

Compressive modulus (10 ⁴ psi) (D695)	Tensile modulus (10 ⁴ psi) (D690)	Izod impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
		73°F 125in	73°F 25in	40°F 125in	40°F 25in								
						85		1.1				Prime Source Polymers Inc	
						93		1				Montell U SA Inc	
						91		1				Montell U SA Inc Polycom Huntsman Inc	
						90		1.2				Montell U SA Inc	
								0.9				Montell U SA Inc Targor	
		1.2.5				80-107		0.9				Amoco Polymers Network Polymers Inc Phillips Sumika Polypropylene Co Solvay Polymers Inc Union Carbide Corp Polymers Group	
		1-2.5			33	65-107		0.9	0.03			Equistar Chemicals LP Huntsman Polypropylene Corp Phillips Sumika Polypropylene Co Ticona GmbH	
		1						1				Washington Penn Plastic Co Inc	
		2.5-4.3			33	75-79			0.03			Amoco Polymers Huntsman Polypropylene Corp Targor Ticona GmbH	
					31	78-90		1.1.3	0.03			Montell U SA Inc RTP Co Ticona GmbH	
		1.2.5				88-107			0.03	0.2		Montell U SA Inc Phillips Sumika Polypropylene Co Solvay Polymers Inc	
												Targor	
												Targor	
						71-75		0.9				Montell U SA Inc Ticona GmbH Union Carbide Corp Polymers Group	
						82		1.2				Montell U SA Inc	
								0.9				Montell U SA Inc	
					33-39			1.2				PolyPacific Australia Pty Ltd	
					33-44			1-1.2				PolyPacific Australia Pty Ltd	
					56			0.9				PolyPacific Australia Pty Ltd	
					56-67			0.9				PolyPacific Australia Pty Ltd	
					44			1.1				PolyPacific Australia Pty Ltd	
					56			0.9				PolyPacific Australia Pty Ltd	
						72-100		0.9	0.03	0.2		Montell U SA Inc Union Carbide Corp Polymers Group	
					33	75-80		0.9	0.03			Equistar Chemicals LP Exxon Chemical Co Fina Oil & Chemical Co Montell U SA Inc Solvay Polymers Inc Targor Union Carbide Corp Polymers Group	
												Targor	
						80-85		0.9				Equistar Chemicals LP Targor	
						80-85		0.9				Equistar Chemicals LP	
												Ticona GmbH	
						80		0.9				Equistar Chemicals LP	
						80		0.9				Equistar Chemicals LP	
						85-88		0.9				Equistar Chemicals LP	
												Targor	
		0.9				80			0.01			Amoco Polymers Targor	
								0.9				Montell U SA Inc	
		1.3			33	81	78-92	0.9	0.03			Exxon Chemical Co Huntsman Polymers Corp Huntsman Polypropylene Corp Ticona GmbH	
					33-39			1.2				PolyPacific Australia Pty Ltd	
					33-44			1.1.2				PolyPacific Australia Pty Ltd	
					56	80		0.9				Equistar Chemicals LP PolyPacific Australia Pty Ltd Ticona GmbH	
												Targor Ticona GmbH	
					56-67			0.9				PolyPacific Australia Pty Ltd	
					44			1.1				PolyPacific Australia Pty Ltd	
		1.2			33	93			0.03			Huntsman Polypropylene Corp	
					56			0.9				PolyPacific Australia Pty Ltd	
		0.6-1.1				69-107	86-92	0.9	0.03	0.2		Amoco Polymers Arstach Chemical Corp Equistar Chemicals LP Exxon Chemical Co Huntsman Polymers Corp Montell U SA Inc Solvay Polymers Inc	
												Muehlstein Compounded Products	
		1.5			33	75-89		0.9	0.03			Equistar Chemicals LP Huntsman Polypropylene Corp Montell U SA Inc	
						75-85		0.9				Equistar Chemicals LP	
		2.5-4.3			33	75-79			0.03			Amoco Polymers Huntsman Polypropylene Corp	
		1						1				M A Hanna Engineered Materials	
						80		0.9				Equistar Chemicals LP	
		1.5			33	75-88		0.9	0.03			Equistar Chemicals LP Huntsman Polypropylene Corp	
		0.7-1.9			33	58-95			0.03			Huntsman Polymers Corp Huntsman Polypropylene Corp Solvay Polymers Inc	
		1.1			33	75			0.03			Huntsman Polypropylene Corp	
												Huntsman Polypropylene Corp	
		2.5			33	75			0.03			Huntsman Polypropylene Corp	
		1.1			33	75			0.03			Huntsman Polypropylene Corp	
												Huntsman Polypropylene Corp	
						90						Union Carbide Corp Polymers Group	

Resin & Compound

Type	Process	Additive	Filler/reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (ml/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compress strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compress modulus (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
PP Copolymer	FC				19-20				12-25	23	475-550	12-42					7-17
PP Copolymer	FC	ABH			19				12-25			42					16
PP Copolymer	FC	ABM			8												10-13
PP Copolymer	FC	ABU			6.5-7	473			12-25			33-40					
PP Copolymer	FC	AS				473											
PP Copolymer	FC	SH			19				12-25			42					16
PP Copolymer	FC	SM			8	473											
PP Copolymer	FC	SU			6.5-8	473			10-25		500	33-40					10-13
PP Copolymer	FCX				1.5-10.5						490-500	12			1.2		
PP Copolymer	FCX	ABU															
PP Copolymer	FCX	AS															
PP Copolymer	FCX	SU															
PP Copolymer	FP				17-21						1000	12-15			0-2		
PP Copolymer	IBM				0.5-35		385-550		10-25	23-50	410-500	36-48			13-15		13-20
PP Copolymer	IBM	AS			1.8-35		375-455			50	450-700	36-50			13-17		12-22
PP Copolymer	IBM	HS															
PP Copolymer	IBM	IM															
PP Copolymer	IBM	MR			2						700	41			17		15-16
PP Copolymer	IBM	NA			1.9				12-25			49					17
PP Copolymer	IM				0.4-100	320-473	320-536	0.6-25	0.9-25	14-50	9.3-1000	12-62	35-55	50-55	0-23		8-34
PP Copolymer	IM		CCF	10	12		385-475		14-18	30	120-400	32-35					13-21
PP Copolymer	IM		CCF	20	4-12		385-475		10-15	24-34	100-650	29-33					13-25
PP Copolymer	IM		CCF	25	13		410					38					26
PP Copolymer	IM		CCF	30	12		385-475		11-12	24	350-400	26-29					16-28
PP Copolymer	IM		CCF	40	4.5-12		385-475		8-14	27	50-540	25-30					18-34
PP Copolymer	IM		CCF	50						8	60	23					20
PP Copolymer	IM		CFR					10-20	3-4			30-33		48-51	65-70		42-43
PP Copolymer	IM		CFR	10				9-13	2-3			40		55	80		50
PP Copolymer	IM		GBS	20				10-20	13						22		18
PP Copolymer	IM		GFIR					10-20	4						55		40
PP Copolymer	IM		GFIR	10	8		390-470	1.2-20	3-7	52-78	9-10				40-55		22-50
PP Copolymer	IM		GFIR	20	5-15		390-470	1.2-20	2.5-6	75-90	5-8	70-76	95	115	62		26-48
PP Copolymer	IM		GFIR	30	5-20		390-470	1.2	2.4	96-105	3-10	96-114					57-66
PP Copolymer	IM		GFIR	40	1.5-15		390-450		1.5-4	110	3	102		159-170			70-90
PP Copolymer	IM		GFIR	45	10		470	1.2	3		6	120					100
PP Copolymer	IM		GFIR	50	1.5				3			105		180			105
PP Copolymer	IM		GMN					5-10	3			70		100	95		65
PP Copolymer	IM		GMN	34					4		3						80
PP Copolymer	IM		GMN	35					4		4						55
PP Copolymer	IM		MCF	10			385-475					42					28-31
PP Copolymer	IM		MCF	12					10		15						24
PP Copolymer	IM		MCF	20			385-475		8		15	42-45					25-39
PP Copolymer	IM		MCF	25					7-8		10-12						27-28
PP Copolymer	IM		MCF	30			385-475					42-49					45-50
PP Copolymer	IM		MCF	35					7		12						24
PP Copolymer	IM		MCF	40			385-475		6		5	43-50					42-55

Us J)	Compress modulus (10 ⁴ psi) (D885)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in- F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/ 23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/ml) (D149)	Supplier
		73°F 125in	73°F, .25in	40°F 125in	40°F, .25in								
		13				33	74-95	95-96	0.9	0.03		Fina Oil & Chemical Co Formosa Plastics Corp USA Huntsman Polymers Corp Huntsman Polypropylene Corp , Montell U SA Inc , Solvay Polymers, Inc Union Carbide Corp Polymers Group	
		11				33	75			0.03		Huntsman Polypropylene Corp Huntsman Polypropylene Corp	
		16				33	65			0.03	0.2	Huntsman Polypropylene Corp , Montell U SA Inc Solvay Polymers Inc Targor Solvay Polymers Inc Targor	
		11				33	75			0.03		Huntsman Polypropylene Corp Huntsman Polypropylene Corp Targor	
		0.9-1.6				33	65-80			0.01-0.03	0.2	Amoco Polymers, Huntsman Polypropylene Corp Montell U SA Inc Solvay Polymers Inc Targor Huntsman Polymers Corp Solvay Polymers Inc Solvay Polymers Inc Solvay Polymers Inc Huntsman Polymers Corp	
								86-92				Huntsman Polymers Corp	
		12					60-89		0.9	0.01-0.03	0.2	Amoco Polymers Exxon Chemical Co Montell U SA Inc Solvay Polymers Inc Union Carbide Corp Poly- mers Group	
		11					80-100		0.9			Amoco Polymers, Huntsman Polymers Corp Montell U SA Inc Phillips Sumika Polypropylene Co Solvay Polymers Inc , Union Carbide Corp Polymers Group Ticona GmbH Ticona GmbH	
							80-84		0.9			Equistar Chemicals LP Huntsman Polymers Corp Huntsman Polypropylene Corp	
		1.2				33	93			0.03			
		0.4-1.4	3-10			21-83	1.8-10.9	86-92	0.9-1.3	0.01-0.15	0.2	A Schulman Inc Amoco Polymers Aristech Chemical Corp Borealis Compounds Inc Channel Polymers Dow Plastics, DSM Engineering Plastics Epsilon Prod- ucts Co Equistar Chemicals LP Exxon Chemical Co Fina Oil & Chemical Co Formosa Plastics Corp USA, General Polymers Huntsman Polymers Corp , Hunts- man Polypropylene Corp M Holland Co M A Hanna Engineered Materials Montell U SA Inc Muehlstein Compounded Products Prime Source Polymers Inc RheTech RTP Co Shuman Plastics Inc Solvay Poly- mers Inc Spartech Compounding Targor Ticona Ticona GmbH Union Carbide Corp Polymers Group Washington Penn Plastic Co Inc	
							70-89		1			A Schulman Inc Montell U SA Inc Polycom Hunts- man Inc Prime Source Polymers Inc	
		1.6	1.1				75-92		1	0.02		A Schulman Inc DSM Engineering Plastics M A Hanna Engineered Materials, Montell U SA Inc Polycom Huntsman Inc , Prime Source Polymers Inc Montell U SA Inc	
							75-85		1.1			A Schulman Inc Montell U SA Inc Polycom Hunts- man Inc Prime Source Polymers Inc	
		1.4	1				73-87		1.2-1.3	0.02		A Schulman Inc DSM Engineering Plastics M A Hanna Engineered Materials Montell U SA Inc Polycom Huntsman Inc Prime Source Polymers Inc Polycom Huntsman Inc	
									1.4			RTP Co	
						23-24			0.9-1	0.01		RTP Co	
									0.9	0.01		RTP Co	
							89		1	0.02		RTP Co	
							90		1.1	0.03		RTP Co	
		3	2.8			25	85-85		1-1.3	0.01		DSM Engineering Plastics Montell U SA Inc Prime Source Polymers Inc RTP Co	
			3.2			24	80-92		1	0.02		DSM Engineering Plastics Montell U SA Inc , Prime Source Polymers Inc , RTP Co	
		3.3	3.3				85-90		1.1			DSM Engineering Plastics Montell U SA Inc Prime Source Polymers Inc	
		3.6	3.3				100		1.2			DSM Engineering Plastics Montell U SA Inc Prime Source Polymers, Inc Montell U SA Inc Montell U SA Inc RTP Co	
							95		1.2	0.03		Prime Source Polymers Inc	
							90		1.2			Prime Source Polymers Inc	
							85		1.2			Prime Source Polymers Inc	
							89-90		1			A Schulman Inc	
							80		1			Prime Source Polymers Inc	
							80-90		1			A Schulman Inc Prime Source Polymers Inc	
							82-90		1.1			Prime Source Polymers Inc	
							88-89		1.1			A Schulman Inc	
							82		1.2			Prime Source Polymers Inc	
							85-89		1.2			A Schulman Inc Prime Source Polymers Inc	

