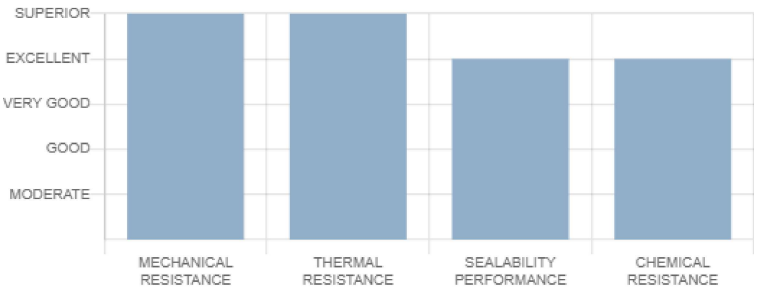
GRAFILIT® SP

GRAFILIT® SP is an expanded graphite-based material with a tanged stainless steel insert, thus enhancing the surface load and blowout safety. GRAFILIT® SP has excellent chemical, thermal, and mechanical resistance. GRAFILIT® SP is a gasket material used in a wide range of industries, such as gas and steam supply, chemical and petrochemical industries.

PROPERTIES



APPROPRIATE INDUSTRIES & APPLICATIONS

- CHEMICAL INDUSTRY
- GENERAL PURPOSE
- HIGH-TEMPERATURE APP.
- GAS SUPPLY
- HEATING SYSTEMS
- STEAM SUPPLY

Composition	Expanded natural graphite (>99% carbon content), tanged stainless steel sheet insert (AISI 316; 0.1 mm)		
Color	Black		
Approvals and compliances	BAM (oxygen)	DNV GL	DVGW DIN 30653 (5 bars)
	DVGW DIN 3535-6	FIRE SAFE API 607	
Sheet dimensions	Size (mm): 1000 x 1000 | 1500 x 1500 Thickness (mm): 1.0 | 1.5 | 2.0 | 3.0 Other sizes and thicknesses available on request		

TECHNICAL DATA

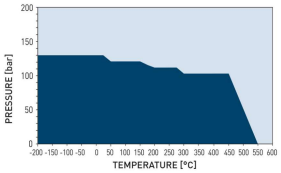
Typical values for 2.0 mm thickness

Density	DIN 28090-2	g/cm³	1.4
Density (plain graphite)	DIN 28090-2	g/cm³	1.0
Carbon content	DIN 51903	%	>99
Total sulfur content	ASTM D5016	ppm	<1000
Leachable chloride content	FSA NMG 202	ppm	<50
Leachable fluoride content	FSA NMG 203	ppm	<50
Total halogen content		ppm	<200
Ash content	DIN 51903	%	<1
Compressibility	ASTM F36A	%	35
Recovery	ASTM F36A	%	17
Residual stress	DIN 52913		
50 MPa, 300°C, 16 h		MPa	49
Specific leak rate	DIN 3535-6	mg/(s·m)	0.05
Compression modulus	DIN 28090-2		
At room temperature: ε_{KSW}		%	34
At elevated temperature: $\varepsilon_{WSW/300°C}$		%	1.2
Creep relaxation	DIN 28090-2		
At room temperature: ε_{KRW}		%	4.2
At elevated temperature: $\varepsilon_{WRW/300°C}$		%	3.3
Operating conditions			
Minimum temperature		°C/°F	-200/-328
Maximum continuous temperature			
– under oxidizing atmosphere		°C/°F	550/1022
– under reducing or inert atmosphere		°C/°F	700/1292
Maximum pressure		bar/psi	200/2900

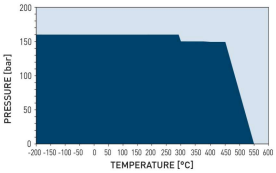
P-T diagrams

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

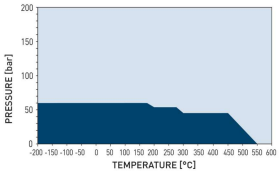
Steam or gasses



Liquids



Aggressive gasses



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

- General suitability - Under common installation practices and chemical compatibility
- Conditional suitability - Appropriate measures ensure maximum performance for joint design and gasket installation. Technical consultation is recommended
- 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. If there are specific type-approval regulations, these have to be complied with.

Legend: + Recommended ○ Recommendation depends on operating conditions, − Not recommended

