INSULATES THE FUTURE

TECHNICAL
INSULATION

COMPANY PROFILE

ODE Insulation embarked on its business journey in 1985 with contracting operations. In 1998, ODE decided to move forward in the insulation industry, one that would serve Turkey's need. Having become an importer in 1990 and a manufacturer in 1996, ODE now manufactures products in two main categories, Building insulation and HVAC insulation. ODE is now among the largest manufacturers of the insulation industry with five state-of-the-art manufacturing facilities, over four thousand product varieties, and expert workforce.

ODE manufactures extruded polystyrene thermal insulating material under the brand of ODE Isıpan; thermal modified bituminous waterproofing blankets under the brand of ODE Membrane, glass wool products used for heat and sound insulation and fire safety under the brand of ODE Starflex; and elastomeric rubber foam insulating material under the brand of ODE R-Flex.

As of today, ODE Insulation, which exports to more than seventy five countries in six continents, maintains its steady growth by adding new markets to its export network every day, while making valuable contributions to the insulation industry and the country's economy. ODE Insulation continues its activities with the aim of becoming a world brand in the insulation sector and has been the choice of prestigious projects worldwide.

In accordance with the sustainability norms in buildings, ODE Insulation, whose all products are EPD Certified, also manufactures in a way to meet the certificate demands specific to both international and different markets.

ODE Insulation, which has carried out pioneering works to increase public awareness of insulation and energy efficiency, changed its company motto to "Insulates the Future" in 2014. ODE insulates the future and it will keep investing in the future by transferring its experience in insulation to create a sustainable environment for the next generations.

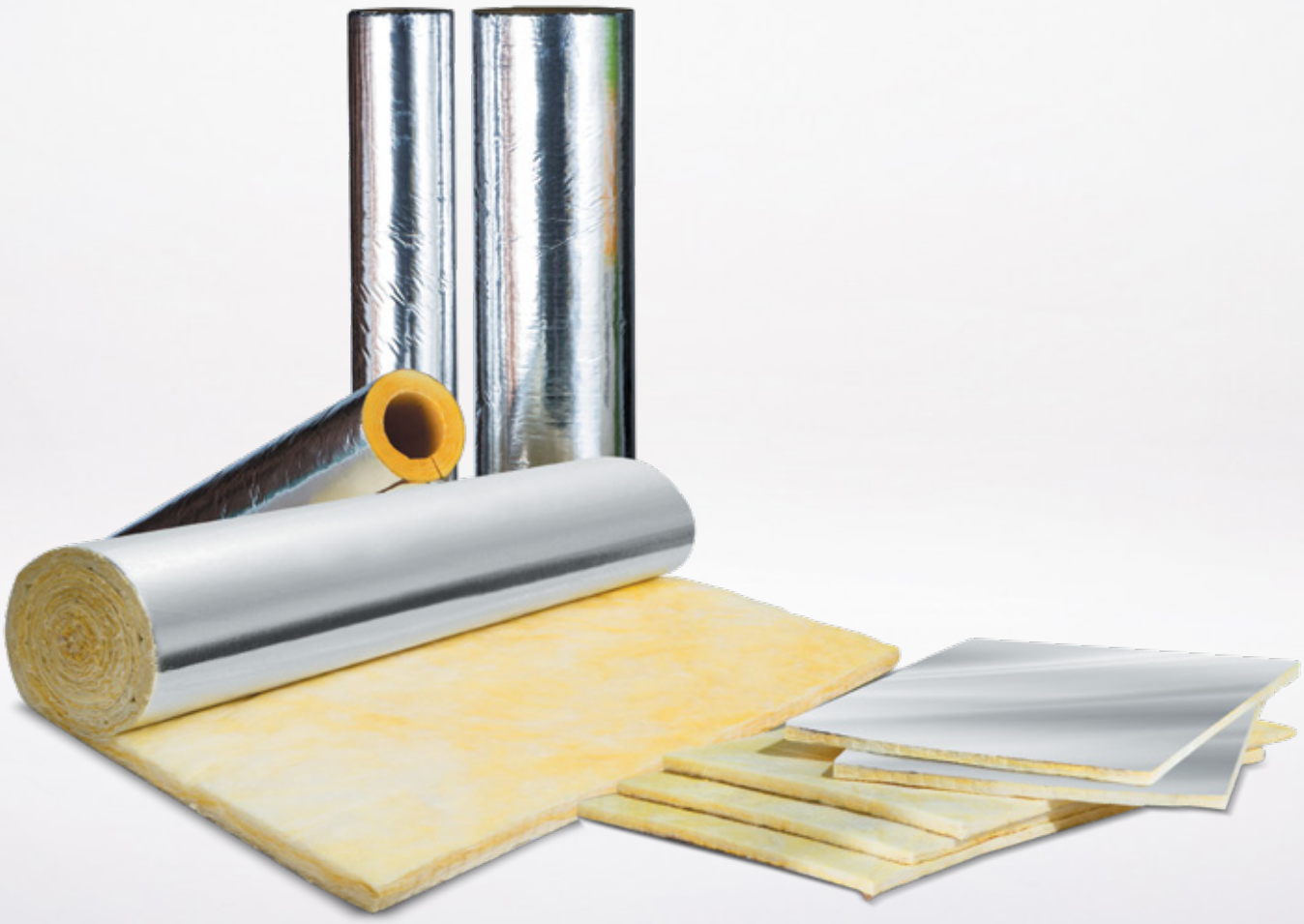
ÇORLU PRODUCTION PLANT

ESKİŞEHİR PRODUCTION PLANT

TECHNICAL INSULATION

CONTENTS

ODE STARFLEX
(GLASS WOOL)

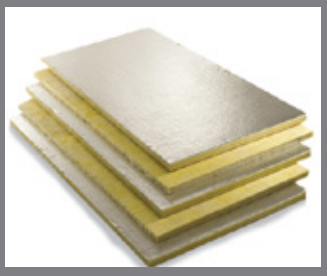


ODE STARFLEX
GLASS WOOL

Glass wool is produced by heating silica sand at high temperature, melting it into fibers. It is used for thermal insulation, sound insulation, acoustic design, and for the purposes of fire safety.

