



INSULATES THE FUTURE



 **EPD**[®]

TURKEY
THE INTERNATIONAL EPD[®] SYSTEM

ISO 9001
ISO 27001
ISO 14001
ISO 50001
OHSAS 18001



Elastomeric Rubber Foam



TECHNICAL INSULATION
R-FLEX

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 to import insulation products in 1990 and then the company became a manufacturer in insulation industry in 1996. Today, ODE manufactures insulation materials under two main categories; Building Insulation and HVAC Insulation. Building insulation materials are Isipan (Extruded Polystyrene Foam), Membran (Polymer Bitumen Based Waterproofing Membrane) and Starflex (Glass Wool), while 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 with manufacturing and exporting 4,000 different kinds of insulation materials to 75 countries.

ODE became a regional leader over the years and during 2017, the company has completed the first phase of its new investment and started manufacturing in the 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 with its Environmental Product Declaration (EPD) certificate for all 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 in order to create a sustainable environment for the next generations.



ÇORLU PRODUCTION FACILITIES



ESKİŞEHİR PRODUCTION FACILITY

ELASTOMERIC RUBBER FOAM



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 1m² 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.

The thermal conductivity coefficient of ODE R-Flex PRM Sheet is **0.032 W/mK** (at 0°C).

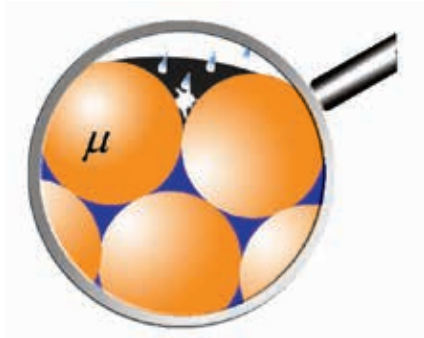


WATER VAPOR DIFFUSION

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 .

ODE R-Flex PRM Sheet's water vapour diffusion coefficient is **$\mu \geq 7000$** .



ELASTOMERIC RUBBER FOAM



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

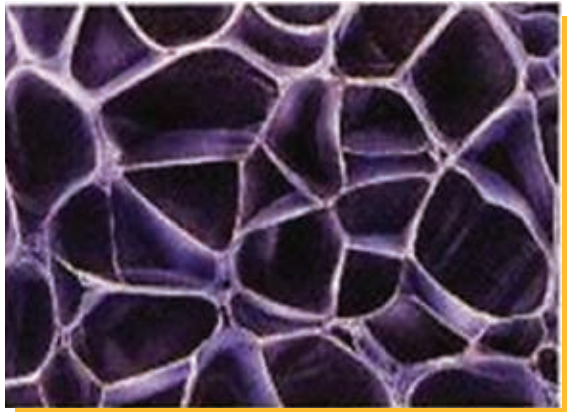
As indicated in Section 5:3, Part 7 of DIN 1988, insulation materials should be as neutral as possible and they should not contain water soluble chlorines, NH₃, or NO₃ more than a certain percentage. Accordingly, the limit values: 0.5% chlorine in steel pipes, and in 0.2%.

Nitrate and Ammonia in copper tubes. ODE R-Flex is safe in terms of the corrosion risk with its max of 0.05% water soluble Cl ion and Ph 8 values.



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 PRM/STD



ODE R-FLEX 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, rectangular and circular sections, ventilation ducts. It is produced in various thicknesses and widths.

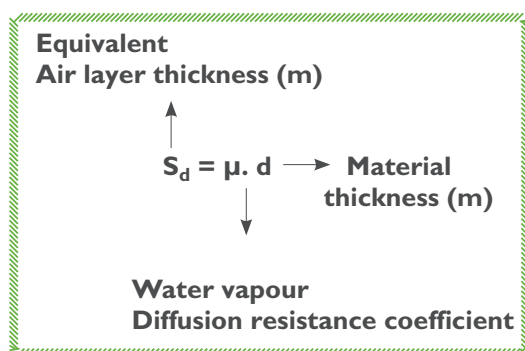
ODE R-FLEX PRM & STD PIPE

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 does not contain halogen. It is manufactured in 6 - 114 mm diameters and 6-32 mm thickness.

