SPECIAL TOPICS

Neuburg Siliceous Earth in addition-cured high consistency silicone rubber
Molding, high tear resistance
40-50 Shore A, Q, addition-cured

		Base cpd.	Silfit Z 91	Âktisil Q	Aktifit Q	Aktifit VM
Guide formulations of HOFFMANN MINERAL	M 675.0	41	42	43	44	45
Elastosil R plus 4000/40 MH		100.0	100.0	100.0	100.0	100.0
SILFIT Z 91		---	25.0	---	---	---
AKTISIL Q		---	---	25.0	---	---
AKTIFIT Q		---	---	---	25.0	---
AKTIFIT VM		---	---	---	---	25.0
Elastosil AUX Batch PT 2		1.5	1.5	1.5	1.5	1.5
Total phr		126.5	126.5	126.5	126.5	126.5

General benefits with 25 phr Neuburg Siliceous Earth vs. unfilled polymer / base compound

Processing properties
- less stickiness and higher intrinsic strength of the non-cured compounds (green strength)

Mechanical properties
- comparable or higher tear resistance
- higher moduli
- better oil resistance
- comparable hot air resistance

Compound costs
- compound cost reduction potential

Product specific benefits	**Silfit Z 91**	**Aktisil Q**	**Aktifit Q**	**Aktifit VM**
Reduction of stickiness	+	+	+	+
Intrinsic strength of non-cured compound (green strength)	+	+	+	+
Torque minimum	=	=	=	=
Cure yield	+	+	+	+
Tear resistance trousers	=		=	
Tear resistance Graves	**+**	=	**+**	+
Moduli	+	**+**	**+**	+
Compression set		=		
Hot air resistance		**+**		
Oil resistance	+	**+**	+	+

+ ≈ better than base compound **+** ≈ best product = ≈ comparable to base compound

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		Base cpd.	Silfit Z 91	Âktisil Q	Aktifit Q	Aktifit VM
	M 675.0	41	42	43	44	45
Rotorless curemeter, 150°C						
M_{min}	Nm	0.013	0.016	0.014	0.016	0.016
M_{max}	Nm	0.200	0.275	0.257	0.272	0.266
M_{max}-M_{min}	Nm	0.187	0.259	0.243	0.256	0.250
tan δ	-	0.08	0.08	0.07	0.08	0.08
Physical properties						
Press cure 5 min @ 150°C + Post cure 4 h @ 200°C						
Hardness	Shore A	37	43	48	46	42
Tensile strength	MPa	7.9	6.2	5.8	6.3	5.8
Elongation at break	%	887	637	629	676	739
Modulus 100 %	MPa	1.1	1.6	1.8	1.8	1.4
Modulus 300 %	MPa	2.6	3.8	3.8	3.9	3.2
Tear resistance (trousers)	N/mm	20.6	20.8	19.7	20.9	19.1
Tear resistance (Graves)	N/mm	35.3	38.3	36.4	38.3	37.8
Compression set, 24 h @ 175°C, 25 % deflection	%	24	32	24	32	28
Rebound	%	49	44	46	43	43
Air aging, 168 h @ 200°C, post cured specimen						
Hardness	Shore A	37	43	48	46	42
Tensile strength	MPa	7.9	6.2	5.8	6.3	5.8
Elongation at break	%	887	637	629	676	739
Modulus 100 %	MPa	1.1	1.6	1.8	1.8	1.4
Modulus 300 %	MPa	2.6	3.8	3.8	3.9	3.2
Tear resistance (trousers)	N/mm	20.6	20.8	19.7	20.9	19.1
Tear resistance (Graves)	N/mm	35.3	38.3	36.4	38.3	37.8
Rebound	%	49	44	46	43	43
Δ Hardness	Shore A	+4	+8	+5	+4	+8
Δ Tensile strength	%	+20.1	+8.2	-2.8	-13.6	+7.9
Δ Elongation at break	%, rel.	-25.1	-43.9	-20.6	-42.1	-43.7
Δ Modulus 100 %	%	+19.1	+33.3	+25.0	+16.4	+42.6
Δ Modulus 300 %	%	+34.6	+53.5	+15.0	+22.5	+52.5
Δ Tear resistance (trousers)	%	-17.5	-17.8	-12.2	-24.4	-17.3
Δ Tear resistance (Graves)	%	-11.3	-17	-20.3	-26.9	-10.8
Δ Rebound	%, rel.	-6.1	-6.8	-6.5	-2.3	2.3

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		Base cpd.	Silfit Z 91	Âktisil Q	Aktifit Q	Aktifit VM
	M 675.0	41	42	43	44	45
Immersion in reference oil IRM 903, 72 h @ 150°C, post cured specimen						
Hardness	Shore A	23	28	31	28	26
Tensile strength	MPa	3.1	3.3	3.4	3.3	2.9
Elongation at break	%	267	251	272	248	286
Modulus 100 %	MPa	1.3	1.7	1.9	1.7	1.3
Δ Hardness	Shore A	-14	-15	-17	-18	-16
Δ Tensile strength	%	-61.4	-46.6	-40.5	-47.0	-49.4
Δ Elongation at break	%, rel.	-69.9	-60.7	-56.8	-63.3	-61.3
Δ Modulus 100 %	%	+14.5	+6.3	+7.3	-6.8	-6.4
Δ Weight	%	+53	+42	+39	+42	+44
Δ Volume	%	+65	+59	+56	+58	+61

Standards

Cure characteristics	DIN 53529, part 1-4
Tensile test	DIN 53504, S2
Compression set	DIN ISO 815, B
Hardness	DIN ISO 7619-1
Rebound	DIN 53512
Tear resistance (trousers)	DIN ISO 34-1, A
Tear resistance (Graves)	DIN ISO 34-1, Bb
Air aging	ISO 188, D
Immersion in liquid media	DIN ISO 1817

More information on this topic:

Neuburg Siliceous Earth in addition cured high consistency silicone rubber

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