Glass wool can be manufactured in the form of blankets, boards, and pipes in various dimensions and with various specifications, and various facing materials depending on place and purpose of use.

BLANKET



BOARD

PREFABRICATED PIPE

THERMAL CONDUCTIVITY (λ)

Thermal conductivity is the amount of heat that is transferred through two 1 m^2 surfaces of insulation material, that are 1 m apart and parallel to each other when the temperature difference between the two sides (Δt) equals 1°C. The unit of thermal conductivity is W/(m.K). This value is the most important property of the insulation material.

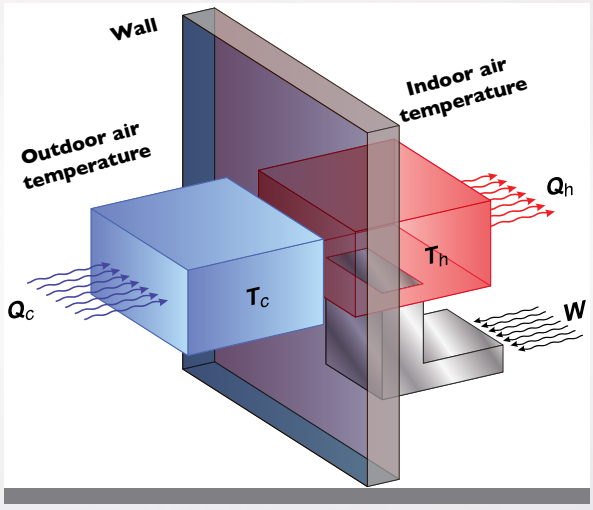
The lower the thermal conductivity coefficient of the insulating material is, the higher resistance it has against heat transfer.

ODE Starflex is manufactured in the **λ = 0,031-0,044 W/(m.K)** thermal conductivity range in accordance with EN 13162 and EN 14303 standards.

THERMAL RESISTANCE (R)

Thermal resistance is the measure of the resistance of the insulation material to the transfer of heat. It is calculated as the proportion of the thickness of a material (m) to thermal conductivity W/(m.K). Its unit is (m^2.K)/W.

It is calculated using the formula R=d/λ. As the material's R value increases, the material shows greater resistance to the transfer of heat. In selected systems, the lower thermal conductivity (λ) or the higher the thickness of thermal insulation material (d), the higher is the thermal insulation resistance achieved.



ODE STARFLEX

FIRE SAFETY

Selection of combustibility classification is important for knowing fire response of materials. According to the EN 13501-1 standard, insulation materials have been classified A to F in terms of combustibility, and additional classifications have been made for smoke formation and the formation of flaming droplets. The safety criteria the material must meet to be considered safe during a fire are:

* Flammability
* Generated heat
* Toxicity.
* Flame spread
* Produced smoke

COMBUSTIBILITY CLASSIFICATION (According to EN 13501-1)	
Combustibility Classification	A1-A2-B-C-D-E-F
Additional Classification According to Smoke Generation	s1-s2-s3
Additional Classification for Flaming Droplets/Particles	d0-d1-d2

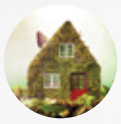
ODE Starflex is classified as a A1 Non-Combustible material as per the EN 13501-1 standard.

SERVICE TEMPERATURE

It should be known that the thermal insulation material is suitable to be used at what temperature range in order to be applied safety. ODE Starflex can be used with convenience without compromising their properties between -50°C and +250°C.

SOUND INSULATION AND ACOUSTIC DESIGN

Sound is defined as pressure waves which propagate in free environments. Efforts conducted to reduce the sound pressure level are classified as "insulation", while efforts toward reducing the time of reverberation are classified as "acoustic design". In order to reduce unwanted sound and noise in buildings and installations, ODE Starflex offers effective solutions for acoustic design and sound insulation with its open pore fibrous nature and wide product range.



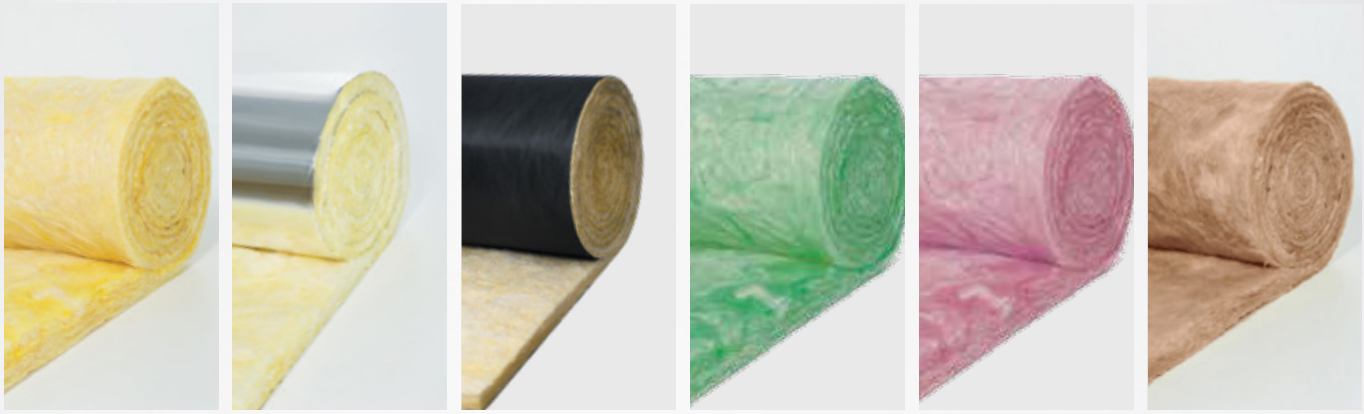
ENVIRONMENTALLY FRIENDLY

ODE Starflex glass wool is certified as user friendly, environmentally friendly, and not harmful for human health by EUCEB, the European Certification Board for mineral wool products. With its EPD (Environmental Product Declaration) Document, it furnishes additional scores between 2-18 for buildings wishing to obtain LEED, BREEAM, DGNB, etc. certification.

