

PRODUCT DATA SHEET

1.0 SCOPE

- 1.1 This specification describes style 553 which is a non asbestos sheet gasket material specifically designed to keep the environment free from hazardous substances by combining excellent sealing properties with an ecological composition.
- 1.2 Product 553 is manufactured for the oil refining industry, the chemical industry, the pulp and paper industry and power plants.

2.0 CONTENT AND CONSTRUCTION

- 2.1 Content
 - 2.1.1 Glass fibres
 - 2.1.2 Aramid fibres
 - 2.1.3 NBR
 - 2.1.4 Fillers
- 2.2 Construction
 - 2.2.1 Glass and Aramid fibres with an NBR binder
- 2.3 Colour
 - 2.3.1 Green with black print

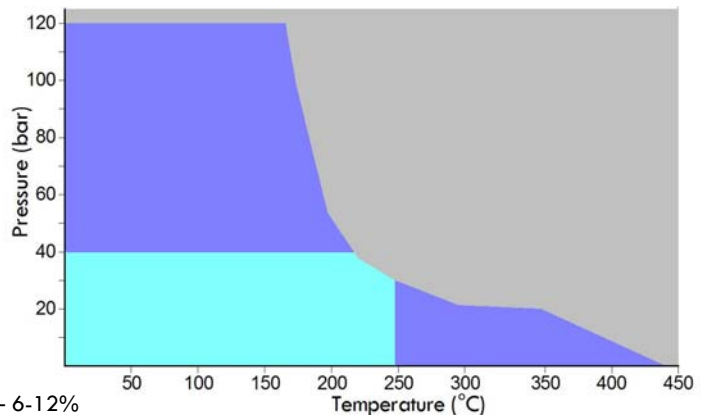


3.0 TYPICAL PROPERTIES

- 3.1 Pressure and temperature capabilities

	resistant
	resistant, but ensure that proper installation procedures are followed
	generally not resistant, consult engineering

*Pressure and temperature capabilities are an indication only.
Always consult Chesterton application engineering when in doubt.*



- 3.2 Physical properties
 - 3.2.1 Compressibility (ASTM F36/J) – 6-12%
 - 3.2.2 Recovery (ASTM F36/J) >55%
 - 3.2.3 Tensile strength (DIN 52910) – 9 Mpa
 - 3.2.4 Stress resistance (DIN 52913)
 - 16h, 300°C, 50 MPa – 30 MPa
 - 16h, 175°C, 50 MPa – 35 MPa
 - 3.1.7 Seal ability (DIN 3535/6) – 0.03 mg/(s*m)
 - 3.1.8 Thickness increase (ASTM F146)
 - Oil IRM 903, 5h, 150°C – <5%
 - ASTM Fuel B, 5h, 23°C – ≤5%
- 3.3 Chemical properties
 - 3.3.1 This material can be used in water, hydrocarbons, alcohols, oils, steam. See chemical resistance chart.
- 3.4 Approvals
 - 3.4.1 553 has a DVGW and KTW approval and is fire safe according to API 607 (all pending)
 - 3.4.2 BS 7531 Grade X

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CHEMICAL RESISTANCE TABLE

- A Compatible
 B Moderately compatible
 C Not compatible

Acetamide	A	Ethyl acetate	B	Oleic acid	A
Acetic acid 10%	A	Ethyl alcohol	A	Oleum	C
Acetic acid 100%	A	Ethyl chloride	B	Oxalic acid	B
Acetic ester	B	Ethylene	A	Oxygen	A
Acetone	B	Ethylene glycol	A	Palmitic acid	A
Acetylene	A	Formic acid 10%	A	Pentane	A
Adipic acid	A	Formic acid 85%	B	Perchloroethylene	B
Air	A	Formaldehyde	A	Phenol	C
Alum	A	Freon 12	A	Phosphoric acid	A
Aluminium acetate	A	Freon 22	B	Potassium acetate	A
Aluminium chlorate	A	Fuel oil	A	Potassium bicarbonate	A
Aluminium chloride	A	Gasoline	A	Potassium carbonate	A
Ammonia	B	Glycerine	A	Potassium chloride	A
Ammonium bicarbonate	A	Heptane	A	Potassium dichromate	A
Ammonium chloride	A	Hydraulic oil (Mineral)	A	Potassium hydroxide	A
Ammonium hydroxide	B	Hydraulic oil		Potassium iodide	A
Amyl acetate	B	(phosphate ester type)	B	Potassium nitrate	A
Aniline	C	Hydraulic oil (glycol based)	A	Potassium permanganate	A
Asphalt	A	Hydrazine	A	Propane	A
Barium chloride	A	Hydrochloric acid 20%	B	Pyridine	C
Benzene	A	Hydrochloric acid 36%	C	Salicylic acid	A
Benzoic acid	A	Hydrofluoric acid 10%	C	Silicone oil	A
Boric acid	A	Hydrofluoric acid 40%	C	Soap	A
Borax	A	Hydrogen	A	Sodium aluminate	A
Butane	A	Isobutane	A	Sodium bicarbonate	A
Butyl alcohol	A	Isooctane	A	Sodium bisulphite	A
Butyric acid	A	Isopropyl alcohol	A	Sodium carbonate	A
Calcium chloride	A	Kerosene	A	Sodium chloride	A
Calcium hydroxide	A	Lead acetate	A	Sodium cyanide	A
Carbon disulphide	C	Lead arsenate	A	Sodium hydroxide	B
Carbon dioxide	A	Magnesium sulphate	A	Sodium sulphate	A
Chloroform	B	Malic acid	A	Sodium sulphide	A
Chlorine, dry	C	Methane	A	Starch	A
Chlorine, wet	C	Methanol	A	Steam	A
Chromic acid	C	Methyl chloride	B	Stearic acid	A
Citric acid	A	Methylene dichloride	C	Sugar	A
Copper acetate	A	Methyl ethyl ketone	B	Sulphuric acid 20%	C
Creosote	C	Milk	A	Sulphuric acid 96%	C
Cresol	B	Mineral oil type ASTM no.1	A	Tar	A
Cyclohexanol	A	Naphtha	A	Tartaric acid	A
Cyclohexanone	B	Nitric acid 20%	A	Toluene	A
Decaline	A	Nitric acid 40%	B	Transformer oil	A
Dibenzyl ether	C	Nitric acid 96%	C	Trichlorethylene	A
Dimethyl formamide	C	Nitrobenzene	C	Water	A
Dowtherm	B	Nitrogen	A	White Spirit	A
Ethane	A	Octane	A	Xylene	B

