



GASKETS AND SEALING PRODUCTS
MANUFACTURER

PRODUCT CATALOG
SOFT
GASKETS



ELASTOMER
COMPRESSED NON-ASBESTOS
PTFE
FLEXIBLE GRAPHITE
MICA
THERMAL INSULATION

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ETANȘĂRI GRAFEX is a Romanian private company, gasket and asbestos free sealing products manufacturer for any application, from the most common to nuclear industry.

The company's development is based on our know-how and experience in this area and our constant concern to manufacture customized products, according to the requirements and appropriate to the application.

Our experience extends beyond the products we manufacture to the equipments and installations where they are used. We wish a complete collaboration in order to ensure a reliable solution, that will improve your performances at the highest level of quality and fiability.

Soft gaskets

refers to gaskets manufactured from material that it is easily compressed with low bolt loads. Main soft gasket materials are represented by a large variety of elastomers, compressed non-asbestos, PTFE, flexible graphite and other high temperature sheet products.

After choosing the right type of gasket suitable for your application, this is processed by stamping or cutting, obtaining the desired flat gasket.

ELASTOMER GASKETS SHEETS

Elastomer gaskets are only used for relatively low pressure applications. The elastomer will extrude as it is tightened due to the incompressibility and low shear modulus of the material.

Elastomer gaskets are found as a typical flanged gasket for low pressure water and oil applications up to 10 bar. They are readily applicable to custom shapes as they can be moulded to suit the flange design, such as engine and compressor sumps and engine covers.

Type	Description	Hardness range (IRHD)	Temperature limits
Natural rubber (NR) Polyisoprene	Excellent for recovery properties. Good resistance to most inorganic salts, mild acids and alkalis. Not recommended for oils and solvents, or where exposure to ozone, oxygen or sunlight is prominent.	30...95	Maximum intermitent: 105°C Maximum continuous: 75°C
NBR Nitrile Butadiene Rubber	Excellent for recovery properties. Good resistance to most inorganic salts, mild acids and alkalis. Not recommended for oils and solvents, or where exposure to ozone, oxygen or sunlight is prominent.	20...90	Maximum intermitent: 130°C Maximum continuous: 120°C
SBR Styrene Butadiene Rubber	Suitable for use with weak organic acids and moderate chemicals. Not suitable for strong acids, most hydrocarbons or ozone.	40...95	Maximum intermitent: 115°C Maximum continuous: 85°C
EPDM Ethylene Propylene Diene Monomer Rubber	Elastomer which offers good resistance to ozone, steam, strong acids and alkalis, but is not suitable for solvents and aromatic hydrocarbons.	30...85	Maximum intermitent: 150°C Maximum continuous: 130°C
Neoprene Polychloroprene Rubber	Excellent resistance to oils, ozone and weathering. Suitable for moderate acids, alkalis, salt solutions, petroleum, solvents, oils and fuels. It is not recommended for strong acids or hydrocarbons.	30...90	Maximum intermitent: 125°C Maximum continuous: 95°C
Silicone Polysiloxane	Excellent temperature properties, and unaffected by ozone and sunlight. Not suitable for many hydrocarbons and steam.	40...80	Maximum intermitent: 300°C Maximum continuous: 205°C
HNBR Hydrogenated Nitrile Rubber	HNBR is the ideal choice for applications needing excellent physical properties, as well as oil, heat, and/or chemical resistance.	50...90	Maximum intermitent: 180°C Maximum continuous: 150°C
¹Viton® Fluorocarbon Rubber	Viton is generally compatible with hydrocarbons, but incompatible with ketones such as acetone, and organic acids such as acetic acid	50...90	Maximum intermitent: 180°C Maximum continuous: 150°C
¹Kalrez® Perfluorocarbon Rubber	They are used in highly aggressive chemical processing, semiconductor wafer fabrication, pharmaceutical, oil and gas recovery, and aerospace applications.	65...90	Maximum intermitent: 325°C

¹Viton® and Kalrez® are registered trademarks of DuPont Performance Elastomers L.L.C.