ODE STARFLEX BLANKET

High performance, long-lasting, environmentally friendly glass wool product manufactured in blanket form and used for thermal and sound insulation and for fire safety.

The ODE Starflex Blanket is manufactured in the thermal conductivity range of **λ = 0.032-0.044 W/(m.K)**.



AREAS OF USE

- Heating, cooling and ventilation systems including air conditioning ducts,
- Ventilation Ducts,
- Solar collectors etc.

ADVANTAGES

- It is used for thermal insulation, sound insulation, acoustic design, and for the purposes of fire safety.
- Its classification as a **"Class A1 Non-Combustible"** (EN 13501-1) material is a very significant advantage for fire safety.*
- Glass wool blankets covered on one side with aluminum foil provide high thermal and sound insulation in air conditioning and ventilation ducts.
- Due to the properties of glass wool, it does not tear or produce wastage during installation.
- It does not degrade, decompose, or become mouldy in time.
- Thanks to its natural content, it does not degrade and is applicator-friendly.
- It is EUCEB certified as not harmful to human health.
- With its EPD Document, it furnishes additional scores for buildings wishing to obtain LEED, BREEAM, DGNB, etc. certification.

* Unfaced types.

ODE STARFLEX BLANKET

TECHNICAL SPECIFICATIONS

NAME OF PRODUCT		ODE STARFLEX					
Property	Unit	ODE STARFLEX Blanket Group					
Type	-	**STARFLEX 044**	**STARFLEX 042**	**STARFLEX 040**	**STARFLEX 037**	**STARFLEX 035**	**STARFLEX 032**
Thickness	mm	50-240	50-240	50-240	25-200	25-200	25-180
Reaction to Fire	Euroclass	A1					
Thermal Conductivity (λ) (10°C)	W/(m.K)	0.044	0.042	0.040	0.037	0.035	0.032
Thermal Resistance (R)	$(m^2.K)/W$	1.10-5.45	1.15-5.70	1.25-6.00	0.65-5.40	0.70-5.70	0.75-5.60
Maximum Service Temperature	°C	250					

Note: Fire rating varies according to type of facing. Please request a Declaration of Performance (DOP) document for the product in question.

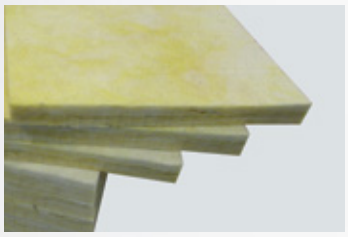
LAMINATION TYPES

The ODE Starflex Blanket can be manufactured with various facing.

YGT	Yellow Glass Tissue
BGT	Black Glass Tissue
FSK	Foil Scrim Kraft
Class 0	Class 0 Alu Foil
WGF	Woven Glass Fabric
ALUGLASS	Aluminum Glass Fabric
KRAFT	Kraft Paper

ODE STARFLEX BOARD

The ODE Starflex Board Group is manufactured in the thermal conductivity range of **λ = 0.031-0.037 W/(m.K)**.



AREAS OF USE

- Heating, cooling and ventilation systems including air conditioning ducts,
- Ventilation Ducts,
- Acoustic applications,
- Solar collectors etc.

ADVANTAGES

- It is used for thermal insulation, sound insulation, acoustic design, and for the purposes of fire safety.
- It does not undergo any dimensional changes when exposed to varying temperatures and humidity.
- Its classification as a **"Class A1 Non-Combustible"** (EN 13501-1) material is a very significant advantage for fire safety.*
- Glass wool boards covered on one side with aluminum foil provide high thermal and sound insulation in air conditioning and ventilation ducts.
- Due to the properties of glass wool, it does not tear or produce wastage during installation.
- It does not degrade, decompose, or become mouldy in time.
- Thanks to its natural content, it does not degrade and is applicator-friendly.
- It is EUCEB certified as not harmful to human health.
- With its EPD Certificate, it earns additional points for buildings wishing to obtain LEED, BREEAM, DGNB, etc. certification.

* Unfaced types.

ODE STARFLEX BOARD

TECHNICAL SPECIFICATIONS

NAME OF PRODUCT		ODE STARFLEX			
Property	Unit	ODE STARFLEX Board			
Type	-	STARFLEX 037	STARFLEX 035	STARFLEX 032	STARFLEX 031
Thickness	mm	50-220	50-220	25-180	20-100
Reaction to Fire	Euroclass	A1			
Thermal conductivity (λ) (10°C)	W/(m.K)	0.037	0.035	0.032	0.031
Thermal Resistance (R)	$(m^2.K)/W$	1.35-5.90	1.40-6.25	0.75-5.60	0.65-3.20
Maximum Service Temperature	°C	250			

Note: Fire rating varies according to type of facing. Please request a Declaration of Performance (DOP) document for the product in question.

LAMINATION TYPES

The ODE Starflex Board can be manufactured with various laminations.

YGT	Yellow Glass Tissue
BGT	Black Glass Tissue
FSK	Foil Scrim Kraft
Class 0	Class 0 Alu Foil
WGF	Woven Glass Fabric
ALUGLASS	Aluminum Glass Fabric
KRAFT	Kraft Paper

ODE STARFLEX PIPE

Pipes manufactured of glasswool with high unit weight, for the purpose of thermal-sound insulation and fire safety of pipes used for heating and cooling.

Product	Thickness (mm)	DIAMETER (mm)	Thermal Conductivity (W/m.K) (10 °C)	Thermal Resistance R (m^2.K)/W	Lamination	Fire Class TS EN 13501-1
STARFLEX Prefabricated Pipe	20-100	21-324*	0.035	0.55-2.85	Unfaced	A1
					Aluglass	
					Class 0 ALU	
					FSK	C_L-S_1, do

AREAS OF USE

- Industrial pipes
- Central heating installations
- Solar energy installations
- All types of mechanical and industrial installations for thermal as well as vibration and noise installation of pressurized water pipes

ADVANTAGES

- A lengthwise slit along the side allows easy fitting on pipes and facilitates insulation of long pipework in a short period of time.
- Does not lose wall thickness after installation.
- Saves on time materials, and workmanship thanks to self-adhesive tape in aluminum foil-faced applications.
- ODE Starflex Prefabricated Pipes are installed without wastage, any leftover sections can be utilized.
- Prevents transfer of noise and vibration to other spaces thanks to glass wool.
- Can be easily removed and re-installed without damage in the event of any malfunctions or maintenance on the installation.
- It is EUCEB certified as not harmful to human health.
- With its EPD Certificate, it earns additional points for buildings wishing to obtain LEED, BREEAM, DGNB, etc. certification.

