INSULATES THE FUTURE

ECO - FRIENDLY

TECHNICAL INSULATION

R-FLEX

TURKEY EPD®

THE INTERNATIONAL EPD® SYSTEM

ISO 9001
ISO 27001
ISO 14001
ISO 50001
OHSAS 18001

CE EN 14304

TSE TS 14304

Elastomeric Rubber Foam

ODE

COMPANY PROFILE

ODE Insulation was founded in 1985 as a contractor in construction industry. In 1988, the company made a strategic decision to specialize in insulation industry. ODE started importing insulation products in 1990 and in 1996 the company became a manufacturer in insulation industry. Today, ODE manufactures insulation materials under 2 main categories; Building Insulation and HVAC Insulation. Its building insulation materials are Isıpan (Extruded Polystyrene Foam), Membran (Polymer Bitumen Based Waterproofing Membrane) and Starflex (Glass Wool). Its HVAC insulation materials are Starflex (Glass Wool) and R-flex (Flexible Elastomeric Foam). As of today, ODE is one of the biggest insulation manufacturers in the region. It manufactures and exports 4,000 varieties of insulation products to 75 countries.

Over the years, ODE became a regional leader and recently in 2017 the company has completed the first phase of its new investment and started producing in its new factory in Eskişehir, Turkey. Once the second phase of this investment is completed and the production capacity in technical insulation (HVAC) is increased, ODE will be the biggest manufacturer in technical insulation between China and Germany.

Besides, ODE Insulation has identified 15 target countries for its export under Turquality brand building program. Currently ODE is focusing on these countries in order to develop its distribution channels. In 2015, ODE became the first and the only company in insulation industry in the region that has Environmental Product Declaration (EPD) certificate for all of its product range, which means that ODE products are internationally approved and they are in accordance with the European standards.

ODE insulates the future and it will keep investing in the future by transferring its 30 years of experience in insulation to create a sustainable environment for the next generations.

ÇORLU PRODUCTION FACILITY

ESKİŞEHİR PRODUCTION FACILITY

ELASTOMERIC
RUBBER FOAM

INSULATES THE FUTURE

GENERAL FEATURES

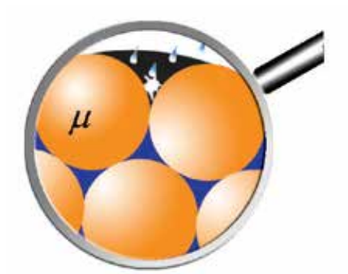
A wide range of thermal insulation materials are used in the thermal insulation of cold lines and cooling systems in installation. Today, elastomeric rubber foam produced in Turkey is one of the most preferred material in the market thanks to its superior features such as thermal conductivity, of installation insulation, water vapor diffusion resistance, and fire resistance. The technical criteria to be considered in the use of the elastomeric rubber foam materials with a wide production range are described below.

THERMAL CONDUCTIVITY COEFFICIENT (λ)

The thermal conductivity coefficient is the amount of heat transfer when the temperature difference is (Δt) 1°C between 1m^2 surface at a 1 meter distance of the insulation materials perpendicular to each other. It is the most decisive feature in the selection of thermal insulation materials. Materials with low thermal conductivity (λ) have a high thermal insulation performance.

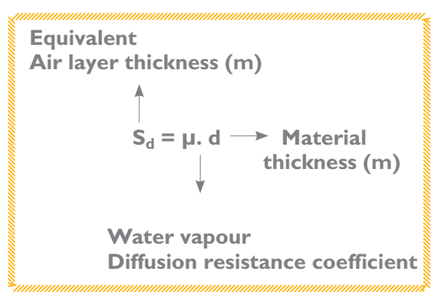
WATER VAPOR DIFFUSION RESISTANCE COEFFICIENT (μ)

The proportion of the resistance of the materials against water vapour transmission to the water vapour diffusion resistance of the air is called water vapour diffusion coefficient and it is indicated by μ.



WATER VAPOR DIFFUSION RESISTANCE

In cold lines, products with enough water vapour diffusion resistance should either be used or the materials with a low μ value should be used with a vapour barrier to avoid condensation in the thermal insulating material. Equivalent air layer thickness (m) is the resistance that a material demonstrates to the diffusion of water vapour times thickness in meters.



