

 **DONIT**[®]
Made in EU

 **DONIT**[®]
A perfect fit

TESNIT[®]

DONIFLEX[®]

GRAFILIT[®]

DONIFLON[®]

MICALIT[®]

A CLEVER
CHOICE

GRAFILIT[®]
MULTIFORCE

DONIT® Sealing technologies

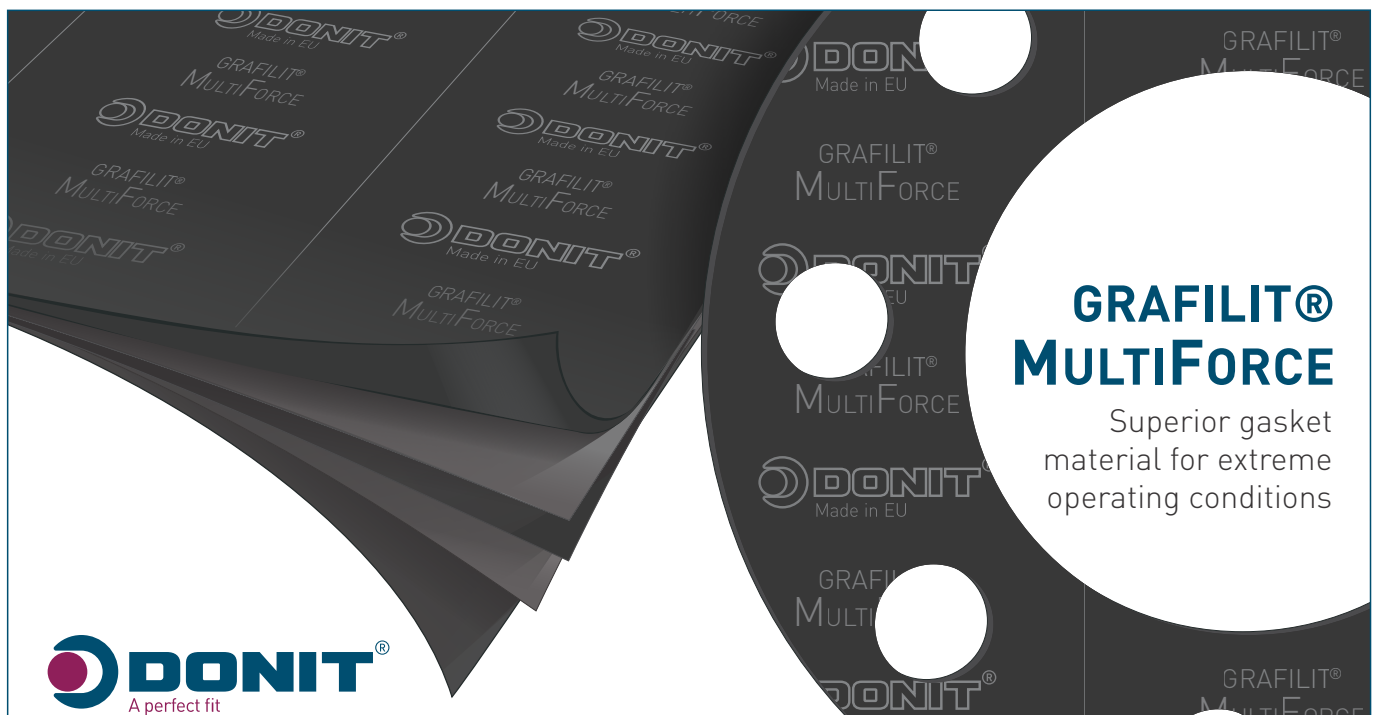
GRAFILIT® MULTIFORCE is the answer to the most demanding challenges in the field of static sealing. Graphite as a thermally stable and chemically resistant material mechanically reinforced with multiple stainless-steel inserts, confirms this explanation.

As we know, graphite morphology leads to the anisotropy in electrical, thermal, and mechanical properties of graphite and explains its natural lubricity. These positive features represent GRAFILIT® MULTIFORCE as a distinctive material with the essential characteristics of graphite and stainless-steel foil with some unique properties which makes it a valuable material for most demanding applications. GRAFILIT® MULTIFORCE flexible graphite is manufactured employing a process that introduces no organic or inorganic elastomeric binders, fillers, or other potentially fugitive ingredients that could limit its thermal and chemical stability.

