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AUTOMOTIVE INDUSTRY**Radiator hose****Hose lining, low electrical conductivity**

65 Shore A, EPDM, peroxide cure

Specification VW TL 523.61

Guide formulation of HOFFMANN MINERAL		M 557.0/4
Vistalon 3666		52.5
Vistalon 7500		70.0
Durex 0		70.0
AKTISIL VM 56		80.0
Process Oil P 460 (ex Sunpar 2280)		22.5
TMQ		1.0
Rhenofit EDMA/S		0.7
Perkadox 14-40B-pd		7.0
Total phr		303.7

Mooney Viscosity

ML (1+4) 120°C DIN 53523, T3 MU 102

Mooney Scorch

ML (5 MU) 120°C DIN 53523, T4 min 26.5

Goettfert Elastograph, $\pm 0.2^\circ$, 180°Ct₅ DIN 53529, T3 min 0.5t₉₀ DIN 53529, T3 min 4,6

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Physical properties**Press cure 5 min @ 180°C**

Density	DIN EN ISO 1183-1	g/cm ³	1.25
Hardness	DIN ISO 7619-1	Shore A	68
Modulus 100 %	DIN 53504, S2	MPa	4.3
Modulus 300 %	DIN 53504, S2	MPa	10.7
Tensile strength	DIN 53504, S2	MPa	11.3
Elongation at break	DIN 53504, S2	%	320
Rebound	DIN 53512	%	52
Tear resistance	DIN ISO 34-1, A	N/mm	7.1
Volume resistivity	DIN IEC 93	Ω cm	2 x 10 ⁶

Compression set

22 h @ 160°C, 50 % deflection, 3 h cooled under deflection

measured after 3 min relaxation	%	47.9
measured after 30 min relaxation	%	41.9
measured after 60 min relaxation	%	41.1

22 h @ 160°C, 25 % defl. DIN ISO 815, B % 24

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Air aging, 94 h @ 160°C, DIN 53508

Hardness	Shore A	71
Modulus 100 %	MPa	5.2
Tensile strength	MPa	10.6
Elongation at break	%	230
Rebound	%	51
Tear resistance	N/mm	5.3
Δ Hardness	Shore A	+3
Δ Modulus 100 %	%	+20
Δ Tensile strength	%	-6
Δ Elongation at break	%, rel.	-28
Δ Rebound	%, rel.	-2
Δ Tear resistance	%	-26

Air aging, 168 h @ 150°C, DIN 53508

Hardness	Shore A	72
Modulus 100 %	MPa	5.4
Tensile strength	MPa	10.8
Elongation at break	%	220
Rebound	%	50
Tear resistance	N/mm	4.9
Δ Hardness	Shore A	+4
Δ Modulus 100 %	%	+25
Δ Tensile strength	%	-4
Δ Elongation at break	%, rel.	-31
Δ Rebound	%, rel.	+5
Δ Tear resistance	%	-31

Air aging, 336 h @ 150°C, DIN 53508

Hardness	Shore A	74
Modulus 100 %	MPa	6.2
Tensile strength	MPa	9.3
Elongation at break	%	175
Rebound	%	49
Tear resistance	N/mm	3.8
Δ Hardness	Shore A	+6
Δ Modulus 100 %	%	+43
Δ Tensile strength	%	-18
Δ Elongation at break	%, rel.	-46
Δ Rebound	%, rel.	-6
Δ Tear resistance	%	-47

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Immersion in BP Olex MK 4449, 22 h @ 100°C, DIN 53521

Hardness (piled S2 specimen)	Shore A	46
Modulus 100 %	MPa	4.4
Tensile strength	MPa	7.3
Elongation at break	%	185
Δ Hardness	Shore A	-23
Δ Modulus 100 %	%	+1
Δ Tensile strength	%	-35
Δ Elongation at break	%, rel.	-41
Δ Weight	%	+62
Δ Volume	%	+90

Immersion in VW coolant G 12 (50 vol-% in deionized water), 94 h @ 160°C

Hardness (piled S2 specimen)	Shore A	66
Modulus 100 %	MPa	3.9
Tensile strength	MPa	10.5
Elongation at break	%	325
Δ Hardness	Shore A	-3
Δ Modulus 100 %	%	-10
Δ Tensile strength	%	-7
Δ Elongation at break	%, rel.	+3
Δ Weight	%	+1.5
Δ Volume	%	+0.9

More information on this topic is available in this technical report:

[Effect of Aktisil VM 56 in Radiator Hose acc. to VW TL 523 61](#)

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