



Alcryn^{fi} MPRTM

What Is Alcryn[®] MPRTM?

Alcryn[®] melt-processible rubber (MPR) is a true rubber, based on a partially cross-linked, chlorinated olefin interpolymer alloy. Alcryn[®] is designed for the manufacture of rubber parts with high productivity on thermoplastic processing equipment.

It Processes Like a Thermoplastic

Alcryn[®] MPR--a family of mid-performance elastomers that:

- does not require pre-drying for most processes
- is ready to use as received, no compounding required
- does not require vulcanization
- can be processed on plastics equipment
- can be injection-molded, extruded, blow-molded, calendered, and vacuum-formed
- can be co-extruded, co-injected and calender-laminated with PVC, without adhesives
- can be overmolded and co-injected on selected rigid substrates
- molds in short cycles (high production rates)
- produces recyclable scrap

Fast efficient processing, without the need for compounding and vulcanization, yields low operating and part costs.

It Behaves Like a Rubber

Alcryn[®] brings the end user a unique and highly desirable combination of functional rubber properties and environmental resistance. Alcryn[®] MPR:

- looks, feels, and performs like flexible vulcanized rubber
- has outstanding weather and ozone resistance
- has excellent oil and heat resistance
- is energy absorbing for noise and vibration abatement
- provides a service temperature range of -130° to 225°F (-90° to 107°C)

Product Line

The grades of Alcryn[®] MPR are grouped into four series:

- 1000 Series (black)
 - general plastic processing
 - not suitable for injection molding
 - excellent weather resistance
- 2000 Series (black, neutral, and translucent)
 - high-flow in all plastic processing
 - designed for injection molding
 - excellent for complex extrusions
 - not suitable for calendering
 - black grades have excellent weather resistance
 - neutral and translucent require additives* for maximum weather resistance
- 3000 Series (neutral)
 - general plastic processing
 - not suitable for injection molding
 - requires additives* for weather resistance
- 4600 Series (black and neutral)
 - moderate flow in general plastic processing
 - not recommended for injection molding
 - excellent for complex extrusions
 - black grades have excellent weather resistance

Within a series, the individual grades differ in hardness and related mechanical properties such as stiffness and tear strength. (Refer to the properties table for the relationship between hardness and mechanical properties.)

*pigments/UV stabilizers

Applications

MPR offers high value-in-use for many applications now served by vulcanized rubbers, other thermoplastic elastomers, and flexible thermoplastics, including:

- Window and door weatherstripping (and other complex profile extrusions)
- Soft handles and grips
- Molded seals and gaskets
- Injection-molded and co-injection molded parts
- Blow-molded parts
- Tubing and hose
- Wire and cable jackets
- Coated fabrics and sheet goods