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Fire Classifications according to EN 13501-1 Standard	
A1	A1 Non-flammable materials - fireproof material
A2	A2 Materials that do not contribute significantly to fire load and fire development
B	Materials that provide better conditions than C-Class
C	Materials that provide better conditions than D-Class
D	Materials that are resistant for a long time
E	Materials that are resistant for a short time
F	Materials whose fire performance is not determined

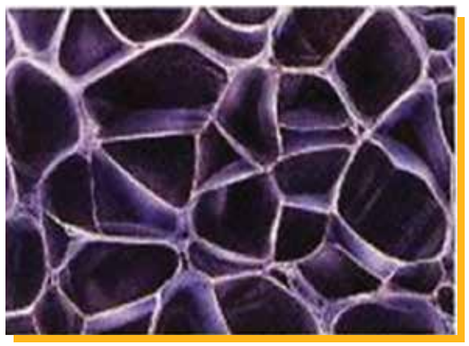
FIRE RESISTANCE

ODE R-Flex PRM Sheet is in the "B-s3, d0" class based on the Fire Classification Standard EN 13501-1. ODE R-Flex PRM Pipe is in the "B-s2, d0" class based on the Fire Classification Standard EN 13501-1.

CORROSION RISK

The corrosive substances of the insulation material is also important for mechanical insulation. Insulation materials should be as neutral as possible and they should not contain water soluble chlorines, Cl, F, Na, Si, more than a certain value defined by countries. ODE R-Flex is safe in terms of the corrosion risk.

WATER ABSORPTION BY VOLUME



In order to determine water absorption percentages of materials, they are left in a closed test environment at 90% relative humidity for 24 hours. The weight difference percentage of the materials before and after the test gives the volume ratio of water absorption by diffusion. Another method is complete immersion. The water absorption percentage of the material in direct contact with water is found based on its weight before and after testing. Having a closed cell percentage of higher than 90%, ODE R-Flex's water absorption by volume is 0.4%.

ODE R-FLEX
ELASTOMETRIC RUBBER FOAM

ODE R-FLEX, which is one of the most popular materials of the sector thanks to its superior specifications in thermal conductivity, water vapor diffusion resistance and fire resistance -significant criteria for thermal insulation of installations- is manufactured in three main groups, **DIAMOND, PRM, STD** with various laminations.

The water vapor diffusion resistance factor for
R-FLEX DIAMOND μ ≥ 11000,
R-FLEX PRM μ ≥ 7000,
R-FLEX STD μ ≥ 5000.

ODE R-FLEX DIAMOND/PRM/STD SHEET

It is a flexible insulation material manufactured in sheet from elastomeric rubber foam material. It is not affected by mould or microorganisms. It is ideal for insulation pipes with higher diameters, rectangular and circular sections, ventilation ducts. It is produced in various thicknesses and widths.

TECHNICAL SPECIFICATIONS	UNIT	SHEET		
		R-FLEX DIAMOND SHEET	R-FLEX PRM SHEET	R-FLEX STD SHEET
Thermal Conductivity (λ) (0°C)	W/(m.K)	0,034	0,034	0,036
Water Vapor Diffusion Resistance Factor (μ)	-	≥11000	≥7000	≥5000
Reaction to Fire EN 13501-1	-	B - s3, d0	B - s3, d0	B - s3, d0
Service Temperature	°C	-50/110	-50/110	-50/110

ODE R-FLEX SHEET

Width (mm)	Thickness (mm)									
	6	9	10	13	19	25	32	40	50	60
1000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1200	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
1500	✓	✓	✓	✓	✓	✓	✓	-	-	-

ODE R-FLEX
LAMINATED PRODUCTS

ODE R-FLEX provides more advantage with its self laminated products as an alternative to coating.

ODE R-FLEX's laminated products are;
R-FLEX ALUGLASS (Aluminum Glass Fabric)
R-FLEX AL-CLAD (Aluminium Cladding)
R-FLEX ALU (Aluminium Foil Facing)
R-FLEX METALIZED (Metalized Facing)
R-FLEX SA (Self Adhesive)

ODE DIAMOND/PRM/STD ALUGLASS SHEET

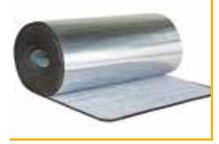
- The top surface of the product is coated with Aluglass (aluminum glass fabric)
- Facing thickness is 180 microns.
- It has 95 g / m glass cloth material.
- It has high fire and UV resistance thanks to its glass cloth surface.
- Complete sealing and minimal workmanship mistakes.
- It maintains its elasticity property at low and high temperatures and does not deteriorate its lamination.
- High pressure resistance .