CorkRubber GASKET SHEETS

CorkRubber is a soft gasket technology providing a range of products that are designed to withstand a wide variety of application needs. Its unique features have made it the preferred material used across multiple applications and industries, ranging from marine, gas, industrial, heavy duty and automotive, keeping up with an ever changing market with specific solutions for ethanol and biodiesel fuel blends.

Design advantages of this line:

- Conformable to flages with higher “out-of-flatness” values, such as stamped steel or plastic covers;
- Lower bolt torques;
- Fewer fastners in the system;
- Smaller or lower grade fastners

Type	Description	Hardness range (IRHD)	Temperature limits
CR1521	Cork-SBR blend, with outstanding low sealing stress for low loading applications. Suitable for most lubrication fluids.	50...70	Maximum intermitent: 110°C
CR1800	Cork-Nitrile blend, medium load material. Suitable for fuels, bio-fuels, oil and coolants.	65...85	Maximum intermitent: 110°C
CR7000	Cork-silicone blend, medium loading material used for high and low temperature resistance, exceptional resistance to coolants and acceptable resistance to most lubricants.	65...80	Maximum intermitent: 175°C
CR1028	Cork-nitrile blend, medium loading material used for natural gas and LPG applications.	65...75	Maximum intermitent: 125°C



COMPRESSED
NON-ASBESTOS
FIBER SHEETS

AF (Asbestos-free) gasket sheets are state-of-the-art materials for technical sealing of various media, and for application in a broad range of temperatures and pressures.

These products are composites of top quality aramide fibres, specially composed inorganic fibres, and fillers, as well as elastomers selected for specific working conditions. Highly specialised calendering process of sheets, meeting the requirements of ISO-9001, guarantees high and stable quality.

Standard thicknesses of sheets (mm)
(thicknesses above 5.0 mm are produced by gluing)
0,3; 0,8; 1,0; 1,5; 2,0; 2,5; 3,0; 4,0; 5,0; 6,0

Standard dimensions of sheets (mm)
(custom dimensions available within the total range of 1500x3000 mm)
1500x1500

All sheets can be offered with stainless steel net reinforcement (ZS) or graphitated on both faces(2G).



Description	Type	AF 302	AF 200 Universal	AF U	AF Oil	AF 400	AF Carb	AF GL
		Low-parameter sheet, recommended mostly for water supply and sewage mains.	Versatile, oil resistant sheet designed for applications with the majority of media under medium temperatures and pressures. Environmentally friendly sheet type, free from N-nitrosamines	Sheet designated for sealing in medium temperature and medium pressure applications. Specially designed for drinking water installations. Water, steam, kerosene, fuel, and oil resistant, among other media.	Oil-resistant gasket sheet, recommended for high temperatures and pressures. Designated for application in supervised joints. Suitable for natural gas and drinking water installations. Also recommended for applications with water, steam, kerosene, fuels, oils, brine, natural gas, propane-butane	High parameter sheet, made of top quality materials. Highly reliable, with broad range of applications. Designated for use in supervised joints, and installations for transmission of natural gas. Resistant to water, steam, kerosene, fuel, oil, and solutions of salts, among others	A high performance sheet, recommended mostly for installations working with steam.	Specially selected constituents and structure of AF-GL gasket sheet ensure high tightness of a joint and resistance to a whole range of media, including steam, water, fuels, oils, solutions of salt as well as weak solutions of acids and bases.
Peak temperature (°C)		180	300	350	350	400	450	400
Temperature under continuous operation (°C)		155	220	250	300	350	350	340
Temperature under continuous operation with steam (°C)		130	180	200	230	260	350	250
Pressure (MPa)		4	6	10	10	12	10	12
Density +/- 5 % (g/cm³) DIN 28090-2		1.9	2.0	2	2.0	2.0	1.9	1.9
Compressibility (%) ASTM F36		10	10	10	10	10	11	10
Elastic recovery - min. (%) ASTM F36		50	55	50	55	55	55	55
Colour		pink	red	light green	green	blue	black	steel grey

Chemical resistance chart

- Suitable for use
- Can be used only after successful trials under working conditions
- Not suitable for use