* Please consult us for your larger diameter requests.

STORAGE INFORMATION

NEW

HYPERPACK PALLETIZED PACKAGING

Thanks to the hyperpack packaging system,
ODE Starflex glass wool facilitates:

- Loading more product per volume
- Loading and unloading using transpallet
- Minimum stocking cost
- Can be stored outdoors

POINTS TO TAKE INTO CONSIDERATION DURING SHIPPING AND STORAGE

- The product should be protected from direct sunlight during storage, shipping, and application, and it should not be stored under direct sunlight.
- Packaged products should be stored horizontally on a flat surface, and should not be subjected to the effects of point loads which will cause a deviation from squareness of boards.
- In ODE Starflex application, in cases where supplementary products do not bear the ODE brand, the manufacturer of the material should be consulted regarding the compatibility of the material with ODE Starflex.
- ODE Starflex which can be used compatibly with building materials should be kept away from all compounds containing solvents, all petroleum products containing solvents, from bleaching and corrosive chemical substances.

APPLICATION AREAS

DUCT INSULATION

1. External Application

Glass wool blankets and boards faced on one side with aluminum foil are used on surfaces such as air conditioning and ventilation ducts. Glass wool blankets faced on one side with aluminum foil can be applied on ventilation ducts with rectangular or circular cross-sections. There are 5 cm long aluminum foil overlaps on both sides of these materials manufactured in the form of blankets. In applications of glass wool blankets on the exterior of ventilation ducts, the insulation material is fastened to the duct surface by means of special self-adhesive retaining pins.

After the application surface has been cleaned, 5 to 6 special self-adhesive retaining pins are stuck per each m^2 of duct surface. The length of blanket that will be cut is determined depending on the duct cross section that is to be insulated. For ventilation ducts with circular cross-sections, the length of blanket that needs to be cut is calculated by adding 2 times the thickness of the insulation and 5 cm of overlap to the perimeter length of the duct. For ventilation ducts with rectangular cross-sections, the length of blanket that needs to be cut is calculated by adding 8 times the thickness of the insulation and 5 cm of overlap to the perimeter length of the duct. After the material has been cut to the proper dimensions, the blanket is slipped over the pins with the aluminum foil faced surface facing outwards, fully covering the duct surface. Pin washers are placed on pins that perforate the material. The application is completed by gluing or stapling of overlaps of blanket seams or wrapping them with self adhesive aluminum foil tape to ensure continuity and sealing of the aluminum facing on the external surface. In order to avoid reducing the thickness of the thermal insulation material used, glass wool blankets or self adhesive aluminum foil tapes should not be stretched too much while they are wrapped around the duct, and care should be taken to ensure that the material is not crushed while attaching pin washers.

2. Internal Application

2.1) Acoustic Application for Ventilation and Air Conditioning Ducts

Applications made for the purposes of sound and thermal insulation and fire safety on internal surfaces of ventilation and air conditioning ducts. Prior to application, duct surfaces are cleaned until they are free or dust and grease. The internal measurements of the duct that is to be insulated are taken, and the material is cut to the appropriate dimensions. Self-adhesive anchor pins are stuck inside the duct depending on the velocity of air flow. After a special adhesive is applied to the duct surface with a brush, the previously cut boards are placed. The transverse and lengthwise seams should be placed evenly, and no gaps should be left. While placing a washer on a pin, the installer should take care not to compress over 10% of the thickness of the insulation material. The application is completed by trimming the excess pin lengths from the washers.

2.2) Collector Applications

Collector blankets and boards should be used together for thermal insulation applications on solar collectors. Aluminum foil faced glass wool boards can also be used to prevent thermal losses due to radiation from the absorbing surface toward the frame and to reflect the heat back to the selective surface. In application a 10 - 20 mm gap is left between the absorbing surface and the insulation of the lower surface depending on the height of the frame. 2 - 3 mm holes are drilled in places where rain water can not enter, to ventilate the collectors and to prevent condensation.

INSULATION OF PIPEWORK

Applications made on pipework vary depending on whether the thermal insulation material is faced or unfaced. Facing can be applied on unfaced thermal insulation materials to prevent condensation problems on cold lines, to protect pipework installed in areas that are open to the elements or underground, and to prevent some thermal insulation materials from the ultraviolet rays of the sun.

APPLICATION AREAS

INSULATION OF PIPEWORK

1. Unfaced Glass Wool Applications

The glass wool pipe thermal insulation material used in these applications material has a lengthwise slit along its middle to allow easy installation on pipework. The application is completed by applying facing to the exterior of the insulation material. For the application to be made, both the pipe and the insulation material should be at a temperature of at least 10°C. Therefore the insulation material should be left to stand until its temperature equalizes with the ambient temperature.

The insulation material is slid over the pipe by means of the lengthwise slits running along it, is tightened and tied at intervals of no more than 300 mm using galvanized wires, plastic straps or steel straps depending on the external diameter. In transverse joints, galvanized wires are used if the external diameter of the insulated pipe is below 500 mm, and plastic or steel straps are used if the external diameter is over 500 mm. If the requires insulation thickness is reached by applying two layers, care should be taken to stagger the seams. In single layer applications, care should be taken to place the seam underneath the pipe.