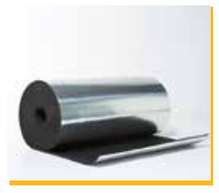
ODE R-FLEX DIAMOND/PRM/STD AL-CLAD SHEET

- Developed as an alternative to 0.8 – 1 mm aluminum metal lamination. An aluminum lamination with a thickness of 250 microns.
- Self-adhesive on one side, if desired. Full and excellent adhesion to the surface of the duct with reinforced adhesive.
- Applicable to the outdoor systems with UV resistant external lamination.*
- Advantages of fast application, minimum labour and waste (2-3%)
- Optimal sizes (1000-1200mm) and various thickness for duct installation.
- Increase in the water vapour diffusion resistance of the product.
- Complete sealing and minimal workmanship mistakes.
- Preservation of the form against mechanical impacts.

ODE R-FLEX DIAMOND/PRM/STD ALU SHEET

- Facing thickness is 54 microns.
- A resistant coating with polyester-laminated aluminum
- Self-adhesive on one side, if desired. Full and excellent adhesion to the surface of the duct with reinforced adhesive.
- Application saving time and labour.
- Preservation of the form against mechanical impacts.
- Visual support for the channel where applied on the aluminum foil lamination.
- Increase in the water vapour diffusion resistance of the product.
- Complete sealing and minimal workmanship mistakes.
- Optimal sizes (1000-1200mm) and various thickness for duct installation.





*For special types

ODE R-FLEX LAMINATED PRODUCTS

ODE R-FLEX DIAMOND/PRM/STD METALIZED SHEET

- Elastomeric rubber foam sheet with Metalized PET film as their final facing layer.
- Facing thickness is 42 microns.
- Has high strength and surface hardness by virtue of its characteristics.
- Increases the product's water vapour diffusion resistance.
- Raises UV resistance.
- It is manufactured in sizes that are best suited for duct insulation (1000-1200 mm) and in various thicknesses.
- It is easily applied.
- Saves on labour.
- It is cost friendly.

ODE R-FLEX DIAMOND/PRM/STD SA

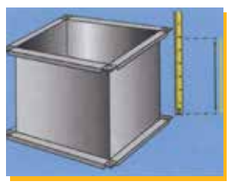
Another outstanding feature of the ODE R-Flex elastomeric rubber foam sheet is the manufacturing of self-adhesive **ODE R-Flex SA Types.**

- 2 types of protective lamination are used on the adhesive surface which is called
- Kraft paper SA
- HDPE filmed SA
- Adhesive surfaces are manufactured with or without a "mesh". Use of the mesh large ducts.
- The advantage o these types that provide various ease of application.
- The advantage of physical adhesion due to the
- self- adhesion.
- No risk available in chemical adhesion.
- Full sealing.
- All the surfaces adhered to the same quality.
- Application to the ground.
- Reduction in labour time by 40%.

Non-self-adhesive rubber foam is adhered by an adhesive like **ODE Konfix,** which is called a chemical adhesion.

Chemical adhesion depends on:

- Surface cleanliness,
- Quality of the adhesive used,
- Temperature and relative humidity,
- And labour quality.



ODE R-FLEX DIAMOND/PRM/STD PIPE

It is completely flexible, prefabricated pipes insulation material, manufactured as pipes from elastomeric rubber foams for the installation pipes in cold and warm lines. It is manufactured in **6 - 114 mm** diameters and **6-32 mm** thickness.

TECHNICAL SPECIFICATIONS	UNIT	PIPE		
		R-FLEX DIAMOND PIPE	R-FLEX PRM PIPE	R-FLEX STD PIPE
Thermal Conductivity (λ) (0°C)	W/(m.K)	0,036	0,036	0,036
Water Vapour Diffusion Resistance Factor (μ)	-	≥11000	≥7000	≥5000
Reaction to Fire EN 13501-1	-	BL-s2,d0	BL-s2,d0	BL-s3,d0
Service Temperature	°C	-50/116	-50/116	-50/116

ODE R-FLEX PIPE

Length (mm)	Thickness (mm)					
	6	9	13	19	25	32
2000	✓	✓	✓	✓	✓	✓

ODE R-FLEX LAMINATED PIPE PRODUCTS

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- High pressure resistance .

