

AUTOMOTIVE INDUSTRY

Profile, sponge, black

Partial replacement of carbon black with NSE, electrically conductive

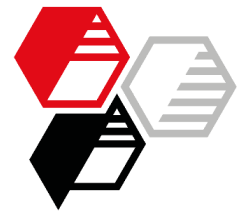
Density 0.50 g/cm³, EPDM, sulfur cure / CV cure

Guide formulations of HOFFMANN MINERAL Volume fraction Carbon Black (%)	conventional filled with CB		partial CB replacement - conductive				
	18.8		15.3				
	M 665	4/1	4/2	4/3	4/4	4/6	4/7
Keltan 8550C	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Carbon Black N-550	85.00	70.00	70.00	70.00	70.00	70.00	70.00
SILLIKOLLOID P 87	---	30.00	---	---	---	---	---
SILLITIN Z 86	---	---	30.00	---	---	---	---
SILLITIN N 82)*	---	---	---	30.00	---	---	---
AKTISIL PF 216	---	---	---	---	30.00	---	---
AKTIFIT PF 115	---	---	---	---	---	30.00	---
Process Oil P 460 (ex Sunpar 2280)	70.00	70.00	70.00	70.00	70.00	70.00	70.00
Zinkoxyd aktiv	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Stearic acid	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Kezadol GR	2.25	2.25	2.25	2.25	2.25	2.25	2.25
PEG 4000	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Rhenogran DPG-80	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Rhenogran MBT-80	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Rhenogran ZBEC-70	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Rhenogran TP-50	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Sulfur	1.52	1.52	1.52	1.52	1.52	1.52	1.52
Rhenogran CLD-80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
TRACEL K 3/95	2.50	2.50	2.50	2.50	2.50	2.50	2.50
TRACEL OBSH 75 EPR-1	1.90	1.90	1.90	1.90	1.90	1.90	1.90
Total phr	284.27	299.27	299.27	299.27	299.27	299.27	299.27

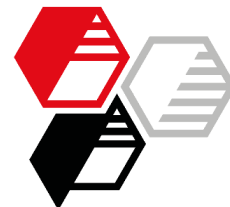
)* No longer available. Recommended: SILLITIN N 75

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

- comparable cell structures
- comparable modulus level with AKTISIL PF 216 and AKTIFIT PF 115 in the tensile test
- comparable compression set
- reduced water absorption with SILLITIN Z 86
- partly significant reduction of compound costs



		conventional filled with CB		partial CB replacement - conductive				
		M 665	4/1	4/2	4/3	4/4	4/6	4/7
Mooney Viscosity								
ML (1+2) @ 120°C	DIN ISO 289-1	MU	40	41	43	43	45	43
Mooney Scorch								
ML +5 @ 120°C	DIN ISO 289-2	min	5.0	4.6	4.5	4.5	4.4	4.6
Rotorless curemeter @ 200 °C								
Cure yield	DIN 53529, T3	Nm	0.60	0.63	0.64	0.59	0.67	0.65
Curing rate	DIN 53529, T3	Nm/min	1.27	1.25	1.33	1.32	1.31	1.31
t ₉₀	DIN 53529, T3	min	1.1	1.1	1.1	1.1	1.2	1.1
Mechanical properties								
Curing in salt bath 3 min @ 200 °C								
Density (foamed)	DIN EN ISO 1183-1	g/cm ³	0.51	0.49	0.47	0.45	0.51	0.50
Tensile strength	DIN 53504, S2	MPa	2.7	2.2	1.8	1.7	2.3	2.3
Modulus 10 %	DIN 53504, S2	MPa	0.12	0.11	0.10	0.09	0.12	0.11
Modulus 100 %	DIN 53504, S2	MPa	0.8	0.6	0.6	0.6	0.8	0.8
Elongation at break	DIN 53504, S2	%	305	311	283	278	281	288
Hardness	DIN ISO 7619-1	Shore A	23	21	21	19	23	23
Tear resistance (trouser)	DIN ISO 34-1, A	N/mm	2.3	2.0	1.9	1.9	2.0	2.1
Compression set 22 h @ 70°C, 50 %	DIN ISO 815-1, B	%	8.6	9.7	8.1	8.4	8.0	8.5
Water absorption	ASTM D 1056	%	48	50	35	59	50	59
Electrical properties, DIN IEC 93								
Voltage used		V	1	10	10	10	10	10
Volume resistivity		Ω*cm	1.7E+08	6.1E+06	9.2E+06	1.4E+07	8.0E+06	4.0E+06



Comparable cell structures (therefore only one exemplary illustration in each case)

conventional – filled with CB

partial CB replacement - conductive



More information on this topic:

[Partial Replacement of Carbon Black with Neuburg Siliceous Earth in Cellular EPDM Profile Compounds](#)

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