

KEVLAR®



KEVLAR® engineered elastomer with Acrylonitrile Butadiene Rubber (NBR)

**Merge 1F770
(Roll Cover Formulation)**

TEST COMPOUND FORMULATION

(see note 1)

Nitrile Rubber (Breon N36C50)	100	90	80	70	90	90	70	70
1F770	–	13	26	39	13	13	39	39
Ultrasil VN3	45	45	45	45	15	30	15	30
Zinc oxide	5	5	5	5	5	5	5	5
Stearic acid	2	2	2	2	2	2	2	2
TMQ (Flectol H)	2	2	2	2	2	2	2	2
Durez 12687	15	15	15	15	15	15	15	15
Titanium dioxide	5	5	5	5	5	5	5	5
PEG	3	3	3	3	3	3	3	3
MBTS	1	1	1	1	1	1	1	1
Sulphur	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Engineered elastomer content (pphr)	0	13	26	39	13	13	39	39
Aramid content (pphr)	0	3	6	9	3	3	9	9
Silica content (pphr)	45	45	45	45	15	30	15	30

PROPERTIES

Mooney Viscosity @ 100°C

ML 1+4	89	85	88	91	47	60	56	70
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Mooney Scorch MS 121°C

Time to + 5 units rise	30	28	34	26	18	24	21	24
Time to + 10 units rise	32	29	37	28	19	26	22	26
Minimum	33	34	36	38	15	21	18	26

ODR 160°C 100 Range 30 mins

M _L	8.1	9.1	9.6	13.5	3.5	5.3	5.6	7.9
T _{s2}	3	3	4	3	2	2	2	2
T ₉₀	32	28	28	26	20	25	20	24
M _H	61	62	56	73	37	48	45	55

MDR 160°C 100 Range 30 mins

M _L	8	9	10	14	4	5	6	8
T _{s2}	3	3	4	3	2	2	2	2
T ₉₀	32	28	28	26	20	25	20	24
M _H	61	62	56	73	37	48	45	55

Engineered elastomer content (pphr)	0	13	26	39	13	13	39	39
Aramid content (pphr)	0	3	6	9	3	3	9	9
Silica content (pphr)	45	45	45	45	15	30	15	30

Vulcanisate properties measured on 2 mm sheet (machine direction)

Hardness	° Shore A	81	86	91	96	71	80	80	92
Tensile St	MPa	21.4	17.8	14.4	16.2	13.4	18.1	14.7	15.6
Mod @ 10%	MPa	1.7	3.9	8.4	10.6	1.3	2.0	6.8	9.8
Mod @ 25%	MPa	2.1	6.4	12.3	15.0	3.0	4.1	13.1	15.1
Mod @ 50%	MPa	2.2	8.0	14.5	–	5.3	6.2	15.7	–
Mod @ 100%	MPa	2.5	9.3	15.1	–	7.1	7.7	–	–
E/B	%	704	585	156	49	592	655	59	47
Tear ISO 34C	kN/M	64	77	93	105	59	67	91	98

Vulcanisate properties measured on 2 mm sheet (cross machine direction)

Tensile St	MPa	21.8	17.4	13.7	11.4	16.5	18.1	10.5	10.2
Mod @ 10%	MPa	1.7	2.4	2.5	3.8	0.8	1.2	2.9	1.9
Mod @ 25%	MPa	2.1	3	3.8	5.6	1.4	3	7.7	4.7
Mod @ 50%	MPa	2.2	3.4	4.9	7.4	2.2	3	7.7	4.7
Mod @ 100%	MPa	2.5	4.5	6.7	9.8	3.5	4.2	10.3	7.1
E/B	%	694	595	461	226	668	681	146	258
Tear ISO 34C	kN/M	61	80	86	80	59	71	84	77

DIN Abrasion

Weight loss	g x 10 ⁻³	34	29	24	24	26	28	22	28
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Compression set 70 hrs @ 23 °C

	%	44	48	44	48	33	42	35	38
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Dynamic Data (MTS) at Room Temperature

10 Hz

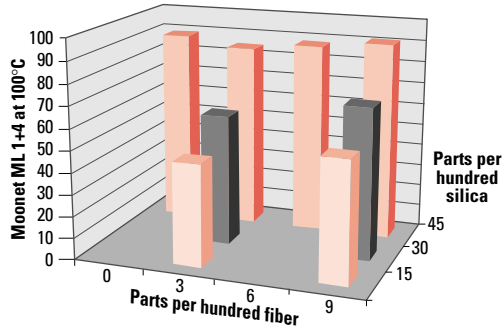
K*	N/mm	1748	1493	2077	2185	808	1111	1345	1955
K'	N/mm	1661	1420	1945	2036	771	1056	1274	1846
K''	N/mm	546	461	728	794	240	348	432	644
Tan Delta	–	0.33	0.32	0.37	0.39	0.31	0.33	0.34	0.35

