	78	66	50	-
22	1.2	7.8	20	136	84	74	64	42	32
25	-	1	25	120	78	60	48	40	36
28	3.4	11.8	-	98	72	60	48	40	24
32	-	-	32	80	60	50	36	24	22
35	1	13.8	-	76	58	50	36	24	22
42	11.4	15.8	-	60	48	40	32	22	16
48	11.2	-	-	50	40	30	24	18	14
60	2	-	-	46	32	24	22	12	10
76	21.2	3	-	40	26	22	18	10	8
89	3	31.2	-	36	24	18	14	8	8
114	4	-	-	32	20	14	12	6	6



Pipe Insulation with Protect Black Coating

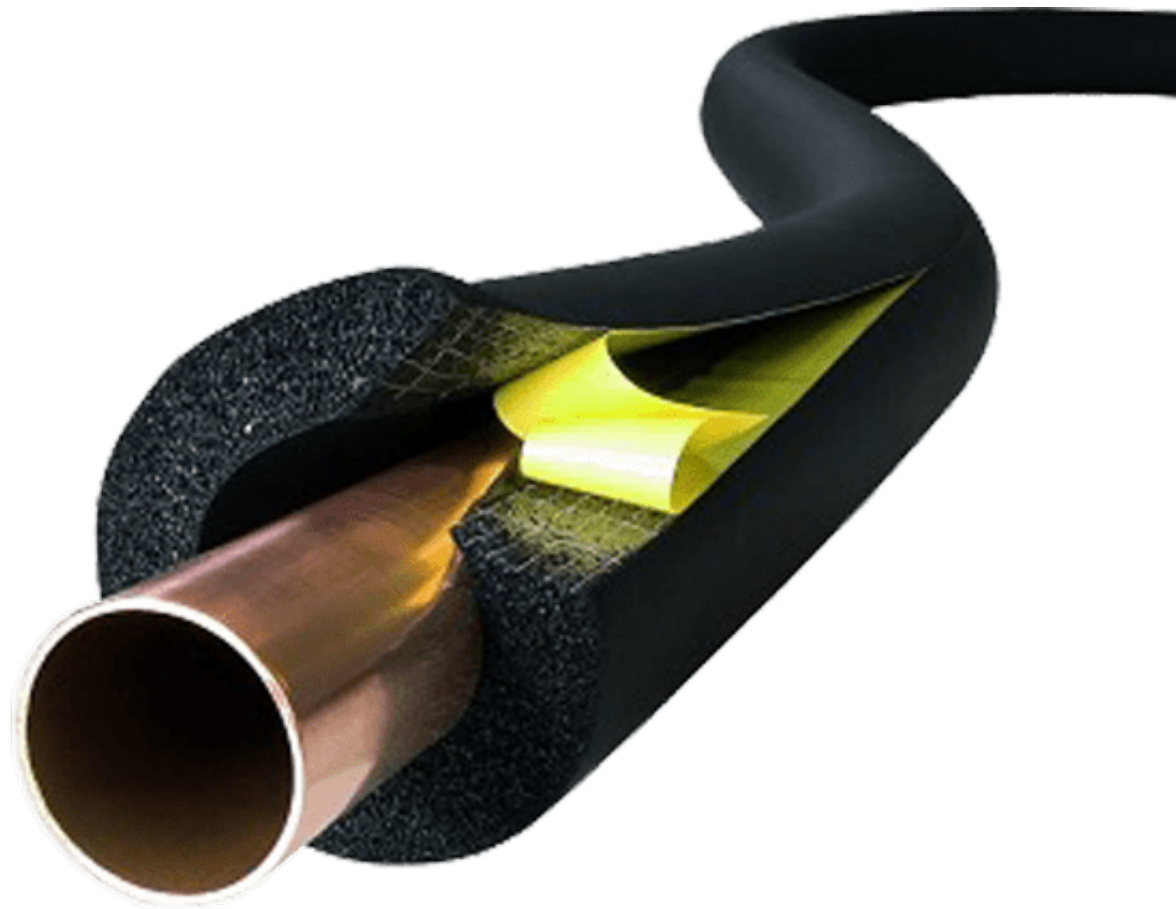
This flexible elastomeric insulation with a polymer coating is used to protect the insulation against mechanical shocks, to insulate cooling and heating systems, cold water lines and air conditioning to save energy and protect against condensation. The advantages of this type of insulation are as follows:

- 1- It is easy to clean and remove waste materials on it (suitable for food production centers, hospitals and schools)
- 2- Suitable for outdoor use due to its high resistance to the sun's UV rays
- 3- Can be used in the basement for hot and cold-water pipes
- 4- Waterproof and moisture proof
- 5- Eliminates the need to paint lines and pipes
- 6- Protection against the growth of bacteria and fungi.

