

# **MATERIAL DATA SHEET\***

**ALPANA d.o.o.**

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## H-Pur Material Data Sheet

Properties	Value	Unit	Standard
Hardness	95 +/-3	Sh A	DIN 53505
Hardness	48+/-3	Sh D	DIN 53505
Density	1,21	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set 70°C / 24 h, 20 % deformation	≤29	%	
Compression set 70°C / 70 h, 10 % deformation	20	%	DIN 53517 or DIN ISO 815-1
Compression set 100°C / 24 h, 20 % deformation	≤32	%	
100 % modulus	≥12	N/mm <sup>2</sup>	DIN 53504
Rebound resilience	28	%	DIN 53512
Tensile strength	≥45	N/mm <sup>2</sup>	DIN 53504
Elongation at break	≥315	%	DIN 53504
Tear strength	≥100	N/mm	DIN 53515 or DIN ISO 34-1
Abrasion	16	mm <sup>3</sup>	DIN 53516
Min. service temperature	-20	°C	
Max. service temperature	+115	°C	

## LT-Pur Material Data Sheet

Properties	Value	Unit	Standard
Hardness	95 +/-3	Sh A	DIN 53505
Hardness	48+/-3	Sh D	DIN 53505
Density	1,18	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set - 40°C / 70 h, 10 % deformation	40	%	DIN 53517 or DIN ISO 815-1
Compression set 70°C / 70 h, 10 % deformation	20	%	DIN 53517 or DIN ISO 815-1
Glass temperature	-42	°C	
100 % modulus	≥12	N/mm <sup>2</sup>	DIN 53504
Rebound resilience	48	%	DIN 53512
Tensile strength	≥48	N/mm <sup>2</sup>	DIN 53504
Elongation at break	≥440	%	DIN 53504
Tear strength	75	N/mm	DIN 53515 or DIN ISO 34-1
Abrasion	14	mm <sup>3</sup>	DIN 53516
Min. service temperature	-50	°C	
Max. service temperature	+110	°C	

## S-Pur Material Data Sheet

Properties	Value	Unit	Standard
Hardness	95+/-3	Sh A	DIN 53505
Hardness	48+/-3	Sh D	DIN 53505
Density	1,22	g/cm <sup>3</sup>	DIN5347
Compression set 70°C / 70 h, 10 % deformation	22	%	DIN 53517 or DIN ISO 815-1
Compression set 100°C / 24 h, 20 % deformation	28	%	DIN 53517 or DIN ISO 815-1
100% modulus	≥16	N/mm <sup>2</sup>	DIN 53504
Tensile strength	≥46	N/mm <sup>2</sup>	DIN 53504
Elongation at break	≥400	%	DIN 53504
Tear strength	110	N/mm	DIN 53515 or DIN ISO 34-1
Abrasion	20	mm <sup>3</sup>	DIN 53516
Min. service temperature	-20	°C	
Max. service temperature	+110	°C	

## XH-Pur Material Data Sheet

Properties	Value	Unit	Standard
Hardness	57+/-2	Sh D	DIN 53505
Density	1,2	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set 70°C / 70 h, 20 % deformation	25	%	DIN 53517 or DIN ISO 815-1
Compression set 100°C / 24 h, 20 % deformation	30	%	DIN 53517 or DIN ISO 815-1
100 % modulus	23	N/mm <sup>2</sup>	DIN 53504
Tensile strength	≥45	N/mm <sup>2</sup>	DIN 53504
Elongation at break	≥300	%	DIN 53504
Tear strength	≥100	N/mm	DIN 53515 or DIN ISO 34-1
Abrasion	18	mm <sup>3</sup>	DIN 53516
Min. service temperature	-20	°C	
Max. service temperature	+110	°C	

## XSH-Pur Material Data Sheet

Properties	Value	Unit	Standard
Hardness	57+/-2	Sh D	DIN 53505
Density	1,22	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set 70°C / 24 h, 20 % deformation	29	%	DIN 53517 or DIN ISO 815-1
Compression set 100°C / 24 h, 20 % deformation	33	%	DIN 53517 or DIN ISO 815-1
100 % modulus	24	N/mm <sup>2</sup>	DIN 53504
Tensile strength	≥40	N/mm <sup>2</sup>	DIN 53504
Elongation at break	≥300	%	DIN 53504
Tear strength	170	N/mm	DIN 53515 or DIN ISO 34-1
Abrasion	25	mm <sup>3</sup>	DIN 53516
Min. service temperature	-20	°C	
Max. service temperature	+110	°C	

