Tecnoflon®

SOLVAY

asking more from chemistry®

Tecnoflon® FKM/FFKM

fluoroelastomers & perfluoroelastomers

Material Guide

SPECIALTY POLYMERS

Tecnoflon® FKM/FFKM

Compound Recipes

Bisphenolic

Compound code	1BN	2BN	3BN	1BY	2BY
Polymer	100	100	100	100	100
Tecnoflon® FOR M1*	4	3	5		
Tecnoflon® FOR M2*	1.5	2	3.5		
MgO DE	3	3	3	7	3
$Ca(OH)_2$	6	6	6		6
MT Black N 990	30	30	30	30	30

Peroxide

Compound code	1P	2P	3P	4P	5P	6P
Polymer	100	100	100	100	100	100
Luperox® 101XL45	3	1.5	4	1.5	2	1.5
Drimix® TAIC (75 %)	4	2			5	2
ZnO	5	5	5	5	5	
MT Black N 990	30	15	7	7	30	15
Austin Black 325			8	8		

BN: without cure system • BY: with cure system • P: peroxide cure system
** Curing Masterbatches*

Bisphenolic

Raw Copolymers	**N 215/U** Very low viscosity copolymer.	**N 535** Medium-low viscosity copolymer. General purpose.	**N 935** High viscosity copolymer. General purpose.	**NH** Very high viscosity copolymer with very good compression set values.	**N 60HS – N 90HS** Copolymers curable without calcium hydroxide. Low post cure time and very good scorch safety.
Cure Incorporated Copolymers	**FOR 210** Extremely low viscosity copolymer. To be used in blend with other grades for flow improvement.	**FOR 539** Low viscosity cure incorporated copolymer with improved elongation at break compared to FOR 537. Suitable for injection molding of O-rings.	**FOR 5351/U** Low viscosity copolymer with excellent mold flow and release, high elongation and excellent hot tear strength.	**FOR 60K/U** Medium viscosity molded goods copolymer with superior rubber to metal bonding, high elongation and excellent hot tear strength.	**FOR 5312K** Medium-high viscosity copolymer with superior mold flow and release, showing high elongation and excellent hot tear. Suitable for compression molding of metal bonded and complicated shape items.
	FOR 4353 – FOR 7353 Low and medium viscosity cure incorporated copolymers with superior mold release, low mold fouling and excellent compression set. Compliant with FDA section 177.2600.	**FOR 50HS – FOR 80HS** Copolymers curable without calcium hydroxide. Low post cure time required. Very good scorch safety and outstanding processability.	**FOR 501HS – FOR 801HS** Copolymers curable without calcium hydroxide. Low post cure time required. Good scorch safety, outstanding processing and improved hot tear resistance.		
Raw Terpolymers	**TN 50A** Low viscosity terpolymer with excellent processability. General purpose.	**TN** 68 % fluorine terpolymer, showing improved chemical resistance with respect to copolymers and comparable mechanical properties.	**T 538 – T 938** Low and high viscosity 68.5 % fluorine terpolymers with excellent chemical resistance.		
Cure Incorporated Terpolymers	**FOR 7380K** Medium-low viscosity molded goods terpolymer with superior rubber to metal bonding, good scorch safety and excellent hot tear strength.	**FOR TF 838K** Medium viscosity molded goods terpolymer with superior rubber to metal bonding, good scorch safety and excellent hot tear strength.	**FOR 5381** Medium-low viscosity O-ring terpolymer with 68.5 % fluorine, with excellent mold release. For injection molding.		
	FOR 9385F Medium viscosity molded goods terpolymer with 68.5 % fluorine. Superior rubber to metal bonding, excellent scorch safety, very good hot tear strength.	**FOR 9383** Medium-high viscosity 68.5 % terpolymer with excellent chemical resistance, very good hot tear resistance for metal bonding application and molding of complicated shapes.	**FOR 3390** Medium-low viscosity O-ring terpolymer with 70 % fluorine, good scorch safety and excellent fuel and heat resistance.		

Outstanding support – outstanding performance

When you choose Tecnoflon® FKM/FFKM, you get more than great products. You also get outstanding service and support from knowledgeable, responsive technical staff. And you get the convenience and dependability of a supplier with manufacturing facilities in North America and Europe. Best of all, you get the confidence of knowing that Solvay Specialty Polymers continually invests in ongoing research and development, ensuring that we'll be there with the products you need to meet the challenges of today – and tomorrow. For over four decades, one brand has set the highest standards of performance in the fluoroelastomer industry: Tecnoflon® fluoroelastomers.

