

Tecnoflon® PL 458

Low Temperature Peroxide Curable

Tecnoflon® PL 458 is a new generation low post cure peroxide curable fluoroelastomer. Tecnoflon® PL 458 exhibits both excellent low temperature flexibility ($TR_{10} = -24\text{ °C}$) and an outstanding resistance to a variety of chemicals. As all other Tecnoflon® peroxide curable grades, it exhibits excellent processability; moreover it needs very short post-curing cycles.

Some of the basic properties of Tecnoflon® PL 458 are:

- Excellent low temperature flexibility
- Low volume swell in methanol-based fuels
- Low post cure
- Superior mould flow
- Lack of mould fouling
- Excellent mould release

Tecnoflon® PL 458 can be used for injection, compression and transfer molding of O-rings, gaskets and seals. Tecnoflon® PL 458 can be combined with the cure system and other typical fluoroelastomer compounding ingredients. Mixing can be accomplished with two roll mills or internal mixers.

Tecnoflon® PL 458 can be extruded into hoses or profiles and can be calendered to make sheet stocks or belting. Finished goods may be produced by a variety of rubber processing methods.

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	Typical Value	Unit	Test Method
ML (1+10') at 121 °C	23	MU	ASTM D1646
Fluorine content	66	%	Solvay Internal Method – NMR
Specific gravity	1.83	g/cm ³	ASTM D792
Colour	Translucent		
Packaging / Form	Slabs		
Solubility	Ketones and esters		

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Typical properties

Test Compound	Typical Value	Unit	Test Method
Tecnoflon® PL 458	100	phr	
Luperox® 101XL-45	3	phr	
Drimix® TAIC (75%)	4	phr	
ZnO	5	phr	
N-990 MT Carbon Black	30	phr	

Property	Typical Value	Unit	Test Method
Mooney viscosity ML (1+10') at 121 °C	33	MU	ASTM D1646
ODR 12 min at 177 °C arc 3°			ASTM D1646
Minimum torque	8.8	lb·in	
Maximum torque	151	lb·in	
t _{s2}	0.8	min	
t' ₅₀	1.4	min	
t' ₉₀	1.8	min	
MDR 6 min at 177 °C arc 0.5°			ASTM D6601
Minimum torque	0.97	lb·in	
Maximum torque	30.2	lb·in	
t _{s2}	0.4	min	
t' ₅₀	0.6	min	
t' ₉₀	0.8	min	
Press cure: 6 min at 170 °C, (1+4) h at 230 °C			
100% Modulus	7.8	MPa	ASTM D412C
Tensile strength	20.8	MPa	
Elongation at break	182	%	
Hardness	73	ShoreA	ASTM D2240
Compression set 25% deformation, 70 h at 200 °C			ASTM D395 method B
O-ring #214	18	MPa	
Temperature retraction			ASTM D1329
TR ₁₀	-24	%	

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Fluid resistance

Property	Typical Value	Unit	Test Method
Methanol, 70 h at 60°C			
Δ Tensile strength	-35	%	
Δ Elongation at break	-14	%	
Δ Hardness	-6	Shore A	
Δ Volume	10	%	
Methanol, 168 h at 23°C			
Δ Tensile strength	-37	%	
Δ Elongation at break	-22	%	
Δ Hardness	-4	Shore A	
Δ Volume	9	%	
Ethanol, 70 h at 60°C			
Δ Tensile strength	-26	%	
Δ Elongation at break	-11	%	
Δ Hardness	-3	Shore A	
Δ Volume	6	%	
Fuel C, 168 h at 23°C			
Δ Tensile strength	-29	%	
Δ Elongation at break	-15	%	
Δ Hardness	-2	Shore A	
Δ Volume	6	%	
M15 (Fuel C/Methanol 85/15), 16 h at 23°C			
Δ Tensile strength	-	%	
Δ Elongation at break	-	%	
Δ Hardness	-	Shore A	
Δ Volume	6	%	
M15 (Fuel C/Methanol 85/15), 168 h at 23°C			
Δ Tensile strength	-44	%	
Δ Elongation at break	-26	%	
Δ Hardness	-5	Shore A	
Δ Volume	14	%	
M85 (Fuel C/Methanol 15/85), 168 h at 23°C			
Δ Tensile strength	-46	%	
Δ Elongation at break	-26	%	
Δ Hardness	-4	Shore A	
Δ Volume	11	%	

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Property	Typical Value	Unit	Test Method
FAM A, 70 h at 60°C			
Δ Tensile strength	-37	%	
Δ Elongation at break	-18	%	
Δ Hardness	-8	Shore A	
Δ Volume	14	%	
FAM B, 70 h at 60°C			
Δ Tensile strength	-44	%	
Δ Elongation at break	-22	%	
Δ Hardness	-8	Shore A	
Δ Volume	19	%	
Fuel PEROX PN 180, 336 h at 60°C			
Δ Tensile strength	-44	%	
Δ Elongation at break	-26	%	
Δ Hardness	-5	Shore A	
Δ Volume	14	%	

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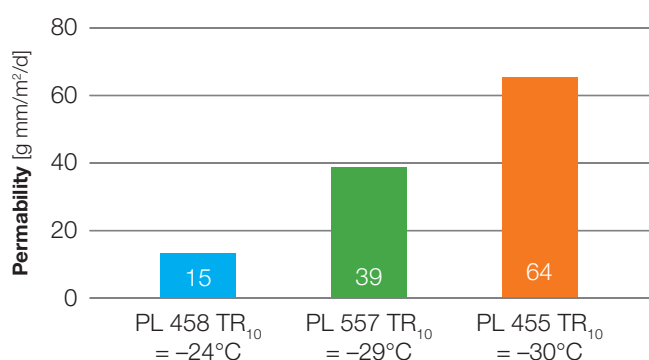
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Comparison with other Tecnoflon® low T grades swelling

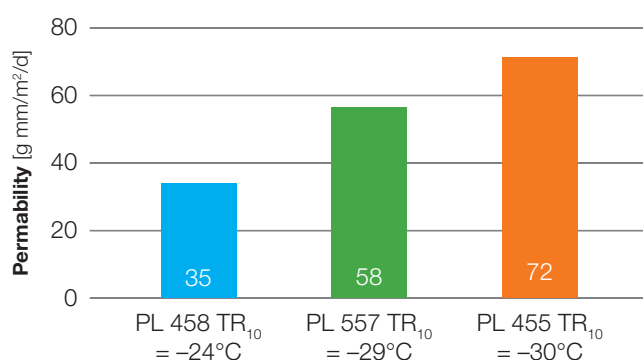
Property	Unit	PL 458	PL 557	PL 455	Test Method
Fluorine content	% wt	66	65.5	64.5	
TR ₁₀	°C	-24	-29	-30	ASTM D1329
FAM A, 70 h at 60°C					
Δ Volume	%	14	17	25	
FAM B, 70 h at 60°C					
Δ Volume	%	19	27	41	
Fuel C, 168 h at 23°C					
Δ Volume	%	6	8	9	
M15 168 h at 23°C					
Δ Volume	%	14	24	40	

Permeability to fuel mixtures (M15 and CE10)

M15 at 21°C



CE10 at 40°C



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