Table 1. Alcryn® General Purpose Grades

Property ^a	Test Methods			Unit	1000 Series			3000 Series		
	ASTM	ISO			1060 BK	1070 BK	1080 BK	3055 NC	3065 NC	3075 NC
Mechanical										
Specific Gravity	D471	2781			1.19	1.23	1.25	1.18	1.26	1.35
Hardness, Durometer A	D2240	48		Shore A	62	72	78	57	67	76
Tensile Properties	D412	37								
100% Modulus				psi	560	770	1150	415	600	860
Tensile Strength				psi	1400	1800	1900	1200	1300	1425
Elongation At Break				%	300	270	210	440	400	360
Torsion Modulus, At 75°F (24°C)	D1043	-		psi	280	330	420	200	310	500
At -4°F (-20°C)	-	-		psi	1100	2080	2900	2500	6600	18,500
Tear Strength										
Graves (Die C), At 75°F (24°C)	D624	-		lb/in	150	160	140	165	205	280
Permanent Set (Tension)	D412	-		%	8	10	8	6	9	11
Compression Set, Method B ^b	D395	815								
After 22 Hr At 75°F (24°C)				%	15	15	15	17	17	23
After 22 Hr At 212°F (100°C)				%	55	55	55	65	69	67
Heat Aging Resistance										
Tensile Properties After 7 Days At 257°F (125°C)	D573	188								
100% Modulus				psi	560	780	1375	360	660	960
Tensile Strength				psi	1550	1900	2035	1270	1300	1530
Elongation At Break				%	325	235	190	450	370	350
Hardness, Durometer A				Shore A	67	70	77	58	65	74
Low Temperature Properties										
Brittleness Temperature	D746	812		°F (°C)	-60 (-51)	-63 (-53)	-47 (-44)	-65 (-54)	-49 (-45)	-22 (-30)
Clash-Berg Stiffness Temp., 10,000 psi (69 Mpa)	D1043	-		°F (°C)	-36 (-38)	-29 (-34)	-22 (-30)	-18 (-28)	-9 (-23)	+1 (-17)
Tabor Abrasion, Cs-17 Wheel, 1000g load	D3389	-		mg/1000 cycles	7	7	5	<1	<1	<1
Chemical										
Fluid Resistance -- Volume Change	D471	1817								
After 7 Days In Water At 212°F (100°C)				%	12	8	10	15	14	13
After 7 Days In ASTM Oil No. 1 At 212°F (100°C)				%	-10	-9	-8	-12	-9	-6
After 7 Days In IRM 903 Oil No. 3 At 212°F (100°C)				%	27	25	23	25	30	29
After 7 Days In ASTM Ref. Fuel No. B At 75°F (24°C)				%	30	30	29	30	32	36
Rheological										
Viscosity at 300 s ⁻¹ at 374°F (190°C)	D3835	-		Pas	545	740	800	465	580	840
Typical Processing Temperature	-	-		°F (°C)	350 (177)	350 (177)	350 (177)	350 (177)	350 (177)	350 (177)

^a All properties measured on specimens cut from 1.9 mm (75 mil) thick compression-molded plaques.

^b Type I pellets, 12.7 mm (0.5 in) diameter, plied up from 1.9 mm (75 mil) slabs.

Table 2. Alcryn® Injection Molding Grades

Property ^a	Test Methods			2000 Series						
	ASTM	ISO	Unit	2060 CL	2060NC	2070 NC	2080 NC	2090 NC	2250 UT	2265 UT
Mechanical										
Specific Gravity	D471	2781		1.12	1.12	1.20	1.26	1.17	1.06	1.08
Hardness, Durometer A	D2240	48	Shore A	60	59	68	76	88	47	62
Tensile Properties	D412	37								
100% Modulus			psi	435	440	580	770	930	280	520
Tensile Strength			psi	1050	1150	1260	1440	1570	1000	1410
Elongation At Break			%	375	420	400	400	320	420	470
Torsion Modulus,										
At 75°F (24°C)	D1043	-	psi		340	320	430		290	365
At -4°F (-20°C)	-	-	psi		700	1240	2080		380	800
Tear Strength										
Graves (Die C), At 75°F (24°C)	D624	-	lb/in	150	160	170	190		110	150
Permanent Set (Tension)	D412	-	%	12	8	9	11	13	7	6
Compression Set, Method B^b	D395	815								
After 22 Hr At 75°F (24°C)			%	27	13	16	17	27	15	12
After 22 Hr At 212°F (100°C)			%	69	62	64	61	74	56	54
Heat Aging Resistance										
Tensile Properties After 7 Days At 257°F (125°C)	D573	188								
100% Modulus			psi	509	400	520	640	71	240	640
Tensile Strength			psi	1128	950	800	800	37	940	1670
Elongation At Break			%	375	340	220	135		450	405
Hardness, Durometer A			Shore A	61	60	65	71		45	66
Low Temperature Properties										
Brittleness Temperature	D746	812	°F (°C)		-121 (-85)	-121 (-85)	-105 (-76)		-132 (-91)	-132 (-91)
Clash-Berg Stiffness Temp., 10,000 psi (69 Mpa)	D1043	-	°F (°C)		-44 (-42)	-40 (-40)	-26 (-32)	23(-5°C)	-78 (-26)	-58 (-50)
Tabor Abrasion, Cs-17 Wheel, 1000g load	D3389	-	mg/1000 cycles		5	9	10		5	7
Chemical										
Fluid Resistance -- Volume Change	D471	1817								
After 7 Days In Water At 212°F (100°C)			%	9	8	7	8		7	6
After 7 Days In ASTM Oil No. 1 At 212°F (100°C)			%	-30	-21	-16	-14	-10	-39	-21
After 7 Days In IRM 903 Oil No. 3 At 212°F (100°C)			%	-6	17	18	23	-23	32	23
After 7 Days In ASTM Ref. Fuel No. B At 75°F (24°C)			%	8	17	22	29	36	24	19
Rheological										
Viscosity at 300 s-1 at 374°F (190°C)	D3835	-	Pas	247	350	465	640	550	115	390
Typical Processing Temperature	-	-	°F (°C)	350(177)	350(177)	350(177)	350(177)	350(177)	330(166)	330(166)