Today, Tecnoflon® FKM/FFKM continues to provide the broadest range of capabilities and the best value for all your fluoroelastomer applications. For example, the Tecnoflon® line extends from "workhorse" copolymers and terpolymers, to advanced peroxide curable and low temperature grades, to perfluoroelastomers that deliver the highest performance of any elastomer. And through our unique production technology, Solvay Specialty Polymers has developed polymers that eliminate costly processing steps, for higher yields and increased cost-efficiency.

Low Temperature Bisphenol Curable	**T 636 – T636/L** Medium-low and low viscosity bisphenol curable terpolymers with TR10 of –19 °C.	**L 636** Medium-low viscosity bisphenol curable tetrapolymer with TR10 of –21 °C.	**FOR TF 636** Medium-low viscosity cure incorporated terpolymer with TR10 of –19 °C.	**FOR 5361** Low viscosity cure incorporated terpolymer with TR10 of –19 °C.
Peroxide Curable Terpolymers	**P 457 – P 757** Low and medium viscosity peroxide curable polymers with 67 % fluorine. Superior hot tear strength. Outstanding relaxation behavior.	**P 459 – P 959** Low and medium viscosity peroxide curable polymers with 70 % fluorine. Best in class for chemical and fuel resistance.		
Low Temperature Peroxide Curable	**PL 458 – PL 958** Low and medium viscosity peroxide curable polymers with 66 % fluorine with TR10 of –24 °C. Best in class for chemical and fuel resistance.	**PL 557** Medium-low viscosity peroxide curable with improved chemical resistance over PL 455/PL 855 with TR10 of –29 °C.	**PL 455 – PL 855** Low and medium viscosity peroxide curable polymers with 64 % fluorine with TR10 of –30 °C.	
Very Low Temperature Peroxide Curable	**VPL 45730 – VPL 85730** Low and medium-low viscosity peroxide curable grades, matching the best performance both in low temperature behavior (TR10 = –30 °C, like PL 855) and chemical resistance (like PL 958). The best choice for fuel permeability reduction.	**VPL 45535** Low viscosity peroxide curable grade with improved low temperature behavior (TR10 = –35 °C). Easy processing, good chemical resistance in oxygenated fuels.	**VPL 55540 – VPL 85540** Low and medium-low viscosity peroxide curable grades with outstanding low temperature behavior (TR10 = –40 °C) and chemical resistance. Easy processing and low fuel permeability.	
Base Resistant Peroxide Curable	**BR 9151** Medium viscosity peroxide curable polymer with good amine resistance: excellent for use in contact with automotive engine oils, gear lubricants, transmission fluids and coolants.			
Perfluoroelastomers	**PFR 94** Perfluoroelastomer (FFKM) designed for broad chemical resistance in aggressive environments.	**PFR 06HC** Perfluoroelastomer (FFKM) designed for outstanding chemical resistance in extremely aggressive environments, such as hot amines.	**PFR 95 – PFR 95HT** Perfluoroelastomers (FFKM) based on innovative and unique curing chemistry, offering an improved working temperature range (PFR 95 up to 280 °C, PFR 95HT up to 300 °C) and broad fluid resistance (especially steam at high temperature).	
Specialty Grades	**FPA 1** Special fluorinated process aid designed to improve the processing of elastomeric compounds. It greatly enhances flowability of compounds, reducing flow lines and knitting defects.	**TN Latex** Water based terpolymer emulsion. A viable alternative to solvent based fluoroelastomer coatings. 70 % solid content.	**NM Powder** Processing aid for polyolefins.	