Resin & Compound

Type	Process	Additive	Filler/reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (mil/in) (D855)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compressive strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compressive modulus (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
PP Copolymer	IM		MNF		15-18		410-470	5-20	4-11		11-40	28-38		48	55-70		32-70
PP Copolymer	IM		MNF	10	18				12		32	25			16		16
PP Copolymer	IM		MNF	20	18			10-20	8-12		30	23			20-40		20-30
PP Copolymer	IM		MNF	30	18				6		22	23			28		28
PP Copolymer	IM		MNF	40	12-18				5-12		15	23-26			38		30-38
PP Copolymer	IM		SSF					10-20	10						25		23
PP Copolymer	IM		TF		15-7				8-14		40-300						29-41
PP Copolymer	IM		TF	10	15		385-475		8-18		25-400	32-38					16-23
PP Copolymer	IM		TF	20	4-12		385-475		8-15	20-38	15-400	26-39					17-34
PP Copolymer	IM		TF	23	23		410		29	20	35						30
PP Copolymer	IM		TF	30			385-475	10-20	5-12		15-150	30-36			55		21-50
PP Copolymer	IM		TF	40	4-12		385-475		4-13	26-35	12-70	29-37					24-47
PP Copolymer	IM		TF	50					8	20	25						26
PP Copolymer	IM		UN		28-5		385-475				47						33
PP Copolymer	IM	ABU			8			1-2			40						19
PP Copolymer	IM	AS			15-100		374-536	0.6-12	10-25		9-500	32-61			11-19		9-35
PP Copolymer	IM	CB					430-450	10-20	13-20	33-46	5-15	25-34		40-48	20-26		14-20
PP Copolymer	IM	CB	GFIR	15				10-20	4-6			38-40		58-60	48-50		34-35
PP Copolymer	IM	HS			0.6-65		375-525	0.6-15	12-25		124-510	27-42			15		10-23
PP Copolymer	IM	HS	CCF		16		400-500					35					20
PP Copolymer	IM	HS	GFIR	15	9-5		400-500	10-20	3-6			70		80			34-50
PP Copolymer	IM	HS	GFIR	20	8		400-500					53					37
PP Copolymer	IM	HS	GFIR	30	9		400-500					70					50
PP Copolymer	IM	HS	MCF		16		400-500	10-20	9-10			35	70		100		20-55
PP Copolymer	IM	HS	MCF	25				10-20	3			70		80			50
PP Copolymer	IM	HS	MNF	20													10
PP Copolymer	IM	HS	TF	20	20		400-500										30
PP Copolymer	IM	HS	TF	45				0-20	11			39		34			30
PP Copolymer	IM	IM			0.5-35		400-482	0.6-20	10-25		200-500	30-41			11-15		10-25
PP Copolymer	IM	IM	GBS	30				10-20	2-3			100		70			50
PP Copolymer	IM	IM	GFIR	10			390-450	10-20	4-7	60	3-5	75		35-44			30-38
PP Copolymer	IM	IM	GFIR	15				10-20	4-5			85		49			36
PP Copolymer	IM	IM	GFIR	20			390-450	10-20	3-4	85	4-4			50-60			40-50
PP Copolymer	IM	IM	GFIR	30			390-450	10-20	2-4	104	3-7	75		70-80			55-66
PP Copolymer	IM	IM	GFIR	40			390-450	10-20	1-3	120	3			80-110			70-80
PP Copolymer	IM	IM	MCF	12					11		15						26
PP Copolymer	IM	IM	MCF	20					10		12						29
PP Copolymer	IM	IM	MCF	25				10-15	10					43			40
PP Copolymer	IM	IM	MNF					10-15	14			40		22-34			18-30
PP Copolymer	IM	IM	MNF	20													35
PP Copolymer	IM	IM	TF	15				10-20	10					38			29-30
PP Copolymer	IM	IM	TF	20			400-450		9-12	36	12-18						35
PP Copolymer	IM	IM	TF	40					7		10						30-40
PP Copolymer	IM	IM	TF	45				10-20	9-11			39		34-50			11-22
PP Copolymer	IM	IR			2.5-20		380-440	10-20	12-23	29-45	35-300	25-46	35	40-42	12-26		35
PP Copolymer	IM	IR	GFIR	10				10-20	5					40			45
PP Copolymer	IM	IR	GFIR	15				10-20	4					50			50-58
PP Copolymer	IM	IR	GFIR	20	5	470	1-2-20	3-5		7	77			60			20
PP Copolymer	IM	IR	MNF	50					13-15		46						40
PP Copolymer	IM	IR	TF	45				10-20	9					50			12-15
PP Copolymer	IM	L			1.5-2		440		10-25			40-42		14-16			20
PP Copolymer	IM	L	CCF		16		400-500					35					20

Tensile strength (psi)	Compressive modulus (10 ⁴ psi) (D695)	Izod impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil. (D570)	Dielectric strength (V/mil) (D149)	Supplier
		73°F 125in	73°F 25in	40°F 125in	40°F 25in								
					27-39	90		1-1.4	0.02-0.03			Montell U SA Inc PolyPacific Australia Pty Ltd RTP Co	
						60		1				Aclo Compounerds Inc	
					30	65		1-1.2	0.02			Aclo Compounerds Inc RTP Co	
						68		1.1				Aclo Compounerds Inc	
						70-90		1.2				Aclo Compounerds Inc, Montell U SA Inc	
					34			1	0.01			RTP Co	
					33-44			1.1.2				PolyPacific Australia Pty Ltd	
		1.3				70-88		1				A Schulman Inc M A Hanna Engineered Materials Muehlstein Compounded Products Polycorn Huntsman Inc Prime Source Polymers Inc	
		1.1	1			62-92		1	0.02			A Schulman Inc DSM Engineering Plastics M A Hanna Engineered Materials Montell U SA Inc Polycorn Huntsman Inc Prime Source Polymers Inc	
		0.7			25	70-95		1.1-1.3	0.01			Montell U SA Inc	
		0.5	0.8			70-91		1.2-1.3	0.02			A Schulman Inc DSM Engineering Plastics M A Hanna Engineered Materials Montell U SA Inc Polycorn Huntsman Inc Prime Source Polymers Inc	
						95		1				Polycorn Huntsman Inc	
												A Schulman Inc	
		0.4-3			33	75-109		0.9	0.01-0.03	0.2		Union Carbide Corp Polymers Group	
												Amoco Polymers Aristech Chemical Corp Borealis Compounds Inc Dow Plastics Equistar Chemicals LP Exxon Chemical Co Fina Oil & Chemical Co Huntsman Polymers Corp Huntsman Polypropylene Corp Montell U SA Inc Network Polymers Inc Phillips Sumika Polypropylene Co Solvay Polymers Inc Targor Ticona GmbH Union Carbide Corp Polymers Group	
		8			30-35	68		1-1.1	0.015-0.03			ComAlloy International Corp DSM Engineering Plastics RTP Co	
					20-22			1.1	0.02			RTP Co	
		1-2.5			33-56	55-107		0.9	0.01-0.03			Borealis Compounds Inc Equistar Chemicals LP Exxon Chemical Co Huntsman Polypropylene Corp M Holland Co PCD Polymere GmbH Phillips Sumika Polypropylene Co PolyPacific Australia Pty Ltd RheT ech RTP Co Targor Ticona GmbH Union Carbide Corp Polymers Group	
												Spartech Compounding	
								1.2				Spartech Compounding	
					21	94		1.1-1.3	0.01			RTP Co Spartech Compounding	
								1.1				Spartech Compounding Targor	
								1.1				Spartech Compounding	
						99		1.2	0.03			RTP Co Spartech Compounding	
					21	94		1.3	0.01			RTP Co	
												Targor	
												Spartech Compounding	
					34	89		1	0.03			RTP Co	
		1.2-4.3			33-37	60-90		0.9	0.01-0.03			Amoco Polymers Huntsman Polypropylene Corp PCD Polymere GmbH RTP Co Targor Ticona GmbH Union Carbide Corp Polymers Group	
					21	97		1.1	0.01			RTP Co	
					31	80-84		1-1.1	0.01-0.04			DSM Engineering Plastics RTP Co	
			2		27	88		1	0.01			RTP Co	
			2.3			85-92		1.1.4	0.01-0.04			DSM Engineering Plastics RTP Co	
			2.6			90-97		1.1	0.03-0.04			DSM Engineering Plastics RTP Co	
			3.2			95-102		1.2	0.06			DSM Engineering Plastics RTP Co	
						90		1				Prime Source Polymers Inc	
						90		1				Prime Source Polymers Inc	
								1.1	0.02			RTP Co	
								1	0.02			RTP Co	
						88		1	0.02			Targor	
								1.1	0.03			RTP Co	
						90		1				DSM Engineering Plastics Prime Source Polymers Inc	
						90		1.2				Prime Source Polymers Inc	
					34	89		1.1.5	0.03			RTP Co	
		1			30-67	82-93		0.9-1.3	0.01-0.03			M A Hanna Engineered Materials Montell U SA Inc PolyPacific Australia Pty Ltd RTP Co Ticona GmbH	
						85		1.3	0.01			RTP Co	
						90		1.4	0.01			RTP Co	
						92-96		1.4	0.01-0.02			Montell U SA Inc RTP Co	
					44			1.1				PolyPacific Australia Pty Ltd	
						89		1.5	0.03			RTP Co	
						80		0.9				Equistar Chemicals LP Fina Oil & Chemical Co Ticona GmbH	
								1.2				Spartech Compounding	

Resin & Compound

Type	Process	Additive	Fiber/tem	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ⁵ psi)	Mold shrinkage (linear-flow) (ml/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compress strength (psi) (D895)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compress modulus (10 ⁴ psi) (D686)	Flexural modulus (10 ⁴ psi) (D790)
PP Copolymer	IM	L	GFIR	15	9.5		400-500		4.6								34
PP Copolymer	IM	L	GFIR	20	8		400-500					53					37
PP Copolymer	IM	L	GFIR	30	9		400-500					70					50
PP Copolymer	IM	L	MCF		16		400-500					35					20
PP Copolymer	IM	L	MNF	25	23		400-500										17
PP Copolymer	IM	L	MNF	30	30		400-500										10
PP Copolymer	IM	L	TF	20	20		400-500										38
PP Copolymer	IM	LPTFE	GFIR	10				10-20	7						40		10-15
PP Copolymer	IM	LS						10-20	15								15-21
PP Copolymer	IM	MR			2.50		390-450	0.6-1.5	14-20					38-46			0.8
PP Copolymer	IM	MR	MNF	20													
PP Copolymer	IM	NA			1.4-100		374-536	0.6-1.2	10-25			9-500		31-61			0.4
PP Copolymer	IM	SU			6-50		385-475	1-12						32-46			13-21
PP Copolymer	IM	UVS			0.5-36		392-536	1.15	12-20			124-600		30-41			11-21
PP Copolymer	IM	UVS	CCF					10-20	12				40		35		32
PP Copolymer	IM	UVS	CCF	10	20		410					450		33			17
PP Copolymer	IM	UVS	CCF	40	0.4		470			24		400		37			23
PP Copolymer	IM	UVS	GFIR	20	15		470	1.2-20	3-4					70		115	60
PP Copolymer	IM	UVS	GFIR	30	3		470	1.2-15	3	80	12						52-60
PP Copolymer	IM	UVS	GFIR	40				10-20	2.3								70-80
PP Copolymer	IM	UVS	MNF		5-19		410-450	10-15	14	16	55	27					22
PP Copolymer	IM	UVS	MNF	20													
PP Copolymer	IM	UVS	MNF	25	23		400-500										17
PP Copolymer	IM	UVS	MNF	30	30		400-500										24
PP Copolymer	IM	UVS	TF	15	30		410		11	30	20	37					30
PP Copolymer	IM	UVS	TF	23	23		410					35					30
PP Copolymer	IM	UVS	TF	45				10-20	11				39				30
PP Copolymer	RTM	HS															
PP Copolymer	RTM	IM															13
PP Copolymer	SBM				30					340	870	39					17
PP Copolymer	SBM	AS			35					10-25	500	42					0.8
PP Copolymer	SBM	NA			1.9-35		360-400		12-25			42-49					16-17
PP Copolymer	T				0.3-21	464-500	400-550		12-25			250-1000		12-52			0.7-11-22
PP Copolymer	T		MNF		1.5-18				9-11			11-40					39-49
PP Copolymer	T		TF		1.5-7				8-14			40-300					29-41
PP Copolymer	T	AS			1.8-2		428-536					43-50					17-22
PP Copolymer	T	HS			0.8-36				12-20			124-510		42			12-22
PP Copolymer	T	IM															
PP Copolymer	T	IR			2.5-5				15-19			150-300					15-17
PP Copolymer	T	IR	MNF		50				13-15			46					20
PP Copolymer	T	NA			2-3		428-536							34-39			18-21
PP Copolymer	T	UVS			0.8-36				12-20			124-510					12-20
PP Copolymer	TSP				4-8		420-500					42					11-16
PP Copolymer	V				0.8							36					19
PP Copolymer	V	NA			2-3							34-35					19-21
PP Homopolymer	BM				0.2-36		375-525		12-25			200-1000		7-58		1.20	16-29
PP Homopolymer	BM		CCF	10	10				12	43							26
PP Homopolymer	BM		CCF	20	0.5-10				10-13			40-48					28-30
PP Homopolymer	BM		CCF	30	10				9	37							30
PP Homopolymer	BM		CCF	40	0.5-10				8-10	34				38			32-39
PP Homopolymer	BM		GFIR	10	8-10				5-6	50-77	7-10						30-39
PP Homopolymer	BM		GFIR	20	8-10				3-5	65-88	5-6						44-48
PP Homopolymer	BM		GFIR	30	8-10				3-4	71-99	3-4						62-80
PP Homopolymer	BM		GFIR	35			446-500										60-98
PP Homopolymer	BM		GFIR	40	8				2-3	78-118							1.2-1
PP Homopolymer	BM		MCF	20	10				11	46							46
PP Homopolymer	BM		MCF	40	10				8	45							75