Standard properties of manufactured graphite include thermal stability, thermal conductivity, natural lubricity (self-lubrication effect) and chemical resistance to fluids and gases, the flat stainless-steel foils add more strength and mechanical resistance. GRAFILIT® MULTIFORCE combines these properties with the added characteristics of flexibility, resilience, compactness, easy processing and handling. These characteristics differentiate it from other forms of graphite, making it a superior, high-performance sealing material.

Main advantages

- Very high available bolt load.
- Very high thermo-mechanical properties.
- Easy handling.
- Easy cutting.



GRAFILIT® MULTIFORCE is an expanded graphite based material with multiple stainless steel foil inserts, thus facilitating its handling, cutting and enhances the surface load. GRAFILIT® MULTIFORCE has excellent chemical and thermal resistance. Its high creep resistance and high compressibility make it suitable for highly demanding conditions in the chemical and petrochemical industries. Also available for specific Nuclear applications. (NG – nuclear grade on request).



PROPERTIES

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

APPROPRIATE INDUSTRIES & APPLICATIONS

- WATER SUPPLY
- STEAM SUPPLY
- GAS SUPPLY
- CHEMICAL INDUSTRY
- PETROCHEMICAL INDUSTRY
- POWER PLANT
- REFRIGERATION AND COOLING
- HEATING SYSTEMS
- HIGH TEMP. APPLICATIONS
- COMPRESSORS AND PUMPS
- VALVES

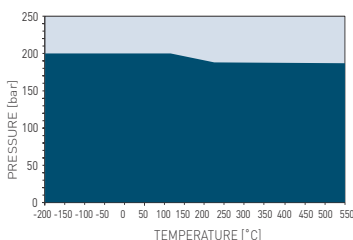
Composition	Expanded natural graphite (carbon content > 99 % graphite nuclear grade purity), impregnated with anti-oxidation inhibitor, multiple stainless steel (AISI 316L) flat foil inserts (thickness 0.05 mm).
Colour	Black
Approvals	Fire safe according to API 6FB, DVGW DIN 3535-6, BAM (suitable for gaseous and liquid oxygen $T_{max} = 200^{\circ}C$, $P_{max} = 130$ bar)

TECHNICAL DATA Typical values for a thickness of 2.0 mm (3 inserts in 0.05 mm)

Density (pure graphite)	DIN 28090-2	g/cm ³	1.1
Density (with inserts)	DIN 28090-2	g/cm ³	1.6
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)	< 0.02
Total Chloride content	FSA NMG 202	ppm	< 20
Total Sulfur content		ppm	< 300
Total Halogen content		ppm	< 200
Ash content of graphite	DIN 51903	%	< 1.0
Oxidation rate in air at 670°C	LECO TGA	%/hr	<=3
Compression modulus	DIN 28090-2		
At room temperature: ϵ_{KSW}		%	25
At elevated temperature: $\epsilon_{WSW/300^{\circ}C}$		%	<= 3
Percentage creep relaxation			
At room temperature: ϵ_{KRW}		%	5
At elevated temperature: $\epsilon_{WRW/300^{\circ}C}$		%	1
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		bar/psi	250/3625

P-T DIAGRAM

EN 1514-1, Type IBC, PN 40, DIN 28091-2 / 3.8, 2.0 mm



- General suitability - Appropriate measures ensure maximum performance for joint design and gasket installation.
- Limited suitability - Technical consultation is mandatory.

Dimensions of standard sheets
 Sheet size (mm): 1000 x 1000 | 1500 x 1500
 Thickness (mm): 1.0 | 1.5 | 2.0 | 3.0
 Other dimensions and thicknesses are available on request.

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

CHEMICAL RESISTANCE CHART

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

- + Recommended
- ? Recommendation depends on operating conditions
- Not recommended



DONIT TESNIT, d.o.o.

Cesta komandanta Staneta 38
 1215 Medvode, Slovenia

Phone: +386 (0)1 582 33 00

Fax: +386 (0)1 582 32 06

+386 (0)1 582 32 08

Web: www.donit.eu

E-mail: info@donit.eu

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DONIT® Gasket Sheets is a DONIT TESNIT d.o.o.'s business unit that produces high quality gasket sheets, certified by renowned industry standards. At DONIT® Gasket Sheets, we are focused on superior customer knowledge, on providing reliable and optimal solutions, on innovation and on excellent application engineering.

