

AUTOMOTIVE INDUSTRY

Molding, light-colored

Gasket and O-Ring

AKTISIL Q versus carbon black N-550

60 Shore A, AEM, diamine cure

according to PSA S22 5106

	Control	AKTISIL Q	
		20 phr R. W 759 cure system	30 phr E. T810T
Guide formulations of HOFFMANN MINERAL	M 621.7/1	M 621.8/8	M 621.8/9
Vamac Ultra IP	100.00	100.00	100.00
Luvomaxx CDPA	2.00	2.00	2.00
Stearic acid	1.50	1.50	1.50
Vanfre VAM	1.50	1.50	1.50
Crodamide ER	1.00	1.00	1.00
FEF N-550	50.00	---	---
AKTISIL Q	---	125.00	125.00
Aminotriethoxysilane (AMEO)	---	0.63	0.63
Rhenosin W 759	10.00	20.00	---
Edenol T810T	---	---	20.00
Diak No. 1	1.50	1.50	1.50
Luvomaxx DBU DL 70	2.57	2.57	2.57
Total phr	170.07	255.70	255.70

Along with positive cost aspects, **replacing N-550 by AKTISIL Q** in combination with various possibilities of optimisation results in good initial mechanical properties along with a good compression set, good heat resistance and markedly improved engine oil resistance (esp. reduced hardness change and reduced volume increase).

Mooney Viscosity

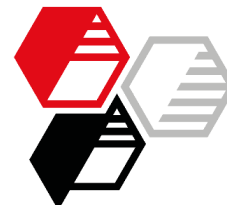
ML (1+4) 120°C	DIN 53523, T3	MU	33	23	25
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Mooney Scorch

ML (5 MU) 120°C	DIN 53523, T4	min	6.9	6.6	6.0
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Rotorless curemeter, 180°C

Mmin	DIN 53529, T3	Nm	0.03	0.01	0.01
Mmax	DIN 53529, T3	Nm	0.51	0.52	0.53
Cure rate	DIN 53529, T3	Nm/min	0.38	0.47	0.47
t ₅	DIN 53529, T3	min	0.35	0.42	0.40
t ₁₀	DIN 53529, T3	min	0.42	0.49	0.46
t ₉₀	DIN 53529, T3	min	2.6	2.5	2.6



			Control	AKTISIL Q		
				20 phr R. W 759 cure system	30 phr E. T810T	
			M 621.7/1	M 621.8/8	M 621.8/9	
Physical properties						
Press cure 10 min @ 180°C						
Density	DIN EN ISO 1183-1	g/cm ³	1.20	1.42	1.42	
						PSA S22 5106
Post cure 4 h @ 185°C						
Hardness (piled S2)	DIN ISO 48-4	Shore A	66	57	57	50-80
Tensile strength	DIN 53504, S2	MPa	16	8.1	8.1	≥ 7
Elongation at break	DIN 53504, S2	%	270	257	252	≥ 200
Rebound	DIN 53512	%	43	44	42	
Compression set	DIN ISO 815-1, B					
72 h @ 165°C, 25 % deflection		%	21	18	15	≤ 25
Air aging, 168 h @ 165°C (post cured specimen)						
Hardness (piled S2)		Shore A	65	62	59	
Tensile strength		MPa	16	9,2	9,3	
Elongation at break		%	271	210	187	≥ 150
Modulus 100 %		MPa	5.2	4.4	5.3	
Rebound		%	38	40	38	
Δ Hardness		Shore A	+4	+5	+2	≤ +10
Δ Tensile strength		%	-1	15	14	≤ -20
Δ Elongation at break		%, rel.	0	-18	-26	≤ -30
Δ Modulus 100 %		%	+10	+21	+19	
Δ Rebound		%, rel.	-12	-9	-10	
Immersion in oil, OS 206 304, 168 h @ 165°C (post cured specimen)						
Hardness (piled S2)		Shore A	57	55	57	
Tensile strength		MPa	16	10	10	
Elongation at break		%	227	213	213	≥ 150
Modulus 100 %		MPa	5.6	4.5	5.0	
Δ Hardness		Shore A	-9	-2	0	±5
Δ Tensile strength		%	-4	+23	+25	≤ -20
Δ Elongation at break		%, rel.	-16	-17	-16	≤ -30
Δ Modulus 100 %		%	+19	+24	+12	
Δ Volume		%	+14	+8	+6	-5 / +10

More information on this topic:

Aktisil Q in AEM Seals and Gaskets

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