SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Technical apendix
Material overview

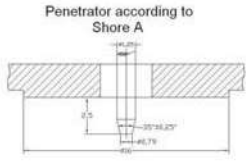
Hardness test of rubber elastic substances (Elastomer)

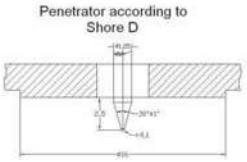
The hardness is an iportant parameter of rubber elastic substances (elastomer). There are several standardized techniques to measure the hardness. The check is made according to Shore A or Shore D and IRHD (International degree of hardness of rubber) / DIN53519

Hardness test according to DIN 53505, Shore A and D

This generally applied procedure enables a fast identification of the hardness. The tests conducted in a test laboratory are made according to the terms of DIN53505. At the test for Shore A, the resistance against infiltration of a truncated cone needed under a selected compressive force is measured. The hardness can be measured with a stand- or pocket tool. With pocket tools uncertainty of measurement can`t be exluded because of warying contact pressure. A sample which is not thick enough will lead to higher measured data (if the sample is less thick than 6 mm it is recommended to measure according to IHRD). A test too close to the border of the sample may lead to an artificially low result.

Shore A	Technical usage
100 98 95 92	high hardness
90 88 85 82 80	hard
78 75 72 70 68	medium hard
65 62 60 58 55 52	medium soft
50 48 45 42 40	soft
38 35 32	high softness





Hardness test according to IRHD/DIN 53519

With this method the hardness of rubber samples is determined. It is measured how a selected bowl is deformed under a selected pressure into the sample This test is made with special test control units, and is generally not matchable to the hardness test according to Shore A.

SI and legal units

Measurement	Formula symbol	SI-unit (Système Internationale d`Unitès)	More accredited units
Absorbed dose	D	Gy (gray)	
Amount of substance	n	mol (Mol)	
Amperage	I	A (ampere)	
Area	A	m²	a (Are), ha (hectare)
Electr. conductance	G	S (siemens)	
Electr. inductance	L	H (Henry)	
Electr. resistance	R	Ω (ohm)	
Electr. potential	U	V (volt)	
Energy	W, E	J (joule)	kWh (kilowatt hour)
Force	F	N (newton)	
Frequency	f	Hz (hertz)	1/s
Gravity acceleration	g	m/s²	
Illuminance	E	Lx (lux)	
Length	l	m (metre)	µm (micrometre), mm, cm, dm, km
Light level	I	cd (candela)	
Power	P	W (watt)	
Pressure	p	Pa (pascal)	bar
Radioactivity	A	Bq (berquerel)	
Rational speed	n	1/s	1/min, min¯¹, rpm
Sound power level	L_p	W/W	dB (decibel)
Sound pressure level	L_p	Pa/Pa	dB (decibel)
Speed	v	m/s²	km/h
Temperature	T, t	K (Kelvin)	°C
Time	t	s (second)	min, h (hour), d (day), a (year)
Torsional moment	M	Nm (Newtonmetre)	
Volume	V	m³	l, L (litre)
Weight	m	kg (kilogramme)	g, t, u (atomic mass unit), Kt (metric carat)
Weight force	G	N (newton)	

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Material overview

Abbreviation	Chemical Name	Trade names® (examples)
Elastomers		
ACM	Acrylic rubber	Cyanacrylm Europrene AR
AEMI	Ethylene-acrylic-rubber	Vamac
PUR (AU) (EU)	Polyurethane-rubber (Polyester-urethane-rubber) (Polyether-urethane-rubber)	Vulkollan, Desmopan, Moltopren, Elastollan, Urepan, Elsthane, Simputhan
BIIR	Bromobutyl rubber	
CIIR	Chlorobutyl rubber	Esso Butyl HT 10
CO	Epichlorohydrin polymer	Herclor H, Hydrin 100
CR	Chlorobutadiene rubber	Neoprene, Baypren
CSM	Chlorosulfonated polyethylene	Hypalon
ECO	Ethylene oxide epichlorohydrin rubber	Hydrin,Herclor, Epichlomer
EPDM EPM	Ethylene propylene diene monomer rubber Ethylene probylene copolymer	Nordel, DSM (Keltan), Dutral, Buna EP
FFPM (FFKM)	Perfluoroelastomer	Kalrez, Simriz
FPM (FKM)	Fluoroelastomer	Viton, Fluorel, Tecnoflon
FVMQ Q, MQ, MVQ, VMQ	Fluorosilicone Methyl silicone Vinyl methyl silicone	Silopren, Silastik, Silicone, Rhodorsil
IIR	Butyl rubber	Polysarbutyl, Esso Butyl, Polysar Butyl
NBR X-NBR NEM (H-NBR)	Acrylonitrile butadiene rubber Carboxylated nitrile rubber Hydrogenated acrylonitrile butadiene rubber	Perbunan N, Chemiegum, Buna N, Nitril
NR	Natural rubber	Para
SBR	Styrene butadiene rubber	Buna SL, Soloprene, Dunatex, Krynol

Thermoplastics		
ABS	Acrylonitrile butadiene styrene	Lustran, Novodur, Terluran
PA	Polyamide	Nylon, Sustamid, Durethan, Rilsan
PC	Polycarbonate	Makrolon, Lexan, Sustonat
PE (PE-HMW, PE-UHMW)	Polyethylene	Hostalen, Baylon, Sustylen (RCH 500, RCH 1000)
PEEK	Polyaryletherketone	Victrex, Ultrax
PEI	Polyetherimide	Ultem
PES	Polyethersulfone	Ultrason
PMMA (Acrylglass)	Polymethyl methacrylate	Plexiglass, Resarit, Degalan, Altuglas
POM	Polyoxymethylene	Delrin, Hostaform, Ultraform, Sustarin
PP	Polypropylene	Novolen, Hostalen PP, Vestolen P, Eltex P
PSU	Polysulfone	Udel, Ultrason S
PTFE	Polytetrafluoroethylene	Teflon, Hostalflon TF, Fluon
PVC	Polyvinyl chloride	Hostalit, Mipulam, Trovidur, Vestolit, Vnidur
PVDF	Polyvinylidene fluoride	Solef, Dyfor

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Material overview

Abbreviation	Operating temperatures	Stability (List of resistance on the folloiwing pages)					Characteristics
		Petro-leum Oil	Gaso-line	Sulphuric acid (conc.)	Wa-ter	Ozo-ne	
Elastomers							
ACM	approx -25 to +130 °C	1	2	-	3	2	Seals and molded parts with petroleum oil contact, good aging and ozone resistance
AEM	approx -40 to +150 °C	1	2	-	3	2	Seals and molded parts, good resistance to petroleum oil, water and coolants. Good weather and ozone resistance
PUR (AU) (EU)	approx. -30 to + 80 °C	2 (AU)	1	3	3	1	Versatile material. Very high notch impact strength and resistance to wear and tear. Good stability in water, petroleum oil and fats. Very good aging and ozone resistance
BIIR	approx. -40 to +150 °C	3	3	2	1	3	Good resistance to acids, glycol brake fluids, hot water.
CIIR	approx. -40 to +140 °C	3	3	2	1	3	Good resistance to acids, glycol brake fluids, hot water.
CO	approx. -40 to +140 °C	1	2	-	1	1	Low gas permeability, good weather and ozone resistance.
CR	approx. -45 to +100 °C	3	2	3	2	3	Good mechanical properties, weather and ozone resistant. Does not spontaneously combust.
CSM	approx. -20 to +120 °C	3	3	2	1	1	Good chemical, aging and ozone resistance, flammable
ECO	approx. -40 to +140 °C	1	2	-	1	1	Good resistance to petroleum oil and fats, to gases such as for example propane and butane.
EPDM EPM	approx. -50 to +150 °C	3	3	1	1	1	Versatile material (sealing). Good stability in hot water, very good aging, weather and ozone resistance.
FFPM (FFKM)	approx. -15 to +230 °C	1	1	1	1	1	Excellent chemical resistance, for safety related applications
FPM (FKM)	approx. -20 to +200 °C	1	1	1	1	1	Versatile material, very good oil and chemical resistance, heat resistant
FVMQ Q, MQ MVQ, VMQ	approx. -80 to +175 °C approx. -60 to +180 °C approx. -60 to +200 °C	1 2 2	1 3 3	- 3 3	- 1 2	1 1 1	High thermal resistance, aging, ozone, and weather resistant. Good insulating properties. The material FBMQ also has improved resistance to fuels and oils.
IIR	approx. -40 to +150 °C	3	3	1	1	3	Good resistance to acids, glycol brake fluids, hot water.
NBR X-NBR (H.NBR)	approx. -30 to +100 °C approx. -25 to +100 °C approx. -30 to +150 °C	1	2	3	1	3	Versatile material. Seals and molded parts with petroleum oil or fuel contact. NBR has poor ozone and weather resistance. X-NBR is more wear resistant. H-NBR has improved mechanical properties and is abrasion resistant.
NR	approx. -60 to + 80 °C	3	3	3	2	3	High mechanical stability and elasticity, high resistance to alternating bending, flammable.
SBR	approx. -50 to +100 °C	3	3	2	2	3	Improved abrasion- and aging resistance.Good resistance to brake fluid.
Thermoplastics							
ABS	approx. -50 to + 70 °C	1	3	1	1	1	High scratch and impact resistance, chemical resistant. Limited colorfastness.
PA	approx. -40 to +100 °C	1	1	3	1	3	Abrasion resistant and durable. High resistance ratings, good emergency running properties.
PC	approx. -40 to +110 °C	1	3	3	1	1	Durable, impact resistant and weather resistant, almost unbreakable. Good adhesion properties.
PE	approx. -50 to + 90 °C (-150/-200 to + 80 °C)	2	2	2	1	3	Good chemical stability, very high mechanical stability. High break resistance.
PEEK	approx. -40 to +250 °C	1	1	3	1	1	Very good chemical resistance, universal application. High thermal resistance.
PEI	approx. -40 to +170 °C	3	3	3	1	-	Thermostable, durable, good chemical resistance.
PES	approx. -40 to +180 °C	1	1	3	1	-	High thermostability, stable, durable.
PMMA	approx. -40 to + 75 °C	1	1	2	1	1	Weather resistant, transparent, glass-clear, good adhesion properties.
POM	approx. -40 to +100 °C	1	1	3	1	3	Good mechanical properties, abrasion resistant, dimensionally stable, good chemical resistance.
PP	approx. - 5 to +100 °C	2	2	1	1	3	High thermostability, hard and rigid, susceptible to cold, good welding properties, flammable.
PSU	approx. -40 to +160 °C	1	2	3	1	-	Durable, high stability, good dielectric properties.
PTFE	approx. -200 to +260°C	1	1	1	1	1	Extremely temperature and chemical resistant, physiologically harmless, does not spontaneously combust, very low friction coefficient.
PVC	approx. -10 to + 60 °C	2	3	3	1	1	Good chemical resistance and mechanical ratings, soft PVC hardens in gasoline and oil, good welding and adhesion properties.
PVDF	approx. -40 to + 100 °C	1	1	1	1	1	Abrasion resistant, high chemical resistance.