## EPDM Material Data Sheet

Properties	Value	Unit	Standard
Hardness	85 +/-3	Sh A	DIN 53505
Density	1,22	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set 23°C / 72 h	11,3	%	DIN 53517 or DIN ISO 815-1
Compression set 70°C / 24 h	16,1	%	DIN 53517 or DIN ISO 815-1
Compression set 100°C / 24 h	13,2	%	DIN 53517 or DIN ISO 815-1
100 % modulus	9,7	MPa	DIN 53504
Rebound resilience	36	%	DIN 53512
Tensile strength	14,4	MPa	DIN 53504
Elongation at break	137	%	DIN 53504
Tear strength	5	N/mm	DIN 53515 or DIN ISO 34-1 A
Abrasion	120	mm <sup>3</sup>	DIN 53516
Min. service temperature	-50	°C	
Max. service temperature	+170	°C	



## FKM Material Data Sheet

Properties	Value	Unit	Standard
Hardness	83 +/-3	Sh A	DIN 53505
Density	2,51	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set 225°C / 22 h	8	%	DIN 53517 or DIN ISO 815-1
Rebound resilience	6	%	DIN 53512
Tensile strength	11,4	MPa	DIN 53504
Elongation at break	208	%	DIN 53504
Tear strength	20	N/mm	DIN 53515 or DIN ISO 34-1 A
Abrasion	154	mm <sup>3</sup>	DIN 53516
Min. service temperature	-20	°C	
Max. service temperature	+200	°C	

## H-NBR Material Data Sheet

Properties	Value	Unit	Standard
Hardness	85 +/-3	Sh A	DIN 53505
Density	1,32	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set 100°C / 22 h	18	%	DIN 53517 or DIN ISO 815-1
Compression set 150°C / 24 h	23	%	DIN 53517 or DIN ISO 815-1
100 % modulus	9,6	MPa	DIN 53504
Rebound resilience	36	%	DIN 53512
Tensile strength	19,5	MPa	DIN 53504
Elongation at break	189	%	DIN 53504
Tear strength	4,6	N/mm	DIN 53515 or DIN ISO 34-1 A
Abrasion	112	mm <sup>3</sup>	DIN 53516
Min. service temperature	-25	°C	
Max. service temperature	+150	°C	

## MVQ Material Data Sheet

Properties	Value	Unit	Standard
Hardness	82 +/-3	Sh A	DIN 53505
Density	1,506	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set 175°C / 22 h	12,5	%	DIN 53517 or DIN ISO 815-1
100 % modulus	5,2	MPa	DIN 53504
Rebound resilience	54	%	DIN 53512
Tensile strength	6,4	MPa	DIN 53504
Elongation at break	181	%	DIN 53504
Tear strength	13,9	N/mm	DIN 53515 or DIN ISO 34-1 A
Abrasion	-	mm <sup>3</sup>	DIN 53516
Min. service temperature	-60	°C	
Max. service temperature	+200	°C	

## NBR Material Data Sheet

Properties	Value	Unit	Standard
Hardness	85 +/-3	Sh A	DIN 53505
Density	1,317	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set 23°C / 72 h	6,4	%	DIN 53517 or DIN ISO 815-1
Compression set 70°C / 24 h	6,2	%	DIN 53517 or DIN ISO 815-1
Compression set 100°C / 24 h	12	%	DIN 53517 or DIN ISO 815-1
100 % modulus	8,8	MPa	DIN 53504
Rebound resilience	25	%	DIN 53512
Tensile strength	15,2	MPa	DIN 53504
Elongation at break	226	%	DIN 53504
Tear strength	5,4	N/mm	DIN 53515 or DIN ISO 34-1 A
Abrasion	90	mm <sup>3</sup>	DIN 53516
Min. service temperature	-30	°C	
Max. service temperature	+100	°C	

## PA6 Material Data Sheet

Properties	Value	Unit	Standard
Hardness	85	Sh D	ISO 868
Density	1,13	g/cm <sup>3</sup>	DIN 53479
Ball indentation hardness	153	N/mm <sup>2</sup>	DIN 53456 H135/30
Tensile strength	80	MPa	ASTM D 4745-79
Elongation at break	40	%	ASTM D 4745-79
Compressive strenght	110	MPa	DIN 53455
Coefficient of thermal expansion	8	1/Kx10 <sup>-5</sup>	
Coefficient of friction	0,4	μ	
Min. service temperature	-40	°C	
Max. service temperature	+110	°C	

## POM Material Data Sheet

Properties	Value	Unit	Standard
Hardness	85	Sh D	ISO 868
Specific gravity	1,4	g/cm <sup>3</sup>	ISO 1183
Ball indentation hardness	145	MPa	ISO 2039-1 H358/30
Tensile stress at yield	65	MPa	ISO 527-2
Elongation at yield	9,4	%	ISO 527-2
Elongation at break	27	%	ISO 527-2
Coefficient of linear thermal expansion	11	10 <sup>-5</sup> /K	DIN 53752
Min. service temperature (glass transition temperature)	-40	°C	
Max. service temperature (High Heat Resistance)	+110	°C	

