



MACHINERY and EQUIPMENT
Diaphragms for expansion vessels

50-55 Shore A, SBR, sulfur cure
Specification DIN EN 13831

		TMTD / MBTS 1.5 / 1.5	TMTD / MBTS 1.5 / 1.5 - PEG	TMTD / MBTS 2 / 1 -PEG
Guide formulations of HOFFMANN MINERAL	M 632.0	11	12	5
Buna SB 1502		100.0	100.0	100.0
Corax N 550		60.0	60.0	60.0
SILLITIN Z 86		60.0	60.0	60.0
Nytex 4700		45.0	45.0	45.0
Dispergator FL		1.4	1.4	1.4
Lipoxol 4000		0.86	---	---
Zinkoxyd aktiv		3.0	3.0	3.0
Stearic acid		2.0	2.0	2.0
Vulkanox HS/LG		0.4	0.4	0.4
Vulkanox 4020/LG		0.4	0.4	0.4
Sulfur		1.9	1.9	1.9
Rhenogran TMTD-70		1.5	1.5	2.0
Rhenogran MBTS-80		1.5	1.5	1.0
Total phr		277.96	277.1	277.1

Mooney Viscosity

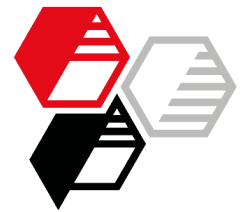
ML (1+4) 120°C	DIN 53523, T3	MU	24	25	24
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Mooney Scorch

ML (5 MU) 120°C	DIN 53523, T4	min	26	25	18
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Rotorless curemeter

			180°C	200°C	180°C	200°C	180°C	200°C
Mmin	DIN 53529, T3	Nm	0.034	0.029	0.035	0.030	0.037	0.032
Mmax-Mmin	DIN 53529, T3	Nm	0.350	0.312	0.340	0.287	0.335	0.313
Curing rate	DIN 53529, T3	Nm/min	0.49	0.82	0.36	0.73	0.47	0.85
t ₅	DIN 53529, T3	min	0.66	0.36	0.62	0.34	0.53	0.30
t ₉₀	DIN 53529, T3	min	1.7	0.8	2.0	0.8	1.6	0.8



			TMTD / MBTS 1,5 / 1,5		TMTD / MBTS 1,5 / 1,5 - PEG		TMTD / MBTS 2 / 1 -PEG		
M 632.0			11		12		5		
Mechanical properties									
Press cure			5 min	1.5 min	5 min	1.5 min	5 min	1.5 min	DIN EN
			180°C	200°C	180°C	200°C	180°C	200°C	13831
Density	DIN EN ISO 1183-1	g/cm ³	1.27	1.27	1.27	1.27	1.27	1.26	
Hardness	DIN ISO 7619-1	Shore A	54	51	54	51	55	53	50 – 65
Tensile strength	DIN 53504, S2	MPa	10.8	10.6	11.5	11.7	10.7	11.4	≥ 10
Elongation at break	DIN 53504, S2	%	535	578	580	639	532	608	≥ 450
Modulus 100 %	DIN 53504, S2	MPa	1.9	1.6	1.9	1.7	2.1	1.8	
Tear resistance	DIN ISO 34-1, A	N/mm	8.1	11	10	14	9.1	11	
Compression set 70 h @ 70°C, 25 % deflection	DIN ISO 815-1, B	%	21	32	28	38	22	29	< 40

Immersion in distilled water, 28 d @ 70°C

The storage in water was conducted with specimens that had been stored for some time. In order to evaluate the influence of this temporary storage, the initial values were determined before starting the storage in water. There was practically no change, except of the hardness which showed a slight increase.

The changes after storage in water refer to the values of the temporarily stored specimens.

Hardness	Shore A	54	53	54	52	55	53	
Tensile strength	MPa	9.4	9.8	10.2	10.7	10.9	11.3	
Elongation at break	%	443	502	470	549	482	522	
Compression set, 70 h @ 70°C, 25 %	%	24	28	32	47	29	29	< 50 *
Δ Hardness	Shore A	-3	-2	-2	-2	-2	-2	< 5
Δ Tensile strength	%	-7	-10	-3	-1	-2	+4	< 20
Δ Elongation at break	%, rel.	-13	-15	-13	-8	-10	-11	< 20
Δ Weight	%	+2.4	+1.8	+1.2	+1.3	+1.0	+1.4	
Δ Volume	%	+3.3	+2.7	+2.3	+1.9	+1.4	+1.8	

* no requirement in DIN EN 13831, specification taken from its previous version DIN 4807

More information on this topic:

[Neuburg Siliceous Earth in diaphragms for expansion vessels based on SBR DIN EN 13381](#)

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