Tecnoflon® VPL 85540 / VPL 55540

Very Low Temperature Peroxide Curable

Tecnoflon® VPL 85540 and VPL 55540 belong to a brand new generation of very low temperature peroxide curable FKM. They have been designed to offer outstanding low temperature flexibility (i.e. TR_{10} = −40 °C). Like all other Tecnoflon® peroxide curable grades, they exhibit excellent processability and superior mechanical properties and sealing ability; moreover they need very short postcuring cycles.

Some of the basic properties of Tecnoflon® VPL 85540 and VPL 55540 are:

- Outstanding low temperature behavior
- Very good chemical resistance
- Low post cure
- Superior mold flow
- Lack of mold fouling
- Excellent mold release
- Very good chemical resistance

Solvay Specialty Polymers offers medium (VPL 85540) and low viscosity (VPL 55540) versions in order to fulfil all customer's requirements. Accordingly to the curing technology, Tecnoflon® VPL 85540 and VPL 55540 can be transformed by all the molding techniques, including injection, injection compression, compression, and transfer molding.

Tecnoflon® VPL 85540 and VPL 55540 can be used with all typical peroxide curing system and the other fluoroelastomer compounding ingredients. Mixing can be accomplished with two roll mills or internal mixers.

Tecnoflon® VPL 85540 and VPL 55540 can be extruded into hoses or profiles or can be calendered to make sheet stocks or belting.

Handling and safety

Normal care and precautions should be taken to avoid skin contact, eye contact and breathing of fumes. Smoking is prohibited in working areas. Wash hands before eating or smoking. For complete health and safety information, please refer to the material safety data sheet.

Basic characteristics of the raw polymer are as follows:

Property	Unit	VPL 55540	VPL 85540	Test Method
ML (1+10') at 121 °C	MU	25	45	ASTM D1646
Fluorine content	%	65	65	Solvay Internal Method – NMR
Specific gravity	g/cm^3	1.83	1.83	ASTM D792
Colour		Translucent	Translucent	
Packaging / Form		Slabs	Slabs	
Solubility		Ketones and esters	Ketones and esters	

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Typical properties

Property	Unit	VPL 55540	VPL 85540	Test Method
Tecnoflon®	phr	100	100	
Luperox® 101XL-45	phr	2	2	
Drimix® TAIC (75 %)	phr	5	5	
ZnO*	phr	5	5	
N-990 MT Carbon Black	phr	30	30	

Property	Unit	VPL 55540	VPL 85540	Test Method
Mooney viscosity ML (1+10') at 121 °C	MU	28	43	ASTM D1646
MDR 6 min at 160 °C arc 0.5 °				ASTM D6601
Minimum torque	lb·in	0.7	1.1	
Maximum torque	lb·in	28.4	27.2	
t_{s2}	min	1.1	0.9	
t'_{50}	min	2.0	1.9	
t'_{90}	min	3.8	3.7	
Post cure: 4 h at 230 °C				
100 % Modulus	MPa	7.2	6.9	ASTM D412C
Tensile strength	MPa	15.0	15.8	
Elongation at break	%	172	174	
Hardness	ShoreA	68	67	ASTM D2240
Compression set 25 % deformation, 70 h at 200 °C				ASTM D395 method B
O-ring #214	%	21	20	
Temperature retraction				ASTM D1329
TR_{10}	°C	−40	−40	