Chemical item	AF-302	AF- 200 U	AF-U	AF-OIL	AF-400	AF Carb	AF-GL
Acetone							
Alcohol, ethyl							
Alcohol, methyl							
Ammonia							
Aniline							
Benzene							
Gasoline							
Chlorine (wet)							
Chlorine (dry)							
Chlorophorm							
Cyclohexanone							
Ethane							
Phenol							
Freon 11 and 12							
Freon 22							
Ethylene glycol							
Nitric acid 20%							
Nitric acid 40%							
Phosphoric acid							
Formic acid							
Acetic acid							
Sulfuric acid 20%							
Fuming sulfuric acid							
Sulfuric acid 65%							
Hydrochloric acid 20%							
Hydrochloric acid 36%							
Soap							
Potassium permanganate							
Kerosene							
Ethyl acetate							
Hydraulic oil (mineral)							
Hydraulic oil (phosphate ester type)							
Silicone Oil							
Air							
Trichloroethylene							
Water							
Sea water							
Ammonium hydroxide							
Potassium hydroxide							
Sodium hydroxide							
Calcium hydroxide							

PTFE SHEETS

Polytetrafluoroethylene (PTFE) is known also under the name of Teflon®, Fluon®, Hostaflon®.

This is a plastic material containing carbon and fluorine atoms in a molecule with very strong atomic bonds, which gives it remarkable properties:

- Thermal stability and the possibility of using between -200°C and 250°C;
- Chemical resistance against most corrosive agents;
- Very low friction coefficient;
- Very good dielectric properties 40-60KV/mm;
- Can be additiveted with various ingredients such as: glass, ceramics, carbon / graphite, bronze, metallic salts and oxides in order to improve properties such as wear resistance, hardness, expansion coefficient, compressive strength, electrical conductivity and thermal resistance.

	T1000	T75GS	T85GLS
	PTFE -100% unfilled	PTFE+25% graphite	PTFE+15% glass fibre
Density (g/cm³)	2.17	2.2	2.25
Maximum tensile strenght (MN/m²)	20.6-29.9	13.7-20.6	17.2-240
Ultimate tensile elongation (%)	250-400	200-300	300-400
Hardness (shD)	50-55	55-65	55-60
Friction coefficient	0.04	0.22	0.10
Color	white	black	white

Maximum working parameters

- Temperature: 260°C
- Pressure: 64 bar
- pH: 0...14

EXPANDED PTFE SHEETS

Expanded PTFE has improved mechanical properties while maintaining all the positive attributes of the base PTFE materials:

- Resistant to creep and cold flow;
- High residual stress;
- Highly conformable;
- Excelent media and temperature resistance
- Longer service life.

	TE11	TE33	TE50
	ePTFE with silica filler	ePTFE with barium sulphate filler	ePTFE with hollow glass microspheres
Density (g/cm³)	2.2	2.9	1.4
Tensile strenght (MPa)	15	17	11
Compresibility (%)	10	12	41
Recovery(%)	41	40	37
Creep(%)	35	33	31
Residual stress 175°C (MPa)	31	33	33
Color	Pink	White	Blue

Maximum working parameters

- Temperature: 260°C
- Pressure: 85 bar
- pH: 0...14



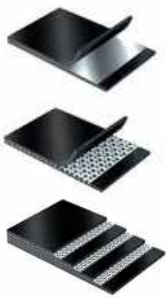
FLEXIBLE GRAPHITE SHEETS

Due to its remarkable properties and enviromental safety, flexible graphite is one of the best materials available as an asbestos substitute.

The flexible graphite remarkable features for sealing are:

- Best material on the market, as working conditions, for steam;
- Compresibility: Flexible graphite is compressible up to the maximum density of 2.25 g/cm3;
- Elastic recovery: GRAFEX flexible graphite sheets/tapes have an elastic recovery of the order of 10% by volume;
- Creep/Relaxation: Flexible graphite has a particularly low creep rate within its working temperature range, up to high specific pressures;
- Lubrication: Flexible graphite is self-lubricant and has a low coeficient of friction;
- Resistance to aging: Flexible graphite is one of the non-metallic materials which is least sensitive to aging;

Reinforcement types



- **SR** - no reinforcement;
- **RI** -316 stainless steel sheet reinforcement (50µm)
- **RN** - nickel reinforcement (13µm)
- **PI** - perforeted 316 stainless steel sheet reinforcement (100µm)
- **GI** - 316L stainless steel mesh reinfocement

Recommended thickness

0.2mm; 0.5mm; 0.8mm, 1mm; 1.5mm; 2mm; 3mm; 5mm.