1 = very good resistance, little or no effect (for thermoplastics moisture expansion < 3 % or loss in weight < 0.5 %)
2 = good resistance, low to moderate effect (for thermoplastics: moisture expansion 3 - 8 % or loss in weight 0.5 - 5 %)
3 = not resistant, strong effect to complete destruction (for thermoplastics: moisture expansion 3 - 8 % or loss in weight > 5 %)
= no data available
All values and descriptions are only approximate and are not binding in every application.
No guarantees can be made

Issue 08/14

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Characteristics of Plastic Materials

Raw materials group	Abbreviation according to DIN EN ISO 1043-1	Trade Name®	Mechanical properties				Temperature resistance	Thermostable DIN 53461 °C
			Density DIN 53479 g/cm³	Tensile strength DIN 53455 %	Fracture strain DIN 53455 %	Elastic modulus DIN 53457 N/mm²		
Acrylonitrile-butadiene styrene-copolymer	ABS	Cycolac	1,04	35	45	2100	-50 to +70	+97
Fabric reinforced laminate	HGW	HGW-2082	1,4	80		7000	to +110	
Polyamide	PA 6	Sustamid 6	1,14	80 tr/60 lf	>30 tr/200 lf	3000 tr/1500 lf	-40 to +100	+95
Polyamide	PA 6 GF 30	Sustamid 6 GF 30	1,35	180 tr/120 lf	>4 tr / >7 lf	9000 tr/7000 lf	-40 to +120	+220
Polyamide	PA 6 + MoS_2	Sustamid 6 + Mo	1,14	80 tr/60 lf	>30 tr/200 lf	3000 tr/1500 lf	-40 to +120	+100
Polyamide	PA 6 G + Oel	Sustamid 6 GOL	1,14	80 tr/60 lf	>30 tr/100 lf	3000 tr/1800 lf	-40 to +105	+95
Polyamide	PA 6 G	Sustamid 6	1,15	85 tr/60 lf	>20 tr/100 lf	3300 tr/2000 lf	-40 to +105	+95
Polycarbonate	PC	Sustonat|Makrolon	1,2	>60	>80	2300	-40 to +110	+138
Polycarbonate	PC GF 20	Sustonat GF 20	1,42	100	3,5	5900	-40 to +120	+147
Polyethylene	PE-HD	Finathene	0,95	30	1000	1000	-50 to +90	+70
Polyethylene	PE-HMW	RCH 500	0,95	28	600	1100	-200 to +80	+60
Polyethylene	PE-UHMW	RCH 1000	0,93	40	>350	680	-150 to +90	+65
Polyletheretherketone	PEEK	Sustatec PEEK	1,32	95	45	3650	to +250	+160
Polyletheretherketone	PEEK-GF30	Victrex	1,49	157	2,2	10300	-40 to +260	+340
Polyetheretherketone	PEEK-mod.	Victrex	1,48	118	3	10000	-40 to +260	
Polyetherimide	PEI	Sustatec PEI	1,27	105	60	3100	to +170	+20
Laminated paper	HP-2061	Pertinax	1,4	120		7000	to +120	
Polyethersulfone	PES	Sustatec PES	1,37	85	40	2500	to +200	+215
Thermoplastic polyester	PET	Sustanat bzw. Sustadur	1,38	90	>20	3000	-20 to +120	+80
Acyrlic glass	PMMA	Degalan	1,18	72	5	3300	-40 to +75	+95
Polyoxymethylene	POM	Sustarin	1,41	70	40	3100	-40 to +100	+124
Polypropylene	PP	Vestolen	0,91	36	>100	1350	+5 to +100	+88
Polypropylene	PP-R	Vestolen	0,9	40	800	700	-5 to +100	+75
Polyphenylene ether	PPE (PPO)	Sustatec PPE mod.	1,1	45	50	2400	-40 to +105	+100
Polystyrene	PS / SB	Vestyron	1,03	25	50	1900	-50 to +70	+89
Polysulfone	PSU	Sustatec PSU	1,24	75	>50	2800	-40 to +160	+175
Polytetrafluoroethylene	PTFE	Teflon	2,14-2,19	14-39	200-500	400-800	-200 to +260	+50
Polyvinyl chloride	PVC		1,42	58	15	3000	-10 to +60	
Polyvinyl chloride, chlorated	PVC-C		1,55	80	15	3000	-15 to +85	+102
Polyvinyl chloride, high impact resistant	PVC-HI		1,38	30	30	2600	-40 to +60	+69
Polyvinyl chloride, unplasticized	PVC-U		1,36	30	33	3000	-15 to +60	+72
Polyvinylidene fluoride	PVDF	Sustatec PVDF	1,78	55	>100	2100	-40 to +110	+115

The values shown in the table are approximate or average values which may vary based on different proccessing conditions, material additives and environmental influences. All values and descriptions reflect our current knowlege and are not binding in every application.
Adhesive capability rating system: + = yes, o = conditional, - = no

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Characteristics of Plastic Materials

Abbreviation according to DIN EN ISO 1043-1	Specific volume resistivity DIN 53482 Ohm x cm	Insulating strength DIN 54481 KV/mm	Moisture absorption at 50 % rel. LK	Adhe-sive capabi-lity	Characteristics	Fields of application
ABS	≥10^{14}	150	0,4	+	Hard, scratch resistant, impact resistant, high chemical resistance, can be used in electroplating	Textile coils, fittings, machine control panels, housing, eyeglass frames
HGW	n. DIN 53480-83	n. DIN 53480-83	n. DIN 53495	+	High mechanical stability, oil and leach resistant, good machinibility	Structural elements in machine construction, for example gear wheels
PA 6	10^{15} tr / 10^{12} lf	12	2,5 - 4,0	+	Durable, abrasion resistant, good vibration damping, good emergency running properties	Gear wheels, rollers, bearing bushings, sliding elements, dowels, buoyancy devices, fittings
PA 6 GF 30	10^{15} tr / 10^{12} lf	60 tr / 30 lf	2,0 - 2,5	+	High stability, rigidity, very abrasion resistant	Gear wheels, barrels, rollers, housing
PA 6 + MoS_2	10^{15} tr / 10^{12} lf	12	2,5 - 3,5	+	Very high wear resistance, high firmness and rigidity ratings, good emergency running properties	Gear wheels, rollers, bearing bushings, sliding elements
PA 6 G + Oel	10^{15} tr / 10^{12} lf	18	2,0 - 3,0	-	High abrasion resistance, low coefficient of sliding frictionl	Bearings, sliding elements
PA 6 G	10^{15} tr / 10^{12} lf	20	2,0 - 3,0	+	Hard, pressure and abrasion resistant, good antifrictional properties	Gear wheels, barrels, rollers
PC	>10^{16}	32	0,2	+	Durable, almost unbreakable, high-impact resistant, transparentt	Security glazing, protective hoods, covers, fan impellers, contact strips
PC GF 20	10^{16}	35	0,1	+	High stability, low thermal expansion	Safety helmets, covers, housing
PE-HD	>10^{15}	>70	0,01	-	Good mechanical stability, low density, good chemical resistance	Gear wheels, sliding elements, piping, fittings, handles, coils, containers
PE-HMW	10^{17}	90	0	-	Harder and more rigid, otherwise similar to PE-UHMW, no moisture absorption	Rails, sliding bearings, molded and rotating parts
PE-UHMW	>10^{14}	>70	0,01	-	High chemical resistance, very high tear resistance and tensile strength, almost unbreakable	Slideways, conveyor screws, pump components, chains, protective plates, molded and rotating parts, food processing
PEEK	4,9 x 10^{16}	22	0,2	+	Very good chemical, thermal and dielectric ratings	Molded and rotating parts, electrical insulation material
PEEK-GF30	≥10^{13}		0,11	+	Good mechanical properties	Molded and rotating parts
PEEK-mod.	≥10^{5}	24,5	0,1	o	Very good chemical, thermal ratings, good mechanical properties	Molded and rotating parts, housing
PEI	10^{17}	33		+	Thermostable, transparent, durable, good chemical resistance	Fan impellers, covers, housing
HP-2061	n. DIN 53480-83	n. DIN 53480-83	n. DIN 53495	+	Very rigid, very good dielectric properties, oil and leach resistant	Insulation material in low voltage devices
PES	>10^{17}	45	~0,7	+	Hard, rigid, tolerable to superheat sterilization, high thermostability	Gear elements, coil forms, medical technology
PET	10^{16}	20	0,2	+	Durable, hard, dimensionally stable, low cooling point, good chemical and electrical properties	Sliding elements, rails
PMMA	>10^{15}	30	0,3	+	Glass-clear, weather and UV resistant, hard surface	Covers, partitions, switch components, piping, displays
POM	10^{15}	>50	0,25	-	Good machinibility, abrasion resistant, dimensionally stable	Gear wheels, valve bodies, fittings, blade wheels, sliding elements, bearings
PP	>10^{16}	70	0,01	o	Good chemical resistance, shatterproof, low density, low moisture absorption	Ventilators, covers, housings, drainpipe fittings, food processor components
PP-R	>10^{16}	70	0,01	o	Higher tensile and ductile strength, otherwise similar to PP	Ventilators, heating ducts, armature
PPE (PPO)	10^{15}	35	0,08	o	High chemical resistance, low density	Containers, housing
PS / SB	>10^{16}	200	<0,1	+	Hard surface, good dielectric properties, coil forms	Packaging, sight glassesr
PSU	5 x 10^{16}	30	0,25	+	High stability, transparent, good dielectric properties	Covers, housing, terminal strips, medical technology
PTFE	10^{18}	40-80	0	o	Highest thermostability and chemical resistance, lowest friction coefficient, physiologically harmless	Sliding elements, chemical seals, armatures, electrical insulation
PVC	10^{15}	39	<0,1	+	Good dielectric properties, good chemical resistance	Containers, covers, housing, pipes, electrical insulation
PVC-C	>10^{15}	20-40	0,2	+	Higher tensile strength and temperature resistance, otherwise similar to PVC	Armatures, pumps, covers
PVC-HI	>10^{15}	20-40	0,2	+	Higher cold resistance and impact resistance, otherwise similar to PVC	Ventilation shafts, fans, covers, containers, pipes
PVC-U	>10^{15}	20-40	0,2	+	Higher fracture strain, otherwise similar to PVC	Covers, containers
PVDF	5 + 10^{14}	20,5	<0,04	o	Abrasion resistant, good dielectric properties, high density, good chemical resistance	Medical components, seals, pump components, covers, containers

The values shown in the table are approximate or average values which may vary based on different proccessing conditions, material additives and environmental influences. All values and descriptions reflect our current knowlege and are not binding in every application.
Adhesive capability rating system: + = yes, o = conditional, - = no

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Conversion factors and tables

Pressure	Pa	Mpa	bar	kp/cm² (1 at)	atm	Torr (mm Hg)	mWs	PSI
1 Pa (=1 N/m²)	1	0,0000001 = 10^{-6}	0,000001 = 10^{-5}	0,0000102 = $1{,}02 \cdot 10^{-5}$	0,00000987 = $9{,}87 \cdot 10^{-5}$	0,00750	0,000102 = $1{,}02 \cdot 10^{-4}$	0,000145 = $1{,}45 \cdot 10^{-4}$
1 Mpa (=1 N/mm²)	0,000001 = 10^{-6}	1	10	10,20	9,87	7519	101,937	145
1 bar (1000 mbar)	0,000001 = 10^{-6}	0,10	1	1,02	0,987	751,90	10,197	14,20
1 kp/cm² (1 at)	98066,5	0,09806	0,98067	1	0,968	737,60	10	14,22
1 atm	101325	0,101325	1,01325	1,032	1	761,65	10,326	14,69
1 Torr (mm Hg)	133,32	0,0000133 = $1{,}33 \cdot 10^{-4}$	0,00133	0,00136	0,00132	1	0,0136	0,02
1 mWs	9806,7	0,009807	0,09807	0,1	0,0968	73,76	1	1,42
1 PSI	6896,6	0,006896	0,068966	0,07034	0,0681	51,85	0,7032	1

Lenghts	inch	foot (ft)	yard (yd)	mile	mm	cm	m	km
1 inch (in)	1	0,0833	0,02778	0,0000158 = $1{,}58 \cdot 10^{-5}$	25,4	2,54	0,0254	0,0000254 = $2{,}54 \cdot 10^{-5}$
1 foot (ft)	12	1	0,3333	0,0001894 = $1{,}89 \cdot 10^{-5}$	304,8	30,48	0,3048	0,0003048 = $3{,}05 \cdot 10^{-4}$
1 yard (yd)	36	3	1	0,0005683 = $5{,}68 \cdot 10^{-5}$	914,4	91,44	0,9144	0,0009144 = $9{,}14 \cdot 10^{-4}$
1 mile	63346	5278,78	1759,62	1	1609000	160900	1609	1,609
1 mm	0,03937	0,003281	0,0010936	0,0000006 = $6 \cdot 10^{-7}$	1	0,1	0,001	0,000001 = 10^{-6}
1 cm	0,3937	0,03281 = $6{,}2 \cdot 10^{-6}$	0,010936	0,0000062	10	1	0,01	0,000001 = 10^{-5}
1 m	39,37	3,281	1,094	0,00062 = $6{,}2 \cdot 10^{-4}$	1000	100	1	0,001
1 km	39370	3281	1094	0,6215	1000000	100000	1000	1

Face	inch² (sq in)	foot² (sq ft)	yard² (sq yd)	cm²	dm²	m²	hectare (ha)
1 inch (sq in)	1	0,006944	0,000772 = $7{,}72 \cdot 10^{-4}$	6,452	0,6452	0,000645	$6{,}45 \cdot 10^{-8}$
1 foot (sq ft)	143,98	1	0,1111	929	9,29	0,0929	$9{,}29 \cdot 10^{-6}$
1 Yard² (sq yd)	1296	9	1	8361	83,61	0,8361	$8{,}36 \cdot 10^{-5}$
1 cm²	0,155	0,001076	0,0001197 =$1{,}12 \cdot 10^{-4}$	1	0,01	0,0001 = 10^{-4}	0,00000008 = 10^{-8}
1 dm²	15,5	0,1076	0,01196	100	1	0,01	0,00001 = 10^{-6}
1 m²	1550	10,76	1,196	10000	100	1	0,0001 = 10^{-4}
1 hectare (ha)	1550031	107600	11960	100000000	1000000	10000	1

All values and descriptions can only be indicative and are not for ebery case of application authentic.
Any warranty is excluded.

