



AUTOMOTIVE INDUSTRY

Hard sponge compounds, black

Partial replacement of carbon black with Neuburg Siliceous Earth for weight and cost savings, electrically non-conductive

60 Shore A, EPDM, sulfur cure / CV cure

Guide formulations of HOFFMANN MINERAL Volume fraction Carbon Black (%)	M 680.4	conventional filled with CB	partial CB replacement – non-conductive			
		28	16			
		1	2	3	5	6
Keltan 8550C		100.00	100.00	100.00	100.00	100.00
Carbon Black N-550		110.00	50.00	50.00	50.00	50.00
SILLITIN N 82)*		---	180.00	---	---	---
SILLITIN Z 86		---	---	180.00	---	---
AKTISIL PF 216		---	---	---	180.00	---
AKTISIL AM		---	---	---	---	180.00
Process Oil P 460 (ex Sunpar 2280)		20.00	20.00	20.00	20.00	20.00
Zinkoxyd aktiv		5.00	8.00	8.00	8.00	8.00
Stearic acid		1.00	1.00	1.00	1.00	1.00
Kezadol GR		2.25	2.25	2.25	2.25	2.25
PEG 4000		2.00	2.00	2.00	2.00	2.00
Rhenogran DPG-80		1.10	1.10	1.10	1.10	1.10
Rhenogran MBT-80		2.00	2.00	2.00	2.00	2.00
Rhenogran ZBEC-70		2.00	2.00	2.00	2.00	2.00
Rhenogran TP-50		4.00	4.00	4.00	4.00	4.00
Rhenogran S-80		1.90	1.90	1.90	1.90	1.90
Rhenogran CLD-80		1.00	1.00	1.00	1.00	1.00
Expancel 950 DU 80		5.05	7.45	7.45	7.45	7.45
Total phr		257.30	382.70	382.70	382.70	382.70

)* No longer available. Recommended: SILLITIN N 75

Replacement of Carbon Black N-550 with Neuburg Siliceous Earth:

Unchanged properties

- cell structures comparable
- density comparable, despite increased filler content
- output comparable along with reduced mass pressure
- elongation at break roughly comparable with SILLITIN grades
- moduli at low deformations comparable, esp. with AKTISIL AM
- compression set comparable with AKTISIL grades

Additional benefits

- surfaces even more matte
- AKTISIL AM for highest tensile strength among Neuburg Siliceous Earth grades
- significant increase in electrical resistance
- significant reduction of compound costs, esp. with SILLITIN grades



			conventional filled with CB	partial CB replacement – non-conductive				
			M 680.4	1	2	3	5	6
Rotorless curemeter @ 230 °C								
Cure yield	DIN 53529, T3	Nm	1.16	1.45	1.46	1.47	1.41	
Curing rate	DIN 53529, T3	Nm/min	3.58	4.54	4.45	4.35	4.47	
t ₉₀	DIN 53529, T3	min	3.1	2.6	2.7	2.7	2.8	
Mechanical properties								
Curing in salt bath 3 min @ 230 °C								
Density	DIN EN ISO 1183-1	g/cm ³	0.73	0.73	0.70	0.71	0.78	
Tensile strength	DIN 53504, S2	MPa	6.3	2.3	2.4	2.9	3.6	
Modulus 10 %	DIN 53504, S2	MPa	0.90	0.89	0.89	0.90	0.91	
Elongation at break	DIN 53504, S2	%	158	125	123	85	83	
Hardness	DIN ISO 7619-1	Shore A	63	60	59	63	66	
Tear resistance (trouser)	DIN ISO 34-1, A	N/mm	4.5	2.8	2.8	2.4	2.6	
Compression set 22 h @ 70°C, 50 %	DIN ISO 815-1, B	%	28	41	43	33	31	
Water absorption	ASTM D 1056	%	0.2	0.4	0.4	0.4	0.3	
Electrical properties, DIN IEC 93								
Voltage used		V	1	100	100	100	100	100
Volume resistivity		Ω*cm	1.3E+07	2.3E+12	7.1E+13	2.3E+13	1.3E+13	

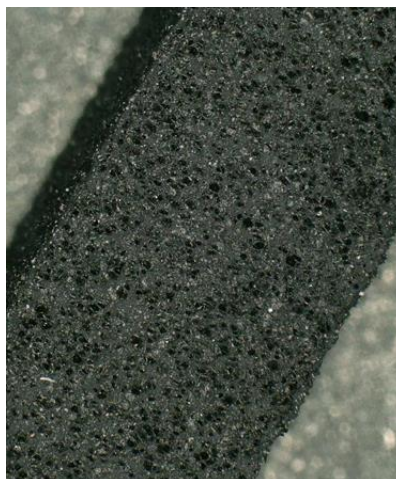


exemplary illustrations

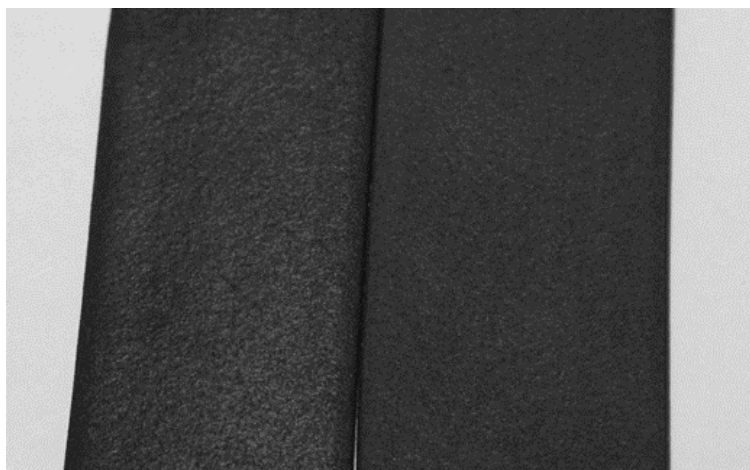
conventional – filled with CB

partial CB replacement -
conductive

cell structure



surface



More information on this topic:

[Partial Replacement of Carbon Black with Neuburg Siliceous Earth in Cellular, Hard EPDM Compounds for Weight and Cost Savings](#)

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