



GRAFILIT® EM is an expanded graphite based material with expanded stainless steel insert, which enables applications with high operation pressures, including cycling operations. Even surface pressure distribution on gasket provides excellent thermomechanical properties and sealing characteristics, and increase blowout resistance. Therefore material is particularly suitable for high temperature applications in petrochemical industry and steam supply.

PROPERTIES

	MECHANICAL RESISTANCE	THERMAL RESISTANCE	SEALABILITY PERFORMANCE	CHEMICAL RESISTANCE
SUPERIOR	■	■	■	■
EXCELLENT	■	■	■	■
VERY GOOD	■	■	■	■
GOOD	■	■	■	■
MODERATE	■	■	■	■

APPROPRIATE INDUSTRIES & APPLICATIONS

- GENERAL PURPOSE
- STEAM SUPPLY
- GAS SUPPLY
- CHEMICAL INDUSTRY
- PETROCHEMICAL INDUSTRY
- PAPER AND CELLULOSE INDUSTRY
- AUTOMOTIVE AND ENGINE BUILDING INDUSTRY
- SHIPBUILDING
- POWER PLANT
- REFRIGERATION AND COOLING
- HEATING SYSTEMS
- HIGH TEMP. APPLICATIONS
- COMPRESSORS AND PUMPS
- VALVES

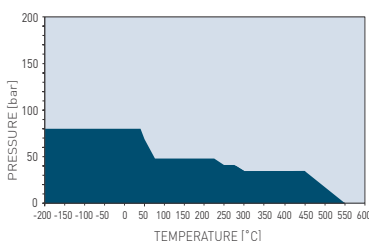
Composition	Expanded natural graphite (>99% graphite purity), expanded stainless steel sheet insert (AISI 316L; 0.15 mm).		
Color	Black		
Approvals	ISO 10497 (fire safe test)	TA-Luft (VDI 2440)	DIN-DVGW DIN 3535-6

TECHNICAL DATA Typical values for a thickness of 1.5 mm

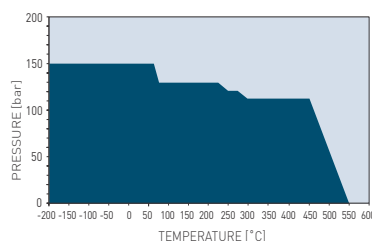
Density	DIN 28090-2	g/cm ³	1.4
Compressibility	ASTM F36A	%	35
Recovery	ASTM F36A	%	20
Stress resistance	DIN 52913		
16 h, 50 MPa, 300 °C		MPa	49
Specific leak rate	DIN 3535-6	mg/(s·m)	0.05
Leachable chloride content	FSA NMG 202	ppm	20
Leachable fluoride content	FSA NMG 203	ppm	20
Ash content of graphite	DIN 51903	%	<1
Compression modulus	DIN 28090-2		
At room temperature: ϵ_{KSW}		%	32
At elevated temperature: $\epsilon_{WSW/300\text{ °C}}$		%	2.5
Percentage creep relaxation	DIN 28090-2		
At room temperature: ϵ_{KRW}		%	4.5
At elevated temperature: $\epsilon_{WRW/300\text{ °C}}$		%	3.5
Operating conditions			
Minimum temperature		°C/°F	-200/-328
Continuous temperature			
- oxidizing atmosphere		°C/°F	550/1022
- reducing or inert atmosphere		°C/°F	700/1292
Pressure			
- Demanding gasses		bar/psi	80/1160
- Steam, gasses		bar/psi	150/2175
- Liquids		bar/psi	180/2610

P-T DIAGRAMS

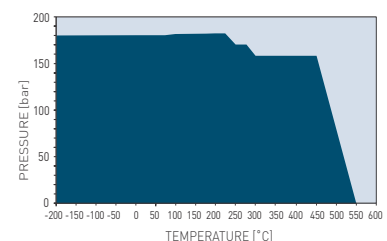
Demanding gasses



Steam, gasses



Liquids



P-T DIAGRAMS

EN 1514-1, Type IBC, PN 40, DIN 28091-2 / 3.8, 1.5 mm

P-T diagrams indicate the maximum permissible combination of internal pressure and service temperature which can be simultaneously applied for a given gasket according to its material type, thickness, size and tightness class. Given the wide variety of gasket applications and service conditions, these values should only be regarded as guidance for the proper gasket assembly. In general, thinner gaskets exhibit better P-T properties.

- General suitability - Under common installation practices and chemical compatibility.
- Limited suitability - Technical consultation is mandatory.

CHEMICAL RESISTANCE CHART

The recommendations made here are intended as a guideline for the selection of a suitable gasket type. As the function and durability of products are dependent upon a number of factors, the data may not be used to support any warranty claims.

Legend: + Recommended, ? Recommendation depends on operating conditions, - Not recommended.