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Conversion factors and tables

Volume	inch³ (sq in)	foot³ (sq ft)	yard³ (sq yd)	cm³	dm³	m³
1 inch³ (sq in)	1	0,0005786 = 5,78 • 10 $^{-4}$	0,0000214 = 2,14 • 10 $^{-5}$	16,39	0,01639	0,0000164 = 1,64 • 10 $^{-5}$
1 foot³ (sq ft)	1728	1	0,037	28316	28,32	0,0283
1 yard³ (sq yd)	46656	27	1	76456	764,56	0,7646
1 cm³	0,06102	0,0000353 = 3,53 • 10 $^{-5}$	0,0000013 =1,3 • 10 $^{-6}$	1	0,001	0,000001 = 10^{-6}
1 dm³	61,02	0,03532	0,00131	1000	1	0,001
1 m³	61023	35,32	1,307	1000000	1000	1

Mass	dram (dr)	ounce (oz)	pound (lb)	gram (g)	kilogram (kg)	ton (t) (metric)
1 dram (dr)	1	0,0625	0,003906	1,772	0,00177	1,77 10^{-6}
1 ounce (oz)	16	1	0,0625	28,35	0,02832	28,3 10^{-6}
1 pound (lb)	256	16	1	453,6	0,4531 =4,53 • 10 $^{-4}$	0,000453
1 gram (g)	0,5643	0,03527	0,002205	1	0,001	0,000001 =10 $^{-6}$
1 kilogram (kg)	564,3	35,27	2,205	1000	1	0,001
1 ton (t) (metrisch)	564383	35270	2205	1000000	1000	1

Temperature	°C	°F	K
1°C (Grad Celsius)	1	33,8	274,15
1 °F (Grad Fahrenheit)	-17,222	1	255,928
1 K (Kelvin)	-272,15	-457,87	1

Time	sec (second)	min (minute)	h (hour)
1 s (Sekunde)	1	0,0166667	0,0002778
1 min (Minute)	60	1	0,0166667
1 h (Stunde)	3600	60	1

Energy	Nm (Joule)	kWh	kpm	kcal
1 Nm (Joule)	1	0,0000003 = 3 • 10 $^{-7}$	0,1019	0,000238 = 2,38 • 10 $^{-4}$
kWh	3600000	1	366972,5	359,2
1 kpm	9,81	0,0000027 = 2,7 • 10 $^{-6}$	1	0,0234
1 kcal	4190	0,001164	427,1	1

Power	dram (dr)	ounce (oz)	pound (lb)	gram (g)	kilogram (kg)
1 W	1	0,001	0,001358	0,102	0,86
1 kW	1000	1	1,358	102	860
1 PS	736	0,736	1	75,075	632,96
1 kp m/s	9,8	0,0098	0,0133	1	8,43
1 kcal/h	1,163	0,01163	0,0158	0,1186	1

All values and descriptions can only be indicative and are not for ebery case of application authentic.
Any warranty is excluded.

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Conversion factors and tables

Speed	M/s	Foot/sec	Mile/h	Km/h	Inch/min	Cm/min
1 m/s	1	3,281	2,237	3,6	2363	6000
1 foot/sec	0,305	1	0,682	1,097	720	1829
1 mile/h	0,447	1,467	1	1,609	1056	2682
1 km/h	0,278	0,911	0,621	1	656	1667
1 inch/min	0,00042	0,00138	0,00095	0,00152	1	2,54
1 cm/min	0,01666	0,00055	0,0004	0,0006	0,3937	1

Conversion inch to mm

Inch/Brake value	Inch/ Decimal value	metric mm
1/64	0,016	0,397
1/32	0,031	0,794
3/64	0,047	1,191
1/16	0,063	1,587
5/64	0,078	1,984
3/32	0,094	2,381
7/64	0,109	2,778
1/8	0,125	3,175
9/64	0,141	3,527
5/32	0,156	3,969
11/64	0,172	4,366
3/16	0,188	4,726
13/64	0,203	5,159
7/32	0,219	5,556
15/64	0,234	5,953
1/4	0,250	6,350
17/64	0,266	6,747
9/32	0,281	7,144
19/64	0,297	7,541
5/16	0,313	7,937
21/64	0,328	8,334
11/32	0,344	8,731
23/64	0,359	9,128
3/8	0,375	9,525
25/64	0,391	9,922
13/32	0,406	10,319
27/64	0,422	10,716
7/16	0,438	11,112
29/64	0,453	11,509
15/32	0,469	11,906
31/64	0,484	12,303
1/2	0,500	12,700

Inch/Brake value	Inch/ Decimal value	metric mm
33/64	0,516	13,097
17/32	0,531	13,494
35/64	0,547	13,890
9/16	0,563	14,287
37/64	0,578	14,684
19/32	0,594	15,081
39/64	0,609	15,478
5/8	0,625	15,875
41/64	0,641	16,272
21/32	0,656	16,669
43/64	0,672	17,066
11/16	0,688	17,462
45/64	0,703	17,859
23/32	0,719	18,256
47/64	0,734	18,653
3/4	0,750	19,050
49/64	0,766	19,477
25/32	0,781	19,844
51/64	0,797	20,241
13/16	0,813	20,638
53,64	0,828	21,034
27/32	0,844	21,431
55/64	0,859	21,828
7/8	0,875	22,225
57/64	0,891	22,622
29/32	0,906	23,018
59/64	0,922	23,416
15/16	0,938	23,812
61/64	0,953	24,209
31/32	0,969	24,606
63/64	0,984	25,003
1/1	1	25,400

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Material Properties

Physical properties								
Basic elastomer	Trademark	Hardness range (Shore) (+/- 5)	Tensile strength N/ mm²	Rebound resilience at 20°C	Abrasion resistance	Resistance to permanent deformation (B)	Commitment to metal	Dielectric properties
Natural rubber (NR)	Crepe Sheets SMR 5 CV	40-90	4-15	++	++	++	++	++
Ethyl-ene-Propyl-ene-Diene Monomer (EPDM)	Keltan Vistalon Nordel Buna AP	40-90	6-13	+	+	+		++
Polychloro-pren (CR)	Baypren Neoprene	40-90	5-15	+	+	+	+	
Nitril rubber (NBR)	Perbunan N	45-90	4-14		+	+		-
Styrol-Butadiene-Rubber (SBR)	BUNA EM	45-90	4-15	+	++	+	++	+

General resistance against:									
Basic elastomer	Trademark	Chemical resistance (A)	Oil resistance (A)	Fuel resist-ance (A)	Solvent resistance (A)	Temperature Stability °C (C)	Ozone resistance	General weather resistance	Gas Impermea-bility
Natural rubber (NR)	Crepe Sheets SMR 5 CV	+	-	none	-	-40 to +80			
Ethyl-ene-Pro-pylene-Di-ene Monomer (EPDM)	Keltan Vistalon Nordel Buna AP	++	-	-		-40 to +120	++	++	
Polychlo-ropren (CR)	Baypren Neoprene	+	+	-	+	-25 to +100	++	++	+
Nitril rubber (NBR)	Perbunan N		++	+	+	-30 to +100		+	+
Styrol-Butadiene-Rubber (SBR)	BUNA EM	+	-	-	-	-30 to +80		+	

These indications are merely reference values and of purely character

A = In view of the multitude of chemicals, solvents, application temperatures and times, the value quoted may vary in some cases. For example, one type of elastomere which normally shows low resistance properties, might show a very good resist to certain media.
B = At relatively high, resp. low temperatures resistance generally drops.
C = These are borderline values which can vary depending on the composition of the mixture.
++ = excellent to very good
+ = good
= satisfactory to moderate
- = low to poor

Issue 08/14

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Material Properties

Thermal Behaviour							Physical Properties			
Basic elastomere	Trademark	Lowest application temperature ° C	Highest application temperature dry °C	water °C	oil °C	steam °C	Remaining deformation	Combustion behaviour	Weathering and ozoe resistance	Gluing properties
Natural rubber (NR)	Crepe Sheets SMR 5 CV	-40	+80	+70	-	-	++			++
Ethylene-Propylene-Diene Monomer (EPDM)	Keltan Vistalon Nordel Buna AP	-40	+120	+120	-	+120	+		++	
Polychloropren (CR)	Baypren Neoprene	-25	+100	-	-	-	+	+	+	++
Acryl-Nitrile-Butadien-Rubber (NBR)	Perbunan N	-30	+100	+80	+120	-	+			+
Styrol-Butadiene-Rubber (SBR)	BUNA EM	-30	+80	+70	-	-	+			+

Resistance to Fluid Media										
								Organic solutions		
Basic elastomer	Trademark	Water	Detergents	Acids	Lye solutions	Oils	Petrols	aliphatic hydrocarbons	aromatic hydrocarbons	Kebone
Natural rubber (NR)	Crepe Sheets SMR 5 CV	+	+			-	-	-	-	
Ethylene-Propylene-Diene Monomer (EPDM)	Keltan Vistalon Nordel Buna AP	++	+	+	+	-	-	-	-	+
Polychloropren (CR)	Baypren Neoprene	+	+	+	+				-	-
Acryl-Nitrile-Butadien-Rubber (NBR)	Perbunan N	+	+	+		+	+	+		-
Styrol-Butadiene-Rubber (SBR)	BUNA EM	+	+	+	+	-	-	-	-	

These indications are merely reference values and of purely character

A = In view of the multitude of chemicals, solvents, application temperatures and times, the value quoted may vary in some cases. For example, one type of elastomere which normally shows low resistance properties, might show a very good resist to certain media.
B = At relatively high, resp. low temperatures resistance generally drops.
C = These are borderline values which can vary depending on the composition of the mixture.
++ = excellent to very good
+ = good
= satisfactory to moderate
- = low to poor

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Resistance list

Chemical Assesssment System

1 = very good resistance, space or no attack.
The medium has little orlimited effect on the material. Environmental changes such as temperature, concentration, etc, can change the resistance.

2 = Resistance good, light to moderate attack
The material has a satisfactory usability. The medium may cause a continuous negative influence on the hose material. It can also lead to discoloration. ambience changes such as temperature, concentration, etc., can the cange resistance.

3 = medium resistance to short-term contact with
the medium for long-term contact with the media, the destruction of the material.

4 = not resistant, strong attack to complete Destruction
A blank space indicates that no assessment has been made. Please ask for the relevant recommendation.

Notes:
- The values are test results and apply only as a guide. These figures allow for a pre-selection, but in vital or extreme cases, practical tests must be conducted.
- The values are based (where otherwise indicated) on saturated or concentrated solutions.
- The test is conducted at standard temperature at 20 ° C when not otherwise specified.
- If your specific case does not use this information pleas contact us
- If solvent with other chemicals or water be mixed, the compatibility of these solvent must also be examined.
- There is no rule of discoloration. if discoloration occur, we ask for information, we will be happy to make an application recommendation.
- Even the permeability must be reviewed. It may be some media in the gaseous state-material to affect although the medium in the liquid state is suitable.

