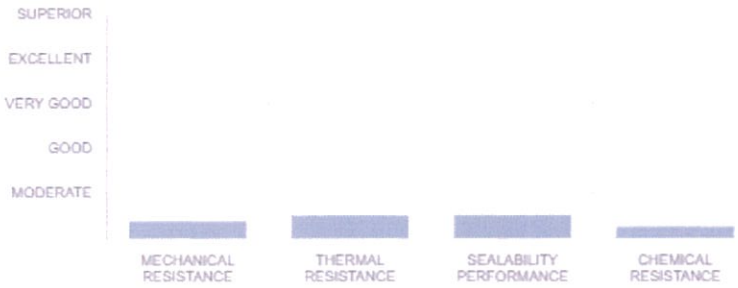
# DONIT® | TESNIT®BA-SOFT



TESNIT® BA-SOFT gasket material sheet has been specially developed for demanding applications where only low bolt loads are permissible and flange irregularities need to be compensated. It offers high compressibility and increased recovery in addition to improved mechanical and thermal performances. It can be used for sealing mineral oils, fuels, lubricants, refrigerants, steam, air, and many other media.

## PROPERTIES




## APPROPRIATE INDUSTRIES & APPLICATIONS

- AUTOMOTIVE AND ENGINE BUILDING INDUSTRIES
- COMPRESSORS & PUMPS
- HEATING SYSTEMS
- REFRIGERATION & COOLING
- SHIPBUILDING
- VALVES

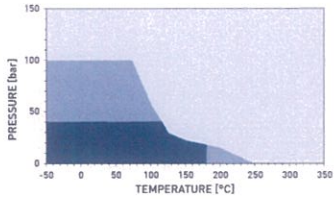
| | |
|---|---|
| Composition | Synthetic fibers, special fillers, NBR |
| Color | Lemon |
| Approvals and compliances | DVGW DIN 3535-6 EC 1935/2004 ELL (hot)<br>TZW W270 |
| Sheet dimensions | Size (mm): 1500 x 1500 \| 3000 x 1500 \| 4500 x 1500<br>Thickness (mm): 0.5 \| 1.0 \| 1.5 \| 2.0 \| 3.0<br>Other sizes and thicknesses available on request |
| Tolerances | ± 5 % on length and width<br>On thickness up to 1.0 mm ± 0.1 mm<br>On thickness above 1.0 mm ± 10 % |
| Surface finish | Standard: 4AS. Optional: graphite or PTFE |

## TECHNICAL DATA

Typical values for 2 mm thickness

| | | | |
|---|---|---|---|
| **Density** | DIN 28090-2 | g/cm³ | 1.5 |
| **Compressibility** | ASTM F36J | % | 25 |
| **Recovery** | ASTM F36J | % | 64 |
| **Tensile strength** | ASTM F152 | MPa | 6 |
| **Residual stress** | DIN 52913 | | |
| 50 MPa, 175°C, 16 h | | MPa | 30 |
| 50 MPa, 300°C, 16 h | | MPa | 20 |
| **Specific leak rate** | DIN 3535-6 | mg/(s·m) | 0.009 |
| **Thickness increase** | ASTM F146 | | |
| Oil IRM 903, 150°C, 5 h | | % | 2 |
| ASTM Fuel B, 23°C, 5 h | | % | 6 |
| **Compression modulus** | DIN 28090-2 | | |
| At room temperature: $\varepsilon_{KSW}$ | | % | 18.4 |
| At elevated temperature: $\varepsilon_{WSW/200°C}$ | | % | 14.6 |
| **Creep relaxation** | DIN 28090-2 | | |
| At room temperature: $\varepsilon_{KRW}$ | | % | 10 |
| At elevated temperature: $\varepsilon_{WRW/200°C}$ | | % | 1.6 |
| **Maximum operating conditions** | | | |
| Peak temperature | | °C/°F | 350/662 |
| Continuous temperature | | °C/°F | 250/482 |
| Continuous temperature with steam | | °C/°F | 200/392 |
| Pressure | | bar/psi | 100/1450 |

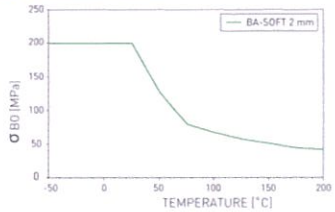
## P-T diagram EN 1514-1, Type IBC, PN 40, DIN 28091-2 / 3.8, 2 mm




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.

## $\sigma_{BO}$ DIAGRAMS DIN 28090-1




$\sigma_{BO}$ diagrams represent $\sigma_{BO}$ values for different gasket material thicknesses. These values indicate the maximum in-service compressive pressures which can be applied on the gasket area involved without destructing or damaging the gasket material.

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

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.