Pipe Insulation with Protect Black Coating

Pipe Insulation

Inner Diameter of Insulated Pipe (mm)	Pipe Size			Insulation Thickness (mm)					
	Steel Pipes (inch)	Copper Pipes (inch)	5-layer Pipes (mm)	9	13	16	19	25	32
				Meterage of Protect Black Tubular Insulation in Aach Carton (m)					
6	-	1.4	-	352	150	120	100	64	-
8	-	-	-	266	130	110	98	58	-
10	1.8	3.8	-	266	130	110	98	58	-
12	-	1.2	-	234	110	100	88	54	-
15	1.4	5.8	16	192	92	88	78	52	-
18	3.8	3.4	-	166	88	78	66	50	-
22	1.2	7.8	20	136	84	74	64	42	32
25	-	1	25	120	78	60	48	40	36
28	3.4	11.8	-	98	72	60	48	40	24
32	-	-	32	80	60	50	36	24	22
35	1	13.8	-	76	58	50	36	24	22
42	11.4	15.8	-	60	48	40	32	22	16
48	11.2	-	-	50	40	30	24	18	14
60	2	-	-	46	32	24	22	12	10
76	21.2	3	-	40	26	22	18	10	8
89	3	31.2	-	36	24	18	14	8	8
114	4	-	-	32	20	14	12	6	6



Grooved Pipe Insulation

Grooved pipe elastomeric hoses have high resistance to moisture and steam, oil and chemicals. Also, low heat transfer, high shelf life and no skin and respiratory sensitivity are other advantages of this product. When piping has been done and it is not possible to use pipe insulators, slotted insulators should be used to insulate these pipes. Both edges of the seam of these insulations are glued, which, in addition to better adhesion of the insulation seam, eliminates the need to clean the edges. Also, the fact that the edges are glued makes the installation process easier and the installation process faster.

Grooved Pipe Insulation

Pipe Insulation

Inner Diameter of Insulated Pipe (mm)	Pipe Size			Insulation Thickness (mm)					
	Steel Pipes (inch)	Copper Pipes (inch)	5-layer Pipes (mm)	9	13	16	19	25	32
				Meterage of Corrugated Pipe Insulation in Each Carton (m)					
6	-	1.4	-	352	150	120	100	64	-
8	-	-	-	266	130	110	98	58	-
10	1.8	3.8	-	266	130	110	98	58	-
12	-	1.2	-	234	110	100	88	54	-
15	1.4	5.8	16	192	92	88	78	52	-
18	3.8	3.4	-	166	88	78	66	50	-
22	1.2	7.8	20	136	84	74	64	42	32
25	-	1	25	120	78	60	48	40	36
28	3.4	11.8	-	98	72	60	48	40	24
32	-	-	32	80	60	50	36	24	22
35	1	13.8	-	76	58	50	36	24	22
42	11.4	15.8	-	60	48	40	32	22	16
48	11.2	-	-	50	40	30	24	18	14
60	2	-	-	46	32	24	22	12	10
76	21.2	3	-	40	26	22	18	10	8
89	3	31.2	-	36	24	18	14	8	8
114	4	-	-	32	20	14	12	6	6



Pipe Insulation with Aluminum Coating

Elastomeric pipe insulation with aluminum coating is generally used to insulate cooling and heating pipes in open spaces due to its very high resistance against the sun's UV rays. In environments where there is a high probability of objects and mechanical shocks to the insulation, these insulations are used due to their flexibility and tear resistance. This product is produced and presented in three models with thicknesses of 130 microns, 170 microns and 230 microns and plain or adhesive back.

Pipe Insulation with Aluminum Coating

Pipe Insulation

Inner Diameter of Insulated Pipe (mm)	Pipe Size			Insulation Thickness (mm)					
	Steel Pipes (inch)	Copper Pipes (inch)	5-layer Pipes (mm)	9	13	16	19	25	32
				Meterage of all Kinds of Elastomeric Pipe Insulation With Aluminum Coating (m)					
6	-	1.4	-	352	150	120	100	64	-
8	-	-	-	266	130	110	98	58	-
10	1.8	3.8	-	266	130	110	98	58	-
12	-	1.2	-	234	110	100	88	54	-
15	1.4	5.8	16	192	92	88	78	52	-
18	3.8	3.4	-	166	88	78	66	50	-
22	1.2	7.8	20	136	84	74	64	42	32
25	-	1	25	120	78	60	48	40	36
28	3.4	11.8	-	98	72	60	48	40	24
32	-	-	32	80	60	50	36	24	22
35	1	13.8	-	76	58	50	36	24	22
42	11.4	15.8	-	60	48	40	32	22	16
48	11.2	-	-	50	40	30	24	18	14
60	2	-	-	46	32	24	22	12	10
76	21.2	3	-	40	26	22	18	10	8
89	3	31.2	-	36	24	18	14	8	8
114	4	-	-	32	20	14	12	6	6