Material Grade	Compression modulus (10 ⁴ psi) (D695)	Izod impact (D255)				Coefficient of linear thermal expansion, flow (in/in- F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/ 23C) (D782)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/ml) (D149)	Supplier
		73°F 125in	73°F, 25in	40°F 125in	40°F, 25in								
								1.1				Spartech Compounding	
								1.1				Spartech Compounding	
								1.1				Spartech Compounding	
								1.2				Spartech Compounding	
												Spartech Compounding	
								1.1				Spartech Compounding	
												Spartech Compounding	
								1.1	0.01			RTP Co	
10-15								0.9	0.01			RTP Co	
18-21	0.8					80-97		0.9				Dow Plastics, Equistar Chemicals LP, Fina Oil & Chemical Co, Huntsman Polypropylene Corp	
												Targor	
11-25	0.4-3.5				33	75-109		0.9	0.01-0.03	0.2		Amoco Polymers, Dow Plastics, Equistar Chemicals LP, Exxon Chemical Co, Fina Oil & Chemical Co, Huntsman Polypropylene Corp, M. Holland Co, Montell U SA Inc, Network Polymers Inc, Phillips Sumika Polypropylene Co, Solvay Polymers Inc, Targor, Union Carbide Corp, Polymers Group	
13-21							90	0.9	0.03	0.2		Montell U SA Inc, Union Carbide Corp, Polymers Group	
11-31	2				38-56	60-90		0.9-1.2	0.01-0.03			Borealis Compounds Inc, Exxon Chemical Co, Huntsman Polypropylene Corp, Montell U SA Inc, PolyPacific Australia Pty Ltd, RTP Co, Targor, Ticona GmbH, Union Carbide Corp, Polymers Group	
							88	1.1	0.02			RTP Co	
17						88		1				Montell U SA Inc	
18						82		1.2				Montell U SA Inc	
10-45								1	0.01			Montell U SA Inc, RTP Co	
21-50							97	1.1	0.04			Montell U SA Inc, RTP Co	
10-90							95-102	1.2	0.06			RTP Co	
12					26-30			1	0.02			Montell U SA Inc, RTP Co	
												Targor	
												Spartech Compounding	
17								1.1				Spartech Compounding	
24					30	90		1				Montell U SA Inc	
30								1.1				Montell U SA Inc	
30					34	89		1	0.03			RTP Co	
												Ticona GmbH	
												Ticona GmbH	
13								0.9				Exxon Chemical Co	
17	0.8					85			0.01			Amoco Polymers	
16-17	0.7-1.2				33	80-93			0.03			Huntsman Polypropylene Corp	
14-22	0.8-10				33	55-99	86-92	0.9	0.03	0.2		Amoco Polymers, Anstech Chemical Corp, Exxon Chemical Co, Formosa Plastics Corp, USA, Huntsman Polymers Corp, Huntsman Polypropylene Corp, Montell U SA Inc, Targor	
28-40					33-39			1.2				PolyPacific Australia Pty Ltd	
28-41					33-44			1-1.2				PolyPacific Australia Pty Ltd	
17-22						89		0.9				Amoco Polymers, Montell U SA Inc, Targor	
12-22					56	101		0.9				Phillips Sumika Polypropylene Co, PolyPacific Australia Pty Ltd, Ticona GmbH	
												Ticona GmbH	
15-17					56-67			0.9				PolyPacific Australia Pty Ltd, Ticona GmbH	
20					44			1.1				PolyPacific Australia Pty Ltd	
18-21						82-88		0.9				Aristech Chemical Corp, Equistar Chemicals LP, Targor	
18-20					56			0.9				PolyPacific Australia Pty Ltd, Ticona GmbH	
11-18								0.9				Exxon Chemical Co	
19						85						Equistar Chemicals LP	
18-21						88		0.9				Equistar Chemicals LP	
15-29	0.4-1				50	82-108	92-100	0.9	0.02-0.03	0.2		Amoco Polymers, Aristech Chemical Corp, Huntsman Polymers Corp, Huntsman Polypropylene Corp, Montell U SA Inc, Phillips Sumika Polypropylene Co, Solvay Polymers Inc, Targor, Union Carbide Corp, Polymers Group	
28						97		1				The Plastics Group	
28-30						98-100		1				Montell U SA Inc, The Plastics Group	
30						98		1.1				The Plastics Group	
32-39						97-100		1.2				Montell U SA Inc, The Plastics Group	
20-39	1-1.8							1				The Plastics Group	
44-46	1.2-1.3							1				The Plastics Group	
82-90	1.2-1.4							1.1				The Plastics Group	
												Buna Sow, Leuna Olefinverbund GmbH	
80-88	1.2-1.6							1.2				The Plastics Group	
46						97		1				The Plastics Group	
75						97		1.2				The Plastics Group	

Resin & Compound

Type	Process	Additive	Filler/reinif	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear flow) (mil/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compress strength (psi) (D695)	Flexural strength at yield (psi) (D780)	Tensile modulus (10 ⁴ psi) (D638)	Comp modulus (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
PP Homopolymer	BM		TF	10	8				12	41							
PP Homopolymer	BM		TF	20	0 6 8				10 12	38-45	160	49					27
PP Homopolymer	BM		TF	30	8				9	47							24-30
PP Homopolymer	BM		TF	40	8				8	49							35
PP Homopolymer	BM	AS			1 8 35		375-525		10 25			46-56			23		40
PP Homopolymer	BM	HS	GFIR	40													19-30
PP Homopolymer	BM	HS	GFIR	50													
PP Homopolymer	BM	HS	GFL	40													
PP Homopolymer	BM	HS	TF	10						392 464							
PP Homopolymer	BM	HS	TF	20						446-500							
PP Homopolymer	BM	HS	TF	30						446 500							
PP Homopolymer	BM	HS	TF	40						446-500							
PP Homopolymer	BM	L			1 6 2 2		425-500		10 25			50-54			23		21 30
PP Homopolymer	BM	NA			1 9 35		375-525					53-56					
PP Homopolymer	BM	UVS			3 5-5		450 525					51-52					28-30
PP Homopolymer	CAL				1 8-36						1000	7-20			1-4		26
PP Homopolymer	CAS																
PP Homopolymer	CAS	L															
PP Homopolymer	CAS	NA															
PP Homopolymer	CEX				8												
PP Homopolymer	CM				3 5-36		400 525					47-52					
PP Homopolymer	CM	AS			2-5							48-52					24-27
PP Homopolymer	CM	L			1 9 2 2		425-500					54					25
PP Homopolymer	CM	NA			1 9-2 2		425-500					52 54					30
PP Homopolymer	CM	SU			1 5		475-525					48					28-30
PP Homopolymer	CM	UVS			3 5-5		450-525					51-52					22
PP Homopolymer	COT				35		482				610	13			3		26
PP Homopolymer	EBM				1 2 36		390-444				1000	7-53			1 4		22
PP Homopolymer	EBM	NA			1 9		425 500					52					28
PP Homopolymer	EX				0 25 75		370-600		8-25	21-55	27 5-570	38-59			13 23		16-30
PP Homopolymer	EX		CCF						10 14						34 42		28-36
PP Homopolymer	EX		CCF	20	0 5				13 15		100	44 48					23-30
PP Homopolymer	EX		CCF	40	0 5				10 11		70	36-38					27-39
PP Homopolymer	EX		MCF	40	10				8	45							75
PP Homopolymer	EX		TF	20	0 6 5				12-14	38	30 160	49 55					24-43
PP Homopolymer	EX		TF	40					8-9		10 12	50					33-36
PP Homopolymer	EX	ABU			7 3	464-500					200	55					22
PP Homopolymer	EX	AGF			20							49					
PP Homopolymer	EX	AS			2 35		375-525		10 25	37-45	20 570	46 57			14 23		17-30
PP Homopolymer	EX	HS															
PP Homopolymer	EX	HS	GFIR	20		392 410	464-500										
PP Homopolymer	EX	HS	GFIR	40													
PP Homopolymer	EX	HS	GFIR	50													
PP Homopolymer	EX	HS	GFL	40													
PP Homopolymer	EX	HS	MNF	20													
PP Homopolymer	EX	HS	TF	20	6 3						21	49					35
PP Homopolymer	EX	IM	MNF	20													0 7
PP Homopolymer	EX	IR							14 20						25		21 22
PP Homopolymer	EX	L			1 9 2 2	464-500	425-500					54					30
PP Homopolymer	EX	NA			1 9 35		375 525		10 25		20	50 56					22 30
PP Homopolymer	EX	SU			1 5 7 3		475 525				200	48-55					22
PP Homopolymer	EX	UVS			3 5 30		450-525		14		100	50 52			20-25		18-26
PP Homopolymer	EX	UVS	GFIR	20		392-410	464 500										
PP Homopolymer	EXB				3 2-1300		400 500		10 25		20 710	9 57			3 26		13-28

Tensile strength (psi)	Compressive modulus (10 ⁴ psi) (D695)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/ml) (D149)	Supplier
		73°F 125in	73°F 25in	40°F 125in	40°F 25in								
						97		1				The Plastics Group	
						96-97		1				Montell U SA Inc , The Plastics Group	
						97		1 1				The Plastics Group	
						97		1 2				The Plastics Group	
0 4-0 8						89 113						Fina Oil & Chemical Co Huntsman Polypropylene Corp Phillips Sumika Polypropylene Co	
												Ticona GmbH	
												Ticona GmbH	
												Ticona GmbH	
												Buna Sow Leuna Olefinverbund GmbH	
												Buna Sow Leuna Olefinverbund GmbH	
												Buna Sow Leuna Olefinverbund GmbH	
												Buna Sow Leuna Olefinverbund GmbH	
												Fina Oil & Chemical Co Phillips Sumika Polypropylene Co	
0 5						112 113						Phillips Sumika Polypropylene Co	
												Phillips Sumika Polypropylene Co	
							92 100					Huntsman Polymers Corp	
												Amoco Polymers	
												Amoco Polymers	
												Amoco Polymers	
												Huntsman Polypropylene Corp	
												Phillips Sumika Polypropylene Co Ticona GmbH	
												Phillips Sumika Polypropylene Co	
												Phillips Sumika Polypropylene Co	
												Phillips Sumika Polypropylene Co	
								0 9				Montell U SA Inc	
												Phillips Sumika Polypropylene Co	
												Huntsman Polymers Corp Targor Ticona GmbH	
							92 100					Huntsman Polymers Corp Phillips Sumika Polypropylene Co Thai Petrochemical Industry Co Ltd	
												Phillips Sumika Polypropylene Co	
0 4-2					21-56	85 110		0 9-1 1	0 01-0 03	0 2		Amoco Polymers ARCO Polypropylene Aristech Chemical Corp Borealis Compounds Inc Dow Plastics Epsilon Products Co Equistar Chemicals LP Exxon Chemical Co Fina Oil & Chemical Co General Polymers Huntsman Polymers Corp Huntsman Polypropylene Corp M A Hanna Engineered Materials Montell U SA Inc Phillips Sumika Polypropylene Co Shuman Plastics Inc Solvay Polymers Inc Targor Thai Petrochemical Industry Co Ltd Ticona GmbH Union Carbide Corp Polymers Group	
						88 99		1 1 2	0 02			RTP Co	
						100		1				Montell U SA Inc Polycorn Huntsman Inc	
						100		1 2 1 3				Montell U SA Inc Polycorn Huntsman Inc	
						97		1 2				The Plastics Group	
						96		1				Amoco Polymers Montell U SA Inc , Polycorn Huntsman Inc	
						95		1 2-1 3				Polycorn Huntsman Inc Prime Source Polymers Inc	
												Amoco Polymers, Targor	
								0 9				Dow Plastics	
0 4-0 7					21 50	90-113		0 9	0 01-0 03			Amoco Polymers Aristech Chemical Corp Fina Oil & Chemical Co , Huntsman Polypropylene Corp Montell U SA Inc Phillips Sumika Polypropylene Co Solvay Polymers Inc	
												Ticona GmbH	
												Buna Sow Leuna Olefinverbund GmbH Targor	
												Ticona GmbH	
												Ticona GmbH	
												Ticona GmbH	
												Targor	
0 7								1				Targor Washington Penn Plastic Co Inc	
												Targor	
					37			1-1 3	0 01 0 03			RTP Co Ticona GmbH	
												Amoco Polymers Phillips Sumika Polypropylene Co	
0 4-0 5					50	90-113		0 9	0 01 0 03			Targor	
												Amoco Polymers Huntsman Polypropylene Corp Phillips Sumika Polypropylene Co	
												Amoco Polymers Montell U SA Inc	
						104		0 9 1 3	0 03			Equistar Chemicals LP Fina Oil & Chemical Co Montell U SA Inc Phillips Sumika Polypropylene Co RTP Co	
0 5						96 107	97 99	0 9				Buna Sow Leuna Olefinverbund GmbH Targor	
												Amoco Polymers ARCO Polypropylene Exxon Chemical Co Fina Oil & Chemical Co Huntsman Polymers Corp Huntsman Polypropylene Corp Montell U SA Inc	

