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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

Our applications engineering advice and the information contained in this formulation are based on experience and are made to the best of our knowledge and belief, they must be regarded however as non-binding advice without guarantee. Working and employment conditions over which we have no control exclude any damage claim arising from the use of our data and recommendations. Furthermore we cannot assume any responsibility for patent infringements, which might result from the use of our information.

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			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 180°C	1.5 min 200°C	5 min 180°C	1.5 min 200°C	5 min 180°C	1.5 min 200°C	DIN EN 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 is available in this technical report:

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

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