1- Should be smaller than 300 mm.
2- Transverse seams
   - If external diameter <500 mm then galvanized wire
   - If external diameter ≥500 mm then steel strap
3- External diameter

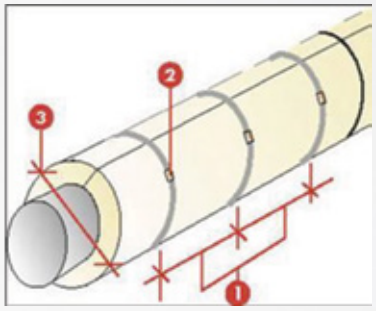
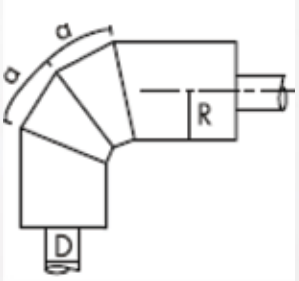


Figure - Application with prefabricated insulation materials

For application on elbows:
Elbows are insulated by cutting one or several pieces from a pipe-formed thermal insulation material depending on the diameter of the pipe (D) and the radius of the elbow (R), and by tying each segment with at least one wire. If the elbow radius is equal to or less than twice the pipe diameter, elbows can be insulated with one 45° connecting piece. Insulation of elbows is completed with two 30° connecting pieces if the elbow radius is 3 times the pipe diameter, and with three 22.5° connecting pieces if the elbow radius is 5 times the pipe diameter.



The application of insulation is completed with the installation of a final facing on the material. If the insulation is to be given a plastic facing, the plastic coating is prepared by cutting with an overrun of at least 25 mm from the outer edge of the insulation. After the facing is wrapped around the pipe, it is fastened to the insulation material using plastic rivets. Elbows are covered with previously prepared plastic elbow segments. Transverse seams are joined with plastic tape. The ends of pipe sections are covered with finishing elements. The finishing element tape is wrapped around the end and fixed in place with rivets/nails.

2. Aluminum Foil Faced Glass Wool Applications

The external surface of the pipe formed insulation material used in these applications is covered with aluminum foil. Aluminum foil faced thermal insulation materials that are manufactured in various diameters have lengthwise slits along their middle to allow them to be slid easily on pipework. A continuous seam of the exterior aluminum foil facing along the slit section is achieved by using the material's self-adhesive joints with a width of 5 cm and by using aluminum foil tape with a thickness of 7.5 cm that will be subsequently applied to the seam. For the application to be made, both the pipe and the insulation material should be at a temperature of at least 10°C. Therefore the insulation material as well as the aluminum foil tape that will be used should be left to stand until its temperature equalizes with the ambient temperature.

If the aluminum foil facing does not include a self-adhesive overlapping section, the lengthwise seams of the insulation material are pressed together and bonded tightly with aluminum foil tape. Care should be taken to ensure that the sections of seams that will be bonded to each other are clean and dry. Seams should be secured with tape or steel wire, and seams along bends should be secured with tape or hot sealant application.

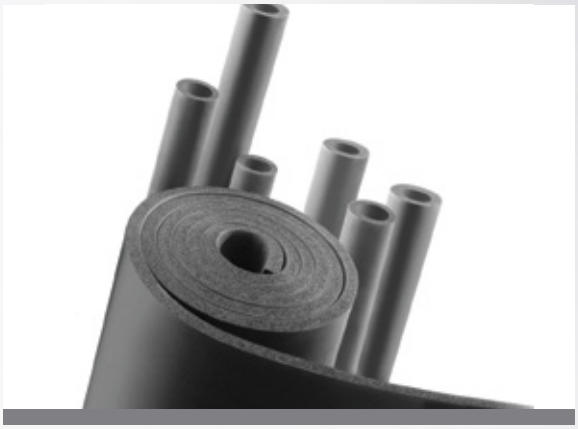
In the event that the front of the insulation material is exposed at the end of pipes, special connecting elements are used. The application is completed by attaching the adhesive finishing element around the end, or by fixing any finishing elements that are not self-adhesive using rivets/nails.

ODE R-FLEX

(ELASTOMERIC RUBBER FOAM)

ODE R-FLEX
ELASTOMERIC RUBBER FOAM

GENERAL PROPERTIES
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 specifications in such properties as thermal conductivity, water vapor diffusion resistance, and fire resistance, which are important criteria for thermal insulation of installations.



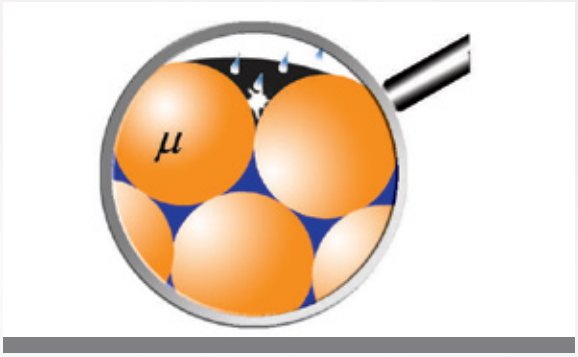
The technical criteria to be considered in the use of the elastomeric rubber foam materials with a wide production range are described below.

THERMAL CONDUCTIVITY (λ)
Thermal conductivity is the amount of heat that is transferred per unit time through two 1 m^2 surfaces of insulation material, that are 1 m apart and parallel to each other when the temperature difference between the two sides (Δt) equals 1°C.

It is the most decisive property in the selection of thermal insulation materials. Materials with low thermal conductivity (λ) have high thermal insulation performance.

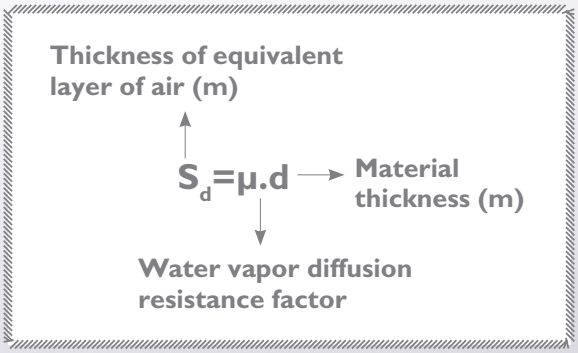
The thermal conductivity of ODE R-Flex DIAMOND, Sheet is **0,034 W/(m.K)**(at 0°C).