^a All properties measured on specimens cut from 1.9 mm (75 mil) thick compression-molded plaques.

^b Type I pellets, 12.7 mm (0.5 in) diameter, plied up from 1.9 mm (75 mil) slabs.

Table 3. Alcryn® Injection Molding Grades

Property ^a	Test Methods			Unit	2000 BK Series				
	ASTM	ISO			2060 BK	2070 BK	2080 BK	2090 BK	2095 BK
Mechanical									
Specific Gravity	D471	2781			1.10	1.14	1.17	1.17	1.17
Hardness, Durometer A	D2240	48		Shore A	59	68	78	88	93
Tensile Properties	D412	37							
100% Modulus				psi	430	610	910	930	1230
Tensile Strength				psi	1170	1270	1760	1570	1900
Elongation At Break				%	410	320	320	320	300
Torsion Modulus,									
At 75°F (24°C)	D1043	-		psi	330	335	470		
At -4°F (-20°C)	-	-		psi	860	1480	4000		
Tear Strength									
Graves (Die C), At 75°F (24°C)	D624	-		lb/in	155	160	200	255	355
Permanent Set (Tension)	D412	-		%	9	9	10	13	24
Compression Set, Method B^b	D395	815							
After 22 Hr At 75°F (24°C)				%	13	14	14	27	
After 22 Hr At 212°F (100°C)				%	62	64	62	74	
Heat Aging Resistance									
Tensile Properties After 7 Days At 257°F (125°C)	D573	188							
100% Modulus				psi	400	650	760	71	
Tensile Strength				psi	1115	1230	1600	37	
Elongation At Break				%	390	280	235		
Hardness, Durometer A				Shore A	63	70	76		
Low Temperature Properties									
Brittleness Temperature	D746	812		°F (°C)	-125 (-87)	-110 (-79)	-123 (-86)		
Clash-Berg Stiffness Temp., 10,000 psi (69 Mpa)	D1043	-		°F (°C)	-40 (-40)	-40 (-40)	-27 (-17)	-5°C	
Tabor Abrasion, Cs-17 Wheel, 1000g load	D3389	-		mg/1000 cycles	5	5	3		
Chemical									
Fluid Resistance -- Volume Change	D471	1817							
After 7 Days In Water At 212°F (100°C)				%	8	6	5	-10	-10
After 7 Days In ASTM Oil No. 1 At 212°F (100°C)				%	-19	-17	-8	-23	31
After 7 Days In IRM 903 Oil No. 3 At 212°F (100°C)				%	16	19	31	36	43
After 7 Days In ASTM Ref. Fuel No. B At 75°F (24°C)				%	25	25	32		
Rheological									
Viscosity at 300 s-1 at 374°F (190°C)	D3835	-		Pas	365	410	700	550	820
Typical Processing Temperature	-	-		°F (°C)	350 (177)	350 (177)	350 (177)	350 (177)	350 (177)

^a All properties measured on specimens cut from 1.9 mm (75 mil) thick compression-molded plaques.