Acetamide	+	Butyric acid	+	Formic acid, 85%	?	N-Methyl-pyrrolidone (NMP)	+	Silicones (oil/grease)	+
Acetic acid, 10%	+	Calcium chloride	?	Formic acid, 100%	?	Milk	+	Soaps	+
Acetic acid, 100% (Glacial)	?	Calcium hydroxide	+	Freon-12 (R-12)	+	Mineral oil (ASTM no.1)	+	Sodium aluminate	+
Acetone	+	Carbon dioxide (gas)	+	Freon-134a (R-134a)	+	Motor oil	+	Sodium bicarbonate	+
Acetonitrile	+	Carbon monoxide (gas)	+	Freon-22 (R-22)	+	Naphtha	+	Sodium bisulfite	+
Acetylene (gas)	+	Cellosolve	+	Fruit juices	+	Nitric acid, 10%	?	Sodium carbonate	+
Acid chlorides	?	Chlorine (gas)	?	Fuel oil	+	Nitric acid, 65%	?	Sodium chloride	+
Acrylic acid	+	Chlorine (in water)	?	Gasoline	+	Nitrobenzene	+	Sodium cyanide	+
Acrylonitrile	+	Chlorobenzene	+	Gelatin	+	Nitrogen (gas)	+	Sodium hydroxide	+
Adipic acid	+	Chloroform	+	Glycerine (Glycerol)	+	Nitrous gases (NOx)	?	Sodium hypochlorite (Bleach)	-
Air (gas)	+	Chloroprene	+	Glycols	+	Octane	+	Sodium silicate (Water glass)	+
Alcohols	+	Chlorosilanes	?	Helium (gas)	+	Oils (Essential)	+	Sodium sulfate	+
Aldehydes	+	Chromic acid	-	Heptane	+	Oils (Vegetable)	+	Sodium sulfide	?
Alum	?	Citric acid	?	Hydraulic oil (Glycol based)	+	Oleic acid	+	Starch	+
Aluminium acetate	?	Copper acetate	+	Hydraulic oil (Mineral type)	+	Oleum (Sulfuric acid, fuming)	-	Steam	+
Aluminium chlorate	?	Copper sulfate	+	Hydraulic oil (Phosphate ester based)	+	Oxalic acid	?	Stearic acid	+
Aluminium chloride	-	Creosote	+	Hydrazine	+	Oxygen (gas)	+	Styrene	+
Aluminium sulfate	+	Cresols (Cresylic acid)	+	Hydrocarbons	+	Palmitic acid	+	Sugars	+
Amines	+	Cyclohexane	+	Hydrochloric acid, 10%	-	Parafin oil	+	Sulfur	+
Ammonia (gas)	+	Cyclohexanol	+	Hydrochloric acid, 37%	-	Pentane	+	Sulfur dioxide (gas)	+
Ammonium bicarbonate	+	Cyclohexanone	+	Hydrofluoric acid, 10%	-	Perchloroethylene	+	Sulfuric acid, 20%	-
Ammonium chloride	?	Decalin	+	Hydrofluoric acid, 48%	-	Petroleum (Crude oil)	+	Sulfuric acid, 98%	-
Ammonium hydroxide	+	Dextrin	+	Hydrogen (gas)	+	Phenol (Carbolic acid)	+	Sulfuryl chloride	-
Amyl acetate	+	Dibenzyl ether	+	Iron sulfate	+	Phosphoric acid, 40%	?	Tar	+
Anhydrides	+	Dibutyl phthalate	+	Isobutane (gas)	+	Phosphoric acid, 85%	?	Tartaric acid	?
Aniline	+	Dimethylacetamide (DMA)	+	Isooctane	+	Phthalic acid	+	Tetrahydrofuran (THF)	+
Anisole	+	Dimethylformamide (DMF)	+	Isoprene	+	Potassium acetate	+	Titanium tetrachloride	-
Argon (gas)	+	Dioxane	+	Isopropyl alcohol (Isopropanol)	+	Potassium bicarbonate	+	Toluene	+
Asphalt	+	Diphenyl (Dowtherm A)	+	Kerosene	+	Potassium carbonate	+	2,4-Toluenediisocyanate	+
Barium chloride	?	Esters	+	Ketones	+	Potassium chloride	+	Transformer oil (Mineral type)	+
Benzaldehyde	+	Ethane (gas)	+	Lactic acid	?	Potassium cyanide	+	Trichloroethylene	+
Benzene	+	Ethers	+	Lead acetate	+	Potassium dichromate	?	Vinegar	+
Benzoic acid	+	Ethyl acetate	+	Lead arsenate	+	Potassium hydroxide	+	Vinyl chloride (gas)	+
Bio-diesel	+	Ethyl alcohol (Ethanol)	+	Magnesium sulfate	+	Potassium iodide	+	Vinylidene chloride	+
Bio-ethanol	+	Ethyl cellulose	+	Maleic acid	+	Potassium nitrate	+	Water	+
Black liquor	?	Ethyl chloride (gas)	+	Malic acid	?	Potassium permanganate	?	White spirits	+
Borax	+	Ethylene (gas)	+	Methane (gas)	+	Propane (gas)	+	Xylenes	+
Boric acid	+	Ethylene glycol	+	Methyl alcohol (Methanol)	+	Propylene (gas)	+	Xylenol	+
Butadiene (gas)	+	Formaldehyde (Formalin)	+	Methyl chloride (gas)	+	Pyridine	+	Zinc sulfate	+
Butane (gas)	+	Formamide	+	Methylene dichloride	+	Salicylic acid	+		
Butyl alcohol (Butanol)	+	Formic acid, 10%	?	Methyl ethyl ketone (MEK)	+	Seawater/brine	?		

All information and data quoted are based upon decades of experience in the production and operation of sealing elements. This data may not be used to support any warranty claims. With its publication this latest edition supersedes all previous issues and is subject to change without further notice.

Standard dimensions of sheets

Sheet size (mm): 1000 x 1000 | 1500 x 1500
 Thickness (mm): 0.5 | 1.0 | 1.5 | 2.0 | 3.0
 Other sizes and thicknesses available on request.

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