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EN13555 TEST DATA

Minimum stress to seal $Q_{min/L}$ (at assembly), $Q_{min/L}$ (after off-loading) for $p = 20$ bar									
L [mg/(s*m)]	$Q_{min/L}$ [MPa]	$Q_{min/L}$ [MPa]							
		$Q_A=10$ MPa	$Q_A=20$ MPa	$Q_A=40$ MPa	$Q_A=60$ MPa	$Q_A=80$ MPa	$Q_A=100$ MPa	$Q_A=120$ MPa	$Q_A=140$ MPa
10^{-9}	5	5	5	5	5	5	5		5
10^{-1}	11		5	5	5	5	5		5
10^{-2}	26			5	5	5	5		5
10^{-3}	43				7	5	5		5
10^{-4}	62					13	7		5
10^{-5}	82						27		12
10^{-6}	116								90
10^{-7}									
10^{-8}									

Minimum stress to seal $Q_{min/L}$ (at assembly), $Q_{min/L}$ (after off-loading) for $p = 40$ bar									
L [mg/(s*m)]	$Q_{min/L}$ [MPa]	$Q_{min/L}$ [MPa]							
		$Q_A=10$ MPa	$Q_A=20$ MPa	$Q_A=40$ MPa	$Q_A=60$ MPa	$Q_A=80$ MPa	$Q_A=100$ MPa	$Q_A=120$ MPa	$Q_A=140$ MPa
10^{-9}	10		10	10	10	10	10		10
10^{-1}	18		10	10	10	10	10		10
10^{-2}	31			10	10	10	10		10
10^{-3}	47				11	10	10		10
10^{-4}	65					20	11		10
10^{-5}	89						54		31
10^{-6}									
10^{-7}									
10^{-8}									

Relaxation ratio P_{QR} for stiffness $C = 500$ kN/mm				
Gasket stress [MPa]	ambient temperature	temperature 1 [100 °C]	temperature 2 [200 °C]	
Stress level 1 [30 MPa]	0.96	0.78	0.67	
Stress level 2 [50 MPa]	0.95	0.74	0.64	
P_{QR} at Q_{Smax}	0.99 at 220 MPa	0.72 at 180 MPa	0.57 at 120 MPa	

Maximal applicable gasket stress Q_{Smax}				
Q_{Smax} [MPa]	Q_{Smax} [MPa] – temperature 1 [200 °C]	Q_{Smax} [MPa] – temperature 2 [300 °C]	Q_{Smax} [MPa] – temperature 3	Q_{Smax} [MPa] – temperature 4
220	180	120		

Sekant unloading modulus of the gasket EG [MPa]				
Gasket stress [MPa]	ambient temperature	temperature 1 [200 °C]	temperature 2 [300 °C]	
10		1142	864	
20	902	1902	2472	
30	1811	2078	3701	
40	2084	2833	4416	
50	2403	3645	4513	
60	2693	3336	5246	
80	3333	3847	5634	
100	4178	4577	6890	
120	5978	4589	8140	
140	6670	4451		
160	6223	5270		
180	5732	5610		
200	5210			
220	5403			
240				
260				
280				
300				
320				
340				
360				
380				
400				
420				
440				
460				
480				
500				

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