Medium	Natural-rubber (NR)	Styrol-Butadiene-rubber (buna) (SBR)	Polyurethane rubber (AU,EU)	Ethylene-Propylene-rubber (EPM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Siloprene) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM	Polyvinylchloride soft	Polyethylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon usw.) (general) (PA)	Polyacetal (POM) (general) **	PTFE Teflon® usw.)	Polyurethan	Cross-linked-polyethylene-rubber
Acetaldehyde	2	2	2	3	3	3	1	3	2	-	1	1	1-2	2	1	2	1
Acetamide	3	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Acetone	3	3	-	1	3	-	2	2	-	3	1	1	1	1	1	-	-
Acetonitrile	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1
Acetonphenone	3	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Acetylacetone	-	-	-	1	1	-	-		-	-	-	-		2	1	-	-
Acetylene gas	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Acetic acid 10%	2	2	-	1	1	2	3	1	2	3	1	1	-	1	1	-	-
Acetic acid 25%	3	3	-	1	2	-	3	2	2	-	2	1	-	3 - -	1	-	-
Acetic acid 50%	-	-	-	2	3	-	3	2	2	-	3	2	-	3 - -	1	-	-
Acetic acid 100% (concentrate)	-	-	-	3	-	-	3	2	-	-	2	2	-	3 - -	1	-	-
Acetic acid ethylester: s. ethyl acetate																	
Acetic acid hydride 50%	2	2	-	1	3	3	1	1	-	-	3	1	1		1	-	-
Acetic acid alumina: s. aluminium acetate																	
Acid: see spec. Title generally	1-3	1-3	3	1-2	2-3	3	2	1-3	1	2-3	1-2	1-2	3	2-3	1	-	-
Acrolein	3	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Acrylonitrile	2	2	-	1	1	-	2	3	2	-	1	1	1	1	1	-	-
Acrylic acid, ethyl ester: s Ethyl acrylate																	
Adipic acid	1	1	-	1	1	1		1	1	1	1	1	1	2	1	-	-
Adipic acid diethyl ester	3	3		1	3	-		1	-	-				1	1	-	-
Air, atmospheric, oil-free to+°C	70	70	80	120	90	90	175	120	200	70	90	100	120	120	200	-	-
Air, oleiferous, until +°C	-	-	80	-	90	100	175	120	200	70	90	100	120	120	200	-	-
Alum: s potassium aluminium sulfate																	
Aliphatic: see benzene and homologous general	-	-	2	-	2-3	1	-	-	1	3	-	2	1	1	1	-	-
Alcohol	1	1	2	1	1	1	1-2	1	1-2	1-2	1-2	1-2	1-2	1-2	1	-	-
Ally chloride	-	-	-	-	-	-	1			-	-	2	1	-	1	-	-
Ally alcohole	1	1	-	1	-	1	-	-	-	20°C2	-	-	-	-	-	-	2
Aluminium acetate, hydrous	1	1		1	1	1	-	1		1	1	1	1	2	1	-	-
Aluminium chloride, hydrous	1	1	1-2	1	1	1	-	1	1	1	1	1	1	-	1	-	-
Aluminium fluoride	1	1	3	1	1	1	1	1	1	1	1	1	1	1-2	1	-	-
Aluminium hydroxide	1	1	2	1	1	1	1		1	1	1	1	1	1	1	-	-
Aluminium nitrate, hydrous	1			1	1	1	2	1		1	1	1	1	2-3	1	-	-
Aluminium phosphate, hydrous(phosphoric acid fused aluminia)	1	1		1	1	1	1	1	1	1	1	1		2-3	1	-	-
Aluminium sulphat, hydrous	1	1	1	1	1	1	1	2	1	1	1	1	1	3	1	-	-
Amine: specific terms																	
Ammonia gas 20 °C	1	1	-	1	1	1	1	2	1	1	1	1	1	1	1	-	-
Ammonia in water	1	1	-	1	1	1	1	3	1	1	1	1	1	1	1	-	-
Ammonia solution 40°C	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonium carbonat, watery	1-2	1-2	-	1	1	2	2	1	1	1	1	1	2	1	1	-	-
Ammonium chloride, watery	1	1	1	1	1	1	1	2	1	1	1	1	1	2	1	-	-
Ammoniumdiphosphate, watery	1	1	1	1	1	1	1-2	1	1	1	1	1	1	2	1	-	-
Ammonium hydroxide, watery: s. ammonia in water																	
Ammoniummetaphosphate	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic.
Any warranty is excluded

Issue 08/14

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Medium	Natural rubber (NR)	Styrol-Butadiene-rubber (Buna) (SBR)	Polyurethane-rubber (AU,EU)	Eethylene-Propylene-rubber (EPM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Siloprene) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM)	Polyvinylchloride soft	Polyethylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon etc.) (general) (PA)	Polyacetale (POM) (general) **	PTFE Teflon® etc.)	Polyurethan	Cross-linked-polyethylene-rubber
Ammonium nitrate, hydrous	1	1	1	1	1	1	2	1	1	1	1	1	1	1	-	-	-
Ammonium nitrite	1	1		1	1	1	2	1							1	-	-
Ammonium persulphate, hydrous	1	1	2	1	1	1	1	1		1	1	1	2	2	1	-	-
Ammonium phosphate, hydrous	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1		
Ammonium sulphate	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	-	-
Ammonium thiocyanate	1	1	2	1	1	1	1			1	1	1	1	1	1	-	-
Amyl acetate 1)	-	-	-	2	-	3	3	-	-	-	2	2	1	2	1	-	-
Amyl alcohol	1	1	2	1	1	1	1	2	1	1	1	1	1	1	1	-	-
Amyl borate	-	-		-	1	1		1	1						1	-	-
Amyl chloride	-	-	-	-	-	-	3			-	-	3	1	3	1	-	-
Aniline (amine benzene)	-	-	-	-	3	-	2	3	1-2	2	1	1	1-2	3	1	-	-
Aniline dyestuffs	3	3	-	2	3	-	2	3	1	1	3	1	1	1	1	-	-
Animal fat , oil , animal																	
Anol: s. cyclohexanole																	
Anon: s. cyclohexanone																	
Antichlor s. sodiumhisulfate (Natriumhiosulfat)																	
Antimony chloride 50%	1	1	2	1	1	3	-	1	1	1	1	1	-	1	1	-	-
Argon gas	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Aromatic compounds: see benzene, toluene, xylol and homologous. generally essential	-	-	-	-	-	3 - -	-	3 - -	1-2	-	-	3	1	1-2	1	-	-
Arsenous acid (arsenic acid)	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Asphalt (bitumen)	-	-	2	-	2	2	2	2	1	2	1	1	1-2	1	1	-	-
Ate - break fluid	-	-	2	-	3	2	-	3	1	2	2	2	1	1	1	-	-
Barium chloride, hydrous	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	-	-
Barium hydroxide	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	-	-
Barium sulphate (Baryt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Barium sulde	1	1	2	1	1	1	1	2	1	1	1	1	1	1	1	-	-
Beer	1	1	1	1	1-2	1	1	1	1	1	1	1	1	1	1	-	-
Benzoic aldehyde	3	3	3	2	-	-	3	-	2	3	-	1	1-2	2	1	-	-
Benzine, low aromatic	-	-	2	-	2-3	1	-	-	1	3	-	2	1	1	1	-	-
Benzine, high aromatic	-	-	2-3	-	3	1-2	-	-	1	3	-	2	1	1	1	-	-
Benzine, aircraft fuel	-	-	1-2	-	2-3	1	-	2	1	3	-	3	1	1	1	-	-
Benzine (premium fuel)	3	3	-	3	-	1	-	-	-	-	-	-	-	-	-	3	1
Benzine (max. 60% Benzene)	3	3	-	3	-	1	-	-	-	-	-	-	-	-	-	2	1
Benzoic acid , watery	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-
Benzoic aldehyde	3	3	3	2	-	-	3	-	2	3	-	1	1-2	2	1	-	-
Benzene	-	-	-	-	-	3 - -	-	3 - -	1-2	-	-	3	1	1	1	-	-
Benzene alcohol	1-2	1-2	-	1	3	-	1	2	1	3	3	3	3	2	1	-	-
Benzyl benzoate	-	-		2	-	-			1					2	1	-	-
Benzyl chloride (2°-5°)	3	3	-	3	3	3	2	-	1	-	2-3	2-3	-	2-3	1	-	3
Bismuthcarbonate, (Wismutcarbo-nate)	1	1	1	1	1	1	1	1	1	1	1	1	1	1-2	1	-	-
Bisulfitlauf SO2-bearing	1	1		1		3			1	1	1	1		3	1	-	-
Biphenyl, polychlorinated: see Oils Transformer oil																	
Bismuth carbonate, (Wismutcar-bonate)	1	1	1	1	1	1	1	1	1	1	1	1	1	1-2	1	-	-
Bitumen 20°C (see hot bitumen)	-	-	2	-	3	2	3	3	1	-	1	1	1	1	1	-	-
Blancfix: see Bariumsulphate																	
Blubber code liver oil																	
Blue mountain (copperhydroxid)	1	1	1	1	1-2	-	1				1			1	1	-	-
Bore oil: chem. composition																	
Borax: s. sodium carbonate																	
Break fluid: s. fats and Oils																	
Bromine	-	-	-	-	-	3 - -	-	-	1						1	-	-
Bromenzol	-	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-
Butadiene	-	-	1-2	3	2	-		2	1	3	1	-		1	1	-	-
Butane gas	2	2	1	2	1	1	3	1	1	1	-	-	1	1	1	-	-
Butane watery	-	-	1	-	1	1	3	1	1	2	1	1	1	1	1	-	-
Butanole/s: butylalcohole																	
Butanone: s. Methyläthylketon																	
Butter *)	3	3	2	1	2	1	1	2	1	2	1	1	1	1	1	-	-
Buttermilke *)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Butanoic acid, watery 1)	-	-	-	2	3	2	2-3	3	1	-	1	1-2	1-2	1	-	-	
Butyl acetate	3	3	-	2	-	-	3	3	-	-	-	2	1	1	1	-	-

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic.
Any warranty is excluded