Resin & Compound

Type	Process	Additive	Filler/fibre	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (mil/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compressive strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compressive modulus (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
PP Homopolymer	EXB		MNF		6-20				7-16			12-80					27-62
PP Homopolymer	EXB		TF		1.5-42				8-15			4-60					23-64
PP Homopolymer	EXB	HS			10				16-20			350					20
PP Homopolymer	EXB	IR			9				15-19			40					19
PP Homopolymer	EXB	IR	MNF		12				13-17			40					25
PP Homopolymer	EXB	UVS			10-21				16-20			350	48			24-25	13-22
PP Homopolymer	EXC				15-70		400-500					600-650	15-92		1-4		19-25
PP Homopolymer	EXF				1.8-12	473	450-525		12-25			100	48-55		19		19-25
PP Homopolymer	EXF	ABU				464-500	482										
PP Homopolymer	EXF	AS					482										
PP Homopolymer	EXF	HS					482										
PP Homopolymer	EXF	HS	GFIR	20		392-410	464-500										
PP Homopolymer	EXF	L				464-500											
PP Homopolymer	EXF	SM				464-500											
PP Homopolymer	EXF	SU				464-500											
PP Homopolymer	EXF	UVS					482										
PP Homopolymer	EXF	UVS	GFIR	20		392-410	464-500										
PP Homopolymer	EXL				1-36		400-525					60-100	45-54				18-27
PP Homopolymer	EXL	UVS			3.5-30		450-525					100	50-52		20		21-26
PP Homopolymer	EXO				0.7-3							52-53					21-22
PP Homopolymer	EXP				0.7-36					30-57		100-1000	7-58		1-13		17-23
PP Homopolymer	EXP		MNF		6-20				7-16			12-80					27-62
PP Homopolymer	EXP		TF		1.5-42				8-15			4-60					23-64
PP Homopolymer	EXP		WF	20	0.5	340-370						47			40		36
PP Homopolymer	EXP		WF	40	0.5	340-370				39	6-2	45			57		55
PP Homopolymer	EXP	AS			5					40	500	49					17
PP Homopolymer	EXP	HS			10				16-20			350					20
PP Homopolymer	EXP	HS	GFIR	30		392-410	464-500										
PP Homopolymer	EXP	HS	TF	30		392-410	464-500										
PP Homopolymer	EXP	IR			9				15-19			40					19
PP Homopolymer	EXP	IR	MNF		12				13-17			40					25
PP Homopolymer	EXP	NA			2					36		58					25
PP Homopolymer	EXP	UVS			10				16-20			350					20
PP Homopolymer	EXP	UVS	TF	30		392-410	464-500										
PP Homopolymer	EXS				0.2-36		450-525		12-25	29-36	60-1000	7-58			1-24		18-25
PP Homopolymer	EXS		WF	20	0.5	340-370						47			40		36
PP Homopolymer	EXS		WF	40	0.5	340-370				39	6-2	45			57		55
PP Homopolymer	EXS	AS			2-5							48-54					23-25
PP Homopolymer	EXS	HS	GFIR	30		392-410	464-500										
PP Homopolymer	EXS	HS	TF	30		392-410	464-500										
PP Homopolymer	EXS	NA			1.9-2		425-500			36		52-58					23-28
PP Homopolymer	EXS	UVS	TF	30		392-410	464-500										
PP Homopolymer	FB				1.7-8				12-25			100-460	16-54		4-6		19-25
PP Homopolymer	FB	ABU			4-10				12-25			54					26
PP Homopolymer	FB	SU			4-10				12-25			54					26
PP Homopolymer	FC				0.7-35				12-25	33-39	438-610	9-57			1-23		15-25
PP Homopolymer	FC	ABU			4-7.3				12-25			200	54-55				22-25
PP Homopolymer	FC	SU			4-8.5				12-25			200	49-55				20-26
PP Homopolymer	FP				1.8-36						1000	7-20			1-4		21
PP Homopolymer	IBM				1.5-1.6							49					25
PP Homopolymer	IBM	AS			2							52					25
PP Homopolymer	IBM	HS															

Tensile strength (ksi)	Compressive modulus (10 ⁴ psi) (D685)	Izod impact (D256)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D686)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
			73°F 125in	73°F .25in	40°F 125in	40°F .25in								
						33-56			1-1.2				PolyPacific Australia Pty Ltd	
						33-56			1.1.3				PolyPacific Australia Pty Ltd	
						58			0.9				PolyPacific Australia Pty Ltd	
						67			0.9				PolyPacific Australia Pty Ltd	
						56			1				PolyPacific Australia Pty Ltd	
						56	103		0.9				Fina Oil & Chemical Co PolyPacific Australia Pty Ltd Union Carbide Corp Polymers Group	
		0.4						80-104	0.9	0.03	0.2		Aristech Chemical Corp Exxon Chemical Co Huntsman Polymers Corp , Huntsman Polypropylene Corp Montell U SA Inc , Phillips Sumika Polypropylene Co	
		0.6				44-50	85-106		0.9	0.03			Dow Plastics, Fina Oil & Chemical Co Huntsman Polymers Corp Huntsman Polypropylene Corp Montell U SA Inc Targor, Ticona GmbH, Union Carbide Corp Polymers Group	
													Targor Ticona GmbH	
													Ticona GmbH	
													Targor	
													Buna Sow Leuna Olefinverbund GmbH	
													Targor Ticona GmbH	
													Targor	
													Targor	
													Buna Sow Leuna Olefinverbund GmbH	
							85-90		0.9				Equistar Chemicals LP Huntsman Polymers Corp , Montell U SA Inc Phillips Sumika Polypropylene Co	
							104						Equistar Chemicals LP, Phillips Sumika Polypropylene Co	
		0.9					100		0.9	0.03	0.2		Aristech Chemical Corp Montell U SA Inc	
							107-110	92-100					Huntsman Polymers Corp Huntsman Polypropylene Corp Solvay Polymers Inc , Ticona GmbH Union Carbide Corp , Polymers Group	
						33-56			1-1.2				PolyPacific Australia Pty Ltd	
						33-56			1.1.3				PolyPacific Australia Pty Ltd	
									1				North Wood Plastics Inc	
									1				North Wood Plastics Inc	
													Solvay Polymers Inc	
						56			0.9				PolyPacific Australia Pty Ltd Ticona GmbH	
													Buna Sow Leuna Olefinverbund GmbH	
													Buna Sow Leuna Olefinverbund GmbH	
						67			0.9				PolyPacific Australia Pty Ltd Ticona GmbH	
						56			1				PolyPacific Australia Pty Ltd	
							98						Huntsman Polypropylene Corp	
						56			0.9				PolyPacific Australia Pty Ltd	
													Buna Sow Leuna Olefinverbund GmbH	
		0.7				50	85-110	92-100	0.9	0.03	0.2		Aristech Chemical Corp , Equistar Chemicals LP Fina Oil & Chemical Co Huntsman Polymers Corp Huntsman Polypropylene Corp Montell U SA Inc Solvay Polymers Inc Thal Petrochemical Industry Co Ltd Union Carbide Corp Polymers Group	
									1				North Wood Plastics Inc	
									1				North Wood Plastics Inc	
							102						Phillips Sumika Polypropylene Co Union Carbide Corp Polymers Group	
													Buna Sow Leuna Olefinverbund GmbH	
													Buna Sow Leuna Olefinverbund GmbH	
							98-102						Huntsman Polypropylene Corp Phillips Sumika Polypropylene Co Union Carbide Corp , Polymers Group	
													Buna Sow Leuna Olefinverbund GmbH	
		0.6				33	97			0.03			Amoco Polymers Huntsman Polymers Corp Huntsman Polypropylene Corp	
		0.6				33	100		0.9	0.03			Aristech Chemical Corp Huntsman Polypropylene Corp	
		0.6				33	100		0.9	0.03			Aristech Chemical Corp Huntsman Polypropylene Corp	
		0.6				33	97-109		0.9	0.03			Fina Oil & Chemical Co Formosa Plastics Corp USA Huntsman Polymers Corp Huntsman Polypropylene Corp , Solvay Polymers Inc Union Carbide Corp Polymers Group	
		0.6				33	100			0.03			Amoco Polymers Huntsman Polypropylene Corp	
		0.6				33	100			0.03			Amoco Polymers Huntsman Polypropylene Corp Union Carbide Corp Polymers Group	
								92-100					Huntsman Polymers Corp	
		0.8					93		0.9				Aristech Chemical Corp Ticona GmbH	
													Phillips Sumika Polypropylene Co	
													Ticona GmbH	

Resin & Compound

Type	Process	Additive	Filter/treat	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (mil/in) (D655)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compressive strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Comp. moduli (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
PP Homopolymer	IM				0.45	72	473	350-575	0.6-2.5	10-25	27-55	6-1000	7-60		1-27		11-36
PP Homopolymer	IM		CCF					10-20	10-14						34-45		28-40
PP Homopolymer	IM		CCF	10	10		385-475		12-18	43	125	45-50					20-26
PP Homopolymer	IM		CCF	20	4-20		385-475	10-20	9-15	19-44	50-115	38-46	69		34-35		22-32
PP Homopolymer	IM		CCF	27	10												35
PP Homopolymer	IM		CCF	29	14												33
PP Homopolymer	IM		CCF	30	10-12		385-475	10-20	9-13	37	32-100	33-43	70		44		24-38
PP Homopolymer	IM		CCF	35	5		450			23	50	36					28
PP Homopolymer	IM		CCF	40	4-12		385-475	10-20	8-14	20-40	50-100	34-39	72		42-45		26-40
PP Homopolymer	IM		CCF	50	12				8		30-52	33-34					29-35
PP Homopolymer	IM		CFR	10				10-20	2						90		50
PP Homopolymer	IM		CFR	20				10-20	2						150		100
PP Homopolymer	IM		CFR	30				10-20	1-4						15		15
PP Homopolymer	IM		CFR	40				10-20	1						270		200
PP Homopolymer	IM		GBS	10				10-20	7			65			52		43
PP Homopolymer	IM		GBS	15				10-20	5-10			50			45-70		45-50
PP Homopolymer	IM		GBS	20			390-450	10-20	3-13	43		44			27-80		22-65
PP Homopolymer	IM		GBS	25				10-20	4						85		40
PP Homopolymer	IM		GBS	30				10-20	11-14		10		42		30		25-29
PP Homopolymer	IM		GFIR					10-20	5						64		50
PP Homopolymer	IM		GFIR	10	6-10		385-475	1-2-20	4-8	50-85	4-10	60-78	65	96-120	51-71		30-43
PP Homopolymer	IM		GFIR	15				10-20	4-5						65-80		40-75
PP Homopolymer	IM		GFIR	20	5-18		385-500	1-2-20	2-11	59-123	3-6	45-113		128-185	70-150		28-110
PP Homopolymer	IM		GFIR	25					3		3						55
PP Homopolymer	IM		GFIR	30	3.5-17		385-475	1-2-20	2-4	60-132	2.5-4	85-135		136-208	80-100		62-85
PP Homopolymer	IM		GFIR	35			446-500	10-20	3				100-125		120		80
PP Homopolymer	IM		GFIR	40	1.8-16		385-475	1-2-20	1.5-3	62-140	2-3-1	90-150		144-245	86-130		80-110
PP Homopolymer	IM		GFIR	5				10-20	10				69		40		30
PP Homopolymer	IM		GFIR	50	8		470	1-2-20	2-3		2	145		235	180		100-142
PP Homopolymer	IM		GFIR	8				10-20	8						40		35
PP Homopolymer	IM		GFL	20			390-550		3			75		100			55
PP Homopolymer	IM		GFL	30			420-450		2			166		240	94		80
PP Homopolymer	IM		GMN					10-20	3						60		44
PP Homopolymer	IM		GMN	32					4		3						70
PP Homopolymer	IM		GMN	35				12-16	3-4		3	64	62	110	150		58-83
PP Homopolymer	IM		GMN	40					3		3						85
PP Homopolymer	IM		MCF	10			385-475					54-55					37-40
PP Homopolymer	IM		MCF	12					10		10						28
PP Homopolymer	IM		MCF	15					10		10						30
PP Homopolymer	IM		MCF	20	10		385-475	10-20	3-11	46-52	10	55-58			80		33-75
PP Homopolymer	IM		MCF	30			385-475		6		5	55-63					59-66
PP Homopolymer	IM		MCF	40	10		385-475		6-8	45-64	3	56-65					60-65
PP Homopolymer	IM		MNF		6-20				7-16		12-80						27-62
PP Homopolymer	IM		MNF	10	12				12		25	49			25		25

