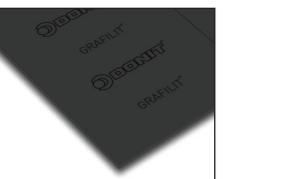


**GRAFILIT®**

Size [mm]

1000 x 1000 | 1500 x 1500 (SF, SL, SP, EM, MF)

1000 x 1000 x 2000 | 1500 x 1500 (IQ)

Thickness [mm]

0.5 | 1.0 | 1.5 | 2.0 | 3.0 (SF, SL)

1.0 | 1.5 | 2.0 | 3.0 (SP, EM, IQ, MF)

Other sizes and thicknesses available on request

**SF****SL****SP****EM****IQ****MULTIFORCE**

Composition	Expanded natural graphite (>99% carbon content)	Expanded natural graphite (>99% carbon content) & stainless steel foil (AISI 316; 0.05 mm) insert	Expanded natural graphite (>99% carbon content) & tanged stainless steel sheet (AISI 316; 0.1 mm) insert	Expanded natural graphite (>99% carbon content) & expanded stainless steel mesh (AISI 316; 0.15 mm) insert	Expanded natural graphite (>99% initial graphite purity >99%) doped with self-oxidation & flange-corrosion inhibitors, and laminated to an expanded chromium-nickel-steel insert (AISI 316L; 0.15 mm)	Expanded natural graphite foils (>99% purity) containing oxidation inhibitor, reinforced with multiple stainless steel flat foils (SS 316; thickness 0.05 mm)
Color	Black	Black	Black	Black	Silver	Black
Properties	Specific for medium operating pressures & high temperatures (but also for cryogenic), with excellent chemical-resistance combined with high compressibility	Specific for high operating pressures & temperatures (but also for cryogenic), with excellent chemical-resistance & blowout-resistance	Specific for high operating pressures & temperatures (but also for cryogenic), with excellent chemical-resistance & blowout-resistance especially for cycling loads	Exceptional thermomechanical properties & an outstanding anti-stick performance, compatible with a wide range of media, high self-oxidation resistant, suitable for cyclic operations, inert to flange corrosion	Excellent chemical and thermal resistances, high creep resistance and high compressibility rendering it suitable for highly demanding conditions with hot and/or corrosive media	
Industries	Water supply; Potable water supply; Chemical industry; Petrochemical industry; Power plant; Heating systems; High-temperature applications	Steam supply; Chemical industry; Heating systems; High-temperature applications	General purpose; Steam supply; Gas supply; Chemical industry; Petrochemical industry; Paper & cellulose industries; Automotive & engine building industries; Shipbuilding; Power plant; Refrigeration & cooling; Heating systems; High-temperature applications	General purpose; Steam supply; Gas supply; Chemical industry; Petrochemical industry; Nuclear power plants; High-temperature applications; Heating systems; Steam supply; Water supply; Gas supply; Refrigeration & cooling; Compressors & pumps; Valves	Chemical industry; Petrochemical industry; Nuclear power plants; High-temperature applications; Heating systems; Steam supply; Water supply; Gas supply; Refrigeration & cooling; Compressors & pumps; Valves	
Approvals & compliances	DVGW DIN 3535-6 ; DVGW DIN 30653 (5 bars); BAM (oxygen); DNV	BAM (oxygen)	DVGW DIN 3535-6 ; ISO 10497 (API 607) ; TA-Luft (VDI 2440) ; DNV ; ABS ; EN 12308 (LNG & Cryogenic applications)	DVGW DIN 3535-6 ; ISO 10497 (API 607) ; TA-Luft (VDI 2440) ; DNV ; ABS ; EN 12308 (LNG & Cryogenic applications)	Fire Safe API 6FB ; DVGW DIN 3535-6 ; BAM (oxygen)	

