MACHINERY and EQUIPMENT
Appliance, Gasket, light-colored

Neuburg Siliceous Earth as an acid resistant and tintable alternative to carbon black
65 Shore A, FKM, peroxide cure

	SILLITIN Z 86	SILLITIN V 88	AKTISIL AM	AKTISIL VM 56	AKTISIL Q
Guide formulations of HOFFMANN MINERAL M 638.0	1	3	5	6	7
Viton GAL-200S	100	100	100	100	100
Zinkoxyd aktiv	3	3	3	3	3
Diak No. 7	3	3	3	3	3
Varox DBPH-50	2	2	2	2	2
SILLITIN Z 86	30	---	---	---	---
SILLITIN V 88	---	30	---	---	---
AKTISIL AM	---	---	30	---	---
AKTISIL VM 56	---	---	---	30	---
AKTISIL Q	---	---	---	---	30
Total phr	138	138	138	138	138

Advantages of all types of Neuburg Siliceous Earth:
- colored parts are possible
- reduction of product carbon footprint

Advantages of the individual types:

SILLITIN Z 86:
- highest modulus of the Sillitin grades
- good mechanical properties
- good oil resistance

SILLITIN V 88:
- highest elongation at break
- highest tear resistance
- best compression set at elevated temperature acc. to VW
- good oil resistance

AKTISIL AM:
- highest cure rate
- highest modulus
- best compression set at room temperature acc. to VW
- good mechanical properties
- good media resistance

AKTISIL VM 56:
- highest tensile strength
- best heat resistance
- good mechanical properties
- good media resistance

AKTISIL Q:
- best compression set acc. to ISO
- best oil and acetic acid resistance
- good mechanical properties
- good heat resistance

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		M 638.0	1	3	5	6	7

Evaluation Neuburg Siliceous Earth vs. carbon black N-990

The rating indicates which type of Neuburg Siliceous Earth improves (+) or equals the corresponding property compared to carbon black. Signs highlighted in red mean that this product within Neuburg Siliceous Earth achieves the best value for this property.

	1	3	5	6	7
Cure speed			+		+
Viscosity	+	+	+	+	+
Tensile strength	+	=	+	+	=
Elongation at break	+	+	=	=	
Modulus 100 %	+	=	+	+	+
Tear resistance	+	+	=	=	=
Compression set ISO, 200°C	=	=	=	=	=
Compression set ISO, 200°C, no post cure	=	=	=	=	+
Compression set ISO, 232°C	=	=	=	=	=
Compression set ISO, 232°C, no post cure	=	=	=	=	+
Compression set VW 23°C	=	=	+	+	=
Compression set VW 150°C	=	+	+	=	=
Hot air resistance 210°C			+	+	+
Hot air resistance 230°C			=	+	+
Fuel resistance	=	=	=	=	=
Oil resistance	+	+	+	+	+
Resistance to acetic acid			=	=	+

			1	3	5	6	7
Mooney Viscosity							
ML (1+4) 100°C	DIN 53523, T3	MU	64	62	62	62	61
Rotorless curemeter, 177°C							
M_{min}	DIN 53529, T3	Nm	0.04	0.04	0.04	0.04	0.04
V_{max}	DIN 53529, T3	Nm/min	3.0	3.1	4.0	3.0	3.6
t_{90}	DIN 53529, T3	min	0.9	0.9	0.8	0.9	0.8
Mechanical properties							
Press cure 7 min @ 177°C							
Compression set	DIN ISO 815-1, B						
70 h @ 200°C, 25 % deflection		%	23	22	21	24	18
70 h @ 232°C, 25 % deflection		%	26	25	30	28	20
Post cure 2 h @ 232°C							
Density	DIN EN ISO 1183-1	g/cm³	1.77	1.77	1.79	1.77	1.76
Hardness	DIN ISO 48-4	Shore A	65	65	66	66	65
Modulus 50 %	DIN 53504, S2	MPa	2.1	1.8	1.9	1.8	1.7
Modulus 100 %	DIN 53504, S2	MPa	4.6	3.8	4.9	4.6	4.3
Tensile strength	DIN 53504, S2	MPa	23	20	24	26	20
Elongation at break	DIN 53504, S2	%	379	392	311	318	271
Tear resistance	DIN ISO 34-1, A	N/mm	5.8	7.5	3.9	3.4	4.1
Abrasion	DIN ISO 4649	mm³	80	103	71	64	73
Compression set	DIN ISO 815-1, B						
70 h @ 200°C, 25 % deflection		%	21	20	21	22	20
70 h @ 232°C, 25 % deflection		%	26	26	29	27	23
Compression set	VW PV 3307						
94 h @ 23°C, 50 % deflection		%	46	50	39	40	48
94 h @ 150°C, 50 % deflection		%	40	34	34	42	38