Stress (psi)	Compressive modulus (10 ⁴ psi) (D688)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
		73°F 125in	73°F .25in	40°F 125in	40°F .25in								
0.4-1.5					21-56	74-110	92-100	0.9-1	0.01-0.8	0.2		A Schulman Inc, Amoco Polymers, ARCO Polypropylene, Aristach Chemical Corp, Borealis Compounds Inc, Channel Polymers, Dow Plastics, DSM Engineering Plastics, Epsilon Products Co, Equistar Chemicals LP, Exxon Chemical Co, Fina Oil & Chemical Co, Formosa Plastics Corp, USA, Huntsman Polymers Corp, Huntsman Polypropylene Corp, M Holland Co, M A Hanna Engineered Materials, Montell U SA Inc, Phillips Sumika Polypropylene Co, Prime Source Polymers Inc, RTP Co, Shuman Plastics Inc, Solvay Polymers Inc, Spartech Compounding, Targor Thai Petrochemical Industry Co Ltd, Ticona GmbH, Union Carbide Corp, Polymers Group, Washington Penn Plastic Co Inc	
					28	88-99		1-1.3	0.02			RTP Co	
						97-99		1				A Schulman Inc, Polycorn, Huntsman Inc, The Plastics Group	
0.7					35	88-100		1-1.1	0.01-0.02			A Schulman Inc, DSM Engineering Plastics, M A Hanna Engineered Materials, Montell U SA Inc, Muehlstein Compounded Products, Polycorn, Huntsman Inc, Prime Source Polymers Inc, RTP Co, The Plastics Group	
								1-1.1				Muehlstein Compounded Products	
								1-1.1				Muehlstein Compounded Products	
0.7						82-98		1-1.1	0.02			A Schulman Inc, M A Hanna Engineered Materials, Montell U SA Inc, Polycorn, Huntsman Inc, Prime Source Polymers Inc, RTP Co, The Plastics Group	
						93		1-1.2				Montell U SA Inc	
0.8					28	80-100		1-1.2-1.3	0.02			A Schulman Inc, DSM Engineering Plastics, M A Hanna Engineered Materials, Montell U SA Inc, Polycorn, Huntsman Inc, Prime Source Polymers Inc, RTP Co, The Plastics Group	
						91		1-1.3-1.4				Montell U SA Inc, Polycorn, Huntsman Inc	
						100		0.9	0.01			RTP Co	
								1	0.01			RTP Co	
					20			1-1.1	0.01			RTP Co	
								1-1.1	0.01			RTP Co	
					31	85		1	0.01			RTP Co	
					21	85-100		1-1.1	0.01-0.03			RTP Co	
0.8						90		1-1.2	0.01-0.02			DSM Engineering Plastics, RTP Co	
								1-1.2	0.01			RTP Co	
					36	90-94		1-1.1	0.02			Prime Source Polymers Inc, RTP Co	
								1-1.2	0.06			RTP Co	
0.8-1.8	1-1.1				28-31	84-108		1	0.01-0.04			A Schulman Inc, DSM Engineering Plastics, Montell U SA Inc, Prime Source Polymers Inc, RTP Co, The Plastics Group	
						85		1-1.1-1.2	0.01-0.02			RTP Co	
0.9-1.5	1-1.5				19	94-105		1-1.1-1.3	0.01-0.05			A Schulman Inc, Buna Sow, Leuna Olefinverbund GmbH, DSM Engineering Plastics, Montell U SA Inc, Prime Source Polymers Inc, RTP Co, The Plastics Group	
						94		1-1.1				Prime Source Polymers Inc	
1.1-1.4	1.2-1.7				21	94-110		1-1.1-1.2	0.02-0.05			A Schulman Inc, DSM Engineering Plastics, Montell U SA Inc, Prime Source Polymers Inc, RTP Co, The Plastics Group, Thermofil Inc	
					19	100-102		1-1.2	0.04			Buna Sow, Leuna Olefinverbund GmbH, RTP Co	
1.1-1.6	1.2-1.7					100-110		1-1.2	0.03-0.06			A Schulman Inc, DSM Engineering Plastics, Montell U SA Inc, Prime Source Polymers Inc, RTP Co, The Plastics Group	
					35	84		0.9	0.01			RTP Co	
					16	100-105		1-1.3-1.4	0.06			Montell U SA Inc, Prime Source Polymers Inc, RTP Co	
								1	0.01			RTP Co	
	3-5					110		1	0.05			DSM Engineering Plastics	
4-4						105		1-1.1	0.04			DSM Engineering Plastics	
								1-1.2	0.02			RTP Co	
						90		1-1.1				Prime Source Polymers Inc	
					25	90-92		1-1.2	0.03			Prime Source Polymers Inc, Thermofil Inc	
						95		1-1.2				Prime Source Polymers Inc	
						100-101		1				A Schulman Inc	
						90		1				Prime Source Polymers Inc	
						90		1				Prime Source Polymers Inc	
	0.5					85-99		1-1.2	0.02			A Schulman Inc, DSM Engineering Plastics, Prime Source Polymers Inc, RTP Co, The Plastics Group	
						95-99		1-1.1				A Schulman Inc, Prime Source Polymers Inc	
	0.7					97-100		1-1.2				A Schulman Inc, DSM Engineering Plastics, Prime Source Polymers Inc, The Plastics Group	
					33-56			1-1.2				PolyPacific Australia Pty Ltd	
						70		1				Acio Compounders Inc	

Resin & Compound

Type	Process	Additive	Filler/reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (mil/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compressive strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Comp. Mod. (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)	73°F 125i	
PP Homopolymer	IM		MNF	20	15-12		420-500		10	20	49				39			39-39	
PP Homopolymer	IM		MNF	30	12				6	18	48				47			47	
PP Homopolymer	IM		MNF	40	12				5	18	46				67			47	
PP Homopolymer	IM		MNF	55	9		420-465					29						41	
PP Homopolymer	IM		MNF	61	16							26						39	
PP Homopolymer	IM		TF		1.5-4.2				8-15		4-60							22-64	
PP Homopolymer	IM		TF	10	8		385-475		12-18	41-51	25-70	49-50						23-28	0.5
PP Homopolymer	IM		TF	20	2-20		385-540		9-15	37-50	10-100	41-55		73	32-40			26-43	0.5
PP Homopolymer	IM		TF	22	18													25	
PP Homopolymer	IM		TF	23	23				9-14			38						32	
PP Homopolymer	IM		TF	30	4-8		385-475	10-20	5-12	27-47	10-35	44-48			64			31-60	0.5
PP Homopolymer	IM		TF	32				10-20	10				72		46			40	
PP Homopolymer	IM		TF	40	1.5-12		385-540	10-20	7-12	34-49	10-20	40-46	75	73	44-68			35-63	0.7
PP Homopolymer	IM		TF	45				10-20	12						45			35	
PP Homopolymer	IM		TF	50					8		4	42						30	
PP Homopolymer	IM		WF	20	1.3-7.4				8.7-9.2	37	4.1-9.2	37-40			36-44			31-32	
PP Homopolymer	IM		WF	40	0.5-2.4				5-5.1	37	2.3-5.4	31-38			47-59			40-48	
PP Homopolymer	IM	AS			2.80		375-536	0.6-20	10-25	29-58	20-570	32-61		51-52	14-27			16-30	0.4-1.9
PP Homopolymer	IM	AS	MNF	30			482												
PP Homopolymer	IM	CB							13	42	2							32	
PP Homopolymer	IM	CBA	GFIR	30				10-20	3						100			73	
PP Homopolymer	IM	HS			5-16		392-536	0.6-20	12-25		350	48-54	68		18-21			17-23	0.4-0.6
PP Homopolymer	IM	HS	CCF	10	11		400-500												
PP Homopolymer	IM	HS	CCF	40	11		400-500	10-20	10				72		42			34-36	
PP Homopolymer	IM	HS	CHF	40			482												
PP Homopolymer	IM	HS	GBS	35				10-20	3				87		125			85	
PP Homopolymer	IM	HS	GFIR	10	9		400-500	10-20	5			46			80			18-60	
PP Homopolymer	IM	HS	GFIR	15				10-20	3-5				70-90		60-130			47-80	
PP Homopolymer	IM	HS	GFIR	20	4-5	392-410	392-500	10-20	4			63	75-97		73			85-55	
PP Homopolymer	IM	HS	GFIR	25				10-20	2-4				80		80-130			60-80	
PP Homopolymer	IM	HS	GFIR	30	4-7.5		392-500	10-20	3-4				84-120		100			65-73	
PP Homopolymer	IM	HS	GFIR	40	5		400-500	10-20	2-3				89		130-150			88-100	
PP Homopolymer	IM	HS	GFIR	50				10-20	2				130		150			130	
PP Homopolymer	IM	HS	GFL	40															
PP Homopolymer	IM	HS	MCF	15				10-20	2				80		130			80	
PP Homopolymer	IM	HS	MCF	20				10-20	5						80			80	
PP Homopolymer	IM	HS	MCF	25				10-20	3				90		130			80	
PP Homopolymer	IM	HS	MNF	10															
PP Homopolymer	IM	HS	MNF	20			482												
PP Homopolymer	IM	HS	MNF	30			482												
PP Homopolymer	IM	HS	MNF	40															
PP Homopolymer	IM	HS	TF				482												
PP Homopolymer	IM	HS	TF	10			392-464	10-20	14				68		33			29	
PP Homopolymer	IM	HS	TF	15				10-20	10				72		50			40	
PP Homopolymer	IM	HS	TF	20	10-13		400-500					45						25-32	0.6
PP Homopolymer	IM	HS	TF	30		392-410	446-500												
PP Homopolymer	IM	HS	TF	40	5		440-500	0.8-20	8		15	42	75	74	49-68			43-55	0.5
PP Homopolymer	IM	HS	TF	45				10-20	12				69		37			31-35	
PP Homopolymer	IM	IM					482												
PP Homopolymer	IM	IM	GFIR	3					7		3							41	

Polypropylene

No. of uses (psi)	Compression modulus (10 ⁴ psi) (D885)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
		73°F 125in	73°F .25in	40°F 125in	40°F .25in								
						75		1				Aclo Compouderers Inc Exxon Chemical Co	
						78		1.1				Aclo Compouderers Inc	
						80		1.2				Aclo Compouderers Inc	
								1.4				Exxon Chemical Co	
								1.8				Washington Penn Plastic Co Inc	
						33-56		1-1.3				PolyPacific Australia Pty Ltd	
	0.5					90-100		1	0.02			A Schulman Inc DSM Engineering Plastics Polycorn Huntsman Inc Prime Source Polymers Inc , The Plastics Group	
	0.5					84-98		1.1.1	0.03			A Schulman Inc Albis Canada Inc Amoco Polymers DSM Engineering Plastics M A Hanna Engineered Materials Montell U SA Inc Muehlstein Compounded Products Polycorn Huntsman Inc Prime Source Polymers Inc The Plastics Group	
								1				Muehlstein Compounded Products	
								1				M A Hanna Engineered Materials	
	0.5					90-97		1.1-1.2	0.06			A Schulman Inc M A Hanna Engineered Materials Montell U SA Inc , Polycorn Huntsman Inc Prime Source Polymers Inc RTP Co , The Plastics Group	
						27	85	1.1	0.03			RTP Co	
	0.7					23	87-103	1.2.1.3	0.03			A Schulman Inc Albis Canada Inc DSM Engineering Plastics Exxon Chemical Co M A Hanna Engineered Materials Montell U SA Inc Muehlstein Compounded Products Polycorn Huntsman Inc Prime Source Polymers Inc RTP Co The Plastics Group	
							90	1	0.03			RTP Co	
								1.4				Polycorn Huntsman Inc	
								1				North Wood Plastics Inc	
								1-1.1				North Wood Plastics Inc	
	0.4-1.9					21-62	85-114	0.9-1.3	0.01-0.05	0.2		Amoco Polymers Aristech Chemical Corp Borealis Compounds Inc Dow Plastics Equistar Chemicals LP Exxon Chemical Co Fina Oil & Chemical Co Formosa Plastics Corp USA Huntsman Polypropylene Corp Montell U SA Inc Network Polymers Inc Phillips Sumilka Polypropylene Co RTP Co Solvay Polymers Inc Targor Ticona GmbH Union Carbide Corp Polymers Group	
							109	1				Targor	
							95	1.1	0.03			ComAlloy International Corp	
	0.4-0.6					33-56	80-108	0.9	0.01-0.03			Borealis Compounds Inc Equistar Chemicals LP Exxon Chemical Co , Huntsman Polypropylene Corp PolyPacific Australia Pty Ltd RTP Co Ticona GmbH Union Carbide Corp Polymers Group Washington Penn Plastic Co Inc	
												Spartech Compounding	
						28	99	1.2	0.02			RTP Co Spartech Compounding	
												Targor	
						20	98	1.2	0.04			RTP Co	
							93	1-1.1	0.01			RTP Co Spartech Compounding	
						21-29	86-94	1-1.3	0.01			RTP Co	
						24-25	80-93	1	0.01-0.02			Buna Sow Leuna Olefinverbund GmbH, RTP Co Spartech Compounding Targor	
						20-22	93-96	1.1.1.2	0.01-0.03			RTP Co	
						20-21	95-98	1.1	0.03 or 0.4			Buna Sow Leuna Olefinverbund GmbH, RTP Co Spartech Compounding, Targor	
						18	102-105	1.2	0.06			Buna Sow Leuna Olefinverbund GmbH RTP Co Spartech Compounding Ticona GmbH	
						16	105	1.3	0.06			RTP Co Ticona GmbH	
												Ticona GmbH	
						20	96	1.2	0.03			RTP Co	
							93	1.1	0.01			RTP Co	
						21	94	1.3	0.01			RTP Co	
												Targor	
												Targor	
												Targor	
												Targor	
						36	83	1	0.02			Buna Sow Leuna Olefinverbund GmbH RTP Co	
						27	95	1.1	0.03			RTP Co	
	0.6							1				Buna Sow Leuna Olefinverbund GmbH Spartech Compounding Targor Washington Penn Plastic Co Inc	
												Buna Sow Leuna Olefinverbund GmbH	
	0.5					23	102	1.2.1.3	0.03			Buna Sow Leuna Olefinverbund GmbH RTP Co Washington Penn Plastic Co Inc	
	0.1-0.36					33	90	1	0.03			RTP Co	
												Targor	
	41						92	1				Prime Source Polymers Inc	

