AUTOMOTIVE INDUSTRY
Molding, light-colored

AKTIFIT AM in combination with silica in AEM
70/80 Shore A, AEM, diamine cure

	Ultrasil VN 2	**60 phr**	**30 phr**	**20 phr**
	AKTIFIT AM	**---**	**60 phr**	**80 phr**
Guide formulations of DuPont	AEM	9913	9914	9919
Vamac Ultra IP		100.0	100.0	100.0
Naugard 445		2.0	2.0	2.0
Armeen 18D Prills		0.5	0.5	0.5
Ofalub SEO		1.5	1.5	1.5
Stearic acid		1.0	1.0	1.0
Ultrasil VN 2		60.0	30.0	20.0
Dynasylan AMEO		1.0	0.5	0.5
AKTIFIT AM		---	60,0	80.0
Alcanplast PO 80		10.0	10.0	10.0
Vulcofac HDC		1.3	1.3	1.3
Alcanpoudre DBU-70		3.0	3.0	3.0
Total phr		180.3	209.8	219.8

Combining silica with AKTIFIT AM results in

- improved processing due to reduced viscosity
  (see viscosity ML 1+4 @ 120°C and MDR min. torque @ 180°C)
- shorter conversion time
- markedly improved compression set
- slightly improved heat resistance

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HOFFMANN MINERAL GmbH • P. O. Box 14 60 • D-86619 Neuburg (Donau) • Phone (+49 84 31) 53-0 • Fax (+49 84 31) 53-3 30
Internet: www.hoffmann-mineral.com • e-Mail: info@hoffmann-mineral.com

			Ultrasil VN 2	60 phr	30 phr	20 phr
			AKTIFIT AM	---	60 phr	80 phr
			AEM	9913	9914	9919
Rheological properties						
Mooney Viscosity ML (1+4) @ 120°C		MU		88	53	52
MDR Min. Torque @ 180°C		dNm		2.43	0.55	0.46
MDR Max. Torque @ 180°C		dNm		31.67	17.40	16.44
MDR Cure Rate @ 180°C		dNm/min		10	7.2	7.0
MDR t_{10} @ 180°C		min		0.71	0.78	0.74
MDR t_{90} @ 180°C		min		8.8	7.7	6.9
Mechanical properties						
Cure 10 min @ 180°C + post cure 4 h @ 175°C						
Hardness	DIN ISO 7619-1	Shore A		81	71	68
Tensile strength		MPa		16	16	15
Modulus 50 %		MPa		2.6	2.4	2.3
Modulus 100 %		MPa		4.7	6.5	6.9
Elongation at break		%		279	209	185
Tear resistance (Type C, Crescent)		kN/m		27	19	18
Tear resistance (Type A, Trouser)		kN/m		9.4	3.5	2.8
Compression set						
70 h @ 150°C, 25 % deflection	DIN ISO 815-1	%		37	17	14
1008 h @ 150°C, 25 % deflection	DIN ISO 815-1	%		58	40	39
94 h @ 150°C, 50 % deflection, 5s	VW PV 3307	%		58	41	36
Air aging, 1008 h @ 150°C, post cured specimen						
Hardness		Shore A		83	73	69
Tensile strength		MPa		15	15	14
Modulus 100 %		MPa		6.0	7.0	6.8
Elongation at break		%		215	202	190
Δ Hardness		Shore A		+2	+2	+1
Δ Tensile strength		%		-10	-5	-7
Δ Modulus 100 %		%		+26	+7	-1
Δ Elongation at break		%, rel.		-23	-3	+3
Mechanical properties @ 150°C						
Tensile strength		MPa		5.1	5.3	4.6
Modulus 50 %		MPa		2.3	2.5	2.5
Elongation at break		%		117	88	76
Tear resistance (Type C, Crescent)		kN/m		9.0	4.4	3.7

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