**TECHNICAL DATA** Typical values for a thickness of:

Density	DIN 28090-2	g/cm³	1.0	1.3	1.5	1.4	1.4	/
Density (plain graphite)	DIN 28090-2	g/cm³	1.0	1.0	1.0	1.0	1.0	1.1
Total sulfur content	ASTM D5016	ppm	/	/	/	<100	<250	
Leachable chloride content	FSA NMG 202	ppm	20	20	20	20	20	<20
Leachable fluoride content	FSA NMG 203	ppm	20	20	20	20	20	/
Leachable halogen content			/	/	/	/	/	<100
Ash content	DIN 51903	%	<1	<1	<1	<1	<0.5	<1
Weight loss (air, 670 °C, 4 h)	DIN 28090-2	%/h	/	/	/	<4	<3	<3
Compressibility	ASTM F36A	%	45	42	35	35	35	35
Recovery	ASTM F36A	%	13	15	17	20	22	20
Tensile strength	ASTM F152	MPa	/	/	/	25	9	/
Longitudinal		MPa	/	/	/	/	/	
Transversal		MPa	/	/	/	/	/	
Residual stress	DIN 52913	MPa	49	49	49	49	48	49
50 MPa, 300 °C, 16 h	DIN 3535-6	mg/(s·m)	0.05	0.05	0.05	<0.02	<0.02	<0.02
Specific leak rate	DIN 3535-6	MPa	49	49	49	49	48	49
Thickness increase	ASTM F146							
Oil IRM 903, 150 °C, 5 h		%	/	/	/	/	/	
ASTM Fuel B, 23 °C, 5 h		%	/	/	/	/	/	
Compression modulus	DIN 28090-2							
At room temperature: $\epsilon_{50}$		%	41	38	34	32	32	35
At elevated temperature: $\epsilon_{50,300}$ °C		%	0.9	1.2	1.2	2.5	2.5	3
Creep relaxation	DIN 28090-2							
At room temperature: $\epsilon_{50}$		%	5.0	4.3	4.2	4.5	4	5
At elevated temperature: $\epsilon_{50,300}$ °C		%	4.0	3.6	3.3	3.5	3	4
Operating conditions								
Minimum temperature		°C/F	-200/-328	-200/-328	-200/-328	-200/-328	-200/-328	-200/-328
Maximum continuous temperature		°C/F	550/1022	550/1022	550/1022	550/1022	550/1022	550/1022
- under oxidizing atmosphere		°C/F	700/1292	700/1292	700/1292	700/1292	700/1292	700/1292
- under reducing or inert atmosphere		°C/F	700/1292	700/1292	700/1292	700/1292	700/1292	700/1292
Maximum pressure		bar/psi	80/1160	100/1450	200/2900	200/2900	250/3626	

\*Lifespan might be limited at high temperatures. Consult our Application Engineering when operating temperatures exceed 450°C/842°F.

**MICALIT®**

Size [mm] 1000 x 1200

Thickness [mm]

0.4 - 3.0 (F) 1.5 | 2.0 | 3.0 (P)

**TECHNICAL DATA** Typical values for 2 mm thickness

Mica content		%	>90	>90
Binder content		%	<10	<10
Density	DIN 28090-2	g/cm³	1.90	2.19
Compressibility	ASTM F36J	%	15-35	15-35
Recovery	ASTM F36J	%	30-45	30-45
Weight loss (at 800 °C)	DIN 52911	%	<5	<5
Tensile Strength	ASTM F152	MPa	>20	30
Residual stress	DIN 52913	MPa	40	42
Dielectric Strength	ASTM D149	kV/mm	>15	/
50 % RH, 23 °C, 24 h		W/(m·K)	0.3	/
Thermal Conductivity		W/(m·K)	3.0	/
at 20 °C perpendicular				
at 20 °C horizontal				
Compression modulus	DIN 28090-2			
At room temperature: $\epsilon_{50}$		%	14.4	20.3
At elevated temperature: $\epsilon_{50,200}$ °C		%	6.4	4.1
Max. operating temperature		°C	950	950
Max. operating pressure		bar	5	40

**F****P**

Composition	Phlogopite mica flakes, silicon resin	Phlogopite mica flakes, silicon resin, tanged stainless steel insert (AISI 316L in 0.1 mm)
Color	Yellow-Brown	Yellow-Brown
Properties	Excellent thermal, good chemical and mechanical properties; good dielectric and low thermal conductivity properties	Excellent thermal, good chemical and mechanical properties; good dielectric and low thermal conductivity properties
Industries	Chemical industry; Petrochemical industry; Automotive & engine building industries; Heating systems; High-temperature applications	Chemical industry; Petrochemical industry; Automotive & engine building industries; Heating systems; High-temperature applications