ODE DIAMOND/PRM/STD AL-CLAD PIPE

- Developed as an alternative to 0.8 – 1 mm aluminum metal lamination. An aluminum lamination with a thickness of 250 microns.
- Applicable to the outdoor systems with UV resistant external lamination.*
- Advantages of fast application, minimum labour and waste (2-3%)
- Increase in the water vapour diffusion resistance of the product.
- Complete sealing and minimal workmanship mistakes.
- Protection of the form against mechanical impacts.

ODE DIAMOND/PRM/STD ALU PIPE

- A resistant coating with polyester-laminated aluminum.
- Facing thickness is 54 microns.
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- Complete sealing and minimal workmanship mistakes.

ODE DIAMOND/PRM/STD METALIZED PIPE

- Elastomeric rubber foam pipe with Metalized PET film as their final facing layer.
- Facing thickness is 42 microns.
- Has high strength and surface hardness by virtue of its characteristics.
- Increases the product's water vapour diffusion resistance.
- Raises UV resistance.
- It is cost friendly.

*For special types

ODE R-FLEX DIAMOND/PRM/STD
PIPE SIZE CHART

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ODE R-FLEX PIPE

COPPER	STEEL	PPM/PPRC		Inner Diameter	Thickness (mm)					
				R-FLEX PIPE	6	9	13	19	25	32
inch	inch	inch	mm	mm	m/box	m/box	m/box	m/box	m/box	m/box
1/4"				6	496	312	204	120	64	
5/16"				8	432	300	200		64	
3/8"	1/8"	1/8"		10	364	276	180	98	64	
1/2"				12	316	252	156	88	60	
5/8"				15	266	204	120	78	56	
3/4"	3/8"	3/8"		18	220	178	120	72	50	32
7/8"	1/2"	1/2"	20	22	180	136	98	66	42	32
			25	25		144	92	62	40	
1 1/8"	3/4"	3/4"		28	130	122	78	56	40	24
				32		90	72	40	34	
1 3/8"	1"	1"	32	35	120	90	70	40	32	26
				38		94		40		
1 5/8"	1 1/4"	1 1/4"	40	42	102	94	60	40	30	20
6"	1 1/2"	1 1/2"	50	48		80	50	34	24	18
				54		62	40	34	20	16
2 3/8"	2"	2"	63	60		62	40	34	18	16
				64		62	38	28	18	16
				67		58	38	26	16	14
3"	2 1/2"			76		50	38	28	16	12
3 1/2"	3"	3"	90	89		48	34	22	18	12
4 1/2"	4"	4"	110	114		32	26	18	14	10

ODE R-FLEX SPECIAL PIPE (COIL) PRODUCTION

These are the elastomeric rubber foam pipes specially manufactured with diameters of 6-10-12-15 mm, thicknesses of 9-13 mm, and 50 m long coils to ensure sustainability in the insulation of copper pipes used in the cooling industry.

PACKAGING AND SHIPMENT

ODE R-FLEX SHEET		VOLUME (m^3)
PACKAGING	100 cm	0,263
PACKAGING	120 cm	0,315
PACKAGING	150 cm	0,4

ODE R-FLEX PIPE	VOLUME (m^3)	BOX Width x Length x Height
Box	0,273	39 cm x 33,3 cm x 210,5 cm

LOADING INFO

	TRUCK			TRAILER TRUCK			40 HC CONTAINER		
Approximate Volume	45 m^3			84 m^3			76 m^3		
Sheet (Bag) amount (based on roll width)	100 cm for	120 cm for	150 cm for	100 cm for	120 cm for	150 cm for	100 cm for	120 cm for	150 cm for
	170-180 Rolls	150-160 Rolls	120-130 Rolls	320-330 Rolls	275-285 Rolls	220-230 Rolls	280-290 Rolls	240-250 Rolls	200-210 Rolls
Pipe (Cartoon box amount)	165-170 boxes			315-320 boxes			260-265 boxes		