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		SILLITIN Z 86	SILLITIN V 88	AKTISIL AM	AKTISIL VM 56	AKTISIL Q
	M 638.0	1	3	5	6	7
Air aging, 504 h @ 210°C, post cured specimen, measured 30 min after exposure						
Hardness	Shore A	70	68	69	68	67
Tensile strength	MPa	25	22	26	25	22
Elongation at break	%	257	302	304	312	356
Δ Hardness	Shore A	+5	+3	+3	+2	+2
Δ Tensile strength	%	+10	+12	+7.5	-3.6	+11
Δ Elongation at break	%, rel.	-32	-23	-2.3	-1.6	+31
Air aging, 94 h @ 230°C, post cured specimen, measured 30 min after exposure						
Hardness	Shore A	69	67	68	67	65
Tensile strength	MPa	28	24	28	27	23
Elongation at break	%	278	312	299	304	331
Δ Hardness	Shore A	+4	+2	+2	+1	0
Δ Tensile strength	%	+23	+21	+15	+4.5	+16
Δ Elongation at break	%, rel.	-27	-20	-3.8	-4.3	+22
Immersion in FAM B, 70 h @ 23°C, post cured specimen						
Hardness	Shore A	60	57	58	57	58
Tensile strength	MPa	9.3	7.8	11	13	10
Elongation at break	%	340	331	238	251	206
Δ Hardness	Shore A	-5	-8	-8	-9	-7
Δ Tensile strength	%	-60	-60	-53	-51	-49
Δ Elongation at break	%, rel.	-10	-16	-24	-21	-24
Δ Weight	%	+7.9	+7.7	+6.8	+7.8	+8.0
Δ Volume	%	+19	+18	+17	+19	+19
Immersion in oil, OS 206 304, 168 h @ 150°C, post cured specimen						
Hardness	Shore A	66	64	65	64	64
Tensile strength	MPa	21	18	22	23	21
Elongation at break	%	351	370	281	286	291
Δ Hardness	Shore A	+1	-1	-1	-2	-1
Δ Tensile strength	%	-8.4	-7.4	-8.8	-9.7	+2.3
Δ Elongation at break	%, rel.	-7.4	-5.6	-9.8	-10	+7.3
Δ Weight	%	+0.6	+0.6	+0.7	+0.8	+0.6
Δ Volume	%	+1.1	+0.7	+1.2	+1.4	+0.7
Immersion in acetic acid pH3, 168 h @ 100°C, post cured specimen						
Hardness	Shore A	40	38	47	48	51
Tensile strength	MPa	10	9.1	19	19	20
Elongation at break	%	285	288	300	281	274
Δ Hardness	Shore A	-25	-27	-19	-18	-14
Δ Tensile strength	%	-56	-54	-22	-24	-3.0
Δ Elongation at break	%, rel.	-25	-27	-3.7	-12	+1.2
Δ Weight	%	+49	+36	+24	+25	+23
Δ Volume	%	+94	+68	+47	+47	+43

More information on this topic:

Neuburg Siliceous Earth in Peroxide Cured FKM as an Acid Resistant and Tintable Alternative to Carbon Black N990

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