Density	DIN 28090-2	g/cm³	1.90	2.19
Compressibility	ASTM F36J	%	15-35	15-35
Recovery	ASTM F36J	%	30-45	30-45
Weight loss (at 800 °C)	DIN 52911	%	<5	<5
Tensile Strength	ASTM F152	MPa	>20	30
Residual stress	DIN 52913	MPa	40	42
Dielectric Strength	ASTM D149	kV/mm	>15	/
50 % RH, 23 °C, 24 h		W/(m·K)	0.3	/
Thermal Conductivity		W/(m·K)	3.0	/
at 20 °C perpendicular				
at 20 °C horizontal				
Compression modulus	DIN 28090-2			
At room temperature: $\epsilon_{50}$		%	14.4	20.3
At elevated temperature: $\epsilon_{50,200}$ °C		%	6.4	4.1
Max. operating temperature		°C	950	950
Max. operating pressure		bar	5	40

**TECHNICAL DATA** Typical values for 2 mm thickness**900E****2010****2020****2030**

# TESNIT®

## BASIC SHEET FEATURES

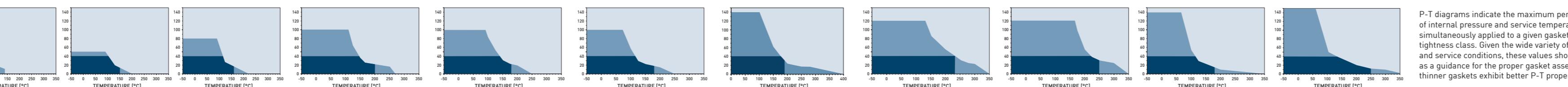
Size [mm]	1500 x 1500   3000 x 1500   4500 x 1500 (BA-202, BA-203, BA-50, BA-55, BA-U, BA-CF, BA-M, BA-GL, BA-SOFT)
1500 x 1500 (BA-R, BA-REM)	
1500 x 1400   Rolls (BA-R300)	
500 x 1400 (BA-R302)	
Other sizes available on request	
Thickness [mm]	0.5   1.0   1.5   2.0   3.0 (BA-202, BA-203, BA-50, BA-55, BA-U, BA-CF, BA-M, BA-GL, BA-SOFT)
1.0   1.5   2.0   3.0 (BA-R, BA-REM)	
0.7   1.0   1.2   1.4   2.0   2.5   3.0 (BA-R300)	
1.4   1.6   2.0   3.0 (BA-R302)	
Surface finish	2AS: BA-202, BA-203 4AS: BA-50, BA-55, BA-U, BA-CF, BA-M, BA-GL, BA-REM, BA-SOFT 2G: BA-R, BA-R300, BA-302 Optional on request: graphite or PTFE
Tolerances	± 5 % on length and width On thickness up to 1.0 mm ± 0.1 mm On thickness above 1.0 mm ± 10 %

## TECHNICAL DATA Typical values for 2 mm thickness (BA-REM 1.5 mm)

Density	DIN 28090-2	g/cm³	1.8	1.8	1.8	1.7	1.5	1.7	1.7	1.8	2.0	2.2	3.2	3.7	
Compressibility	ASTM F36J	%	9	10	9	7	11	25	8	10	7	8	7	8	
Recovery	ASTM F36J	%	60	60	55	55	60	64	55	60	55	55	50	40	
Tensile strength	ASTM F152	MPa	8	8	11	7	14	6	18	13	11	17	35	/	
Residual stress	DIN 52913														
50 MPa, 175 °C, 16 h		MPa	20	25	25	35	27	30	35	35	38	30	43	46	
50 MPa, 300 °C, 16 h		MPa	/	/	/	30	23	20	25	27	33	25	38	40	
Specific leak rate	DIN 3535-6	mg/(s·m)	0.04	0.08	0.07	0.06	0.02	0.009	0.02	0.05	0.03	/	/	/	
Thickness increase	ASTM F146														
Oil IRM 903, 150°C, 5 h		%	10	8	8	8	2	2	3	5	3	8	5	5	
ASTM Fuel B, 23°C, 5 h		%	10	10	10	10	5	6	5	6	5	/	8	/	
Compression modulus	DIN 28090-2														
At room temperature: $\epsilon_{KSW}$		%	/	/	8.5	7.6	9.5	18.4	8	10.8	6.9	8.5	6.5	11.1	
At elevated temperature: $\epsilon_{WSW/200\text{ }^{\circ}\text{C}}$		%	/	/	25	11.4	16.1	14.6	9	11.0	7.9	15.8	5.8	6.9	
Creep relaxation	DIN 28090-2														
At room temperature: $\epsilon_{KRW}$		%	/	/	5.1	3.2	4.7	10	2.5	4.1	3.3	4.2	3.2	3.4	
At elevated temperature: $\epsilon_{WRW/200\text{ }^{\circ}\text{C}}$		%	/	/	1.2	0.8	0.8	1.6	1.5	0.8	1.2	0.7	0.5	0.4	
Maximum operating conditions															
Peak temperature		°C/F	180/356	250/482	280/536	350/662	350/662	350/662	400/752	440/824	440/824	400/752	460/860	550/1022	650/1202
Continuous temperature		°C/F	140/284	200/392	220/428	270/518	250/482	280/536	350/662	350/662	350/662	350/662	370/698	450/842	600/1112
Continuous temperature with steam		°C/F	120/248	160/320	180/356	230/446	200/392	200/392	300/572	250/482	/	250/482	/	/	/
Pressure		bar/psi	40/580	50/725	80/1160	100/1450	100/1450	100/1450	140/2030	120/1740	120/1740	140/2030	150/2175	/	/