ODE R-FLEX is produced into two groups: **Premium** and **Standard**.

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.



ODE R-FLEX LAMINATED PRODUCTS

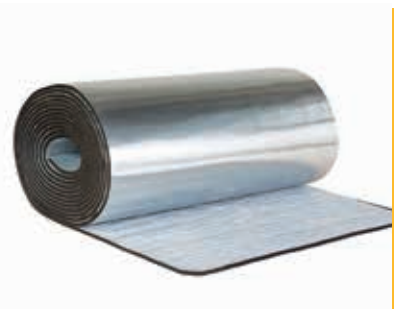


ODE provides more advantage with its self laminated products as an alternative to coating.

ODE's laminated products are;
R-FLEX ALF (Aluminium Foil Facing)
R-FLEX AL-CLAD (Aluminium Cladding)

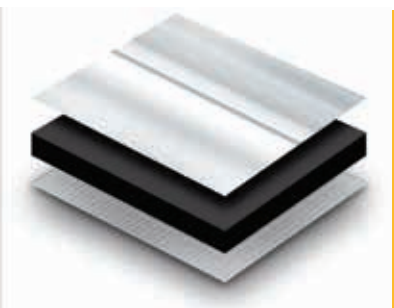
ODE R-FLEX PRM/STD ALU SHEET

- Made of 54 microns aluminum foil
- 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.
- Reduction in vibration of the ducts with flexible structure.
- The adhesive strength of "15 N/25 mm 24 hours – steel plate".
- Reduction in the rate of waste down to 2-3%.



ODE R-FLEX 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.
- Easy and precise application with high flexibility
- Complete sealing and minimal workmanship mistakes.
- Reduction in vibration of the ducts with flexible structure.
- The adhesive strength of "15 N/25 mm 24 hours – steel plate".
- Preservation of the form against mechanical impacts.
- High tear strength (182 N /25 mm – wide)



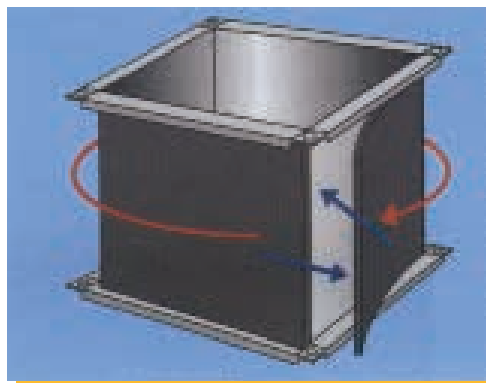
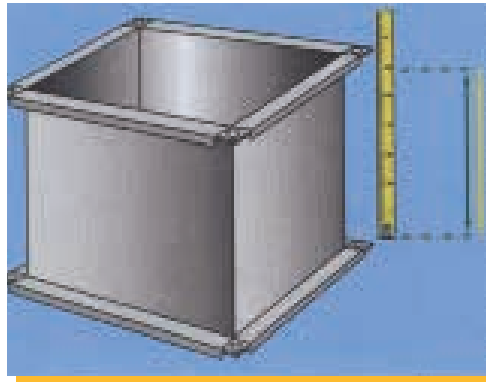
ODE R-FLEX PRM/STD SA



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 as physical adhesion.
- Kraft paper SA
 - HDPE filmed SA
 - Adhesive surfaces are manufactured with or without a "mesh". Use of the mesh is recommended in large ducts.

