

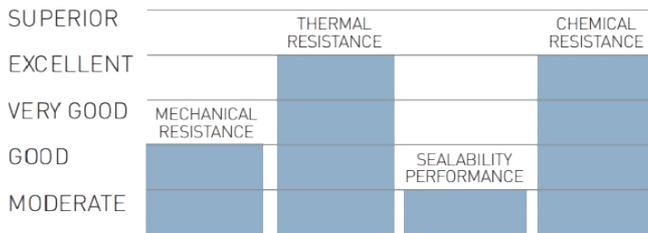


DONIFLEX GMD

(Particolari/Guarnizioni realizzate con processo di taglio da lastra con queste caratteristiche)

Doniflex GMD is an advanced composite material based on graphite and aramid manufacturer under organic solvent-free conditions. Combines the advantages of the chemical and thermal resistance of graphite with the strength or aramid. This "medium density" material has good resistance for gasket with narrow-width. It is particularly suitable for steam and hot water supplies as well as for boilers and radiators.

PROPERTIES



APPROPRIATE INDUSTRIES & APPLICATIONS

- GENERAL PURPOSE
- WATER SUPPLY
- STEAM SUPPLY
- PETROCHEMICAL INDUSTRY
- PAPER AND CELLULOSE INDUSTRY
- AUTOMOTIVE AND ENGINE BUILDING INDUSTRY
- SHIPBUILDING
- POWER PLANT
- HEATING SYSTEMS
- HIGH TEMP. APPLICATIONS

Compositions: Aramid fibers, natural graphite, inorganic fillers, NBR binder.

Color: Grey.

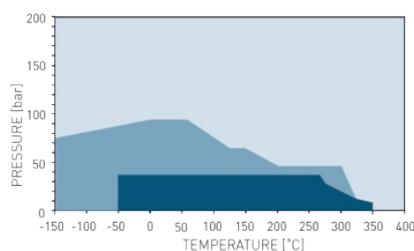
Antistick: (2G Graphite)(2AS standard).

Technical Data (Typical value for a thickness of 1 mm)

Density	DIN 28090-2	g/cm ³	1.4
Compressibility	ASTM F36J	%	20
Recovery	ASTM F36J	%	32
Tensile strength	ASTM F152	MPa	9
Stress resistance	DIN 52913		
50 MPa, 16 h, 175 °C		MPa	45
50 MPa, 16 h, 300 °C		MPa	40
Specific leak rate	DIN 3535-6	mg/(s·m)	0.5
Thickness increase	ASTM F146		
Oil IRM 903, 5 h, 150 °C		%	5
ASTM Fuel B, 5 h, 23 °C		%	5
Weight increase			
Oil IRM 903, 5 h, 150 °C		%	20
ASTM Fuel B, 5 h, 23 °C		%	17
Compression modulus	DIN 28090-2		
At room temperature: ϵ_{KSW}		%	17
At elevated temperature: $\epsilon_{WSW/200\text{ °C}}$		%	5
Percentage creep relaxation	DIN 28090-2		
At room temperature: ϵ_{KRW}		%	2.6
At elevated temperature: $\epsilon_{WRW/200\text{ °C}}$		%	0.2
Creep deformation			
Change in thickness at 20 °C, 50 MPa		%	18
Change in thickness at 300 °C, 50 MPa		%	10
Change in thickness at 400 °C, 50 MPa		%	15

P-T DIAGRAM

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

P-T diagrams indicate the maximum permissible combination of internal pressure and service temperature which can be simultaneously applied for a given gasket according its material type, thickness, size and tightness class. Give 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 gasket exhibit better P-T properties.

OMOLOGAZIONI

I manufatti da noi realizzati sono ottenuti con processo di taglio a freddo che non altera le proprietà chimico/fisiche del materiale. E' però un processo industriale NON asettico che può lasciare traccia di polveri (Talco, ...) che non ne alterano le proprietà. Si rende quindi necessaria la pulizia/sterilizzazione prima del suo utilizzo dove necessario.