## PTFE 101 Material Data Sheet

Properties	Value	Unit	Standard
Hardness	≥51	Sh D	ASTM D2240
Density	2,14 - 2,18	g/cm <sup>3</sup>	ASTM D792
Tensile strength	≥30	N/mm <sup>2</sup>	ISO 12086 ISO 527
Elongation at break	≥300	%	ISO 12086 ISO 527
Compressive strength at 1% deformation	4 - 5	N/mm <sup>2</sup>	ASTM D695
Deformation under load at room temperature 24 hours at 13,7 N/mm <sup>2</sup>	≤17	%	ASTM D621
Permanent deformation as above after 24 hours of rest at room temperature	≤9	%	ASTM D621
Deformation under load at 260°C after 24 hours at 41 N/mm <sup>2</sup>	≤32	%	ASTM D621
Permanent deformation as above after 24 hours of rest at room temperature	≤19	%	ASTM D621
Impact strength Izod	153	J/m <sup>2</sup>	ASTM D256
Coefficient of Linear Expansion (25° - 100°C)	12 - 13	10 <sup>-5</sup> (mm/mm)/°C	ASTM D696
Min. service temperature	-200	°C	
Max. service temperature	+260	°C	

## PTFE 102 Material Data Sheet

Properties	Value	Unit	Standard
Hardness	≥55	Sh D	ASTM D2240
Density	2,20 - 2,30	g/cm <sup>3</sup>	ASTM D792
Tensile strength	≥18	N/mm <sup>2</sup>	ISO 12086 ISO 527
Elongation at break	≥230	%	ISO 12086 ISO 527
Compressive strength at 1% deformation	≥8	N/mm <sup>2</sup>	ASTM D695
Deformation under load at room temperature 24 hours at 13,7 N/mm <sup>2</sup>	≤8	%	ASTM D621
Permanent deformation as above after 24 hours of rest at room temperature	≤4	%	ASTM D621
Coefficient of Linear Expansion (25° - 100°C)	9 - 12	10-5 (mm/mm)/ °C	ASTM D696
Min. service temperature	-200	°C	
Max. service temperature	+260	°C	



## PTFE 103 Material Data Sheet

Properties	Value	Unit	Standard
Hardness	≥58	Sh D	ASTM D2240
Density	2,98 - 3,16	g/cm <sup>3</sup>	ASTM D792
Tensile strength	≥18	N/mm <sup>2</sup>	ISO 12086 ISO 527
Elongation at break	≥200	%	ISO 12086 ISO 527
Compressive strength at 1% deformation	≥8	N/mm <sup>2</sup>	ASTM D695
Deformation under load at room temperature 24 hours at 13,7 N/mm <sup>2</sup>	≤8	%	ASTM D621
Permanent deformation as above after 24 hours of rest at room temperature	≤5	%	ASTM D621
Coefficient of Linear Expansion (25° - 100°C)	8 - 11	10 <sup>-5</sup> (mm/mm)/ °C	ASTM D696
Min. service temperature	-200	°C	
Max. service temperature	+260	°C	

## PTFE 104 Material Data Sheet

Properties	Value	Unit	Standard
Hardness	60-65	Sh D	ASTM D2240
Density	2,05 - 2,11	g/cm <sup>3</sup>	ASTM D792
Tensile strength	15-20	N/mm <sup>2</sup>	ISO 12086 ISO 527
Elongation at break	150-200	%	ISO 12086 ISO 527
Compressive strength at 1% deformation	4,5-6,5	N/mm <sup>2</sup>	ASTM D695
Deformation under load at room temperature 24 hours at 13,7 N/mm <sup>2</sup>	2,5-4	%	ASTM D621
Permanent deformation as above after 24 hours of rest at room temperature	2,5-4	%	ASTM D621
Coefficient of Linear Expansion (25°C-100°C)	12-13	10-5 (mm/mm)/ °C	ASTM D696
Min. service temperature	-200	°C	
Max. service temperature	+260	°C	

## Tape for guide rings Material Data Sheet

Properties	Value	Unit
Hardness	100	HRM
Density	1,21	g/cm <sup>3</sup>
Compressive strength static	290	MPa
Compressive strength dynamic	80	MPa
Impact strength Izod	66	J/m <sup>2</sup>
Maximum sliding speed	2,5	m/s
Coefficient of Linear Expansion (25° - 100°C)	6 - 7	10 <sup>-5</sup> (mm/mm)/ °C
Min. service temperature	-40	°C
Max. service temperature	+120	°C

\*All above established data results are from random tests which were taken from the functioning production. All data was stated based on standard test-products in accordance with ISO, DIN and ASTM standards and can substantially not be extended to the completed seal. Our practical technical recommendations, either oral, written or through tests is given in conformity with our best knowledge. However, this data is to be regarded as non-obligatory advice, also taking into consideration any protective rights of a third party, and does not acquit you from making tests with our product in relation to its adaptability for the assigned processes and intendments. Utilization, application and processing of the products befall completely outside of our control and are therefore solely user's liability. As regards the responsibility, it will be limited to all damages in the value of the product which we delivered and which the user applied. Certainly, we do assure the immaculate quality of our products in concordance with our general sales and delivery conditions.