Tecnoflon® – fluoroelastomers and perfluoroelastomers product guide

		Grade	Fluorine Content [Weight %]	Specific Gravity [g/cm³] ASTM D792	Rubber Mooney Visc. ML (1+10) @ 121 °C [Units] ASTM D1646	Tensile Strength [MPa] ASTM D412C	Elongation at Break [%] ASTM D412C
Bisphenolic	Raw Copolymers	N 215/U	66	1.81	10	14.1	184
		N 535	66	1.81	27	17.5	182
		N 935	66	1.81	62	18.5	185
		NH	66	1.81	124	19.5	175
		N 60HS	66	1.81	27	15.0	200
		N 90HS	66	1.81	45	16.1	190
	Cure Incorporated Copolymers	FOR 210	66	1.81	9	17.8	187
		FOR 539	66	1.81	21	16.5	190
		FOR 5351/U	66	1.81	24	16.2	249
		FOR 60K/U	66	1.81	30	16.2	212
		FOR 5312K	66	1.81	41	17.6	253
		FOR 4353	66	1.81	20	15.7	174
		FOR 7353	66	1.81	39	18.2	174
		FOR 50HS	66	1.81	23	18.6	203
		FOR 80HS	66	1.81	38	18.0	201
		FOR 501HS	66	1.81	24	15.0	270
		FOR 801HS	66	1.81	40	17.5	261
	Raw Terpolymers	TN 50A	68	1.86	23	13.5	297
		TN	68	1.86	67	17.8	230
		T 538	68.5	1.88	26	12.1	250
		T 938	68.5	1.88	66	15.5	218
	Cure Incorporated Terpolymers	FOR 7380K	68	1.86	32	16.0	247
		FOR TF 838K	68	1.86	41	12.4	360
		FOR 5381	68.5	1.88	21	15.0	200
		FOR 9385F	68.5	1.88	45	11.5	350
		FOR 9383	68.5	1.88	60	16.8	285
		FOR 3390	70	1.89	47	14.5	240

Hardness [Shore A] ASTM 2240	C.Set 70 h @ 200 °C on #214 O-Ring [%] ASTM D395 Method B	TR10 (°C) ASTM D1329	Post Cure	Compound Recipe	Notes
74	20	–17	(8+16) h @ 250 °C	1BN	
74	13	–17	(8+16) h @ 250 °C	1BN	FDA
75	13	–17	(8+16) h @ 250 °C	1BN	FDA
77	12	–17	(8+16) h @ 250 °C	1BN	FDA
68	14	–17	(8+16) h @ 250 °C	1BN	Curable without $Ca(OH)_2$, low post-cure – FDA
70	14	–17	(8+16) h @ 250 °C	1BN	Curable without $Ca(OH)_2$, low post-cure – FDA
74	22	–17	(8+16) h @ 250 °C	2BY	
76	18	–17	(8+16) h @ 250 °C	2BY	
72	18	–17	(8+16) h @ 250 °C	2BY	
72	18	–17	(8+16) h @ 250 °C	2BY	
74	18	–17	(8+16) h @ 250 °C	2BY	
76	15	–17	(8+16) h @ 250 °C	2BY	FDA
78	16	–17	(8+16) h @ 250 °C	2BY	FDA
70	15	–17	1 h @ 250 °C	1BY	Curable without $Ca(OH)_2$, low post-cure
71	13	–17	1 h @ 250 °C	1BY	Curable without $Ca(OH)_2$, low post-cure
65	17	–17	1 h @ 250 °C	1BY	Curable without $Ca(OH)_2$, low post-cure
65	17	–17	1 h @ 250 °C	1BY	Curable without $Ca(OH)_2$, low post-cure
72	29	–14	(8+16) h @ 250 °C	2BN	
77	29	–14	(8+16) h @ 250 °C	2BN	FDA
75	31	–13	(8+16) h @ 250 °C	3BN	
78	24	–13	(8+16) h @ 250 °C	3BN	FDA
75	30	–14	(8+16) h @ 250 °C	2BY	
74	–	–14	(8+16) h @ 250 °C	2BY	
80	23	–13	(8+16) h @ 250 °C	2BY	
75	–	–13	(8+16) h @ 250 °C	2BY	
74	32	–13	(8+16) h @ 250 °C	2BY	
80	32	–7	(8+16) h @ 250 °C	2BY	