WATER VAPOR DIFFUSION RESISTANCE FACTOR (μ)
The ratio of the resistance of materials to the passage of water vapor to the water vapour diffusion resistance of air is called the water vapour diffusion resistance factor and is indicated with μ.



Water vapor diffusion resistance factor of the ODE R-Flex DIAMOND is μ ≥ 11000.

WATER VAPOR DIFFUSION RESISTANCE
To avoid condensation in thermal insulation materials on cold lines, products with adequate water vapour diffusion resistance should be used or materials with low μ value should be faced seamlessly with a product that is highly resistant to the passage of water vapor (aluminum foil, etc.).



The resistance demonstrated by a material to diffusion of water vapor is directly proportional to the μ value and thickness (d) of the material.

ODE R-FLEX
ELASTOMERIC RUBBER FOAM

COMBUSTIBILITY CLASSIFICATION (According to EN 13501-1)	
Combustibility Classification	A1-A2-B-C-D-E-F
Additional Classification According to Smoke Generation	s1-s2-s3
Additional Classification for Flaming Droplets/Particles	d0-d1-d2

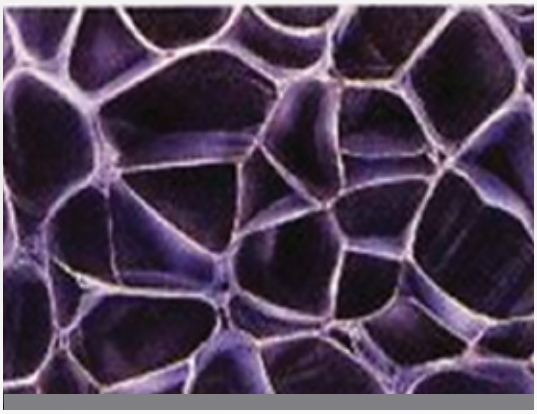
FIRE RESISTANCE

Selection of combustibility classification is important for knowing fire response of materials. According to the EN 13501-1 standard, insulation materials have been classified A to F in terms of combustibility, and additional classifications have been made for smoke formation and the formation of flaming droplets.

ODE R-Flex Diamond Sheet is class "B-s3, d0" according to the Fire Classification Standard EN 13501-1 while ODE R-Flex Diamond Pipe is class "B_L-s2, d0" according to EN 13501-1.

CORROSION RISK

The corrosive substance content of insulating materials is fairly important for insulation of mechanical installations. Insulation materials should be as neutral as possible and should not contain more than a certain amount of water soluble Chlorides, C1, F, Na, and Si. ODE R-Flex is a safe insulation material with respect to corrosion risk.



WATER ABSORPTION BY VOLUME

In order to determine their percentage of water absorption through diffusion, materials are left in a closed test environment at 90% relative humidity for 24 hours. The percentage of the difference in weight of materials before and after the test gives the volume ratio of water absorption through 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.

ODE R-Flex has a closed cell percentage of higher than 90%, and water absorption by volume of 0.4%.

RESISTANCE AGAINST BACTERIA AND MOLD

ODE R-Flex is resistant to bacteria, fungus and mold growth, contains antimicrobial protection.

ODE R-FLEX SHEET
ELASTOMERIC RUBBER FOAM

The ODE R-Flex Sheet which is one of the most popular materials of the sector thanks to its thermal conductivity, water vapor diffusion resistance and fire resistance figures -significant criteria for thermal insulation of installations- is manufactured under three main groups, **DIAMOND**, **PRM** and **STD**, with different facings. R-FLEX DIAMOND, R-FLEX PRM are produced thicknes range of 6-60 mm and R-FLEX STD thicknes range of 6-50 mm. It is ideal for insulation of large diameter pipes, and of ducts with rectangular and circular cross sections.

TECHNICAL SPECIFICATIONS

ODE R-FLEX SHEET	ODE R-FLEX DIAMOND	ODE R-FLEX PRM	ODE R-FLEX STD
Thermal Conductivity (λ) W/(m.K) (0°C)	0,034	0,034	0,036
Water Vapor Diffusion Resistance Factor (μ) ≥	11.000	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

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

* Please consult our regional directorates for marked dimensions.

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 SA (Self Adhesive)
R-Flex AL-CLAD (Aluminium Cladding)
R-Flex ALU (Aluminium Foil Facing)
R-Flex METALIZED (Metalized Facing)
R-Flex ALUGLASS (Aluminum Glass Fabric)

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 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 physical adhesion due to the self - adhesion.
- Full sealing.
- All the surfaces adhered to the same quality.
- Reduction in labour time by 40%.

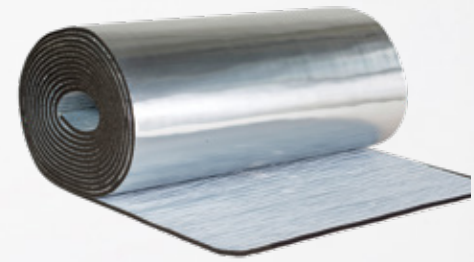
* For special types.

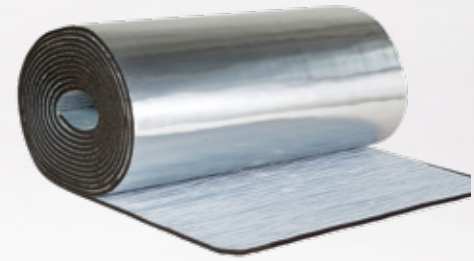
ODE R-FLEX DIAMOND/PRM/STD AL-CLAD SHEET

- Developed as an alternative to 0.8 – 1 mm aluminum metal lamination.
- 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 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

- 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 and various thickness for duct installation.

