

**Gaskets** 

Fibre rubber sealings

# thoenes



## thoenes DO181

**thoenes**® DO181 is a sealing material based on aramid and graphite. The graphite gives the sealing material a good thermal and chemical resistance, the aramid the corresponding strength. Furthermore, the material is characterised by its high compressibility despite low density, its good stress resistance and its flexibility.

Basis: Aramid fibre, natural graphite, inorganic fillers, NBR

Colour: Grey

Surface coating: Standard - without non-stick coating

Other coatings on request

Certifications: AMTEC TA-Luft (VDI 2440)

**Applications:** Wide range of applications, especially for steam supply, chemicals and

heating system. Use in flanges, valves, pumps, compressors, heat

exchangers in power plants.

#### Technical specifications (typical values at 2 mm thickness)

Description		DIN 28091-2		FA-AC1-0
Density		DIN 28090-2	g/cm³	1.2
Compressibility		ASTM F 36/J	%	35
Resilience		ASTM F 36/J	%	17
Tensile strength		ASTM F152	MPa	4.5
Pressure resistance		DIN 52913		
50 MPa, T= 175°C,	16 h		MPa	40
50 MPa, T= 300°C,	16 h		MPa	35
Media resistance	in Oil IRM 903, 5 h, 150 °C	ASTM F 146		
Thickness increase			%	3
Weight increase			%	30
Media resistance	in ASTM fuel B, 5 h, 23 °C	ASTM F 146		
Thickness increase			%	2
Weight increase			%	25
Specific leakage rate		DIN 3535/6	mg/m*s	0.5
Creep deformation				
Change in thickness	at 20 °C, 50 MPa		%	33
Change in thickness	at 300 °C, 50 MPa		%	8
Change in thickness	at 400 °C, 50 MPa		%	17
Cold compression val	ue ε κsw	DIN 28090-2	%	26
Cold rebound value ε	DIN 28090-2	%	3.0	
Warm setting value ε	WSW/200 °C	DIN 28090-2	%	5
Warm rebound value	€ WRW/200°C	DIN 28090-2	%	0.5

**Dimensions:** Plate sizes \* 1500 mm x 1480 mm; 2000 mm x 1480 mm

Thickness \* 0.5 mm; 1.0 mm; 1.5 mm; 2.0 mm; 3.0 mm

<sup>\*</sup> Different sizes and thicknesses on request

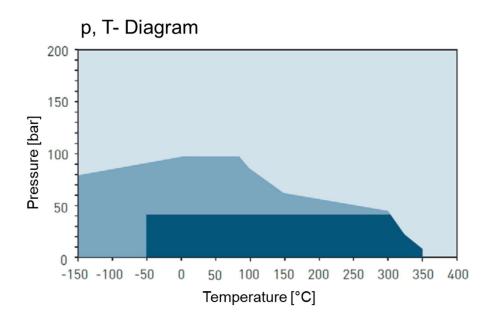




**Gaskets** 

#### Fibre rubber sealings

#### Recommendations for use



- General suitability Under common installation practices and chemical compatibility.
- Conditional sutability Appropriate measures ensure maximium performance for joint design and gasket installation. Technical consultation is recommended.
- Limited suitability Technical consultation is mandatory.

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#### Chemical resistance chart

Resistant
Resistance/ recommendation depends on operation conditions ✓ Not resistant