## P-T DIAGRAM EN 1514-1, Type IBC, PN 40, DIN 28091-2 / 3.8, 2 mm

- 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
- Saturated steam curve



P-T diagrams indicate the maximum permissible combination of internal pressure and service temperature which can be simultaneously applied to a given gasket's 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.

# DONIFLEX®

## BASIC SHEET FEATURES

Size [mm]	1500 x 1480   2000 x 1480 Rolls: 1480 mm x L [m]
Thickness [mm]	1.0   1.5   2.0   3.0 Rolls: 0.5   1.0   1.5   2.0
Surface finish	Standard: 4AS. Optional: IQ, graphite or PTFE.



Graphite, aramid fibers, functional inorganic fillers, NBR binder; optionally available with expanded steel reinforcement (AISI 316L, 0.15 mm)

Composition	Graphite, aramid fibers, functional inorganic fillers, NBR binder; optionally available with expanded steel reinforcement (AISI 316L, 0.15 mm)
Color	Anthrakte
Properties	Excellent physicochemical properties, high compressibility & flexibility, fitted with a highly performant anti-stick, devoid of any organic solvent
Industries	General purpose; Water supply; Potable water supply; Petrochemical industry; Chemical industry; shipbuilding; food industry; automotive & engineering building; refrigeration & cooling; heating systems; compressors; pumps; valves
Approvals & compliances	Please inquire

Please inquire

TECHNICAL DATA Typical values for 2 mm thickness	DIN 28090-2	g/cm³	1.25
Density	DIN 28090-2	g/cm³	1.25
Compressibility	ASTM F36J	%	35
Recovery	ASTM F36J	%	25
Tensile strength	ASTM F152	MPa	5
Longitudinal			5
Transversal			5
Stress resistance	DIN 52913	MPa	42
50 MPa, 16 h, 175 °C		MPa	37
50 MPa, 16 h, 300 °C		MPa	0.05
Specific leak rate	DIN 3535-6	mg/(s·m)	0.05
Thickness increase	ASTM F146	%	3
Oil IRM 903, 5 h, 150 °C		%	3
ASTM Fuel B, 23 °C, 5 h		%	25
Weight increase			
Oil IRM 903, 5 h, 150 °C		%	30
ASTM Fuel B, 5 h, 23 °C		%	25
Compression modulus	DIN 28090-2		
At room temperature: $\epsilon_{KSW}$		%	30
At elevated temperature: $\epsilon_{WSW/200\text{ }^{\circ}\text{C}}$		%	6
Creep relaxation	DIN 28090-2		
At room temperature: $\epsilon_{KRW}$		%	3.5
At elevated temperature: $\epsilon_{WRW/200\text{ }^{\circ}\text{C}}$		%	0.3
Creep deformation			
Change in thickness at 20 °C, 50 MPa		%	30
Change in thickness at 300 °C, 50 MPa		%	12
Change in thickness at 400 °C, 50 MPa		%	15
Leachable chloride content	FSA NMG 202	ppm	<20
Leachable fluoride content	FSA NMG 203	ppm	<20