Resin & Compound

Type	Process	Additive	Filler/Reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (mil/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compressive strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compressive modulus (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
PP Homopolymer	IM	IM	GFIR	30			446 500										
PP Homopolymer	IM	IM	MNF	20													
PP Homopolymer	IM	IM	TF	40				10-20	7						35		35
PP Homopolymer	IM	IR			4 22		370-475	10-20	10 24	32-51	5 600	30-47		52-61	20-36		13-40
PP Homopolymer	IM	IR	GFIR	10			390-450		5	80	3						50
PP Homopolymer	IM	IR	GFIR	15				10 15	4						80		70
PP Homopolymer	IM	IR	GFIR	20			390 450	10 15	2	105	3		84		90		75-80
PP Homopolymer	IM	IR	GFIR	30	5		390 450	10-15	1-5	120	2-5	110	90 110		80-120		85-110
PP Homopolymer	IM	IR	GFIR	40			390 450		1	106							128
PP Homopolymer	IM	IR	MNF	12					13 17		40						25
PP Homopolymer	IM	IR	TF	15	8		400-450		3 3-13	38	36	38					40-42
PP Homopolymer	IM	IR	TF	16		338 374	374-428										38
PP Homopolymer	IM	IR	TF	45				10-15	12						45		25-30
PP Homopolymer	IM	L			1 9-2 2		425-500					54-55					40
PP Homopolymer	IM	L	CCF					10-20	10						45		34
PP Homopolymer	IM	L	CCF	10	11		400 500										18
PP Homopolymer	IM	L	CCF	40	11		400 500										35-45
PP Homopolymer	IM	L	GFIR	10	9		400 500					46					55-63
PP Homopolymer	IM	L	GFIR	20	4-5		400 500					63					88
PP Homopolymer	IM	L	GFIR	30	4-7 5		400 500										25
PP Homopolymer	IM	L	GFIR	40	5		400-500										55
PP Homopolymer	IM	L	TF	20	13		400-500										15
PP Homopolymer	IM	L	TF	40				10 20	8				75		68		50
PP Homopolymer	IM	LPTFE						10-20	15				60		15-18		50-60
PP Homopolymer	IM	LPTFE	ARF	10				12 20	10						60		80-100
PP Homopolymer	IM	LPTFE	GFIR	20				10 20	3-4				65		70-80		15-20
PP Homopolymer	IM	LPTFE	GFIR	30				10 20	3						90-110		40
PP Homopolymer	IM	LS						10 20	15				60		15-20		50
PP Homopolymer	IM	LS	GFIR	10				10 20	7				76		50		70
PP Homopolymer	IM	LS	GFIR	20				10-20	4				65		70		84
PP Homopolymer	IM	LS	GFIR	30				10-20	3				120		100		
PP Homopolymer	IM	LS	GFIR	35				10-20	4				87		125		
PP Homopolymer	IM	MR					428 536										
PP Homopolymer	IM	MR	CHF	40			482										
PP Homopolymer	IM	MR	GFIR	30			446 500										
PP Homopolymer	IM	MR	MNF	20			482										
PP Homopolymer	IM	MR	TF				482										
PP Homopolymer	IM	NA			1 9-60		375-536	0 6-12	10 25	29-58	20 200	46-58			16-27		19-30
PP Homopolymer	IM	SH			6 5		445 475	12				51					21
PP Homopolymer	IM	SU			1 5-8 5		475 525	1 12				48-49					20-22
PP Homopolymer	IM	UVS			3 10		450 525	1 20	14 20		350	50-52			19 25		18-26
PP Homopolymer	IM	UVS	CCF					10-20	10						42		38
PP Homopolymer	IM	UVS	CCF	29	14												33
PP Homopolymer	IM	UVS	CHF	10			392-464										
PP Homopolymer	IM	UVS	CHF	20			392-464										
PP Homopolymer	IM	UVS	GFIR	10				10 20	7			70			51		62
PP Homopolymer	IM	UVS	GFIR	20		392-410	392 500	10 20	4			75			73		52
PP Homopolymer	IM	UVS	GFIR	30			392 500	10 20	3 4			84-120			100		70-73
PP Homopolymer	IM	UVS	GFIR	40				10 20	2-3			89			150		85
PP Homopolymer	IM	UVS	MNF	20			392 500										
PP Homopolymer	IM	UVS	MNF	35			392 464										
PP Homopolymer	IM	UVS	MNF	40			392-464										
PP Homopolymer	IM	UVS	TF	15				10 20	10				72		50		40
PP Homopolymer	IM	UVS	TF	30		392 410	464-500										
PP Homopolymer	IM	UVS	TF	40				10 20	8				75		68		55
PP Homopolymer	L				30							55					62
PP Homopolymer	RTM	HS															
PP Homopolymer	RTM	HS	GFIR	50													
PP Homopolymer	RTM	IR															
PP Homopolymer	SBM				12 5		360-400					49					21

Complete modulus (10 ⁴ psi) (D685)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in- F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/ 23C) (D792)	Water absorp- tion @ 24 hrs (D570)	Water absorp- tion @ equil. (D570)	Dielectric strength (V/mlf) (D148)	Supplier
	73°F 125in	73°F, .25in	40°F 125in	40°F, 25in								
												Buna Sow Leuna Olefinverbund GmbH
												Targor
												RTP Co
	0.7-6.7	0.6-0.7		37-67		96-97		0.9-1.4	0.01-0.12			A. Schulman Inc. DSM Engineering Plastics M.A. Hanna Engineered Materials Montell U.S.A. Inc. PolyPacific Australia Pty Ltd RTP Co Ticona GmbH
	1.4							1.3	0.03			DSM Engineering Plastics
								1.5	0.01			RTP Co
	1.5							1.4-1.5	0.02-0.03			DSM Engineering Plastics RTP Co
	1.6			18		100-105		1.4-1.5	0.01-0.05			DSM Engineering Plastics M.A. Hanna Engineered Materials RTP Co
	1.2							1.6	0.02			DSM Engineering Plastics
				56				1				PolyPacific Australia Pty Ltd
	0.3-0.6							1.3-1.4				DSM Engineering Plastics M.A. Hanna Engineered Materials
												Buna Sow Leuna Olefinverbund GmbH
									0.03			RTP Co
	0.5					107		0.9				Amoco Polymers Aristech Chemical Corp Phillips Sumika Polypropylene Co., Ticona GmbH
						99		1.3	0.02			RTP Co
								1.2				Spartech Compounding
								1				Spartech Compounding
								1				Spartech Compounding
								1.1				Spartech Compounding
								1.2				Spartech Compounding
												Spartech Compounding
				23		102		1.3	0.03			RTP Co
						80		1	0.01			RTP Co
				22		120		1.2	0.9			RTP Co
						85-90		1.2	0.01-0.04			RTP Co
						95-98		1.3	0.03-0.04			RTP Co
				38		80		0.9-1	0.01			RTP Co
				31		85		1	0.01			RTP Co
						85		1.2	0.01			RTP Co
				20		98		1.1	0.04			RTP Co
				20		98		1.2	0.045			RTP Co
												Exxon Chemical Co Targor
												Targor
												Buna Sow Leuna Olefinverbund GmbH
												Targor
												Targor
	0.4-0.7			21-50		92-114		0.9	0.01-0.03	0.2		Amoco Polymers Aristech Chemical Corp Borealis Compounds Inc Dow Plastics Equistar Chemicals LP Fine Oil & Chemical Co Huntsman Polypropylene Corp Montell U.S.A. Inc Network Polymers Inc Phil lips Sumika Polypropylene Co Solvay Polymers Inc Targor Union Carbide Corp Polymers Group
						93		0.8	0.03	0.2		Montell U.S.A. Inc
								0.9				Montell U.S.A. Inc Union Carbide Corp Polymers Group
				56		97		0.9-1.3	0.01-0.03			Phillips Sumika Polypropylene Co PolyPacific Australia Pty Ltd RTP Co Ticona GmbH Union Carbide Corp Polymers Group
						99		1.2	0.02			RTP Co
								1.1				Muehlstein Compounded Products
												Buna Sow Leuna Olefinverbund GmbH
												Buna Sow Leuna Olefinverbund GmbH
				31		84		1	0.01			RTP Co
				25		90		1	0.01			Buna Sow Leuna Olefinverbund GmbH, RTP Co Tar- gor
				20-21		95-98		1.1	0.03-0.04			Buna Sow Leuna Olefinverbund GmbH RTP Co
				18		102		1.2	0.06			RTP Co
												Buna Sow Leuna Olefinverbund GmbH
												Buna Sow Leuna Olefinverbund GmbH
												Buna Sow Leuna Olefinverbund GmbH
				27		95		1.1	0.03			RTP Co
												Buna Sow Leuna Olefinverbund GmbH
				23		102		1.3	0.03			RTP Co
						104			0.03	0.2		Montell U.S.A. Inc
												Ticona GmbH
												Ticona GmbH
												Ticona GmbH
21	0.8					90						Huntsman Polypropylene Corp

Resin & Compound

Type	Process	Additive	Filler/reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (ml/min) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compress strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Comp modulus (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
PP Homopolymer	T				0.5-36		450-525		10-25	29-36	40-1000	7-59			1-24		18-27
PP Homopolymer	T		MNF		6-20				7-16		12-80						27-62
PP Homopolymer	T		TF		1.5-42				8-15		4-60						23-64
PP Homopolymer	T	ABU															
PP Homopolymer	T	AS															
PP Homopolymer	T	HS			10				16-20		350						20
PP Homopolymer	T	HS	GFIR	20		392-410	464-500										
PP Homopolymer	T	IR			9				15-19		40						19
PP Homopolymer	T	IR	MNF		12				13-17		40						25
PP Homopolymer	T	L															
PP Homopolymer	T	NA			1.9-2.6		425-500			36		52-58					22-28
PP Homopolymer	T	UVS			10				16-20		350						20
PP Homopolymer	T	UVS	GFIR	20		392-410	464-500										
PP Homopolymer	TP				3-3.4				10-25	37	422	46-48					16-19
PP Homopolymer	TSP				0.25-3.1					25	40-400	47-54					16-26
PP Homopolymer	TSP	NA			2-2.1							52-53					22-23
PP Homopolymer	V				0.2-4							48-56					21-25
PP+Acrylic	IM				8.9		425-500		9-12		400	31					13
PP+EPDM Blend	BM																
PP+EPDM Blend	EX	IM															
PP+EPDM Blend	IM																
PP+EPDM Blend	IM	HS															
PP+EPDM Blend	IM	IM															
PP+EPDM Blend	IM	UVS															
PP+Styrenic	IM		GFIR	35	8		425-500		2-5		2.5	155					110
TPO (POE)	BM				0.5-25	380-430	360-450		8-18	40-47	400-700	7-40					0-26
TPO (POE)	BM		MNF		1		400-440					26					24
TPO (POE)	BM		UN	28					9		100						24
TPO (POE)	BM		UN	36					7		30						30
TPO (POE)	BM	CB				380-420	350-430										
TPO (POE)	BM	HS			0.8					8	800	2					0
TPO (POE)	BM	IR				380-410	360-420										
TPO (POE)	BM	L				380-420	350-430										
TPO (POE)	BM	UVS				380-420	360-430										
TPO (POE)	CAL				0.45-0.5	380-430	360-430			17	350	9					1
TPO (POE)	CAL	IR				380-410	360-420										
TPO (POE)	CEX				1	350-550	480-560				750						
TPO (POE)	EX				0.3-192	380-430	350-470		7.5-18	17-30	150-850	7-39			0		1-26
TPO (POE)	EX		MNF		1		400-440					26					24
TPO (POE)	EX		UN	28					9		100						24
TPO (POE)	EX		UN	36					7		30						30
TPO (POE)	EX	CB				380-420	350-430										
TPO (POE)	EX	HS			0.8					8	800	2					0
TPO (POE)	EX	IR				380-410	360-420										
TPO (POE)	EX	L				380-420	350-430										
TPO (POE)	EX	UVS			0.3-0.8	380-420	360-430		8.5-12	16-39	250-600	34-41					1-22
TPO (POE)	EX	UVS	MNF		0.5		430-445		9		500	34					21
TPO (POE)	EXC				12-25							7					7
TPO (POE)	EXF				0.45-25						580	7-22					17
TPO (POE)	EXP				0.6-5	350-550	400-440				625-750	20-30					0-12
TPO (POE)	EXP		MNF		1		400-440					26					24
TPO (POE)	EXS				0.45-25						625-700	9					1-9
TPO (POE)	FB				0.9						400	10					3
TPO (POE)	FB	ABU			0.6-0.8												
TPO (POE)	FB	SU			0.6-0.8												
TPO (POE)	FC				5.5-9.5						580	22					7