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Medium	Natural-rubber (NR)	Styrol-Butadiene-rubber (Buna) (SBR)	Polyurethane-rubber (AU, EU)	Eethylene-Propylene-rubber (EPDM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Siloprene) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM	Polyvinyl chloride soft	Polyethylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon etc.) (general) (PA)	Polyacetale (POM) (general) **	PTFE Teflon® etc.)	Polyurethan	Cross-linked-polyethylene-rubber
Butyl aldehyde	3	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Butyl alkohole	1	1	3	1	1	1	2	1	1	40°C1	-	1	1	1	1	3	1
Butyl amine	-	-	-	-	-	3	2	-	-					-	1	-	-
Butyl benzoate	-	-		1	-	-		-	1			2		2	1	-	-
Butyl carbitol				1	2	1		2	1						1	-	-
Butyl ether	-	-	3	3	2	1	3			1	1	1	1	1	1	-	-
Butylene, hydrous	3	3		2	3	2		3	1	1	-	-		1	1	-	-
Butyl oleate	1	1	3	1	3	1	2		1	-	1	1	1	1	1	-	-
Butyl stearate				2			-	1						1	1	-	-
Butyraldehyde	-	-	1	3	-	2	1		1	1	-	1	1	1	1	-	-
Calcium acetate	1	1		1	2	2		2	-		1				1	-	-
Calcium bisulphate, hydrous	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Calciumbisulphite	2	2	3	1	2	3	2	1	1	1	1	1	1	-	1	-	-
Calciumcarbonate	1	1	1	1	1	1	1		1	1	1	1	1	1-2	1	-	-
Calcium chloride, watery	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Calcium hydroxide, watery	1	1	3	1	1	2	2	1	1	1	1	1	1	1-2	1	-	-
Calcium hypochlorite, watery	2	2	-	1	-	1	3	2	1	1	1	1	-	3	1	-	-
Calcium nitrate	1	1	1	1	1	1	2	1	1	1	1	1			1	-	-
Calcium oxide	1	1	1	1	1	1	2	1	1	1	1	1		1	1	-	-
Calcium silicate	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	1
Calcium sulfate, watery	1	1	1	1	1	1	1		1	1	1	1	1	1	1	-	-
Calcium sulfite	2	2	1	1	1	2	2	1	1						1	-	-
Carbitol: monoethyl ehter of diethylene glycol																	
Carbon dioxide, gas wet and dry	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Carbon disulphide	-	-	2	-	-	-	-	-	1	2	-	-	1	1	1	-	-
Carbon monoxide	2	2	1	3	2	1	2	1	1	1	1	1	1	1	1	-	-
Carbonic acid: see carbon dioxide																	
Carbon material tra chloride	-	-	3	-	-	3	-	-	1	-	-	-	1-2	1	1	-	-
Carbulic acid: s. phenol																	
Castor oil	1	1	1	2	1	1	1	1	1		2-3	1	1	1	1	-	-
Cellulose acetate	3	3	1	2	3	1	1				1	1	1	1	1	-	-
Chlor, dry	2	2	-	3	-	3	-	2	1	1	-	-	-	-	1	-	-
Chlor, wet	3	3	-	3	-	-	-	2	1	-	-	-	-	3	1		
Chlorethyl ethyldiloride/ chlorbenzene s. monochlorbenzene																	
Chlorbenzone (25 °C)	3	3	-	3	-	3	-	-	-	-	-	-	-	-	-	3	2
Chlor lead base: (vgl. Natriumhypochlorit) 13%	3	3	-	1	-	3	-	-	-	40°C1	-	-	-	-	-	2	2
Chlorbrommethane	-	-	3	3	-	-	-	-	1	-	-	-	1	3	1	-	-
Chlorbutadiene	-	-		-	-	-			1						1	-	-
Chlor calcium: s. Calciumchloride																	
Chlorine dioxide	-	-	-	3	-	-	3	1	1		-	-		-	1	-	-
Chlordflourmethan (25 °C)	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
Chlorinated diphenyl	-	-	-	-	-	-	2	-	1	-	1	1	1	1	1	-	-
Chloroacetic acid: s. Calcium hypochlorite																	
Chloroacetic acid (25 °C)	3	3	-	-	-	3	-	-	-	-	-	-	-	-	-	3	1
Chloridflourmethan (25 °C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorinated hydrocarbon	-	-	-	-	-	2-3											
Chloroform (Trichlormethan)	3	3	-	3	-	3	-	-	1	-	-	-	3	-	1	3	1
Chlorothene: s. Trichloraethane																	
Chlor acid, watery	-	-		2	-	-		1	-	1	1	1	-	-	1	-	-
Chlorsulfonic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Chlorine water 3%	3	3	3	3	2	3	2	3	2	1	2	2	-	-	1	-	-
Chromic acid 10%	-	-	3	2	-	-	3	2	1	1	1	1	3	2-3	1	-	-
Chromic acid 25%	-	-	-	2	-	-	-	2	1	2	1	1	-	-	1	-	-
Chromic acid 50%	-	-	-	2	-	-	-	2	1	-	3	1	-	-	1	-	-
Chromium trioxide s. chromic acid																	
Citric acid, hydrous [1)]	1-2	1-2	1	1	1	1	1	1	1	1	1	1	1-2	2	1	-	-
Citygas, Coalgas (Naturalgas)	3	3	3	3	3	2	3	3	1	1	1	1	1	1	1	-	-
Coal Tar	-	-	-	-	3	2	1	-	1	2	2	2	1	1	1	-	-
Coconut - fat and oil	-	-	1	1	2	1	1	2	1	1	-	-	1	1	1	-	-
Code liver oil (oil) [1)]	-		1	1	2	1	2	2	1	-	1	1	1	1	1	-	-
Copper cynide	1	1	2	1	1	1	1	1	1		1	1	1	1	1	-	-
Copper hydroxide	1	1	1	1	1-2	-	1				1			1	1	-	-
Copper nitrate. hydrous	1	1	3	1	1	1	1	1	1	3	1	3	1	1	1	-	-

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic. Any warranty is excluded

Issue 08/14

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Medium	Natural rubber (NR)	Styrol-Butadiene-rubber (Buna) (SBR)	Polyurethane-rubber (AU,EU)	Eethylene-Propylene-rubber (EPM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Silioprene) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM)	Polyvinylchloride soft	Polyethylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon etc.) (general) (PA))	Polyacetale (POM) (general) **	PTFE Teflon® etc.)	Polyurethan	Cross-linked-polyethylene-rubber
Fluor silicon acid: see pebble hydrofluoric acid / hydrogen fluoride (acid) : see hydro fluoric acid																	
Formaldehyde	2	2	2	2	2	2	1	1-2	1	2	1	1	1-2	1	1	-	-
Formaldehyde solution	2	1	-	1	-	2	-	-	-	40°C1	-	-	-	-	-	2	1
Formalin (30-40% Formaldehyde solution with 8-12% Methyl alcohol	1	1	2	1	1	2	2	2	1	1	1	1	1	1	1	-	-
Formic acid	1	1	-	1	1	2	2	1	3	3	2	1	-	2	1	-	-
Freone und Frigene: detailed application consulting demand																	
Fruit juices[1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Fruity pulp [1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Fruit wines, fermented [1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Furfural	1	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Furfurol	1	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Furfuryl alcohol (Furfurol)	2	2	-	2	2	-	2	2-3	3	1	-	-	1	2	1	-	-
Gallic acid	3	3	3	2	-	-	1	2	1	1	1	1		-	1	-	-
Gasoline: see Benzene																	
Gelantine, hydrous [1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Glauber's salt: see sodium sulphate																	
Glucose [1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Glue, animal	2	2	2	3	1	1	1	1	1	1	1	1	1	1	1	-	-
Glycerin	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	-	-
Glycerol: see pure ethylene glycol																	
Glycol: determine the exact description. generally	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Helium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Heptan	-	-	2	-	2	1	-	2	1	1	1	2	1	1	1	-	-
Hexaldehyde	3	3	3	2	2	-	3				1	1		2	1	-	-
Hexahydrobenzol: see Cyclohexane / Hexane: see Cyclohexanol																	
Hexane	-	-	2	-	1	1	-	1	1	1	1	3	1	1	1	-	-
Hexanol = Hexyl alcohol	1	1	-	1	2	1	3	1	1	3	1	1	1	1	1	-	-
Heyl alcohol	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	3	1
Hot bitumen to °C	-	-	-	-	-	120	-	-	180	-	-	-	90	90	120	-	-
Hot air: see air																	
Hot tar to °C	-	-	-	-	-	100	-	-	180	-	-	-	90	90	200	-	-
Hydraulic oils and liquids																	
Hydrazine	2	2	-	1	2	2	-	2	-	1	1	1		1-2	1	-	-
Hydrazine hydrate	-	-	-	1	3	3	3	1	1	1	1	1		1	1	-	-
Hydrocynic acid 20%	2	2	2	1	3	3	2	2	2	1	1	1		2	1	-	-
Hydrocyanic acid 98% (conc.)	3	3	2	2	3	3	2	2	2	1	1	1		3	1	-	-
Hydrocloric acid 15%	1	1	2	1	3	2	1	1-2	1	1	1	1	-	-	1	-	-
Hydrochloric acid 38% (conc.)	2	2	-	1	3	3	3	1-2	1	2	1	1	-	-	1	-	-
Hydrochloric gas	1	1	2	1	3	2	1	1-2	1	1	1	1	-	-	1	-	-
Hydrofluoric acid (75%)	2	2	-	1	-	3	-	-	-	20°C2	-	-	-	-	-	2	1
Hydrofluoric acid 10%	3	3	2	-	-	3	1	1	1-2	2	2	1	-	-	1	-	-
Hydrofluoric acid 30%	-	-	2	-	-	-	1	1-2	1-2	-	2	1	-	-	1	-	-
Hydrofluoric acid 75%	-	-	3	-	-	-	1-2	1-2	1-2	-	-	1	-	-	1	-	-
Hydrogen(gas)	2	2	1	1	1	1	3	1	1	1	1	1	1	1	1	-	-
10% hydrogen peroxide	3	3	2	2	-	3	1	1	1-2	1	2	1	-	1	1	-	-
30% hydrogen peroxide	-	2	2	-	-	1	1-2	1	-	1	1	-	1	1	-	-	-
Hydrogen sulphide, moist	-	3 - -	2	3	3	1	1	1	-	1	1	1	-	1			
Hydrogen sulpjide, dry	3	3	3	2	3	2	1	1-2	1	-	1	1	1	-	1	-	-
I-cresole (60%)	3	3	-	-	-	3	-	-	-	20°C2	-	-	-	-	-	3	3
Iodine tincture (5-10% alk. iodo form.)	2	2	-	2	-	2	-	2	1	-	3	2	-	-	1	-	-
Iron sulfate, green vitriol, hydrous	1	1	2	1	1	1	1	1	1	1	1	1	2-3	1	1	-	-
Isobutanol = Isobutyl alcohol	1-2	1-2	-	1	1	2	1	1	1	1	1	1	1	1	1	-	-
Isobutyl acetate	3	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Iso octane	-	-	2	-	2	1	1	2	1	1	-	1	1		1	-	-
Iso octanol = Isoctyl alcohol	1	1	3	2	1	2	2	2	1	1	1	1		1	1	-	-
Isophoron	-	-	-	1	-	-	-	-	-					2	1	-	-
Isopropanol = Isopropyl alcohol	1	1	3	1	1	2	1	1	1	3	1	1	1	1	1	2	1
Isopropyl acetate	3	3	3	2	-	-	2	-	-	2		3	1	1	1	-	-
Isopropyl ether	-	-	2	3	3	3		3	3	3	3	3	1	1	1	-	-
Isopropyl benzol	-	-	3 - -	-	-	-	-	-	1						1	-	-
Isopropyl chloride	-	-		-		-			1						1	-	-

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic.
Any warranty is excluded