ATTENZIONE: Le guarnizioni ed i nostri manufatti in genere non sono dispositivi di sicurezza. Ove siano presenti pericoli per la sicurezza delle persone (alte pressioni, alte temperature, fluidi pericolosi, ...) prevedere dispositivi aggiuntivi di sicurezza certificati.

E' compito del progettista dell'impianto scegliere il tipo di materiale adeguato e valutare eventuali pericoli di rottura del manufatto (Guarnizione, bandella, paracolpi, ...) e prevenirli.

Seguono le omologazioni disponibili:

COMPATIBILE CON OLIO DIATERMICO FINO A 90°C e 2bar di pressione

ATTENZIONE: materiale compatibile con i principali oli dia-termici utilizzati nel settore del riscaldamento. E' comunque sempre consigliata una verifica specifica in base al tipo di olio utilizzato.

Alla fine di questo documento potete trovare alcuni test con olio dia-termico e la dichiarazione del produttore del materiale. Si raccomanda inoltre di fare molta attenzione al montaggio e di dare un'adeguata e corretta compressione alla guarnizione (Vedi test a seguire).

CHEMICAL RESISTANCE CHART

+ Recommended ? Recommendation depends on operating conditions - Not recommended

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)	+		

The recommendations made here are intended as guideline for 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.

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.

TEST DI TENUTA CON OLIO DIATERMICO

Prove eseguite su guarnizioni diametro 41x32,5 mm

DONIFLEX GLD

Oil Filled Radiator Heaters

Advantage of DONIFLEX GLD:

- *Excellent conformability*
- *High temperature resistance*
- *Chemical resistance*

TEST

1 Mechanical performance:

Application:

- Assembly of electric heater on radiator body
- Gasket dimensions: $\phi 54 \times \phi 42 \times 2$ mm
- Assembly torque: 100 Nm
- Gasket material: DONIFLEX GLD

Test results:

- No destruction of gasket
- Good surface stress distribution
- Excellent conformability
- High temperature resistance
- Chemical resistance

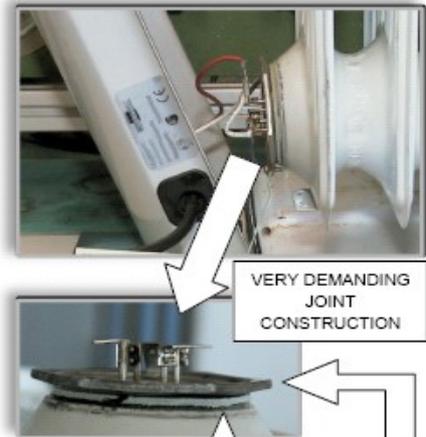
2 Tightness

Application:

- Test element: Oil filled radiator
- Medium: Heat transfer oil
- Temperature: 145°C
- Internal pressure: 1.5 bar
- Assembly torque: 100 Nm
- Duration: 13 hours
- Gasket material: DONIFLEX GLD

Test result:

- No leakage detected



VERY DEMANDING
JOINT
CONSTRUCTION



CSF GASKET MATERIAL:
IRREGULAR SURFACE
STRESS DISTRIBUTION

DONIFLEX GLD
MORE EVEN
SURFACE STRESS
DISTRIBUTION



CERTIFICATE

Company DONIT TESNIT d.d. confirms

that our product
DONIFLEX GMD

*is suitable for use in aluminum radiators working with
Diathermal Oil at operating conditions up to 90°C and 2 bars.*

The proper function of flange connection can be achieved only by proper combination of operating conditions (pressure, temperature), geometry and thickness of gasket, type and geometry of flange and proper installation procedure.

This statement is issued on request of company

Euroguarco SpA.
V. Pietralba 1, 19021 La Spezia, Italy

Mirko Šindič
Director of R&D department



DONIT TESNIT,
družba za proizvodnjo
tesnilnih materialov, d.d.
MEDVODE
10

Zvonko Majcen
Head of technical services



All information data are based on years of experience in production and operation of sealing elements. However, in view of the wide variety of possible installation and operating conditions one cannot draw final conclusions in all application cases regarding the behavior in gasket joint. The data may not, therefore, be used to support any warranty claims.
Whenever there is any doubt, our staff will be pleased to assist you in finding the optimum sealing solutions.

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