



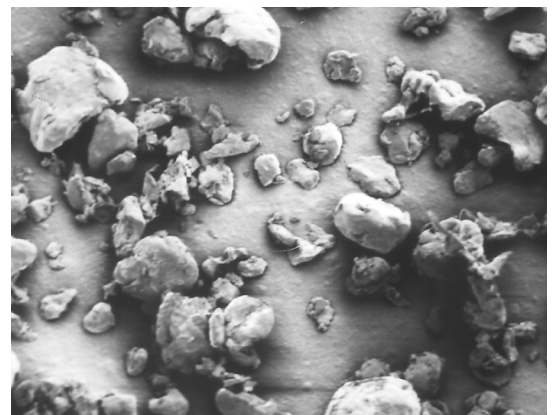
Fiber Technologies, LLC

Fiber Technologies **AP 202** fluoroadditives are homogenous blends of Polytetrafluoroethylene (PTFE) and select surfactants and processing aids. These fluoroadditives work by enhancing the physical properties of elastomers. During compounding, **AP 202** imparts a unique, coefficient of friction reduction that significantly improves the internal lubricity of elastomers.

Properties	AP 202
Color	Grey
Particle Size	2 to 50 Micron
Specific Gravity	≈ 2.4
Benefits	<ul style="list-style-type: none">▪ Internal lubricity▪ Improved mold release▪ Chemical resistance▪ Reduced coefficient of friction▪ Anti-marine fouling▪ Increased abrasion and wear resistance.▪ Lower starting force in dynamic seals (breakaway).▪ Reduced stick slip (static friction)
Normal Level of Use	2 - 12 pph



Elastomer Unmodified



AP 202 Modified Elastomer

COEFFICIENT OF FRICTION STUDY

AP 101 AND AP 202

IN NITRILE RUBBER

The compound tested was an NBR (Nitrile) rotary shaft compound molded into a test shaft seal and measured against a known peak to valley shaft finish. It was measured dry and lubricated over a 1 to 40 N/mm² range of stresses and loads. Static, dynamic, and “stick-slip” measurements were taken. Tear resistance was recorded by the Din 53515 method.

RESEARCHER’S COMMENTS

“The data clearly illustrates the unique capability of **AP 101** and **AP 202** to reduce coefficient of friction over a wide range of forces while providing dramatic (88% in this compound) tear strength improvement. Enhancement of these characteristics, key to the performance of rubber parts, especially in dynamic applications, is possible in all elastomers with the use of Fiber Technologies modifiers.”

LEGEND

- | | |
|---|---|
| (1) Control: | Base NBR Compound |
| (2) Control with AP 101 and AP 202 | Base NBR compound +6 pph AP 101
+6 pphr AP 202 |
| (3) Control with AP 202 | Base NBR compound + 6 pph AP 202 |

Tests: All performed at room temperature.

- 1 = Dry
- 2 = Lubricated
- 3 = Dynamic Friction
- 4 = Static Friction
- 5 = Stick slip

Speed:	1 cm/sec
Peak to valley height:	Measure of shaft’s finish

SPECIFIC STRESS OF LOAD (N/mm²)

	TEST								
	1.0	1.6	2.5	4.0	6.3	10	16	25	40
(1) Control Compound									
1,3	0.88	0.69	0.59	0.44	0.29	0.16	0.13	0.09	0.09
1,4	0.88	0.74	0.59	0.44	0.32	0.22	0.15	0.12	0.11
1,5	0.34	0.20	0.10	0.02	0.01	0.01	0.00	0.00	0.00
2,3	0.57	0.54	0.44	0.32	0.25	0.18	0.13	0.11	0.09
2,4	0.57	0.54	0.44	0.35	0.28	0.22	0.16	0.13	0.10
2,5	0.25	0.16	0.08	0.01	0.00	0.00	0.00	0.00	0.00

Peak to Valley Height: $R_t = 2.68$; $R_z = 1.83$; $R_a = 0.20$ μm
 Tear Resistance in N/mm: 17

	TEST								
	1.0	1.6	2.5	4.0	6.3	10	16	25	40
(2) Control Compound									
1,3	0.30	0.30	0.32	0.25	0.19	0.14	0.10	0.08	0.07
1,4	0.33	0.35	0.35	0.28	0.22	0.18	0.13	0.10	0.09
1,5	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,3	0.31	0.39	0.36	0.32	0.26	0.19	0.13	0.08	0.05
2,4	0.31	0.40	0.37	0.34	0.28	0.22	0.16	0.11	0.08
2,5	0.10	0.08	0.04	0.01	0.00	0.00	0.00	0.00	0.00

Peak to Valley Height: $R_t = 3.74$; $R_z = 2.41$; $R_a = 0.25$ μm
 Tear Resistance in N/mm: 32

	TEST								
	1.0	1.6	2.5	4.0	6.3	10	16	25	40
(3) Control Compound									
1,3	0.40	0.44	0.36	0.27	0.20	0.14	0.10	0.08	0.08
1,4	0.40	0.46	0.38	0.31	0.24	0.18	0.13	0.11	0.09
1,5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,3	0.40	0.42	0.36	0.29	0.23	0.17	0.12	0.08	0.08
2,4	0.40	0.43	0.39	0.32	0.26	0.21	0.16	0.10	0.08
2,5	0.15	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00

Peak to Valley Height: $R_t = 2.16$; $R_z = 1.60$; $R_a = 0.20$ μm
 Tear Resistance in N/mm: 14

Products That Benefit From AP 202

Asphalt
Belts
Coatings
Conveyer Lines
Connectors
Diaphragms
Door-Window
Seals
Foam
Gaskets
Grips
Grommets

Hoses
Insulation
Isolators
Bumpers
Supports
Mats
Motor mounts
O-Rings
Pads
Plugs
Protective Covers

Road Expansion
Joints
Rollers
Room Temperature
Vulcanite's
Seals
Spacers
Stops
Tires
Tube Connectors
Vibration Dampers
Wiper Blades



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