Standard size

1000 x 1000 mm

Maximum working parameters

- Temperature: 260°C (650°C for steam)
- Pressure: 250 bar (strongly related to type of reinforcement)
- pH: 0...14

Standard grades	N998	I980
Applications	Very pure product for special applications	Standard quality for typical industry
Carbon content (%)	>99.8	>98
Ash content (%)	<0.2	<2
Inhibitor content (%)	0	0
Chlorine content in ppm	<=30	<=50
Resistance to temperature in oxidizing atmosphere	+500°C	+450°C
Tensile strenght (DIN 50210 in MPa)	4.5 ± 1.5	
Compresibility in % (ASTM F36-66 Method A)	45 to 53	
Elastic recovery in ASTM F36-66 in %	10 to 15	
Mass loss (500°C/24h)	<1%	<4%

- Chemical inertia: Flexible graphite is a material without any binder and resists most chemical agents, including mineral acids and solvents;
- Resistents to temperature: Flexible graphite maintains its characteristics in a reducing or inert environment, within a wide temperature range from -196°C to 2500°C;
- Anisotropy: Flexible graphite is an anisotropic material. Mechanical and conductivity characteristics are very different in the direction parallel to and perpendicular to flakes;
- Resistance to irradiations: Flexible graphite resists ageing under high irradiations rates;
- Removal: This is a product with low adherence to contact surfaces;
- Fully ecological.

MICA SHEETS

Although graphite products are one of the best sealing choices for a spectacular number of applications, graphite gaskets are susceptible to attack by oxidizing agents. The rate at which graphite oxidizes depends on the application temperature and the concentration of oxygen present. Mica products do not have the oxidizing problem while maintain the seability properties.

Main types

	Expanded mica sheets with biosoluble fibers and SS316L tanged core	Flexible laminated mica sheets bonded with special resin and SS316L tanged core
Density (g/cm³)	1.5	2.0
Compresibility (%)	38	30
Recovery (%)	4	40
Maximum temperature (°C)	1100	900
Maximum pressure (bar)	200	60
Color	Gold	Gold

THERMAL INSULATION MILLBOARDS

Thermal insulation millboards BA are produced on the basis of ceramic and mineral fibres with wide-ranging resistance to heat, and heat-resistant fillers and binders, with the use of paper technology. BA products are widely used in power generation, metallurgy, and ceramics sector.

Board symbol ▶	BA-700	BA-1050	BA-1200	BA-1400
Parameter ▼				
Thermal conductivity W/mk				
w: 20°C	0,117	0,090	0,121	0,106
w: 300°C	0,136	0,111	0,144	0,138
w: 400°C	0,149	-	-	-
w: 600°C	0,174	0,165	0,189	0,182
w: 800°C	-	0,202	0,226	0,215
w: 1000°C	-	0,259	0,282	0,266
w: 1100°C	-	-	0,319	-
w: 1200°C	-	-	-	0,403
Maximum temperature	700°C	1050°C	1250°C	1400°C
Application	general purpose thermal insulation millboard	soft millboard; after wetting, suitable for bending	hard millboard, mostly used for cutting	millboard with unique thermal resistance
Transverse tensile strength (min.)	1,10 MPa	1,20 MPa	1,30 MPa	1,20 MPa
Longitudinal tensile strength (min.)	1,50 MPa	1,50 MPa	1,50 MPa	1,50 MPa
Shrinkage after 2 h at 6000°C (max.)	15%	15%	15%	15%
Humidity (max)	3,0%	3,0%	3,0%	3,0%
Dimensions of sheets in mm	1000 x 1000			

PRODUCT CATALOG

SOFT GASKETS

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