^b Type I pellets, 12.7 mm (0.5 in) diameter, plied up from 1.9 mm (75 mil) slabs.

Table 4. Alcryn® General Purpose Grades

Property ^a	Test Methods			Unit	4600 Series					
	ASTM	ISO			4660 NC	4670 NC	4680 NC	4660 BK	4670 BK	4680 BK
Mechanical										
Specific Gravity	D471	2781			1.17	1.25	1.27	1.17	1.25	1.27
Hardness, Durometer A	D2240	48		Shore A	57	70	78	57	70	79
Tensile Properties	D412	37								
100% Modulus				psi	380	570	740	430	580	860
Tensile Strength				psi	1225	1280	1600	1125	1310	1570
Elongation At Break				%	440	440	360	390	420	380
Torsion Modulus,										
At 75°F (24°C)	D1043	-		psi	250	350	600	250	350	600
At -4°F (-20°C)	-	-		psi	1000	4000	10,000	1000	4000	10,000
Tear Strength										
Graves (Die C), At 75°F (24°C)	D624	-		lb/in	170	220	310	190	220	300
Permanent Set (Tension)	D412	-		%	7	9	12	7	9	12
Compression Set, Method B^b	D395	815								
After 22 Hr At 75°F (24°C)				%	16	21	25	16	20	24
After 22 Hr At 212°F (100°C)				%	72	74	74	72	75	75
Heat Aging Resistance										
Tensile Properties After 7 Days At 257°F (125°C)	D573	188								
100% Modulus				psi	370	730	1260	400	700	1100
Tensile Strength				psi	1200	1380	1680	1210	1320	1600
Elongation At Break				%	400	380	350	460	420	380
Hardness, Durometer A				Shore A	54	64	71	55	64	76
Low Temperature Properties										
Brittleness Temperature	D746	812		°F (°C)	-92 (-69)	-76 (-60)	-65 (-54)	-101 (-74)	-80 (-62)	-75 (-58)
Clash-Berg Stiffness Temp., 10,000 psi (69 Mpa)	D1043	-		°F (°C)	-40 (-40)	-4 (-20)	39 (-4)	-31 (-35)	-4 (-20)	34 (1)
Tabor Abrasion, Cs-17 Wheel, 1000g load	D3389	-		mg/1000 cycles	4	4	9	1	2	6
Chemical										
Fluid Resistance -- Volume Change	D471	1817								
After 7 Days In Water At 212°F (100°C)				%	9	11	11	10	12	10
After 7 Days In ASTM Oil No. 1 At 212°F (100°C)				%	-19	-17	-10	-19	-15	-9
After 7 Days In IRM 903 Oil No. 3 At 212°F (100°C)				%	14	17	26	12	17	24
After 7 Days In ASTM Ref. Fuel No. B At 75°F (24°C)				%	13	16	26	11	14	22
Rheological										
Viscosity at 300 s ⁻¹ at 374°F (190°C)	D3835	-		Pas	400	500	870	370	510	780
Typical Processing Temperature	-	-		°F (°C)	330 (166)	330 (166)	330 (166)	330 (166)	330 (166)	330 (166)

^a All properties measured on specimens cut from 1.9 mm (75 mil) thick compression-molded plaques.

^b Type I pellets, 12.7 mm (0.5 in) diameter, plied up from 1.9 mm (75 mil) slabs.

Product Form and Packaging

All grades are supplied as free-flowing pellets packaged in 55.1 lb (25 kg) polyethylene bags. Palletized units contain 40 bags, or 2204 lb (1000 kg) net weight, wrapped in polyolefin film. All grades have unlimited storage stability under normal storage conditions.

Product Literature

Additional handling, processing, and product information is available from your APA representative.

For more information on Alcryn®:

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Alcryn®