Fuel resistance

Property	Typical Value	Unit	Test Method
Fuel B, 70 h at 24 °C			
Δ Tensile strength	−15	%	
Δ Elongation at break	4	%	
Δ Hardness	−4	Shore A	
Δ Volume	4	%	
Fuel C, 168 h at 23 °C			
Δ Tensile strength	−20	%	
Δ Elongation at break	−8	%	
Δ Hardness	−4	Shore A	
Δ Volume	8	%	
Fuel C, 168 h at 40 °C			
Δ Tensile strength	−31	%	
Δ Elongation at break	−21	%	
Δ Hardness	−6	Shore A	
Δ Volume	12	%	
M15, 168 h at 23 °C			
Δ Tensile strength	−66	%	
Δ Elongation at break	−34	%	
Δ Hardness	−9	Shore A	
Δ Volume	16	%	
Fuel CE 10, 70 h at 60 °C			
Δ Tensile strength	−50	%	
Δ Elongation at break	−23	%	
Δ Hardness	−10	Shore A	
Δ Volume	19	%	
Fuel CE 22, 70 h at 60 °C			
Δ Tensile strength	−47	%	
Δ Elongation at break	−23	%	
Δ Hardness	−10	Shore A	
Δ Volume	21	%	
Fuel CE 85, 70 h at 60 °C			
Δ Tensile strength	−39	%	
Δ Elongation at break	−13	%	
Δ Hardness	−7	Shore A	
Δ Volume	11	%	

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Property	Typical Value	Unit	Test Method
Ethanol, 168 h at 40 °C			
Δ Tensile strength	−34	%	
Δ Elongation at break	−9	%	
Δ Hardness	−5	Shore A	
Δ Volume	7	%	
RME, 336 h at 150 °C			
Δ Tensile strength	−16	%	
Δ Elongation at break	−2.4	%	
Δ Hardness	−3	Shore A	
Δ Volume	1.5	%	
B20 (Diesel + 20 % RME), 1,008 h/150 °C			
Δ Tensile strength	−14	%	
Δ Elongation at break	26	%	
Δ Hardness	−12	Shore A	
Δ Volume	20	%	
Fam B, 72 h at 60 °C			
Δ Tensile strength	−39	%	
Δ Elongation at break	−31	%	
Δ Hardness	−7	Shore A	
Δ Volume	21	%	
PN 180, 336 h at 60 °C			
Δ Tensile strength	−41	%	
Δ Elongation at break	−6	%	
Δ Hardness	−15	Shore A	
Δ Volume	22	%	

Oil resistance

Property	Typical Value	Unit	Test Method
Dexron VI ATF, 1,500 h at 150 °C			
Δ Tensile strength	−19	%	
Δ Elongation at break	−13	%	
Δ Hardness	0	Shore A	
Δ Volume	1	%	
ATF94, 1,500 h at 150 °C			
Δ Tensile strength	−16	%	
Δ Elongation at break	−11	%	
Δ Hardness	1	Shore A	
Δ Volume	1	%	
ASTM 105G (SF 105), 500 h at 150 °C			
Δ Tensile strength	−15	%	
Δ Elongation at break	−2	%	
Δ Hardness	−2	Shore A	
Δ Volume	1	%	
PN 180, 168 h at 150 °C			
Δ Tensile strength	−10	%	
Δ Elongation at break	2.6	%	
Δ Hardness	0	Shore A	
Δ Volume	1.6	%	
Reference oil 300, 500 h at 150 °C			
Δ Tensile strength	−8	%	
Δ Elongation at break	6	%	
Δ Hardness	−6	Shore A	
Δ Volume	7	%	
Havoline XLC/Water 50:50, 1,000 h at 130 °C			
Δ Tensile strength	−24	%	
Δ Elongation at break	−6.1	%	
Δ Hardness	0	Shore A	
Δ Volume	1.5	%	
Diethanolamine 1 % (water), 70 h at 140 °C			
Δ Tensile strength	−12	%	
Δ Elongation at break	5	%	
Δ Hardness	−1	Shore A	
Δ Volume	4	%	

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Property	Typical Value	Unit	Test Method
Steam, 168 h at 200 °C			
Δ Tensile strength	−16	%	
Δ Elongation at break	18	%	
Δ Hardness	0	Shore A	
Δ Volume	0.2	%	
MILH83282, 70 h at 135 °C			
Δ Tensile strength	−13	%	
Δ Elongation at break	12	%	
Δ Hardness	−3	Shore A	
Δ Volume	2	%	

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