30 Hz

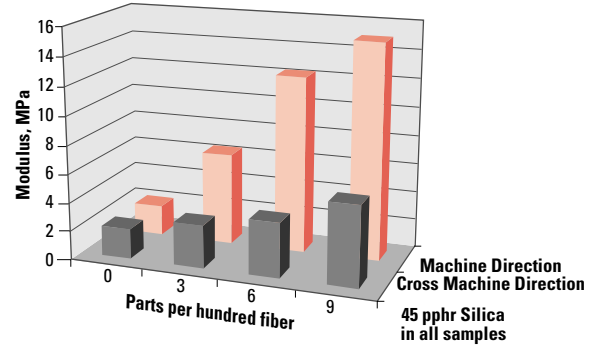
K*	N/mm	1914	1583	2281	2352	751	1239	1411	2218
K'	N/mm	1818	1505	2137	2212	717	1174	1321	2069
K''	N/mm	599	490	796	801	223	396	496	799
Tan Delta	–	0.33	0.33	0.37	0.36	0.31	0.34	0.38	0.39

Note 1 This compound formulation is based on the Textile Mill Roll formulation in “The Vanderbilt Rubber Handbook” 13th edition, page 684.

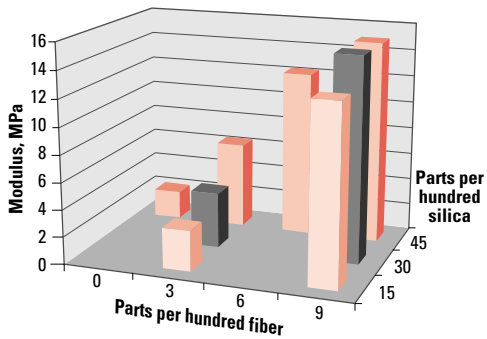
Mooney Viscosity



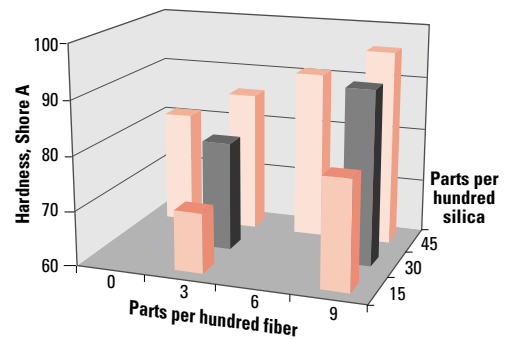
Modulus at 25% Elongation



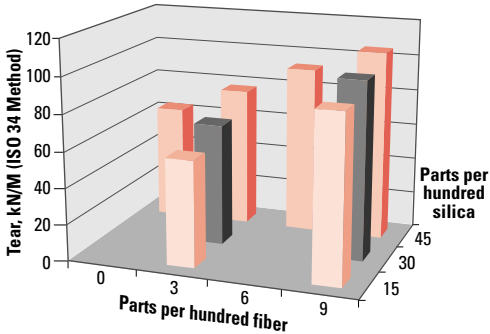
Modulus at 25% Elongation



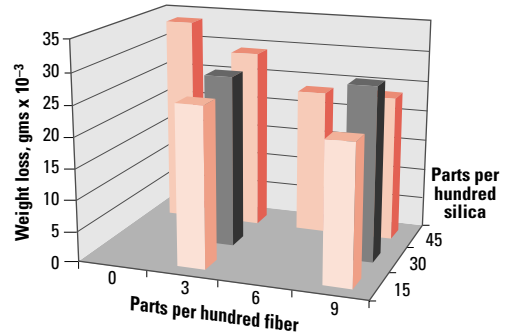
Hardness



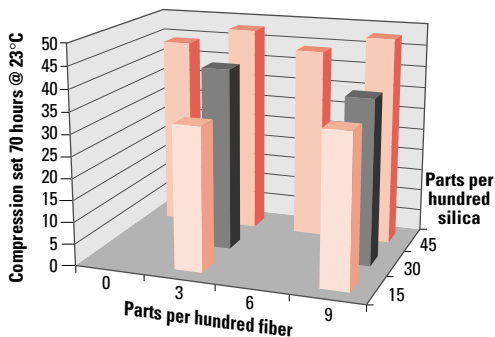
Tear



DIN Abrasion



Compression Set



- Engineered elastomer merge 1F770 contains:
 - 23 weight percent reinforcement
 - 77 weight percent of a medium ACN content NBR rubber
- Specific gravity is 1.05
- ‘Nugget’ shape product form
- Packaged in 15 kilograms kraft bags with a low melt (<100°C) EVA liner

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