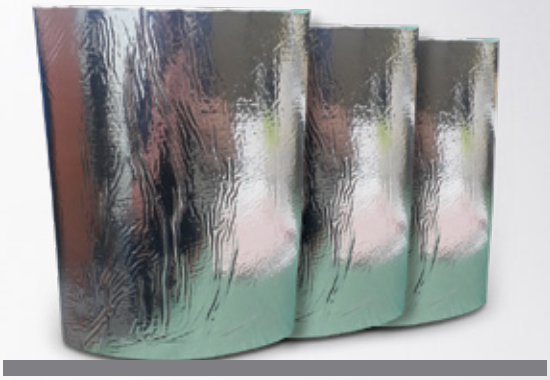




* For special types.

ODE R-FLEX DIAMOND/PRM/STD METALIZED SHEET

- Elastromeric rubber foam sheet with Metalized PET film as their final facing layer.
- 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 and in various thicknesses.
- It is easily applied.
- Saves on labour.
- It is cost friendly.



ODE R-FLEX DIAMOND/PRM/STD ALUGLASS SHEET

- The top surface of the product is coated with Aluglass (aluminum glass fabric)
- 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 PIPE

ELASTOMERIC RUBBER FOAM

It is completely flexible, prefabricated pipe insulation manufactured from elastomeric rubber foam material in the form of pipes, for use on piping installations on cold and warm lines.

ODE R-Flex Pipe is manufactured in three main groups; **DIAMOND, PRM** and **STD.**

R-FLEX DIAMOND and **R-FLEX PRM** are produced diameter range of 6-114 mm and thicknes range of 6-40 mm.

R-FLEX STD is produced diameter range of 6-114 mm and thicknes range of 6-32 mm.

All product types can be produce with various types of facing upon request.

PIPE SIZE CHART

COPPER	STEEL	R-FLEX PIPE	THICKNESS (mm)						
			m/box						
		Internal Diameter	6	9	13	19	25	32	40
1/4"		6	496	312	204	124	64		
5/16"		8	432	300	200	110	64		
3/8"	1/8"	10	364	292	186	98	64		
1/2"		12	316	260	160	88	60		
5/8"		15	266	204	126	78	56		
3/4"	3/8"	18	220	186	126	72	52	32	
7/8"	1/2"	22	190	146	106	68	44	32	22
		25	168	146	96	66	40	28	18
1 1/8"	3/4"	28	148	130	80	62	40	26	18
		32	124	98	78	46	36	26	18
1 3/8"	1"	35	124	98	78	46	34	26	16
		38	120	94	70	42	32	26	14
1 5/8"	1 1/4"	42	108	94	64	42	32	20	14
6"	1 1/2"	48		80	56	38	26	18	12
		54		74	48	34	24	18	12
2 3/8"	2"	60		72	44	34	22	18	10
		64		72	42	28	20	14	10
		67		64	42	28	16	14	8
		70		62	42	28	16	14	8
3"	2 1/2"	76		54	42	28	16	14	8
3 1/2"	3"	89		52	38	24	18	12	8
		102		44	34	20	16	12	4
		108		38	30	18	14	10	4
4 1/2"	4"	114		38	30	18	14	10	4

TABLE OF PIPE THICKNESSES

ODE R-FLEX PIPE

Length (mm)	Thickness (mm)						
	6	9	13	19	25	32	40
1800	✓	✓	✓	✓	✓	✓	✓
2000	✓	✓	✓	✓	✓	✓	✓

TECHNICAL SPECIFICATIONS

ODE R-FLEX PIPE	ODE R-FLEX DIAMOND	ODE R-FLEX PRM	ODE R-FLEX STD
Thermal Conductivity (λ) W/(m.K) (0°C)	0,036	0,036	0,036
Water Vapor Diffusion Resistance Factor (μ) ≥	11.000	7000	5000
Reaction to Fire (EN 13501-1)	B_L-s2, d0	B_L-s2, d0	B_L-s3, d0
Service Temperature (°C)	-50/+116	-50/+116	-50/+116



ODE R-FLEX PIPE LAMINATED TYPES

AL-CLAD	✓
ALUGLASS	✓
ALU	✓
METALIZED	✓


ACCESSORIES

TAPES

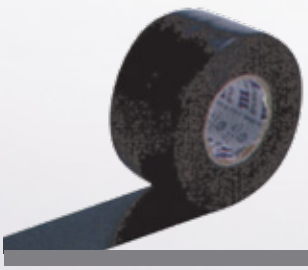
Tapes	Size List	Quantity with in Box (Rolls)	Pallet Quantity (Boxi)
Flat Aluminum Foil Tape	40m x 50mm	24	80
	40m x 75mm	16	80
	40m x 100mm	12	80
	30m x 50mm	24	80
	30m x 75mm	16	80
	30m x 100mm	12	80
Reinforced Aluminum Foil Tape	30m x 50mm	24	80
	30m x 75mm	16	80
	30m x 100mm	12	80
PVC Tape (Black)	25yrd x 50mm	18	200

ADHESIVES

ODE KONFIX (ODE R-FLEX ADHESIVE)

Synthetic rubber based super-strong adhesive used in ODE R-Flex applications. Prevents convection currents at joints, facilitates easy and fast installation. Surfaces to which the product shall be applied should not be greasy or dusty, and ODE Konfix should be applied by using a roll, brush, or spray gun equally on both surfaces, and adhesion should be ensured under constant pressure. The drying period varies between 10 seconds and 4 minutes, and the time required for complete adhesion is 24 hours.