Tecnoflon® – fluoroelastomers and perfluoroelastomers product guide

	Grade	Fluorine Content [Weight %]	Specific Gravity [g/cm³] ASTM D792	Rubber Mooney Visc. ML (1+10) @ 121 °C [Units] ASTM D1646	Tensile Strength [MPa] ASTM D412C	Elongation at Break [%] ASTM D412C
Low Temperature Bisphenol Curable	T 636	65.5	1.81	34	18.5	187
	T 636/L	65.5	1.81	22	17.5	187
	L 636	66	1.83	35	17.3	187
	FOR TF 636	65.5	1.81	31	18.4	165
	FOR 5361	65.5	1.81	21	17.8	175
Peroxide Curable Terpolymers	P 457	67	1.83	21	22.8	239
	P 757	67	1.83	44	23.4	290
	P 459	70	1.90	24	23.7	205
	P 959	70	1.90	48	22.0	230
Low Temperature Peroxide Curable	PL 458	66	1.83	29	20.8	182
	PL 958	66	1.83	53	20.4	192
	PL 557	65.5	1.81	35	19.5	210
	PL 455	64	1.78	19	21.3	227
	PL 855	64	1.78	54	20.8	248
Very Low Temperature Peroxide Curable	VPL 45730	67	1.87	25	19.3	176
	VPL 85730	67	1.87	45	18.8	187
	VPL 45535	65	1.85	25	14.6	166
	VPL 55540	65	1.85	25	15.0	172
	VPL 85540	65	1.85	45	15.8	174
Base Resistant Peroxide Curable	BR 9151	65	1.82	48	21.5	207
Perfluoroelastomers	PFR 94	> 72	2.06	35	20.0	155
	PFR 06HC	> 72	2.05	75	19.0	190
	PFR 95	> 72	2.03	35	16.5	175
	PFR 95HT	> 72	2.05	75	18.0	200

Hardness [Shore A] ASTM 2240	C.Set 70 h @ 200 °C on #214 O-Ring [%] ASTM D395 Method B	TR10 (°C) ASTM D1329	Post Cure	Compound Recipe	Notes
74	13	–19	(8+16) h @ 250 °C	1BN	
73	15	–19	(8+16) h @ 250 °C	1BN	
73	16	–21	(8+16) h @ 250 °C	1BN	
76	13	–19	(8+16) h @ 250 °C	2BY	Cure incorporated
74	17	–19	(8+16) h @ 250 °C	2BY	Cure incorporated
72	22	–15	4 h @ 230 °C	1P	Low post-cure
71	22	–15	4 h @ 230 °C	1P	Low post-cure – FDA
76	19	–5	4 h @ 230 °C	1P	Low post-cure
72	20	–5	4 h @ 230 °C	1P	Low post-cure – FDA
73	18	–24	4 h @ 230 °C	1P	Low post-cure
72	18	–24	4 h @ 230 °C	1P	Low post-cure
71	21	–29	4 h @ 230 °C	1P	Low post-cure
70	23	–30	4 h @ 230 °C	1P	Low post-cure
69	23	–30	4 h @ 230 °C	1P	Low post-cure
74	19	–30	4 h @ 230 °C	5P	Low post-cure
72	22	–30	4 h @ 230 °C	5P	Low post-cure
68	20	–35	4 h @ 230 °C	5P	Low post-cure
68	21	–40	4 h @ 230 °C	5P	Low post-cure
67	20	–40	4 h @ 230 °C	5P	Low post-cure
72	41	–7	8 h @ 230 °C	1P	Excellent resistance to bases
71	18	–2	4 h @ 230 °C	2P	Excellent chemical resistance – FDA
70	20	–2	4 h @ 230 °C	6P	Outstanding chemical resistance
69	18	–1	(8+16) h @ 250 °C	3P	High T applications (up to 280 °C) – FDA
69	19	–1	(8+16) h @ 290 °C	4P	Very high T applications (up to 300 °C) – FDA

SOLVAY

asking more from chemistry®

Specialty Polymers

Worldwide Headquarters
SpecialtyPolymers.EMEA@solvay.com
Viale Lombardia, 20
20021 Bollate (MI), Italy

Americas Headquarters
SpecialtyPolymers.Americas@solvay.com
4500 McGinnis Ferry Road
Alpharetta, GA 30005, USA

Asia Headquarters
SpecialtyPolymers.Asia@solvay.com
Building 7, No, 899, Zuchongzhi Road
Zhangjiang Hi-Tech Park
Shanghai, 201203, China

www.solvay.com

Material Safety Data Sheets (MSDS) are available by emailing us or contacting your sales representative. Always consult the appropriate MSDS before using any of our products.

Neither Solvay Specialty Polymers nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this product, related information or its use. Some applications of which Solvay's products may be proposed to be used are regulated or restricted by applicable laws and regulations or by national or international standards and in some cases by Solvay's recommendation, including applications of food/feed, water treatment, medical, pharmaceuticals, and personal care. Only products designated as part of the Solviva® family of biomaterials may be considered as candidates for use in implantable medical devices. The user alone must finally determine suitability of any information or products for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. The information and the products are for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right.