Tensile modulus 10 ⁴ psi (D638)	Izod Impact (D256)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D896)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D782)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
		25°F .25in	73°F .25in	40°F 125in	40°F .25in								
24	0-2					90-110	92-100	0.9	0.01			Amoco Polymers, Arntech Chemical Corp, Equistar Chemicals LP, Exxon Chemical Co, Fina Oil & Chemical Co, Huntsman Polymers Corp, Huntsman Polypropylene Corp, Montell U SA Inc, Solvay Polymers, Inc, Targor, Ticona GmbH	
					33-56			1-1.2				PolyPacific Australia Pty Ltd	
					33-56			1-1.3				PolyPacific Australia Pty Ltd	
												Ticona GmbH	
												Solvay Polymers Inc, Targor	
					56			0.9				PolyPacific Australia Pty Ltd, Ticona GmbH	
												Buna Sow Leuna Olefinverbund GmbH	
					67			0.9				PolyPacific Australia Pty Ltd, Ticona GmbH	
					56			1				PolyPacific Australia Pty Ltd	
												Amoco Polymers, Ticona GmbH	
	0.7					95-101		0.9	0.03	0.2		Arntech Chemical Corp, Huntsman Polypropylene Corp, Montell U SA Inc, Philips Sumika Polypropylene Co, Targor	
					56			0.9				PolyPacific Australia Pty Ltd	
												Buna Sow Leuna Olefinverbund GmbH	
						96		0.9				ARCO Polypropylene, Solvay Polymers Inc	
						103		0.9				Exxon Chemical Co, Montell U SA Inc, Solvay Polymers Inc	
						95		0.9	0.03	0.2		Montell U SA Inc	
						94-105		0.9	0.03	0.2		Equistar Chemicals LP, Montell U SA Inc	
					45			0.9	0.2			Montell U SA Inc	
												Ticona GmbH	
												Ticona GmbH	
												Ticona GmbH	
												Ticona GmbH	
												Ticona GmbH	
					13	114		1.2	0.2			Montell U SA Inc	
					33-60		25-95	0.9-1.2				A Schulman Inc, DSM Thermoplastic Elastomers Inc, Equistar Chemicals LP, HiTech Polymers Inc, Montell U SA Inc, Multibase Inc, Prime Source Polymers, Inc, Solvay Engineered Polymers	
								1.1				A Schulman Inc	
								1.1				Prime Source Polymers, Inc	
								1.2				Prime Source Polymers, Inc	
							61-76	1				DSM Thermoplastic Elastomers Inc	
							75	0.9				Montell U SA Inc	
							79	1.3				DSM Thermoplastic Elastomers Inc	
							61	1				DSM Thermoplastic Elastomers Inc	
							69-74	1				DSM Thermoplastic Elastomers Inc	
							40-92	0.9-1				DSM Thermoplastic Elastomers Inc, Montell U SA Inc	
							79	1.3				DSM Thermoplastic Elastomers Inc	
							67-95	0.9-1				DSM Thermoplastic Elastomers Inc, DuPont Dow Elastomers	
					10-60		39-92	0.9-1.2				A Schulman Inc, Advanced Elastomer Systems, DSM Thermoplastic Elastomers Inc, Equistar Chemicals LP, J-Von Inc, Montell U SA Inc, Multibase Inc, Prime Source Polymers, Inc, Solvay Engineered Polymers, Union Carbide Corp, Polymers Group, Washington Penn Plastic Co, Inc	
								1.1				A Schulman Inc	
								1.1				Prime Source Polymers, Inc	
								1.2				Prime Source Polymers, Inc	
							61-76	1				DSM Thermoplastic Elastomers Inc	
							75	0.9				Montell U SA Inc	
							72-90	1.3				DSM Thermoplastic Elastomers Inc	
							61	1				DSM Thermoplastic Elastomers Inc	
						51	69-74	0.9-1.1				DSM Thermoplastic Elastomers Inc, Montell U SA Inc	
								1				Montell U SA Inc	
								0.9				Montell U SA Inc	
								0.9				Montell U SA Inc, Union Carbide Corp, Polymers Group	
					33-50		75-95	0.9				A Schulman Inc, DuPont Dow Elastomers, Solvay Engineered Polymers	
								1.1				A Schulman Inc	
					33-50		25-95	0.9-1.1				HiTech Polymers Inc, Montell U SA Inc, Solvay Engineered Polymers, Union Carbide Corp, Polymers Group	
								0.9				Montell U SA Inc	
								0.9				Montell U SA Inc	
								0.9				Montell U SA Inc	
								0.9				Montell U SA Inc	

Resin & Compound

Type	Process	Additive	Filler/reinif	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear flow) (mil/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compress strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Comp modulus (10 ⁴ psi) (D695)
TPO (POE)	FF															
TPO (POE)	IBM				1		410 450									
TPO (POE)	IM				0 41-192	380 520	350 560	0 5-20	2 20	17 34	10 1000	7-40			7	
TPO (POE)	IM															
TPO (POE)	IM	BS		30	17				16		500	11				
TPO (POE)	IM	GFIR		8					13		350	31				
TPO (POE)	IM	GFIR		10				10 20	5						13	
TPO (POE)	IM	GFIR		15	4 5 5 5		420-500	0 6 20	4	47 59	4 6 5				18	
TPO (POE)	IM	GFIR		30	3 9-4		420-500	0 6 1 6	2-6	73 76	3-5 5	58				
TPO (POE)	IM	GFIR		8	4 5		420 460	0 6-1 6		32	7 5					
TPO (POE)	IM	MNF			0 5-16		400-455	0 7-13	7 11 5	31	40 600	25 34				
TPO (POE)	IM	MNF		33												
TPO (POE)	IM	SSF		15				10-20	10 18						1	
TPO (POE)	IM	TF		12												
TPO (POE)	IM	TF		20				0 8-1 4								
TPO (POE)	IM	TF		24												
TPO (POE)	IM	TF		26												
TPO (POE)	IM	TF		3				0 8 1 4	10 12							
TPO (POE)	IM	TF		6							400					
TPO (POE)	IM	UN		20	9			0 8 1 4	12							
TPO (POE)	IM	UN		28					9		25					
TPO (POE)	IM	UN		4	8 5						500					
TPO (POE)	IM	UN		5	8				10 12		200-400					
TPO (POE)	IM	CB		6		380-420	350-430	10 20	9 20		500	11 30		4-5	1	
TPO (POE)	IM	IR		1		380-410	360 420		19							
TPO (POE)	IM	L				380 420	350-430									
TPO (POE)	IM	UVS			0 4 23	380 420	360 446	0 8 1 4	7 13		100 700	21 37				
TPO (POE)	IM	UVS	MNF		0 5-12		410-470	8 13	8 13	31	40-650	26-34				
TPO (POE)	IM				20							26				
TPO (POE)	T				0 52-1 1	380-430	360-430				150 450					
TPO (POE)	T	IR				380-410	360 420									

Flexural modulus (10 ⁴ psi) (D790)
10
0-28
2
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13-43
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1 16
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14 26
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16-26

Continued from p A-217

lose, wood, metal, and glass. The largest markets for commercial PP use are packaging, automotive, durables, consumer goods, and fibers.

The impact-resistant and cushioning properties of PP and its manufacturing versatility make it an ideal packaging material. Present uses of PP in packaging include bags, packaging trays, bottle tops and closures. Metallocene catalysts have enabled some PP polymers to be resistant to gamma irradiation, a process being increasingly used to prevent bacterial contamination and decay of food. Polypropylene maintains its structural integrity while allowing the gamma rays to reach the food, which has enabled PP film to be used as a wrap for fresh foods and vegetables.

The low specific gravity of PP is important to the automotive industry because car parts that are light but maintain relatively high impact resistance and good cushioning can be constructed. With the increasing push



Semicrystalline polypropylene resins provide a balance of low density, impact resistance, and stiffness for rigid packaging applications. [Photo, Dow]

toward more fuel-efficient cars, these properties are in great demand. In Europe and Japan, PP-based thermoplastic olefins account for 85% of automobile bumper fascias manufactured, compared to 55% in the U.S. This market share is expected to grow 5% over the next several years.

For durable/consumer goods, like those in the appliance industry, the good fatigue resistance properties and chemical resistance to hydrocarbons,

alcohols, and nonoxidizing reagents make PP ideal for use in the housings of tubs for laundry machines and dishwashers. The greater strength and stiffness, coupled with reduced impact resistance, also withstand the rigorous performance requirements of these and other appliance applications. Considering these advantages, this market will grow by 4 to 5%/yr during the next five years.

Composing one-third of the total U.S. consumption of PP is fiber-related applications. Easy to process and very durable, PP has proven to be appropriate for use in carpets as both primary and secondary backing, as well as carpet face yarns, upholstery fabrics, automotive fabrics and geotextiles. Additional fiber-related applications include ropes, cordage, filtration materials, horticulture/agriculture materials, spill cleanup materials, and flexible packaging and consumer goods such as diapers, medical/surgical clothing,

feminine dyeability, and high-temperature point, with further clothing fiber and expected removal is uncable-fit. At the for PP America tons. The polyprop by 7.5% pected t. production in cific and. The cost less than pact cop

Melt index (g/10 min @ 300°C)	Compressive strength (psi)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
		73°F 125in	73°F 25in	40°F 125in	40°F .25in								
							65-73	0.9-1.1				Advanced Elastomer Systems	
												Equistar Chemicals LP	
					15-197	36-50	25-98	0.9-1.8	0.03-0.05			A Schulman Inc Advanced Elastomer Systems DSM Thermoplastic Elastomers Inc DuPont Dow Elastomers Equistar Chemicals LP HiTech Polymers Inc Huntsman Polypropylene Corp J-Von Inc Montell U SA Inc Multibase Inc Prime Source Polymers Inc RheTech RTP Co Solvay Engineered Polymers Teknor Apex Co Washington Penn Plastic Co Inc	
					44			1.2				Washington Penn Plastic Co Inc	
								0.9				Montell U SA Inc	
								1	0.01			RTP Co	
						65-79		1	0.01			Eastman Chemical Co RTP Co	
						70-90		1.1				Eastman Chemical Co	
						60		0.9				Eastman Chemical Co	
					26-56	45-54		0.9-1.1				A Schulman Inc Montell U SA Inc	
								1.1 1.2				RheTech	
								1.1	0.05			RTP Co	
								1				RheTech	
								1				RheTech	
								1.1				RheTech	
								0.9				RheTech	
								0.9				RheTech	
								1	0.03			RheTech	
								1.1				Prime Source Polymers Inc	
								0.9				RheTech	
						60		0.9 1				Prime Source Polymers Inc RheTech	
						61-97		1	0.05			DSM Thermoplastic Elastomers Inc RTP Co Washington Penn Plastic Co Inc	
						22	72-90	1.3				DSM Thermoplastic Elastomers Inc Montell U SA Inc	
							61	1				DSM Thermoplastic Elastomers Inc	
					33-34		50-98	0.9-1.1				Advanced Elastomer Systems DSM Thermoplastic Elastomers Inc Montell U SA Inc RheTech Washington Penn Plastic Co Inc	
					23-70			0.9-1.1				Montell U SA Inc	
												Equistar Chemicals LP	
							40-92	0.9 1.1				DSM Thermoplastic Elastomers Inc Solvay Engineered Polymers	
							79	1.3				DSM Thermoplastic Elastomers Inc	

g reagent... e housing... s and dust... length and... ced impac... re rigorou... s of these... tions. Con... his market... during the... f the tota... fiber and... easy to ex... has prov... carpeting... lary carpe... ace yarns... ve fabrics... fiber-rela... ropes and... horticult... ls, spill... flexible... goods like... othing and

amine hygiene products PP lacks availability and has a low melting point, which makes it a poor choice for further application in day-to-day clothing. However, the market for fiber and fiber-like polypropylene is expected to grow about 5%.

Finally, the syndiotactic byproduct removed after ZN-catalyzed production is used in adhesives, caulks, and cable-filling compounds.

At the present time, annual demand for PP consumption in the North America is between 6 and 7 million tons. Through 2002, the demand for polypropylene is expected to increase 7.5%/yr. Holding capacity is expected to increase 21% with 41 new producers expected to begin production in developing regions like the Pacific and the Middle East.

Commercial information

The cost of the basic homopolymer is less than random copolymers and impact copolymers. Market prices for PP

in North America ranged from around 28¢/lb for general purpose grades up to around 45¢/lb for impact grades at the beginning of 1999

By Bob May, Market Dev Mgr for Polypropylene, Dow Plastics, Midland, MI

Homopolymer

- Aaron Industries Corp C
- Addiplast SA C
- Adell Plastics Inc C
- Albis Plastic GmbH C
- AlphaGary Corp C
- Amco Plastic Materials Inc C
- Amoco Chemical (Europe) SA P, Accpro
- Amoco Polymers P, Accpro
- Ampacet Corp C
- Ampacet de Argentina C
- Appryl P
- Anstech Acrylics LLC P

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 —Toll free # 800-250-8053 (USA only)
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- BASF AG P
- Bay Polymer Corp C
- Bay Resins Div Clariant Corp C
- Bayshore Industrial Inc P
- Bergmann Kunststoffwerk GmbH C
- Borealis AS P
- Capco Polymer Industries C
- Channel Polymers P
- Chisso America Inc P

- Chrostki SA C, *Thermolan*
- Color & Composite Technologies Inc C
- ComAlloy International Co C
- Coz Div Allied Products Corp C
- D H Compounding Co C
- Deltco of Wisconsin C
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- Dongbo S C Corp P
- Dow Automotive P
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- Ferro Corp Filled & Reinforced Plastics Div C, *Ferex*
- Feracron Ferrolia Feropak Optum RxLoy*
- Fina Chemicals Petrofina SA (Total Fina Group) P
- Fina Oil & Chemical Co, Chemical Div P
- Formosa Plastics Corp USA P
- Foster Corp C
- GEBA GmbH C
- Gitto/Global Corp C
- BFGoodrich Co Static Control Polymers C
- BFGoodrich Performance Materials CP
- Hicol Inc C
- HMC Polymers Co Ltd P
- Howard Industries Inc C
- Huntsman Corp Headquarters CP, *Rexflex*
- Indian Petrochemicals Corp Ltd P
- Lab Engineering Thermoplastics SpA P, *Latene*
- LNP Engineering Plastics Inc C
- Luxus Ltd C
- M A Hanna Engineered Materials C
- Maryl Industries Inc C
- Modern Dispersions Inc C