- The advantage of 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 PRM/STD

TECHNICAL SPECIFICATIONS



TECHNICAL SPECIFICATIONS	UNIT	ODE R-FLEX STD SHEET	ODE R-FLEX PRM SHEET	ODE R-FLEX STD PIPE	ODE R-FLEX PRM PIPE
Thermal Conductivity Coefficient (λ) EN 12667	W/m K	0,030 (-20°C)	0,030 (-20°C)	0,030 (25°C)	0,030 (25°C)
		0,032 (0°C)	0,032 (0°C)	0,032 (50°C)	0,032 (50°C)
		0,034 (+20°C)	0,034 (+20°C)	0,034 (75°C)	0,034 (75°C)
Water Vapour Diffusion Resistance Coefficient (μ) EN 12086	μ	≥ 5000	≥ 7000	≥ 5000	≥ 7000
Fire Classification EN 13501-I	-	B – s3, d0	B – s3, d0	BL – s2, d0	BL – s2, d0
Fire Classification BS 476	-	Class 0	Class 0	Class 0	Class 0
Risk of Corrosion	-	In compliance with CI max %0,05 DIN1988/7	In compliance with CI max %0,05 DIN1988/7	In compliance with CI max %0,05 DIN1988/7	In compliance with CI max %0,05 DIN1988/7
Close Cell Percentage	%	> 90	> 90	> 90	> 90
Thermal Resistance	°C	-45 / 85	-45 / 85	-45 / 116	-45 / 116
Resistance to Chemicals (Oil, mineral oil)	-	Good	Good	Good	Good
UV and Air Resistance	-	Good	Good	Good	Good
Flexibility	-	Excellent	Excellent	Excellent	Excellent
Ozone Resistance	-	Good	Good	Good	Good
Mold Growth and Odor	-	No	No	No	No
Dissoluble Chlorine Ion Level	mg/kg	500	500	500	500
pH	-	8	8	8	8

ODE R-FLEX 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 does not contain halogen. It is manufactured in **6 - 114 mm** diameters and **6-32 mm** thickness.

ODE R-FLEX PRM PIPE



PRODUCT NAME	λ (Thermal Conductivity Coefficient) W/m.K	μ (Water Vapour Diffusion Resistance Coefficient)	Fire Classification (TS EN 13501-I)
R-FLEX PRM PIPE	0.030 (0°C)	7000	BL-s2, d0
	0.032 (50°C)		
	0.034 (+75°C)		

ODE R-FLEX STD PIPE



PRODUCT NAME	λ (Thermal Conductivity Coefficient) W/m.K	μ (Water Vapour Diffusion Resistance Coefficient)	Fire Classification (TS EN 13501-I)
R-FLEX STD PIPE	0.030 (0°C)	5000	BL-s2, d0
	0.032 (50°C)		
	0.034 (+75°C)		

ODE R-FLEX PRM/STD

PIPE SIZE CHART



LOGISTICS



ODE R-FLEX PRM PIPE / ODE R-FLEX STD PIPE										
COPPER	STEEL	PPM/PPRC		R-FLEX Inner Diameter	THICKNESS (mm)					
inch	inch	inch	DN	mm	6mm	9mm	13mm	19mm	25mm	32mm
					m/box	m/box	m/box	m/box	m/box	m/box
1/4"				6	496	312	168			
5/16"				8	432	300	200			
3/8"	1/8"			10	364	240	144			
1/2"				12	316	204	132			
5/8"	1/4"			15	266	192	120			
3/4"	3/8"			18	220	166	96	60	50	
7/8"	1/2"	1/2"	20	22	180	136	98	60	42	
1 1/8"	3/4"	3/4"	25	28	130	98	78	48	36	
1 3/8"	1"	1"	32	35	100	76	58	40	24	22
1 5/8"	1 1/4"	1 1/4"	40	42	90	70	48	32	22	18
	1 1/2"	1 1/2"	50	48		60	40	24	18	14
2 3/8"	2"	2"	63	60		46	36	26	14	12
3"	2 1/2"			76		40	30	22	12	10
3 1/2"	3"	3"	90	89		40	28	18	12	8
4 1/2"	4"	4"	110	114		26	20	16	10	8

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.



ODE R-FLEX SHEET		VOLUME (m³)
PACKAGING	100 cm	0,263
PACKAGING	120 cm	0,315
PACKAGING	150 cm	0,4

ODE R-FLEX PIPE	VOLUME (m³)	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 m³			84 m³			76 m³		
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		

TOLERANCES

PRODUCT	LENGTH	WIDTH	THICKNESS TOLERANCE (mm)		INTERNAL DIAMETER OF PIPE	
					Di≤100	Di≥100
SHEET (R-FLEX PRM and R-FLEX STD Sheet)	± 1,5 %	± 2 %	dD≤6 6<dD≤19 dD>19	± 1 ±1.5 ±2	-	-
PIPE (R-FLEX PRM and R-FLEX STD Pipe)	± 1,5 %	-	dD≤8 8<dD≤18 18<dD≤31 dD>31	± 1 ±1.5 ±2.5 ±3	D _i D + 1≤D _i ≤D _i D +4	D _i D + 1≤D _i ≤D _i D +6