Heat-cooling and Sound Insulation Rolls

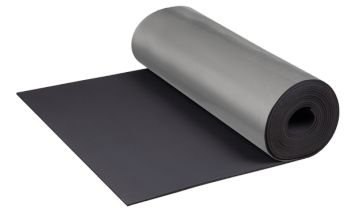


Heat-cooling and Sound Insulation Rolls

- **This type of insulation is used to insulate all kinds of surfaces such as channels, reservoirs and sources, walls of utility devices, large pipes, internal and external walls of all kinds of buildings, etc. Thermal insulators and high-sized pipes are used in the internal and external walls of all kinds of buildings, etc. Thermal and cold insulations are produced in simple types, with adhesive backing, with protect black or aluminum coating. In order to connect and install these insulators, elastomeric insulation glue can be used.**

Aluminum Coated Roll Insulation

For spaces outside the building, coated roll insulation is used to insulate building facilities due to changing weather conditions. They have high resistance to atmospheric changes and UV rays of the sun, mechanical shocks and corrosive substances. Elastomeric insulation with aluminum coating is used in insulating tanks and air channels (round and foursquare), heating and cooling systems, and hot and cold pipes. These insulators are sold in the market in two forms, simple and with adhesive backing, with coating thickness of 130 microns, 170 microns and 230 microns.



Roll Insulation with Protect Black Coating

In order to prevent physical damage to elastomeric insulations and also to prevent the effects of weather conditions, protect black coated roll insulations are used in the necessary cases for insulating building facilities. Elastomeric insulation with Protect Black coating is used in insulating tanks and air channels (round and foursquare), heating and cooling systems, and hot and cold pipes. These insulators are sold in two ways: simple and adhesive.



Simple Roll Insulation

Simple roll elastomeric insulation is used to insulate cooling and heating systems in closed spaces, and its resistance to moisture, chemicals, and the growth of fungi and bacteria is very high. Installation and maintenance of this type of insulation is very easy. These insulators are produced with a thickness of 6 mm to 50 mm, and a special glue is used to install them, and a special sealant is used to cover the created seams.



Title	Thickness (mm)	Roll width (m)	Roll Length (m)	The Area of the Roll in the Package (m2)
Aluminum Coated Roll Insulation Roll Insulation with Protect Black Coating Simple Roll Insulation	6	0.9	30	27
		1	30	30
		1.2	30	36
	9	0.9	20	18
		1	20	20
		1.2	20	24
	13	0.9	14	12.6
		1	14	14
		1.2	14	16.8
	16	0.9	12	10.8
		1	12	12
		1.2	12	14.4
	19	0.9	10	9
		1	10	10
		1.2	10	12
	25	0.9	8	7.2
		1	8	8
		1.2	8	9.6
	32	0.9	6	5.4
		1	6	6
		1.2	6	7.2
	40	0.9	4	3.6
		1	4	4
		1.2	4	4.8
	50	0.9	4	3.6
		1	4	4
		1.2	4	4.8

Roll Insulation with Adhesive Backing

Adhesive-backed roll insulators are used to insulate all types of tanks, air ducts, high-size pipes, etc. without the need for liquid glue. Due to the ease and speed of installation, reducing manpower costs and ensuring flawless connection of the insulation to the surface of the channel and pipe, elastomeric insulation with adhesive backing is used.



Simple Roll Sound Insulation

In this type, elastomeric insulators are used as sound insulation with high sound absorption performance and can be used in buildings and equipment that require sound control. It should be noted that the function of sound level reduction in sound insulation is different according to the frequency of the sound source.