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Medium	Natural rubber (NR)	Styrol-Butadiene-rubber (Buna) (SBR)	Polyurethane-rubber (AU,EU)	Eethylene-Propylene-rubber (EPM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Siloprene) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM)	Polyvinylchloride soft	Polyethylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon etc.) (general) (PA))	Polyacetale (POM) (general) **	PTFE Teflon® etc.)	Polyurethan	Cross-linked-polyethylene-rubber
Fluor silicon acid: see pebble hydrofluoric acid / hydrogen fluoride (acid) : see hydro fluoric acid																	
Formaldehyde	2	2	2	2	2	2	1	1-2	1	2	1	1	1-2	1	1	-	-
Formaldehyde solution	2	1	-	1	-	2	-	-	-	40°C1	-	-	-	-	-	2	1
Formalin (30-40% Formaldehyde solution with 8-12% Methyl alcohol	1	1	2	1	1	2	2	2	1	1	1	1	1	1	1	-	-
Formic acid	1	1	-	1	1	2	2	1	3	3	2	1	-	2	1	-	-
Freone und Frigene: detailed application consulting demand																	
Fruit juices[1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Fruity pulp [1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Fruit wines, fermented [1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Furfural	1	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Furfurol	1	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Furfuryl alcohol (Furfurol)	2	2	-	2	2	-	2	2-3	3	1	-	-	1	2	1	-	-
Gallic acid	3	3	3	2	-	-	1	2	1	1	1	1		-	1	-	-
Gasoline: see Benzene																	
Gelantine, hydrous [1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Glauber's salt: see sodium sulphate																	
Glucose [1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Glue, animal	2	2	2	3	1	1	1	1	1	1	1	1	1	1	1	-	-
Glycerin	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	-	-
Glycerol: see pure ethylene glycol																	
Glycol: determine the exact description. generally	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Helium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Heptan	-	-	2	-	2	1	-	2	1	1	1	2	1	1	1	-	-
Hexaldehyde	3	3	3	2	2	-	3				1	1		2	1	-	-
Hexahydrobenzol: see Cyclohexane / Hexane: see Cyclohexanol																	
Hexane	-	-	2	-	1	1	-	1	1	1	1	3	1	1	1	-	-
Hexanol = Hexyl alcohol	1	1	-	1	2	1	3	1	1	3	1	1	1	1	1	-	-
Heyl alcohol	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	3	1
Hot bitumen to °C	-	-	-	-	-	120	-	-	180	-	-	-	90	90	120	-	-
Hot air: see air																	
Hot tar to °C	-	-	-	-	-	100	-	-	180	-	-	-	90	90	200	-	-
Hydraulic oils and liquids																	
Hydrazine	2	2	-	1	2	2	-	2	-	1	1	1		1-2	1	-	-
Hydrazine hydrate	-	-	-	1	3	3	3	1	1	1	1	1		1	1	-	-
Hydrocynic acid 20%	2	2	2	1	3	3	2	2	2	1	1	1		2	1	-	-
Hydrocyanic acid 98% (conc.)	3	3	2	2	3	3	2	2	2	1	1	1		3	1	-	-
Hydrocloric acid 15%	1	1	2	1	3	2	1	1-2	1	1	1	1	-	-	1	-	-
Hydrochloric acid 38% (conc.)	2	2	-	1	3	3	3	1-2	1	2	1	1	-	-	1	-	-
Hydrochloric gas	1	1	2	1	3	2	1	1-2	1	1	1	1	-	-	1	-	-
Hydrofluoric acid (75%)	2	2	-	1	-	3	-	-	-	20°C2	-	-	-	-	-	2	1
Hydrofluoric acid 10%	3	3	2	-	-	3	1	1	1-2	2	2	1	-	-	1	-	-
Hydrofluoric acid 30%	-	-	2	-	-	-	1	1-2	1-2	-	2	1	-	-	1	-	-
Hydrofluoric acid 75%	-	-	3	-	-	-	1-2	1-2	1-2	-	-	1	-	-	1	-	-
Hydrogen(gas)	2	2	1	1	1	1	3	1	1	1	1	1	1	1	1	-	-
10% hydrogen peroxide	3	3	2	2	-	3	1	1	1-2	1	2	1	-	1	1	-	-
30% hydrogen peroxide	-	2	2	-	-	1	1-2	1	-	1	1	-	1	1	-	-	-
Hydrogen sulphide, moist	-	3 - -	2	3	3	1	1	1	-	1	1	1	-	1			
Hydrogen sulpjide, dry	3	3	3	2	3	2	1	1-2	1	-	1	1	1	-	1	-	-
I-cresole (60%)	3	3	-	-	-	3	-	-	-	20°C2	-	-	-	-	-	3	3
Iodine tincture (5-10% alk. iodo form.)	2	2	-	2	-	2	-	2	1	-	3	2	-	-	1	-	-
Iron sulfate, green vitriol, hydrous	1	1	2	1	1	1	1	1	1	1	1	1	2-3	1	1	-	-
Isobutanol = Isobutyl alcohol	1-2	1-2	-	1	1	2	1	1	1	1	1	1	1	1	1	-	-
Isobutyl acetate	3	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Iso octane	-	-	2	-	2	1	1	2	1	1	-	1	1		1	-	-
Iso octanol = Isoctyl alcohol	1	1	3	2	1	2	2	2	1	1	1	1		1	1	-	-
Isophoron	-	-	-	1	-	-	-	-	-					2	1	-	-
Isopropanol = Isopropyl alcohol	1	1	3	1	1	2	1	1	1	3	1	1	1	1	1	2	1
Isopropyl acetate	3	3	3	2	-	-	2	-	-	2		3	1	1	1	-	-
Isopropyl ether	-	-	2	3	3	3		3	3	3	3	3	1	1	1	-	-
Isopropyl benzol	-	-	3 - -	-	-	-	-	-	1						1	-	-
Isopropyl chloride	-	-		-		-			1						1	-	-

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic. Any warranty is excluded

Issue 08/14

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Medium	Natural rubber (NR)	Styrol-Butadiene-rubber (Buna) (SBR)	Polyurethane-rubber (AU,EU)	Eethylene-Propylene-rubber (EPM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Silopren) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM)	Polyvinylchloride soft	Polyethylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon etc.) (general) (PA)	Polyacetale (POM) (general) **	PTFE Teflon® etc.)	Polyurethan	Cross-linked-polyethylene-rubber
Kerosene (Kerosene)	-	-	2	-	3	2	3	2-3	1	1	-	-	1	1	1	-	-
Ketone: see indvidual names generally speaking	3 - -	3 - -	2	2	-	-	2	-	-	-	-	-	1-2	1-2	1	-	-
King's water	-	-	-	3	-	2	3	2	2	2	-	-	-	-	1	-	-
Lack gasoline: see Benzene																	
Lanolin	-	-	1	3	2	1	3	3	1	2	2	3	1	1	1	-	-
Laughing gas	1	1	1	1	1	1	1	1		1	1	1	1	1	1	-	-
Lauryl alcohol: See Dodecylalcohol																	
Lead acetate, hydrous	1	1	1	1	1	1	1			1	1	1	1-2		1	-	-
Lead arsenate, hydrous	1	1	1	1	1	1	1			1	1	1	1	1	1	-	-
Lead nitrate	1	1		1	1	1	2	1							1	-	-
Lead arsenate	1	1	1	1	1	1	1			1	1	1		1	1	-	-
Liquid ammonia	2	2	-	1	2	1-2	3	2	-	3	1	1	1	1	1	-	-
Linseed oil [1]	-	-	2	2	2	1	1	1-2	1	3	-	1	1	1	1	-	-
LPG: see corresponding chemical name of the gas																	
Magnesium chloride, hydrous	1	1	1	1	1	1	1	1-2	1	1	1	1	1	1	1	-	-
Magnesium hydroxide	2	2	1	1	1	2		1	1						1	-	-
Magnesium solution	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1	1
Magnesium silicate (Talk)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Magnesium sulphate	2	2	1	1	1	2	1	1	1	1	1	1	1	1	1	-	-
Magnesium sulphite, hydrous	1	1	1	1	1	1	1	1	1	1	1	1		-	1	-	-
Maleic acid, hydrous	3	3	-	3	-	-		-	1	1	1	1		3	1	-	-
Malic acid, watery [1]	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Margarine-Fats and Oils [1]	3	3	1	3	2	1	3	1-2	1	2	2-3	2-3	1-2	1	1	-	-
Mash [1]	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Mercury	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	-	-
Mercury chloride (Sublimate)	1	1	1	1	2	3	1	1-2	1	3	1	1	-	1	1	-	-
Mercury nitrate	1	1	1	1	1	1	1			1	1	1	1	1	1	-	-
Mercury salts	1	1	-	1	-	1	-	-	-	40°C1	-	-	-	-	-	-	1
Mesityl oxide	-	-		2	-	-	-	-	-						1	-	-
Methane (gas)	-	-	3	3	3	1	3	3	1	1	1	1	1	1	1	-	-
Methanol: see Methyl alcohol																	
Methyl acrylate	-	-	-	2	-	-	-	-	-	-	1	1	1	2	1	-	-
Methyl ethyl ketone (MEK)	3	3	-	-	-	3	-	-	-	-	-	-	-	-	-	-	1
Methyl alcohol	1	1	3	1	1	1	1	1	1-2	0°C1	1	1	1-2	1	1	2	1
Methyl amine, hydrous	1	1		1	1	-		1	1	3	1	1	1	1	1	-	-
Methyl chloride	3	3	-	2	-	-	-	-	3	3	-	2	1	-	1	-	-
Methylene chloride: see Dichloromethane																	
Methylglycol (Methylcellosolve)	-	-		2	2			2	-	-	1	1	1	2	1	-	-
Methylclykolacetate	-	-	-	2		-	-		-			1	1	2	1	-	-
Methylisobutylketone	-	-	-	3	-	-	3	-	-		1		1	2	1	-	-
Methylphthalate: see Dimethylphthalate																	
Milk [1]	1	1	2	2	1	1	1	-	1	1	1	1	1	1	1	-	-
Mineral oil: see oil, mineral																	
- minerals without additives in 20°C	-	-	1	-	2-3	1	2-3	2-3	1	2	2	2	1	1	1	-	-
- mineral without additives to °C	-	-	60	-	-	120	-	150	200	-	30	40	100	100	200	-	-
- ASTM-Oil No. 1 20 °C	-	-	1	-	1	1	2	1	1	2	2	2	1	1	1	-	-
- ASTM-Oil No. 2 20 °C	-	-	2	-	2	1	3	2	2	2	3	3	1	1	1	-	-
- ASTM-Oil-No. 31 20 °C	-	-	2	-	2	1	3	2	2	2	3	3	1	1	1	-	-
- animal (animal) [1]	-	-	1	2	2	1	3	1-2	1	2	2-3	2-3	1-2	1	1	-	-
- vegetable (vegetable) [1]	3	3	1	3	2	1	3	1-2	1	2	2-3	2-3	1-2	1	-	-	
Molasses [1]	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Monochloro benzene	-	-	3	-	-	-	3	-	2	-	-	1	1	1	1	-	-
Monochlorine acetic acid	-	-	-	2	-	-	-	2	-	-	-	1	-	-	1	-	-
Monochlormethane: see Methylchloride																	
Monostori tyrol: see Styrene, monomer																	
Most, unfermented [1]	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Most, fermanted: see fruit wine																	
Motor: see oil and fats, mineral suppliments clarify																	
Myristylalcohol = Myristinalcohol				1	1	1		1	1	1				1	1	-	-
Naphtha (petroleum)	-	-	2	-	-	1	2	3	1	3	-	1	1	1	1	-	-
Naphthalene: see mineral																	

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic.
Any warranty is excluded