- * REFERENCE EN 14304
- * dD: Declared thickness
- * Di: Internal diameter
- * Di,D: Declared Internal diameter

PRINCIPLES OF APPLICATION

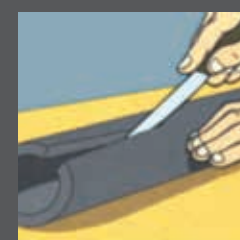
INSULATION OF PIPES



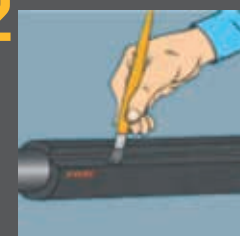
1



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.

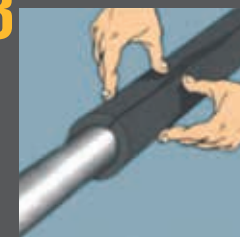


2



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



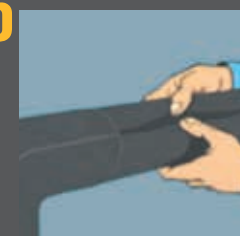
Gently press down on the edges of the slit after making sure that the glue becomes dry.

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 adhere 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.

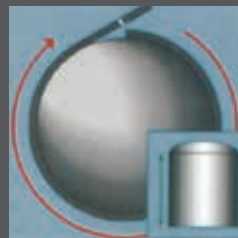
3



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

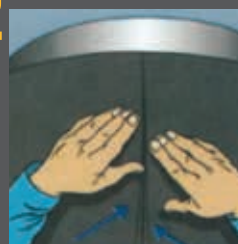
INSULATION OF TANKS

1



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

2



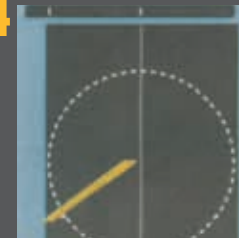
Cut it by transferring the measurements onto an ODE R-Flex Sheet. Apply the ODE R-Flex Adhesive to the entire surface of the ODE R-Flex Sheet using a spatula and to the entire surface of the tank using a brush. Apply the adhesive on the edges of the sheet and adhere the sheet to the tank. Attach the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

3



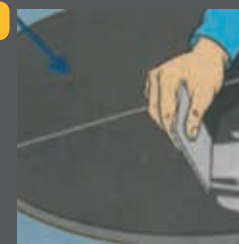
For the insulation of curved parts, measure with the ODE R-Flex Sheet.

4



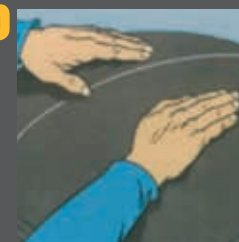
Draw a circle that will cover the curved part by calculating the radius. Cut the circle from the marked areas.

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.

ACCESSORIES



ODE R-FLEX TAPES

ODE R-Flex provides complete sealing with reinforced rubber tapes.

ODE R-Flex PVC Tapes allow for an economical assembly.

TAPES	MEASUREMENT	ROLL/PARCEL	ROLL/PARCEL
ODE R-Flex 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
ODE R-Flex 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
ODE R-Flex 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
ODE R-Flex PVC Tape (Black/Grey)	25 yr x 50 mm	18	200

ODE KONFIX (ODE R-FLEX ADHESIVE)

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	15
ODE KONFIX	kg	3
ODE EKO KONFIX	kg	15
ODE EKO KONFIX	kg	3





INSULATES THE FUTURE

103.08.18.250.02

ODE Yalıtım San. Tic. A.Ş.

A: Piyale Paşa Bulvarı Ortadoğu Plaza Kat:12 34384

Okmeydanı - Şişli / İstanbul / Turkey

T: +90 212 210 49 06

F: +90 212 210 49 07

e-mail: export@ode.com.tr



www.ode.com.tr