PRODUCT MATERIAL RANGE

DONIT® Gasket Sheets

 <p>TESNIT® FIBER-BASED MATERIALS</p>	 <p>DONIFLEX® FIBER-REINFORCED GRAPHITE-BASED MATERIALS</p>	 <p>GRAFILIT® EXPANDED GRAPHITE-BASED MATERIALS</p>	 <p>DONIFLON® PTFE-BASED MATERIALS</p>	 <p>MICALIT® MICA-BASED MATERIALS</p>
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APPLICATION AREAS

We offer a wide range of gasket materials in different sheet sizes for:

	TRADE NAME	GENERAL PURPOSE	WATER SUPPLY	POTABLE WATER SUPPLY	STEAM SUPPLY	GAS SUPPLY	CHEMICAL INDUSTRY	PETROCHEMICAL INDUSTRY	PHARMACEUTICAL	FOOD INDUSTRY	PAPER AND CELLULOSE INDUSTRIES	AUTOMOTIVE AND ENGINE BUILDING INDUSTRY	SHIPBUILDING	POWER PLANT	REFRIGERATION AND COOLING	HEATING SYSTEMS	HIGH TEMP. APPLICATIONS
GASKET SHEETS	TESNIT®	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●
	DONIFLEX®	●	●	●	●	●	●	●			●	●	●	●		●	●
	GRAFILIT®	●	●	●	●	●	●	●			●	●	●	●	●	●	●
	DONIFLON®	●		●	●	●	●	●	●	●	●				●		
	MICALIT®						●	●				●				●	●



DONIT® Industrial Sealing Solutions is a DONIT TESNIT d.o.o.'s business unit with a complete portfolio of solutions, with local and international support. At DONIT® Industrial Sealing Solutions we are focused towards superior customer intimacy / knowledge and toward making our clients' business easier.

PRODUCT MATERIAL RANGE:

DONIT® Industrial Sealing Solutions						
NON-METALLIC FLAT GASKETS	SEMI-METALLIC FLAT GASKETS	METAL GASKETS	NUTS & BOLTS DISC SPRING WASHERS	HIGH THERMAL INSULATION PRODUCTS	EXPANSION JOINTS	CONSULTING & SUPPORT TRAINING





A perfect fit
of **TRUST**

COMMITMENT
POSSIBILITIES

Customer and challenge
driven innovation

High level of flexibility

Adapt to new changes

Broad portfolio of gasket materials and products

BEST PRACTICE
SOLUTIONS

Slovenia**DONIT TESNIT, d.o.o.**

Cesta komandanta Staneta 38, 1215
Medvode, Slovenia
Phone: +386 (0)1 582 33 00
E-mail: info@donit.eu

China**SUZHOU DONIT SEALING
MATERIALS****Import and Export Co., Ltd.**

No. 8 Suzhou Avenue West,
Bank of China Building, Room 1207,
SIP, 215021, P.R. China
Phone: +86 (0)512 659 535 29
E-mail: sales.suzhou@donit.eu

India**DONIT TESNIT INDIA****Rep. by Vindonnus Technologies
PVT Ltd.**

C-406, Mantri Lavendula Mulshi Road,
Bavdan Khurd, Pune - 411 021, India
Phone: +91 95 5254 9558
E-mail: sales.india@donit.eu

Middle East**DONIT TESNIT MIDDLE EAST**

E-mail: sales.middleeast@donit.eu

North America**DONIT TESNIT NORTH AMERICA**

Donit Tesnit North America, LLC
5110 Fulton Industrial Blvd, Suite E
Atlanta, Georgia 30336
Mobile: 678-360-8562
Phone: 404-696-3998
Fax: 877-624-2766
E-mail: sales.northamerica@donit.eu

Latin America**DONIT TESNIT LATIN AMERICA**

E-mail: sales.latinamerica@donit.eu

Slovenia**DONIT TESNIT, d.o.o.**

Donit Industrial Sealing Solutions
Paradiž 4, 8210 Trebnje, Slovenia
Phone: +386 (0)8 205 50 44
E-mail: salesgaskets@donit.eu

Belgium**DISS-EUROPE BVBA**

Donit Industrial Sealing Solutions
Bannerlaan 50,
2280 Grobbendonk, Belgium
Phone: +32 (0)14 302 100
E-mail: sales@disseurope.be



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