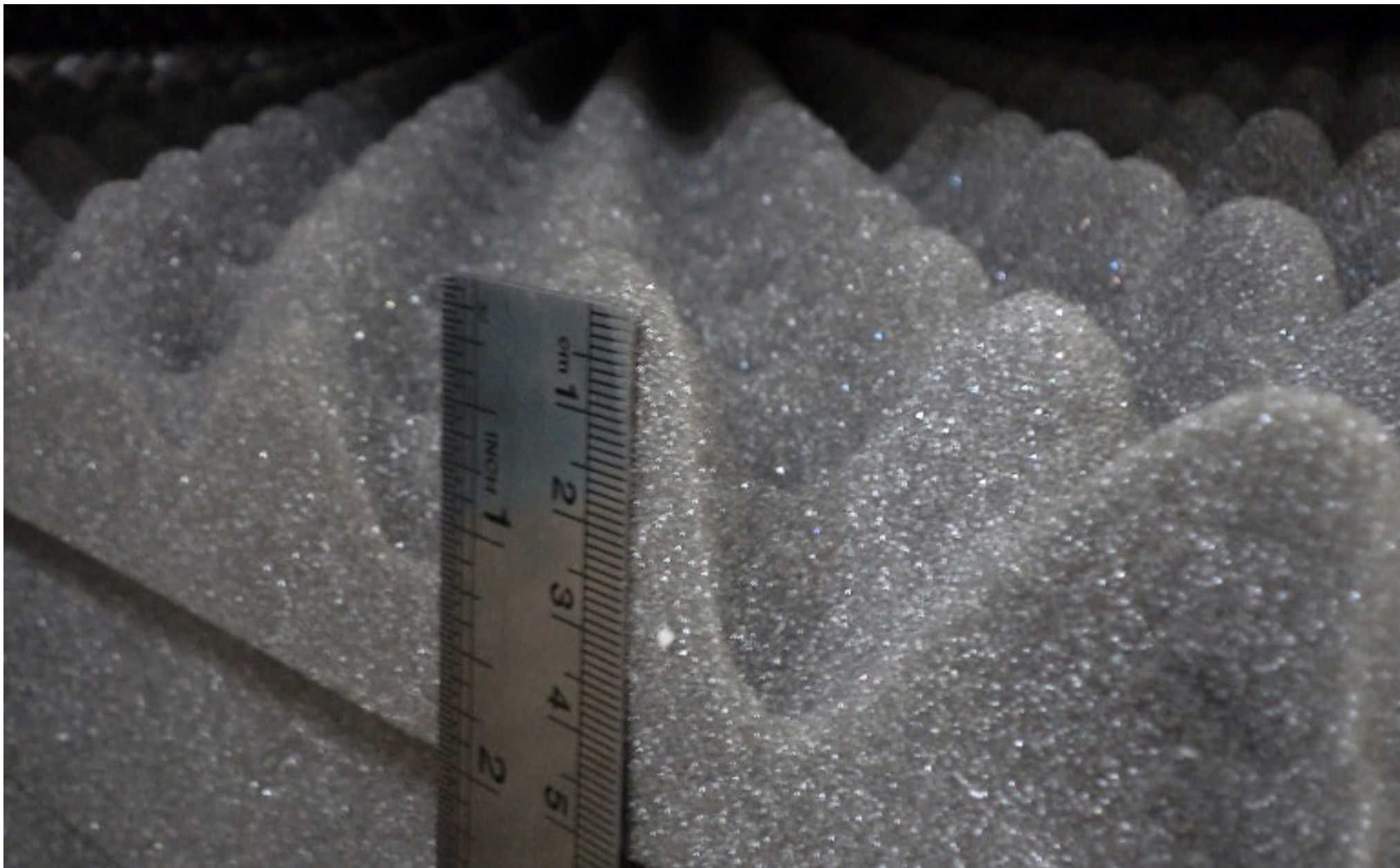


Corrugated Roll Sound Insulation

Elastomeric sound insulation, which is also known as sound insulation for short, is used in a completely specialized way to absorb high sound and can be used in buildings and equipment that require sound control. It is worth noting that the performance of sound level reduction in sound insulation is different according to the frequency of the sound source.



Title	Thickness (mm)	Roll width (m)	Roll Length (m)	The Area of the Roll in the Package (m2)
Simple Roll Insulation & Corrugated Roll Sound Insulation	13	0.9	14	12.6
		1	14	14
		1.2	14	16.8
	25	0.9	8	7.2
		1	8	8
		1.2	8	9.6





Complementary Products of Elastomeric Insulation





IGM Insulation Adhesive

To connect elastomeric insulators to each other or to different surfaces such as channel surface, pipe, wall, etc., special adhesive for elastomeric insulators is used. This type of glue is designed and produced in such a way that the thermal insulation is completely sealed to prevent the penetration of moisture. Also, using it on the surface of elastomeric insulation does not cause corrosion. In terms of thermal tolerance, this type of glue has the necessary compliance with the tolerance of elastomeric insulation. Special insulating glue is produced in metal cans of one and three liters.



IAT Aluminum Sealing Strip

IAT aluminum sealing tape is used for sealing and covering butt joints of elastomeric insulation with aluminum coating. Aluminum tape is made of reinforced or simple aluminum and is produced with an adhesive back.



Elastomeric Sealing Tape (IRT)

This type of sealing tape is used for sealing along pipe insulation, rolls and end-to-end joints of elastomeric insulation. The sealing tape is produced in various widths and thicknesses from elastomeric insulation material and with threaded adhesive backing.



Canvas Sealing Tape

This type of sealing tape is used for sealing the length of pipe insulation, rolls and covering end-to-end joints of elastomeric insulation. Also, this sealing tape is used for places where elastomeric insulation is in the vicinity of moisture, steam, oil, direct sunlight, etc., and more tensile strength is required.



IN KETROWA BUSINESS MODEL, MASS BUILDERS ARE THE MOST IMPORTANT TARGET CUSTOMERS.