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Medium	Natural rubber (NR)	Styrol-Butadiene-rubber (Buna) (SBR)	Polyurethane-rubber (AU,EU)	Eethylene-Propylene-rubber (EPM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Siloprene) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM)	Polyvinylchloride soft	Polyethylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon usw.) (general) (PA)	Polyacetale (POM) (general) **	PTFE Teflon® etc,.)	Polyurethan	Cross-linked-polyethylene-rubber
Natural gas, wet	3	3	1-2	3	1	1	-	1	1	1	2	1	1	1	1	-	-
Natural gas, dry	1	1	1	1	1	1	-	1	1	1	1	1	1	1	1	-	-
Nickel sulphate, hydrous	1	1	2	1	1	1	1	1	1	1	1	1	1-2	1	1	-	-
Nitrate	1	1	1	1	1	1	1	1	1	-	1	1	1	1	1	1	1
Nitric acid 10%	3	3	-	1	3	3	3	1-2	1-2	1	1	1	-	-	1	-	-
Nitric acid 25%	-	-	-	1	-	-	-	1-2	1-2	1	1	1	-	-	1	-	-
Nitric acid 40%	-	-	-	2	-	-	-	1-2	1-2	2	-	-	-	-	1	-	-
Nitric acid 60%	-	-	-	3	-	-	-	1-2	1-2	3	-	-	-	-	1	-	-
Nitrideacid (mixtures of nitric acid and conc. sulphuric acid, see this)																	
Nitro benzene	3	3	-	-	-	-	-	-	2	-	-	1	1-2	2-3	1	-	-
Nitro propane	-	-	-	2	-	-	-	-	-				1	2-3	1	-	-
Nitro toluene	-	-	-	3	-	3		-	3	-	1			2-3	1	-	-
Nony alcohol (Nonanol)	-	-	-	1	1	-	2	2	1		1		1	1	1	-	-
Octane	-	-	1	-	3	1	-	-	1		1		1	1	1	-	-
Octanol = Octyl alcohol	2	2	-	1	1	2	2	1	1	-	1	1	1	1	1	-	-
Olein(acid): see Oelic acid																	
Oleic acid	-	-	1	-	3	2	-	-	2	1	2	3	1	1-2	1	-	-
Oleum (fuming sulphuric acid)	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-
Oleum vapours	-	-	-	3	-	-	-	3	3	3	-	-	-	-	1	-	-
Olive oil [1)]	-	-	1	3	1	1	2	1-2	1	1	1	1	1	1	1	-	-
Oxalic acid, hydrous	2	2	-	2	2	2	1	2	1	2	1	1	1-2	2	1	-	-
Ozone	-	-	1	1	3	-	1	1	1	1	-	-	3	-	1	-	-
Palm oil [1)]	-	-	2	1	2	1	1	3	1	3	-	-	1	1	1	-	-
Palmitic acid	3	3	1	3	2	3	1	2-3	2	-	1	1	1	2	1	-	-
Paraffin, Paraffin oil	-	-	2	3	2	1	2	3	1	1	3	1	1	1	1	-	-
Para formaldehyde	3	3	1	2	2	2	1		2		1	1	1-2	1	1	-	-
Pebble flour water agent acid , hydrous	1	1	-	2	3	2	-	2	-	1	1	1	3	-	1	-	-
Pebble flour water agent acid,(50%)	3	1	-	1	-	3	-	-	-	-	-	-	-	-	-	-	1
Penta chloro phenole	-	-	-	2	-	-	3					1		-	1	-	-
Pentane	-	-	-	-	1	1	-			1	-		1	1	1	-	-
Perborate: see sodiumborate																	
Perchloro ethylene	-	-	-	-	-	2-3	2	-	1	-	-	-	1-2	1	1	-	-
Perchloric acid, hydrous	2	2	-	2	3	3	-	1	1	1	1	1	-	-	1	-	-
Perhydrole: see hydrogen peroxide																	
Permanganate: see potassium permanganate																	
Petrol(eum)	-	-	1	-	2	1	2	3	1	-	2-3	2-3	1-2	1	1	-	-
Petroleum (Naphtaline)	-	-	2	-	-	1	3	2-3	1	1	-	-	1	1	1	-	-
Petrol ether: see petrol																	
Petroleum based	-	-	1	-	2	1	3	2	1	3	3	2	1	1	1	-	-
-Glycol	-	1-2	1	2	1	2						1	1	1	1	-	-
-Phosphat ester based	-	-	-	2	-	-	2-3	-	1	-	-	3	1		1	-	-
Phenol (Carbolic acid), hydrous	3	3	-	1	3	-	2	3	1	-	-	1	-	3	1	-	-
Phosphoroxide chloride	-	-		1	-	-		1	1	-	3	3		-	1	-	-
Phosphoric acid 50%	1	1	2	1	1	2	2	1	1	1	1	1	-	-	1	-	-
Phosphoric acid 85%	1	1	-	1	1	3	3	1-2	1	1	1	1	-	-	1	-	-
Phosphoric acid clay: see Aluminium phosphate																	
Phtal acid anhydride, hydrous (Phtal acid)	1	1		1	1	-		1	-	1	1	1	3	2	1	-	-
Pikric acid	3	3	-	1	3	3	1	2	1-2	1	1	1	1	-	1	-	-
Pine oil [1)]	-	-	1	-	-	2	2	-	1	2	2-3	2-3	1-2	1	1	-	-
Polychlorinated Biphenyl (Pyranole): see Oils, Transformer oil																	
Potash: see potassium carbonate																	
Potassium: see potassium hydroxide / potassium nitrater: potassium nitrate																	
Potassium acetate, hydrous	-	-	-	1	2	2	-	-	-	1	1	1		1	1	-	-
Potassium aluminium sulphate (alum)	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	-	-
Potassium bicarbonate	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Potassium bichromate: see potassium																	
Potassium borate, hydrous	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Pb (10%)	1	1	-	1	-	1	-	-	-	40°C1	-	-	-	-	-	-	1
Potassium bromide, hydrous	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Potassium carbonate (Potash)	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	-	-

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic. Any warranty is excluded

Issue 08/14

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Medium	Natural rubber (NR)	Styrol-Butadiene-rubber (Buna) (SBR)	Polyurethane-rubber (AU,EU)	Eethylene-Propylene-rubber (EPM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Siloprene) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM)	Polyvinylchloride soft	Polyethylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon usw.) (general) (PA)	Polyacetale (POM) (general) **	PTFE Teflon® etc.)	Polyurethan	Cross-linked-polyethylene-rubber
Potasium chlorate, hydrous	1	1	2	1	1	1	2	1	1	1	1	1	1	-	1	-	-
Potassium chloride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Potassium (Cyan kali)	1	1	3	1	1	1	1	1	2	-	1	1	1	1	1	-	-
Potassium dichromate	3	3	2	1	3	2	1	1-2	1	1	1	1	2-3	1	1	-	-
Potassium hydroxide (caustic potash, potassiumlauge)	1	1	1	1	1	1	3	1-2	1	1	1	1	1	1-2	1	-	-
Potassium hypochlorite (water)	2	2	-	2	-	2	2	-	1	1	3	3	-		1	-	-
Potassium iodide hydrous	3	3		1	1	1		1	1	3	1	1	-	1	1	-	-
Potassium nitrate, hydrous	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Potassium permanganate 10% watery	3	3	1	1	3	2	1	1	1	1	1	1	-	1	1	-	-
Potassium phosphate (moni u.dibasisch)	1	1	1	1	2	1	-	1	1		1	1	1	1	1	-	-
Potassium sulphate	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Potassium sulphite	1	1	1	1	1	1	1	1	1	1	1	1	1	-	1	-	-
Propane, liquid	-	-	1	-	2	1	3	3	1	1	-	1	1-2	1	1	-	-
Propane gas	1	1	1	1	1	1	-	2-3	1	1	2	2	1	1	1	-	-
Propanol: see Propyl alcohol																	
Propionic acid	-	-		1	-	-		3	1	1	1	1		-	1	-	-
Propionic acid ethylester	1	3	-	1	-	3	-	-	-	40°C1	-	-	-	-	-	-	1
Propylacetate	-	-		1	1	-		-	-		2	2		1	1	-	-
Propylalcohol	1	1	3	1	1	2	2	2	1	3	1	1	1	1	1	-	-
Propylamine	-	-	-	-	-	-	-	-	-			1		1-2	1	-	-
Propylene (Propene)	-	-	-	-	-	-	-	-	1			1		1	1	-	-
Propylene dichloride				-	-	-	-				-	-	1-2	-	1	-	-
Propylene glycol	1	1		1	1	3	1	1	1	3	1	1	-	1	1	-	-
Propylene oxide	-	-	-	2	-	-	-	-	-			1	-	2	1	-	-
Pure oxygen to+°C	-	-	80	120	90	-	175	120	200	70	70	70	90	10	200	-	-
Pydraul: see Hydraulic fluids for phosphate ester base/ pyranole: see oils/ transformer oil																	
Pyridine	-	-	-	1	-	-	-	3	3	-	1	3	1	1	1	-	-
Radiation, radioactive	-	-	3	2	-	-	-	-	-	-	3	3	-	-	-	-	-
Raps (seeds oil) [1)]	-	2	1	2	2	-	2	1						1			
Raw juice [1)]	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Red wines and know [1)]	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Salicylic acid, hydrous	1	1		1	1	1-2		1	1		1	1	1	3	1	-	-
Salmiak: see Ammonium chloride / ammonia solution: see Ammonia in Water																	
Salt: salt, see sodium chloride																	
Salt water: see Solution see Water, sea water																	
Sangajol = Terpentine oil salts: see Benzene																	
Sebum	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Separating water see Nitric acid																	
Silver salts	-	2	-	1	-	1	-	-	-	40°C1	-	-	-	-	-	1	1
Silicon oils -fat	1	1	1	1	1	1	2	1	1	-	1	1	1	1	1	-	-
Silicon dioxide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Slurry	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Soap solution	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium acetate, hydrous	1	1	3	1	1	1	1		1	1	1	1	1	1	1	-	-
Sodium bicarbonate, hydrous	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium bisulphate	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium bisulphite, hydrous	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium borate (Borax)	2	2	1	1	1	2	2	2	1	1	1	1	1	1	1	-	-
Sodiium carbonate	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium chlorate, hydrous	1	1	2	1	1	1	1	1	1	1	1	1	1	-	1	-	-
Sodium chloride (salt)	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium cyanide	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium dichromate	2-3	3	1	2	3	2	1	1		1	1		1	1		-	-
Sodium fluoral aluminate 10%	1	1	2-3	1	1	1	2		1	1	1	1		1	1	-	-
Sodium fluoride	1	1	2	1	1	1	2		1	1	1	1	1	1	1	-	-
Sodiium hydroxide (caustic soda, caustic soda) 25%, 20°C	1	1	2	1	1	2	2	1	3	1	1	1	1-2	1	1	-	-
Sodium hydroxide5 (caustic soda, causic soda) 25%, 100°C	-	-	-	2	3	-	-	3	-	-	-	2	2-3	-	1	-	-
Sodium hypochlorite 10%	2	2	2	1	3	1	1	1	1	1	1	1	-	2-3	1	-	-
Sodium hypochlorite30%	3	3	3	1	-	2	3	1	2-3	1	2	1	-	2-3	1	-	-

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic. Any warranty is excluded

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Medium	Natural rubber (NR)	Styrol-Butadiene-rubber (Buna((SBR) (SBR)	Polyurethane-rubber (AU,EU)	Ethylene-Propylene-rubber (EPM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Siloprene) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM	Polyvinyl chloride soft	Polyäthylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon etc..) (general) (PA)	Polyacetale (POM) (general) **	PTFE Teflon® etc.)	Polyurethan	Cross-linked-polyethylene-rubber
Sodium metaphosphate	1	1		1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium nitrate	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium nitrite	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	-	-
Sodium perborate	1	1	1	1	1	1	1	1	1	2	1	1	1	3	1	-	-
Sodium peroxide	2	2	3	2	3	2	-	2	2			1	1	1	1	-	-
Sodium phosphate (See also Trisodium phosphate addition)	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium silicate, hydrous	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium sulphate,hydrous	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	-	-
Sodium sulphide, hydrous	3	3		1	-	1		1	-	1	1	1	1	1	1	-	-
Sodium sulphite, hydrous	1	1	1	1	1	1	1	1	1	1	1	1	1	2-3	1	-	-
Sodiumthiosulphate (Anti-chlorine)	1	1	2	1	1	1	1	1	1	1	1	1	1	-	1	-	-
Sole (saline solution)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Soy bean oil	-	-	2	3	2	1	1	2	1	1	-	1	1	1	1	-	-
Sublimate: Quick silver chloride																	
Sugar	1	-	-	1	-	1	-	-	-	40°C1	-	-	-	-	-	1	1
Sugar, hydrous[1]) (Sugarcane juice, see these)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Sulphur, melting, 90°C	-	-	2	-	-	-	1	1	1	-	-	-	1	1	1	-	-
Sulphuric ether: see ether / Sulphur: see sulphurous acids																	
Sulphur dioxide (60%)	3	2	-	1	-	3	-	-	-	60°C1	-	-	-	-	-	2	1
Sulphuric acid 10%	1	1	2	1	1	1	2	1	1	1	1	1	-	1-2	1	-	-
Sulphuric acid 30%	2	2	1	2	2	-	1	1	1	1	1	-	-	1			
Sulphuric acid 50%	3	3	2	1	3	3	-	1	1	1	1	1	-	-	1	-	-
Sulphuric acid 75%	-	-	-	2	-	-	-	1-2	1	3	3	1	-	-	1	-	-
Sulphuric acid 90%	-	-	-	3	-	-	-	2	1	-	-	1	-	-	1	-	-
Sulphuric acid conc. (Oleum, smoking pages)	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-
Sulpuric acid anhydride	-	-	-	2	-	3	-	-	-	-	-	-	-	-	-	3	3
Sulphur choride	-	2	-	2	-	3	-	-	-	-	-	-	-	-	-	3	1
Sulphur trioxide	2	2	2	2	-	3	3	2-3	1	1	1	1	-	-	1	-	-
Sulphurous acid 10%, moist	3	3	2	1	3	3	1	1-2	2	2	1	1	-	-	1	-	-
Sulphurous acid 75%. moist	-	-	-	2	-	-	3	2-3	2	-	3	3	-	-	1	-	-
Starch,hydrous[1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Starchsyrup [1])	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Stearin (acid)	2	2	1	2	2	2	1	2-3	2	1	-	-	1	1	1	-	-
Styrol, monomer	-	3	-	-	-	-	-	2	-	-	-	1	1	1	-	-	-
Tannic acid (Tannin)	2	2	3	2	2	2	2	1-2	1-2	1	1	1	1	3	1	-	-
Tar	-	-	-	-	3	2	2	-	1	2	2	2	1	1	1	-	-
Tartaric acid, hydrous[1])	1	1	1	2	1	1	1	1	1	1	1	1	3	3	1	-	-
Terpentine oil	-	-	-	-	-	1	-	-	1	3	3	-	1	2	1	-	-
Tetrachloro ethane	3	3	-	3	-	3	-	-	-	-	-	-	-	-	-	-	1
Tetrachlorine carbon	-	-	3	-	-	3	-	-	1	-	-	-	1-2	1	1	-	-
Tetrachlorine hydrocarbon	3	3	-	3	-	3	-	-	-	-	-	-	-	-	-	2	3
Tetrahydrofuran	-	-		-	-	3		-	-	-	3	-	1	1-2	1	-	-
Tetralin = Tetrahydronaphtalin	-	-		-	-	3	-	-	1	1	3	-	1	1	1	-	-
Tin-II-Chloride, hydrous	1	1	1	2	1	1	2	1	1	1	1	1	3	-	1	-	-
Toluene	-	-	-	-	-	3	-	-	1	-	-	-	1	1	1	-	-
Transformers-Oils (Pyranole)	-	-	2	-	-	1	2	-	1	3	3	-	1	1	1	-	-
- Silicon based	1	1	1	1	1	1	-	1	1	1	1	1	1	1	1	-	-
- Diesel	-	-	2	-	2-3	1	3	3	1	3	2	3	1-2	1	1	-	-
- Oil	-	-	2	-	2	1	3	3	1	3	2	3	1-2	1	1	-	-
- Hydraulic oil on																	
- Mineral base	-	-	2	-	2	1	3	1-2	1	3	3	2	1	1	1	-	-
- Glycol (polyalkylglycol)	-	-	1-2	1	2	1	2	2	3		1	1	1	1	1	-	-
- Phosphate ester base	-	-	-	2	-	-	2-3	-	1	-	-	3	1		1	-	-
Triäthylamine				-		3					1			1-2	1	-	-
Tributylphosphate	-	-	-	1	-	-		-	-	-	1			2	1	-	-
Trichlorine ethene	-	-	-	-	-	-	-	-	1		-	2	1	-	1	-	-
Trichlorine ethylene	-	-	-	-	-	3	-	-	1-2	-	-	2	1-2	2-3	1	-	-
Trichloridemethane: Chloroform																	
Tricresylphosphate	1	1	-	1	3	-	1	-	2	-	3	3	2	1	1	-	-
Triethanol amine	3	3	-	3	1	2	1	3	1	-	1	1	1	1	1	-	-