Acetamide		Calcium chloride	○	Freon-12 (R-12)	+	Motor oil	+	Sodium bisulfite	+
Acetic acid, 10%	+	Calcium hydroxide	+	Freon-134a (R-134a)	+	Naphtha	+	Sodium carbonate	+
Acetic acid, 100% (Glacial)	○	Carbon dioxide (gas)	+	Freon-22 (R-22)	+	Nitric acid, 10%	○	Sodium chloride	+
Acetone	+	Carbon monoxide (gas)	+	Fruit juices	+	Nitric acid, 65%	○	Sodium cyanide	+
Acetonitrile	+	Cellosolve	+	Fuel oil	+	Nitrobenzene	+	Sodium hydroxide	+
Acetylene (gas)	+	Chlorine (gas)	○	Gasoline	+	Nitrogen (Gas)	+	Sodium hypochlorite (Bleach)	−
Acid chlorides	○	Chlorine (in water)		Gelatin	+	Nitrous gases (NOx)	○	Sodium silicate (Water glass)	+
Acrylic acid	+	Chlorobenzene	+	Glycerine (Glycerol)	+	Octane	+	Sodium sulfate	+
Acrylonitrile	+	Chloroform	+	Glycols	+	Oils (Essential)	+	Sodium sulfide	○
Adipic acid	+	Chloroprene	+	Helium (gas)	+	Oils (Vegetable)	+	Starch	+
Air (gas)	+	Chlorosilanes	○	Heptane	+	Oleic acid	+	Steam	+
Alcohols	+	Chromic acid	−	Hydraulic oil (Glycol based)	+	Oleum (Sulfuric acid, fuming)	−	Stearic acid	+
Aldehydes	+	Citric acid	○	Hydraulic oil (Mineral)	+	Oxalic acid	○	Styrene	+
Alum	○	Copper acetate	+	Hydraulic oil (Phosphate ester-based)	+	Oxygen (gas)	+	Sugars	+
Aluminium acetate	○	Copper sulfate	+	Hydrazine	+	Palmitic acid	+	Sulfur	+
Aluminium chlorate	○	Creosote	+	Hydrocarbons	+	Paraffin oil	+	Sulfur dioxide (Gas)	+
Aluminium chloride	−	Cresols (Cresylic acid)	+	Hydrochloric acid, 10%	−	Pentane	+	Sulfuric acid, 20%	−
Aluminium sulfate	+	Cyclohexane	+	Hydrochloric acid, 37%	−	Perchloroethylene	+	Sulfuric acid, 98%	−
Amines	+	Cyclohexanol	+	Hydrofluoric acid, 10%	−	Petroleum (Crude oil)	+	Sulfuryl chloride	−
Ammonia (Gas)	+	Cyclohexanone	+	Hydrofluoric acid, 48%	−	Phenol (Carbolic acid)	+	Tar	+
Ammonium bicarbonate	+	Decalin	+	Hydrogen (gas)	+	Phosphoric acid, 40%	○	Tartaric acid	○
Ammonium chloride	○	Dextrin	+	Iron sulfate	+	Phosphoric acid, 85%	○	Tetrahydrofuran (THF)	+
Ammonium hydroxide	+	Dibenzyl ether	+	Isobutane (Gas)	+	Phthalic acid	+	Titanium tetrachloride	−
Amyl acetate	+	Dibutyl phthalate	+	Isooctane	+	Potassium acetate	+	Toluene	+
Anhydrides	+	Dimethylacetamide (DMA)	+	Isoprene	+	Potassium bicarbonate	+	2,4-Toluenediisocyanate	+
Aniline	+	Dimethylformamide (DMF)	+	Isopropyl alcohol (Isopropanol)	+	Potassium carbonate	+	Transformer oil (Mineral type)	+
Anisole	+	Dioxane	+	Kerosene	+	Potassium chloride	+	Trichloroethylene	+
Argon (gas)	+	Diphyl (Dowtherm A)	+	Ketones	+	Potassium cyanide	+	Vinegar	+
Asphalt	+	Esters	+	Lactic acid	○	Potassium dichromate	○	Vinyl chloride (gas)	+
Barium chloride	○	Ethane (Gas)	+	Lead acetate	+	Potassium hydroxide	+	Vinylidene chloride	+
Benzaldehyde	+	Ethers	+	Lead arsenate	+	Potassium iodide	+	Water	+
Benzene	+	Ethyl acetate	+	Magnesium sulfate	+	Potassium nitrate	+	White spirits	+
Benzoic acid	+	Ethyl alcohol (Ethanol)	+	Maleic acid	+	Potassium permanganate	○	Xylenes	+
Bio-diesel	+	Ethyl cellulose	+	Malic acid	○	Propane (gas)	+	Xylenol	+
Bio-ethanol	+	Ethyl chloride (gas)	+	Methane (Gas)	+	Propylene (gas)	+	Zinc sulfate	+
Black liquor	○	Ethylene (gas)	+	Methyl alcohol (Methanol)	+	Pyridine	+		
Borax	+	Ethylene glycol	+	Methyl chloride (Gas)	+	Salicylic acid	+		
Boric acid	+	Formaldehyde (Formalin)	+	Methylene dichloride	+	Seawater/brine	○		
Butadiene (gas)	+	Formamide	+	Methyl ethyl ketone (MEK)	+	Silicones (oil/grease)	+		
Butane (gas)	+	Formic acid, 10%		N-Methyl-pyrrolidone (NMP)	+	Soaps	+		
Butyl alcohol (Butanol)	+	Formic acid, 85%	○	Milk	+	Sodium aluminate	+		
Butyric acid	+	Formic acid, 100%	○	Mineral oil type ASTM 1	+	Sodium bicarbonate	+		

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.

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