Substance				Substance				Substance			
Acetamide	✓			Dioxane		V		Oleic acid	✓		
Acetic acid, 10 %	4			Diphyl (Dowtherm A)	<b>V</b>			Oleum (Sulfuric acid, fuming)			<b>✓</b>
Acetic acid, 100 % (Glacial)		V		Esters		V		Oxalic acid	<b>V</b>		
Acetone		V		Ethane (gas)	<b>V</b>			Oxygen (gas)	<b>V</b>		
Acetonitrile			V	Ethers		V		Palmitic acid	<b>V</b>		
Acetylene (gas)	V			Ethyl acetate		v		Paraffin oil	V		
Acid chlorides			V	Ethyl alcohol (Ethanol)	<b>4</b>			Pentane	V		
Acrylic acid	<b>4</b>			Ethyl cellulose		V		Perchloroethylene		V	
Acrylonitrile			V	Ethyl chloride (gas)		v		Petroleum (Crude oil)	<b>4</b>		
Adipic acid	<b>4</b>			Ethylene (gas)	<b>4</b>			Phenol (Carbolic acid)			v v
Air (gas)	✓			Ethylene glycol	V			Phosphoric acid, 40 %		V	
Alcohols	✓			Formaldehyde (Formalin)		V		Phosphoric acid, 85 %		V	
Aldehydes		V		Formamide	V			Phthalic acid	V		
Alum	V			Formic acid, 10 %	<b>V</b>			Potassium acetate	V		
Aluminium acetat	✓			Formic acid, 85 %		V		Potassium bicarbonate	✓		
Aluminium chlorate	✓			Formic acid, 100 %		V		Potassium carbonate	✓		
Aluminium chloride	✓			Freon-12 (R-12)	V			Potassium chloride	✓		
Aluminium sulfate	V			Freon-134a (R-134a)	V			Potassium cyanide	V		
Amines			V	Freon-22 (R-22)		V		Potassium dichromate		V	
Ammonia (gas)		V		Fruit juices	V			Potassium hydroxide		V	
Ammonium bicarbonate	V			Fuel oil	V			Potassium iodide	V		
Ammonium chloride	V			Gasoline	V			Potassium nitrate	V		
Ammonium hydroxide		<u> </u>		Gelatin	_ ✓			Potassium permanganate		V	
Amyl acetate		V		Glycerine (Glycerol)	<b>□</b>			Propane (gas)	<u>_</u>	Ē	
Anhydrides	_	V		Glycols	<b>□</b>			Propylene (gas)	<b>□</b>		
Aniline	_		✓	Helium (gas)	<b>□</b>			Pyridine			<u>_</u>
Anisole	_			Heptane	<b>□</b>			Salicylic acid		V	
Argon (gas)	✓			Hydraulic oil (Glycol based)	<u></u> ✓		$\overline{}$	Seawater/ brine	□ ☑	T	
Asphalt	<b>4</b>	H		Hydraulic oil (Mineral type)	<b>V</b>	=	H	Silicones (oil/ greases)	<b>□</b>		=
Barium chloride	<b>4</b>	H		Hydraulic oil (Phosphate ester based)	<b>V</b>	H		Soaps	<b>V</b>		H
Benzaldehyde		Ū		Hydrazine			v v	Sodium aluminate	<b>□</b>		H
Benzene	_	ö		Hydrocarbons	V			Sodium bicabonate	<b>V</b>	H	H
Benzoic acid	7	H		Hydrochloric acid, 10 %		Image: square of the square of	H	Sodium bisulfite	<b>4</b>		H
Bio-diesel	<b>4</b>	H		Hydrochloric acid, 37 %			<b>□</b>	Sodium carbonate	<b>V</b>		H
Bio-ethanol	<b>4</b>	H		Hydrofluoric acid, 10 %			<u></u>	Sodium chloride	<b>V</b>		H
Black liquor	<b>4</b>	H		Hydrofuoric acid, 48 %	ö		<u>✓</u>	Sodium cyanide	<b>4</b>	H	H
Borax	_	H		Hydrogen (gas)	V			Sodium hydroxide		V	H
Boric acid	<b>V</b>	H		Iron sulfate	<b>☑</b>	H	H	Sodium hypochlorite (Bleach)	$\ddot{\Box}$	<b>V</b>	금
	V	H	H		<b>V</b>	H	H		<b>□</b>		님
Butadiene (gas)	7	H	H	Isobutane (gas)	<b>V</b>	H	H	Sodium silicate (Water glass)	<b>V</b>	H	H
Butane (gas)	V	H	H	Isooctane	<b>V</b>	H	H	Sodium sulfate Sodium sulfide	<b>V</b>	H	H
Butyl alcohol (Butanol)  Butyric acid	V	H			<b>V</b>	H	H		<b>V</b>	H	H
· · · · · · · · · · · · · · · · · · ·	_	_		Isopropyl alcohol (Isopropanol)	<b>V</b>		H	Starch	<b>V</b>		H
Calcium chloride	_			Kerosene			H	Steam	<b>V</b>	무	_
Calcium hydroxide		_	_	Ketones		<b>☑</b>		Stearic acid	_		무
Carbon dioxide (gas)		무		Lactid acid		무	_	Styrene			
Carbon monoxide (gas)			_	Lead acetate	V	무	무	Sugars			_
Cellosolve		<b>☑</b>		Lead arsenate	☑ ☑		무	Sulfur	_	<b>☑</b>	무
Chlorine (gas)	_	V		Magnesium sulfate	V			Sulfur dioxide (gas)		✓	
Chlorine (in water)	_	✓ ✓	-	Maleic acid	V		H	Sulfurio acid, 20 %			
Chlorobenzene	_	<b>☑</b>		Malic acid	☑ ☑	무	무	Sulfuric acid, 98 %	_		
Chloroform		<b>☑</b>		Methane (gas)	☑ ☑	무		Sulfuryl chloride			<b>☑</b>
Chloroprene		<b>☑</b>		Methyl alcohol (Methanol)	Ø			Tar	V	무	무
Chlorosilanes		V		Methyl chloride (gas)		☑ □	무	Tartaric acid			무
Chromic acid			<b>☑</b>	Methylene dichloride		V	무	Tetrahydrofuran (THF)	_	<u> </u>	
Citric acid				Methyl ethyl ketone (MEK)	_	V	-	Titanium tertachloride			<b>☑</b>
Copper acetate	V	무		N-Methyl-pyrrolidone (NMP)		<u>a</u>	무	Toluene			무
Copper sulfate				Milk	V	무	무	2,4-Toluenediisocyanate		V	뮈
Creosote	_	V		Mineral oil (ASTM no. 1)	V		므	Transformer oil (Mineral type)			
Cresols (Cresylic acid)		✓		Motor oil	V		무	Trichloroethylene		V	뮈
Cyclohexane		무		Naphtha Naphtha			무	Vinegar			무
Cyclohexanol				Nitric acid, 10 %		Image: section of the		Vinyl chloride (gas)		V	무
Cyclohexanone		V		Nitric acid, 65 %	<u>_</u>		V	Vinylidene chloride		V	
Decalin		무		Nitrobenzene		<u>a</u>	무	Water	V	무	
Dextrin				Nitrogen (gas)				White spirits	V	무	무
Dibenzyl ether	-	<b>☑</b>		Nitrous gases (NO <sub>x</sub> )		<u>a</u>		Xylenes	☑ □	무	
Dibutyl phthalate	_	<b>☑</b>		Octane	<b>✓</b>	무	무	Xylenol			<b>☑</b>
Dimethylacetamide (DMA)	_	V		Oils (Essential)	V	무		Zinc sulfate		무	무
Dimethylformamide (DMF)		<b></b> ✓		Oils (Vegetable)	<b>V</b>						
The recommendations made here serve only as a guideline for the selection of a suitable gasket. Since the function and durability of a gasket depends on a large number of factors, the information provided cannot be used to substantiate warranty claims. If there are special approval regulations these must be observed.											

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