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic. Any warranty is excluded

Issue 08/14

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

List of resistance

Medium	Natural rubber (NR)	Styrol-Butadiene-rubber (Buna((SBR) (SBR)	Polyurethane-rubber (AU,EU)	Ethylene-Propylene-rubber (EPM, PDM)	Chloroprene-rubber (Neopren) (CR)	Nitrile-rubber (NBR)	Methyl-silicone-rubber (Siloprene) (Q, MQ)	Hypalon® (CSM)	Viton® (FPM	Polyvinyl chloride soft	Polyäthylene (PE) (general)*	Polypropylene (PP)	Polyamide (Nylon etc..) (general) (PA)	Polyacetale (POM) (general) **	PTFE Teflon® etc.)	Polyurethan	Cross-linked-polyethylene-rubber
Triethyl amine	3	-	-	3	-	1	-	-	-	-	-	-	-	-	-	-	1
Trimethyl amine	3	-	-	3	-	1	-	-	-	-	-	-	-	-	-	-	1
Trisodium phosphate	1	1	3	1	1	1	1	1		1	1	1	1	1	1	-	-
Trioctyl phosphate	-	-		-	-	2	3	-	-	-	1	1		2	1	-	-
Unfermented	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Urine	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Vinegar, (fare vinegar) [1)]	1	1	3	1	1	1	1	1	3	1	1	1	1	1	1	-	-
Vinyl acetate	1	1		1	1	1		1	1	-			1	2	1	-	-
Vinyl chloride, monomer	2	2	-	2	-	-	-		1	-	-		1	-	1	-	-
Vitriol: s. coppersulphate / Vitriolöl: s. Oleum																	
Weathering	-	-	1	1	1-2	-	1	1	1	1	2	2	2	2	1	-	-
Water																	
- drinking water or mineral water, without additives[1)] to °C	70	70	60	120	70	110	120	100	150	70	80	90	100	100	200	-	-
- destilled, demineralised, desalinate, condensation: polymer does not , but polymer influenced water																	
- mineral water CO2 saturated [1)]	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-
- king water: see																	
- seawasser	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	-	-
Water vapour to °C	-	-	-	130	-	100	120	100	150	-	-	-	120	120	200	-	-
Water glass: see sodium silicate																	
Weathering	-	-	1	1	1-2	-	1	1	1	1	2	2	2	2	1	-	-
White Spirit: see Benzene																	
Wool: see Lanolin																	
Xylenol	-	-	-	-	-	3- -	-	-	1-2	-	-	3	1	1	1	-	-
Xylene	-	-	-	-	-	3- -	-	-	1-2	-	-	3	1	1	1	-	-
Zinc acetate, hydrous [1)]	-	-	-	1	2	2	-	-	-		1	1		1	1	-	-
Zinc chloride, hydrous [1)]	1	1	3	1	1	1	1	1	1-2	1	1	1	2-3	1	1	-	-
Zinc sulphate, hydrous	1	1	3	1	1	1	1	1	1	1	1	1	2-3	1	1	-	-

* Hard-(low pressure) polyethylene mostly stable as soft (high pressure) polyethylenes
** To distinguish between Homopolymerisat (Delrin®) and Copolymerisaten (eg Hostaform C®)
1) If food quality is needed please ask us fur a quotation

All values and descriptions can only be indicative and are not for every case of application authentic.
Any warranty is excluded

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Summary of important norms

DIN 3771	O-rings
DIN 7168	General tolerances (Free tolerences)
DIN 7715 (Teil 1-5) ISO 3302	Rubber parts permissible degree deviation
DIN 7716 ISO 5285	Rubber products Guidelines for storage, maintanence and cleaning
DIN EN 10204 DIN 50049	Rypes of examination
DIN EN ISO 10431	Plastics designation
DIN 11851 DIN 11864; 1-2	Fittings for food and chemicals, Pharmacy
DIN 16091	Plastic mouldings; tolerence and acceptance conditions for length dimensions
DIN 52613	Technical trials thermal protection provisions of thermal conductivity with the disk device
DIN 53421 ISO 844	Attempt to pressure hard foams
DIN 53423 ISO/R 1209	Bending to hard foams
DIN 53427 ISO 1922	Provision of heavy resistance from hardcore foams between metal plates
DIN 53428	Examination of the behaviour of liquids, vapours, Gases and solid of foams
DIN 53443	Shock attempt; attempt tp bolt case plastics
DIN 53445	Consideration of polymeric materials, torsional vibration test
DIN 53447	Consideration of plastics Tori determine the stiffness of sion (clash- berg)
DIN 53448	Blow tensile test in plastics
DIN 53452	Consideration of plastics, Bending
DIN 53453 ISO 1407	Consideration of plastics Blow tensile test in plastics
DIN 53454 ISO/R 604	Consideration of plastics Pressure test
DIN 53455	Consideration of plastics Tensile
DIN 53457	Consideration of plastics Determining the elasticity module in Train-,printing- and Elasticity limit test
DIN 53476 ISO 175	Determining the behaviour against Fluid of plastics
DIN 53479 ISO/R 1183	Consideration of plastics and Elastomers Determining the density
DIN 53482	Consideration of insulated substances Determining the electrical resistance values
DIN EN ISO 62	Determination of water absorption after storage in cold water of plastics
DIN 53504 ISO 37	Consideration of elastomers Tensile
DIN 53505 ISO 868	Consideration of vulcanised and synthetic rubber Hardness testing according to shore A and D
DIN 53507 ISO 34	Considerations of elastomers Tear growth test with the sample strips
DIN 53508 ISO 188	Consideration of elastomers Artificial ageing of soft rubber
DIN 53509 T2 ISO 1431	Consideration of vulcanized and natural rubber Accelerated ageing of rubber under the influence of ozone Statistic loads of samples
DIN 53512 ISO 4662	Consideration of elastomers Determination of shock elasticity
DIN 53515 ISO 34	Consideration of rubber and elastomers and plastic films Tear growth test angle with the sample Graves to break with
DIN 53516 ISO 4649	Consideration of rubber and elastomers Wear attempt to determine the abrasion
DIN 53517 ISO 815	Consideration of elastomers Determining the hardness of ball pressure Soft rubber International hardness
DIn 53524 ISO 1817	Consideration of vulcanised and synthetic rubber Determining the behavior of liquids, gases and vapors (source behaviour)
DIN 53522 ISO 132/133	Consideration of elastomers and rubber; Duration knucle attempt
DIN 53533	Consideration of elastomers; Examination of the heat education and abrasion resistance in fatigue test
DIN 53536 ISO 1399	Provison of gas permeability in elastomers
DIN 53538	Consideration of elastomers; Standard Reference Elastomers Determining the behaviour of petroleum products to nitrile rubber vulcanizates
DIN 53545	Consideration of elastomers; classification des Verhaltensbei Determination of low temperatures (cold behaviour), words, signs and tests
DIn 53546	Consideration of elastomers; classification der low-temperature brittleness in determining the impact stress VDMA-tank unit
VDMA 24317	VDMA-tank unitr oil hydraulic plants del lamb bare heavy pressure fluids guidelines
DIN-VDE 0302	Insulation of electrical equipments
DIN-VDE 0303	VDE-Regulations for electrical testing of insulator

SAND Profile GmbH
Dr.-Patt-Straße 7–11
D-63811 Stockstadt

Tel.: +49 (0) 60 27/41 60-0
Fax: +49 (0) 60 27/41 60-60

E-Mail: info@sandprofile.com
Web: www.sandprofile.com

Summary of important norms

DIN 2825 EN ISO 6134	Hose lines from elastomers for steam and hot water
DIN 2826 EN ISO 14423	Hose fittings with clamp mount for steam and hot water DN 15 to DN 50 to 18 bar
DIN 2827	Hoses assemblies of stainless steel for chemical substances
DIN 2828 DIN EN 14420-7	Lever arm clutch for PN 10 hoses
DIN EN ISO 9001: 2000	Quality Management-System
DIN 20018	Hoses with fabric insert
DIN 20066 Part 4	Fluid technology, hoselines, installation
DIN 28450	Tanker clutches nominal pressure 10, sizes 50, 80 und 100
EN 10204	Metal products; Types of examination
EN12115	Hoses for liquid or gaseous chemicals
EN 559 DIN 8541	Rubber hoses for welding, Cutting and related procedures
BS 5842: 1980	Specification for thermal plastic tubing and fittings with uses in ports and road and rail tankers (british standard)
EN 1761	Rubber tubing and hoses
DIN EN 14420	Hose fittings and clamp versions
Part 1	Requirements, overview, description and verification
Part 2	Tubular sided hydrants parts, sizes and designs
Part 3	Klemm versions, or bolted verstiftet
Part 4	Flang econnections
Part 5	Threaded connectors
Part 6	Tanker couplings
Part 7	Lever arm clutcher (see above)
Part 8	Balanced couplings (Guillemin)
Part 9	Lessons for tanker couplings
Part 10	Lessons for lever arm clutching
Part 11	Lessons for symmetrical couplings (Guillemin)
EN ISO 8330	Rubber and plastics tubing and hose Vocabulary

pH-values

The pH (potentia hydrogen= hydrogen concentration) is used to, acids and alkalis to be distinguished from one another and to identify strenghts. Because everything was water, also has a pH value of using electric measuring instruments or so called indicators such as Litmus detected. The sacale ranges from pH 0 to pH 14, while the average pH of 7 is considered neutral.

	strong			weak			neutral	weak			strong			
ph-value:	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
	Acids							**neutral dilution**	**Bases**						
	e.g. sulphuric acid, hydrochloric acid				e.g. Carbonic acid, acetic acid			e.g. pure water, blood	e.g. soapsuds			e.g. caustic potash solution, caustic soda solution, Ammonia			