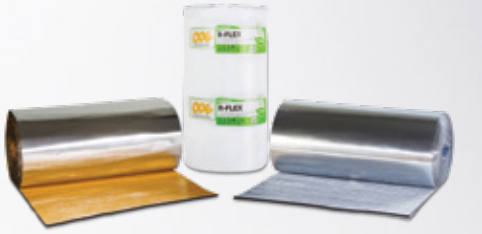
	Quantity (kg)
ODE KONFIX 14/1	14
ODE KONFIX 3/1	3
ODE EKO KONFIX 14/1	14
ODE EKO KONFIX 3/1	3



LOGISTICS

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 (length x width x height)
BOX (2 m)	0,255	209,0 cm x 38,0 cm x 32,2 cm
BOX (1,8 m)	0,231	189,0 cm x 38,0 cm x 32,2 cm

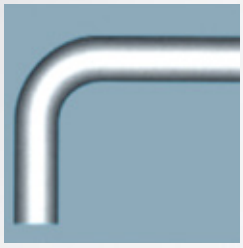
LOGISTICS PLANNING INFORMATION

	TRUCK			18-WHEELER			40 HC CONTAINER		
Approximate Volume	45 m^3			84 m^3			76 m^3		
Quantity of Sheets (Package) (Depending on roll width)	for 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
	170-190 Rolls	150-170 Rolls	120-130 Rolls	341-361 Rolls	297-317 Rolls	220-230 Rolls	297-317 Rolls	253-273 Rolls	200-210 Rolls
Quantity of Pipe (Cardboard box)	165-170 boxes			315-320 boxes			272 boxes		

APPLICATION AREAS

INSULATION OF PIPEWORK

1

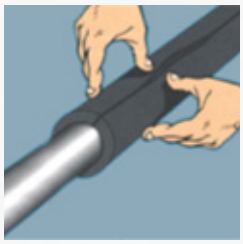


If the installation has been installed, cut the ODE R-Flex Pipe lengthwise. Use only sharp blades for cutting.
This makes the process of applying adhesive easier.

2

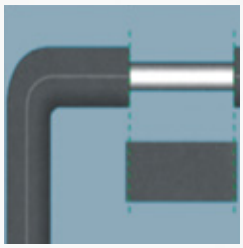
Place the ODE R-Flex Pipe around the pipe to be insulated and apply ODE R-Flex Adhesive to both ends and the edges created along the slit.

3



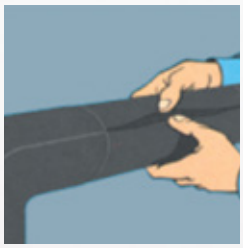
Gently press down on the edges of the slit after making sure that the adhesive has dried.

4



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

5



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

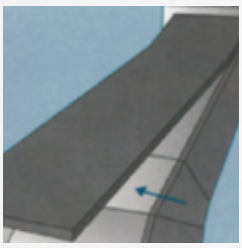
APPLICATION AREAS

INSULATION OF AIR CONDITIONING DUCTS

1

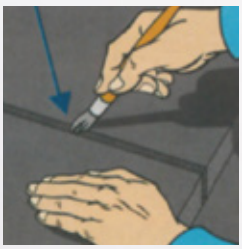
Carefully clean the surface that is to be insulated. There should be nothing left on the surface that will prevent adhesion. Measure the duct surface that is to be insulated, and cut the appropriate size of ODE R-Flex Board from the roll.

2



Apply ODE R-Flex Adhesive on the surface of the ODE R-Flex that is to be attached to the duct and on the duct surface. To achieve good results, coat first the bottom surface of the duct, then the side surfaces, and finally the top surface.

3

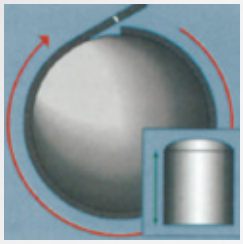


Attach the edges to each other with ODE R-Flex Adhesive.

APPLICATION AREAS

INSULATION OF TANKS

1



Carefully clean the entire surface before starting insulation. Measure the height and circumference of the tank with the ODE R-Flex Sheet.

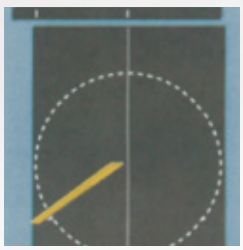
2

Transfer the measurements onto an ODE R-Flex Sheet and cut. Apply ODE R-Flex Adhesive to the entire surface of the ODE R-Flex Board using a spatula, and to the tank surface using a brush. Apply the adhesive on the edges of the sheet and bond the sheet to the tank. Attach the edges to each other.

3

For the insulation of the convex part, measure with the ODE R-Flex Sheet.

4



Draw a circle that will cover the curved part by calculating the radius. Cut the circle carefully at the marked places.

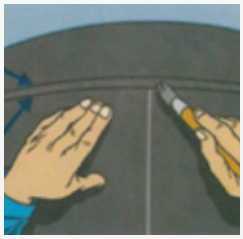
5

Apply ODE R-Flex Adhesive on the part you have cut and the convex part of the tank that is to be covered.

6

Bond the part in its place and push to prevent it from sliding from the middle outwards.

7



When the part has been bonded, apply ODE R-Flex Adhesive all around the perimeter. When the adhesive has dried, push it in tightly and attach it to the section of ODE R-Flex Board covering the main body of the tank.

ODE DUCTFLEX
FLEXIBLE AIR DUCTS

These are the flexible air ducts with steel wire carriers composed of aluminium and polyester layers, which are used to easily distribute the conditioned air supplied by the main ducts to rooms and to exhaust the conditioned air.

Aluminium foil and polyester layers are laminated on each other using adhesive and wrapped around steel wire. ODE Ductflex flexible air ducts have a multilayered and continuous structure. This feature improves the mechanical and fire resistance of the duct.

The ODE Ductflex series comprises ODE Ductflex ALU (Without Insulation), ODE Ductflex ISO (With Thermal Insulation), ODE Ductflex SONO (Thermal and Sound Insulation) product groups.

PROPERTIES AND ADVANTAGES:

ALUMINIUM FACED CONSTRUCTION

- Non-combustibility
- Fire resistance
- High resistance to tearing and shocks
- Impermeability to UV rays
- 98% reflection
- Chemical resistance
- Low protection and maintenance expenses

FLEXIBLE AND CONTINUOUS STUCTURE

- Easy storage
- Easy transport
- Low labour costs

AIR TIGHTNESS

- Energy efficiency
- Low operating costs

HIGH TENSION STEEL WIRE

- High strength
- No deformation
- Easy assembly

SMOOTH INNER WALL

- Low pressure loss
- Low operating costs
- No particle retention

GLASS WOOL INSULATION (ISO and SONO)

- Certified thermal resistance
- Energy efficiency
- Excellent sound and thermal insulation characteristics
- Condensation prevention
- 100% non-combustible

INSULATES THE FUTURE

export@ode.com.tr