ACCESSORIES

ODE R-FLEX TAPES

TAPES	SIZE	ROLL/BOX	BOX/PALLET
Aluminium Foil Tapes	40 mt x 50 mm	24	80
	40 mt x 75 mm	16	80
	40 mt x 100 mm	12	80
	30 mt x 50 mm	24	80
	30 mt x 75 mm	16	80
	30 mt x 100 mm	12	80
Reinforced Aluminium Foil Tape	30 mt x 50 mm	24	80
	30 mt x 75 mm	16	80
	30 mt x 100 mm	12	80
Rubber Tape	3 mm x 50 mm x 15 mt	20	32
	3 mm x 75 mm x 15 mt	13	32
	3 mm x 100 mm x 15 mt	10	32
PVC Tape (Black)	25 yr x 50 mm	18	200

ODE KONFIX

It is a synthetic rubber-based super strong adhesive used in ODE R-Flex applications. It prevents convection currents in the joints, and ensures fast and easy installation.
The surfaces to be adhered should not be greasy or dusty. ODE Konfix should be applied with a roll, a brush, or a spray in equal amounts on both sides and adhesion should be performed under a constant pressure.
The drying time varies between 10 seconds and 4 minutes, it takes 24 hours for full adhesion.

ADHESIVES	UNIT	AMOUNT
ODE KONFIX	kg	14
ODE KONFIX	kg	3
ODE EKO KONFIX	kg	14
ODE EKO KONFIX	kg	3

PRINCIPLES OF APPLICATION

INSULATION OF PIPES

1

If the installation is laid down, cut the ODE R-Flex Pipe longitudinally. Only use sharp blades for cutting. This adhesive makes the applying process easier.

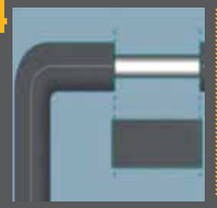
2

Place the ODE R-Flex Pipe around the pipe to be insulated and apply the adhesive both on the ends and the edges created along the slit.

3

Gently press down on the edges of the slit after making sure that the glue becomes dry.

4



Cut a part a few mm longer than required to cover the region between two insulating pipes. If the piece you cut is not long enough, it will make the insulation properties in the area worse.

5

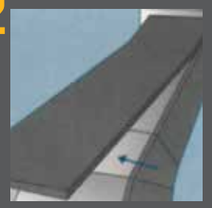
Cut the part longitudinally and adhese it by placing it onto the pipe.

INSULATION OF AIR DUCTS

1

Carefully clean the surface to be insulated. There should be nothing left on the surface that will prevent adhesion. Cut the ODE R-Flex Sheet from the rolls in appropriate sizes by measuring the surface of the duct to be insulated.

2



Apply ODE R-Flex Adhesive on the surface of the ODE R-Flex Sheet that will be adhered and on the duct. To get good results, first cover the bottom surface of the duct, then the side surfaces, and finally the top surface.

3

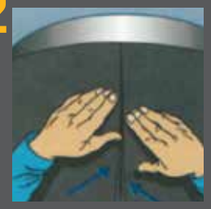
Attach the edges to each other with ODE R-Flex Adhesive.

INSULATION OF TANKS

1

Carefully clean all the surfaces before the insulation. Measure the height and around the tank with the ODE R-Flex Sheet.

2

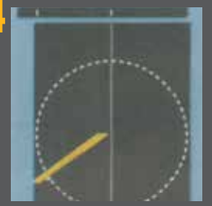


Cut it by transferring the measurements onto an ODE R-Flex Sheet. Apply the ODE R-Flex Adhesive to the entire surface of the ODE R-Flex Sheet using a spatula and to the entire surface of the tank using a brush. Apply the adhesive on the edges of the sheet and adhere the sheet to the tank. Attach the edges to each other.

3

For the insulation of curved parts, measure with the ODE R-Flex Sheet.

4



Draw a circle that will cover the curved part by calculating the radius. Cut the circle from the marked areas.

5

Apply ODE R-Flex Adhesive on the part you have cut and the curved part of the tank that will be covered.

6

Adhere the part in its place and push it to avoid shifting from the middle outwards.

7

When the part is adhered, apply ODE R-Flex Adhesive all around the edges. When it is dry, push it in tightly and attach it with ODE R-Flex Sheet.

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