ABS + POLYCARBONATE

Resin & Compound

Type	Process	Additive	Filler/reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (m/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compressive strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compressive modulus (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
AS	IM		GFIR	10				11 4 18 5			2						74
AS	IM		GFIR	20				11 4 18 5			2						102
AS	IM		GFIR	30				11 4 18 5			2						136
ASA	BM				0 9-4		450-550		4-7		20-30	56 68		79	29 32		24 27
ASA	BM	MR			4		450 550		4-7		20-25	58-68			29-32		24-27
ASA	EBM				0 9-1 3	380-435					30	56		79			24
ASA	EX				0 3-8		450 550		4 7		15 35	54-81		74 102	29 38		24-34
ASA	EX	UVS					465-540					54					24
ASA	EXP				1 3	390 518	464-572				30	56		79			24
ASA	EXP		GFIR	15			464-536										
ASA	EXS				0 9 1 3	380-518	464-572				30	56		79			24
ASA	EXS		GFIR	15			464-538										
ASA	IBM						392-518	464-572									
ASA	IBM		GFIR	15			464-536										
ASA	IM				0 3-25 68	380-435	430 550	8 5-21 3	3 7		20 45	51 74		70 102	29-36		24 35
ASA	IM	MR			4 8		450-550		4-7		15 25	58-81			29-38		24-34
ASA	IM	UVS			21		465 540					54 69					24-33
ASA	T					392-518	464-536					79		100			32
ASA	V				0 3-5 5				4-6			54-70		74-102			26-34
ASA+AES	CEX				1 5-7 8						50	30-46		56 75	21-23		20 24
ASA+AES	EX				1 1 8		485 550		5-6	26	50	30 49		56-79	21 29		20 28
ASA+AES	EXS				1 5-1 8						50	30 46		56 75	21 23		20-24
ASA+PC	BM	HS			21 85		500-570		3-7			90			36		
ASA+PC	BM	IM			21 85		500-570		3 7			90			36		
ASA+PC	BM	UVS			21 85		500-570		3 7			90			36		
ASA+PC	EX				3 45		500-570					77			33		
ASA+PC	EXP					392-536	500 572										
ASA+PC	EXP	HS			21 85		500-570		3-7			90			36		
ASA+PC	EXP	IM			21 85		500-570		3-7			90			36		
ASA+PC	EXP	UVS			21 85		500 570		3 7			90			36		
ASA+PC	EXS					392-536	500 572										
ASA+PC	EXS	HS			21 85		500 570		3-7			90			36		
ASA+PC	EXS	IM			21 85		500 570		3 7			90			36		
ASA+PC	EXS	UVS			21 85		500-570		3 7			90			36		
ASA+PC	IBM				1 8	392 536	500-572		5 7		25	90		128			37
ASA+PC	IM				0 35 52 65		430-570		3 7		25-70	64 91		77-128	33 38		27 38
ASA+PC	IM	HS			21 85- 27 6		500-570		3-7			90-91			36-38		
ASA+PC	IM	IM			21 85- 27 6		500 570		3-7			90 91			36-38		
ASA+PC	IM	UVS			21 85- 27 6		500-570		3-7			90 91			36-38		
ASA+PC	T					392 536	500 572										
ASA+PC	T	HS			21 85		500-570		3 7			90			36		
ASA+PC	T	IM			21 85		500 570		3 7			90			36		
ASA+PC	T	UVS			21 85		500-570		3-7			90			36		
ASA+PVC	EBM				1 5-4 5		380-410		3-5		40-70	66-67		99-100			30-32
ASA+PVC	EXP				1 5-7						70	66		92 100			30-32
ASA+PVC	EXS				1 5-4 5		380 410		3-5		40 70	66-67		99 100			30-32
ASA+PVC	IM				1 5-4 5		380-410		3-5		40-70	66-67		99 100			30-32

Data provided by IDES, Inc., see ad on front of Resin & Compound tab (pg A-A)

ASA-POLYCARBONATE ALLOY

The compatibility of acrylonitrile-styrene-acrylic terpolymer allows it to be readily blended or alloyed with polycarbonate resin to form an impact-modified alloy (ASA + PC) material that is highly resistant to weathering, aging, and chemicals

Markets that make use of these properties are automotive components, electrical and electronic equipment subjected to high heat or severe weather conditions, and water-based sporting equipment and boating applications

CELLULOSICS

Cellulose nitrate, developed in the late 1800s, was the first cellulosic materi-

al Its first uses were in billiard balls, combs and other novelties, and photographic film Although cellulose nitrate had excellent physical properties, it had two major shortcomings that limited its use The first was the necessity for mixing with solvent prior to processing, and the second was flammability Cellulose acetate (CA), which appeared as rods, sheets and blocks in 1927 and as pellets in 1929, does not have these shortcomings In the early 1930s, cellulose acetate be-

came in injection Cellulose acetate (CAP) is used for cellulose acetate toothbrushes and combs interior wheels, grilles

ABS Resin & Compound

ing area, ABS is a versatile, lower-cost resin that also is on the low end of performance. Compared to polycarbonate, ABS has lower impact and chemical resistance, but costs less

Specialty grades of ABS include high-heat, medical, glass-reinforced, flame-retardant, UV-stabilized and transparent resins. Blending ABS and other plastics produces alloys combining the best of both resins.

ABS/polycarbonate alloys extend the properties of ABS and are more cost-efficient than polycarbonate alone. These resins are characterized by rigidity and hardness, good impact strength at high and low temperatures, dimensional stability, excellent creep resistance, low moisture absorption and molded-in color and textures. Flame-retardant grades are used in business machines and electrical/electronic equipment.

An ABS/nylon blend has the processability of ABS, but yields parts



ABS supplies the needed properties and snow-white color for these dual-lumen catheter hubs [Photo, Bayer]

with a nylon-rich surface resulting in superior abrasion, chemical, and heat resistance, plus impact strength exceeding ABS grades. The blends are used in automotive housings and shrouds, lawn and garden equipment, power tools, and appliances.

Processing and applications

ABS offers a broad processing window

with resins tailored for injection molding, profile extrusion, sheet extrusion and coextrusion (both followed by thermoforming), plating, rotomolding, compression molding, cold forming, and blow molding. ABS is easily machined, bonded, fastened, decorated, and finished.

The major markets for ABS are appliances, business machines, transportation, sheet extrusion, and drain, waste, and vent pipe and fittings. Other markets are garden, electrical, sporting goods, and medical.

Some of the most common uses include automotive interior trim, business machine and appliance housings, refrigerator food drawers and door liners and coextruded sheets for campers, recreational vehicles, truck caps and spas.

For automotive trim, ABS' cost/performance, toughness, strength, rigidity, colorability and ease-of-decoration are key properties. The resin's flame-retardant properties, heat resistance,

Type	Process	Additive	Filler/reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (mil/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compress strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compress modulus (10 ⁴ psi) (D695)
ABS	BM				0.22-6	358-482	358-464		3-8	55	14-60	45-83		73-135	22-33	
ABS	BM	CB							5-7			40		72		
ABS	BM	HS				374-446	446-518									
ABS	BM	IM				374-446										
ABS	CAL				0.15-11	356-464	358-464		4-6	48	20-50	44-85		65-142	27-43	
ABS	CAL		GFIR	10	1.1				2-4			84		105		
ABS	CAL	HS				356-446	446-518									
ABS	CAL	IR			5-12				5			54-64		85-107	30-41	
ABS	CAL	LVS			2.5				4-6			56				
ABS	CEX				0.08-4.2	390-480	425-525		5-8	42-48	50	19-73		41-125	14-38	
ABS	CEX	HS				356-428	446-500									
ABS	CM				0.8				3-7		40	65		103	36	
ABS	EBM				5							45		77	27	
ABS	EX				0.15-50	350-482	320-536		1-8	41-73	15-80	19-93		41-142	14-43	
ABS	EX		GFIR	6					1.5	131	2.7-4	62		87		
ABS	EX		GFIR	10	1.1				2.4			84		105		
ABS	EX		WF	20							8					

Data provided by IDES, Inc., see ad on front of Resin & Compound tab (pg A-A)

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36-83

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impact resistance and color stability lead the list for housing applications. For refrigerator applications, the resin offers strength, impact resistance, high gloss, chemical resistance and processability. Coextruded sheets can feature a substrate of ABS with a cap of a weatherable polymer that provides high gloss and UV stability.

Commercial information

Basic ABS molding and extrusion grades ranged between \$1.60 to \$1.75/lb for 40,000 lb lots as of January 1, 1999. Specialty grades vary greatly in price, but typically average 20% higher than basic grades. U.S. ABS sales exceeded 1400 million lb in 1998 and worldwide topped 8000 million lb. Anticipated annual growth rate is about 1% in North America, 2% in Europe, and 3 to 4% in Asia.

By Bruce E. Kleinert, Product Mgr., ABS, Bayer Corp., Pittsburgh, PA 15205

Acrylonitrile-butadiene-styrene (ABS)

Albis Plastic GmbH C
Amco Plastic Materials Inc C
Ansa Termoplastici Srl P

Asahi Chemical Industry Co. Ltd. P, Stylac

Unanell Polymers P, Certene
Chi Mei Industrial Co. Ltd. P, Polyac
ComAlloy International Co. C
Coz Div. Allied Products Corp. C
D.H. Compounding Co. C
Daielco Polymer Compounds Inc. C
Debeco Plastics Inc. C
Denton Plastics Inc. C, Enviroline
Diamond Polymers C
Dow Automotive P
Dow Chemical Pacific (Singapore) Ltd. P
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Elf Atochem SA P, Arradur
ENTECH POLYMERS, INC. C
Federal Plastics Corp. C
Ferro Corp. Plastic Colorants Div. C
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—Tel 216-841-8580 (USA)
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* **GE PLASTICS P, Cycotec**
—Web www.geplastics.com
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BFGoodrich Co. Static Control Polymers C
BFGoodrich Performance Materials CP
Howard Industries Inc. C
Kaneka Corp. P

Lati Engineering Thermoplastics SpA P, Lastilac, Lastilac 09 11
LG Chem P, Lupos, Lupoy
LNP Engineering Plastics Inc. C
Luxus Ltd. C
M.A. Hanna Engineered Materials C, Maxxam
Marval Industries Inc. C
* **MICHAEL DAY ENTERPRISES C**
Miwon America Inc. P, Hanalac
Modern Dispersions Inc. C
MULTIBASE CO., INC. C
Network Polymers Inc. C
Nova Polymers, Inc. P
Novatec Plastics & Chemicals Co. Inc. C, Novalay
Plastic Resale Corp. C
Plastic Technology and Services LLC C
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Polymer Concentrates Inc. C
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Solutia Services International SANY P
Spartech Color C
Spartech Compounding/Color Concentrates C
Spartech Compounding-Engineered Thermoplastics C
Texas Polymer Services Inc. A Div. of A. Schulman Inc. C
Thai ABS Co. Ltd. P, Porane
Toray Marketing & Sales (America) Inc. P, Toyolac
Toshiba Chemical America Inc. C, Emiclear
TP Composites Inc. C
Vamp Tech SpA C, Denisab, Vampsab

compressive modulus (10⁴ psi) (D790)

Flexural modulus (10 ⁴ psi) (D790)	Izod impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
	73°F 125in	73°F 25in	40°F 125in	40°F 25in								
23-43	2.1 10.6	1-7.3			41-65	86-120		1.11	1.7			BASF AG, Bayer AG, Chi Mei Industrial Co. Ltd., Diamond Polymers Inc., Dow Plastics, GE Plastics, Kaneka Corp., Kumho Chemicals, Inc., LG Chemical America Inc., LNP Engineering Plastics Inc., Proquigel
28								1.1	0.3			LNP Engineering Plastics Inc. EniChem EniChem
17-44	3.4-8.4	0.7-8.4	1.2	0.4-3	42-53	84-120		1-1.1	0.3-1			Bayer AG, Diamond Polymers, Inc., EniChem, Mitsubishi Rayon America Inc., Toray Industries, Inc.
47	1.7					113		1.1				Diamond Polymers Inc. EniChem
34-43		1.3-2.6				102-113		1.2	0.21-0.3			Mitsubishi Rayon America Inc.
28	4					88		1.2				Diamond Polymers, Inc.
17-37	2.5-9.3		1.6-4.7		38-53	68-112		1-1.1	1.7	7.7		BASF Corp., Bayer Corp., Plastics Div., Dow Plastics, GE Plastics EniChem
35	7.7	6.5			62	110		1				Chi Mei Industrial Co. Ltd.
27	9		2.5					1				Bayer Corp., Plastics Div.
3-44	2.1-12	0.7-9.2	0.9-5.7	0.4-2.8	7.74	68-120		1.1-2	0.3-1.7	1.6-7.7		A. Schulman Inc., Aclo Compounding Inc., Ashley Polymers Inc., BASF Corp., Bayer AG, Bayer Corp., Plastics Div., Chell Industries Inc., Chi Mei Industrial Co. Ltd., Delta FRP MFG Inc., Diamond Polymers Inc., Dow Plastics, Engineered Polymers Inc., EniChem, GE Plastics, GE Plastics BV, Great Eastern Resins, Industrial Co. Ltd., Kumho Chemicals Inc., LG Chemical America Inc., Mitsubishi Rayon America Inc., Multibase Inc., Network Polymers Inc., Polymer Technology and Services LLC, Polymerland Inc., Prime Source Polymers Inc., Proquigel, Shin A Corp., Shuman Plastics Inc., Spartech Compounding, Taita Chemical Co. Ltd., Thai Petrochemical Industry Co. Ltd., Toray Industries Inc.
36-83	3.4-7.8	1.3-1.9		0.6	50	112		1.1-1.2	0.15-0.3			Chell Industries Inc., EniChem
47	1.7					113		1.1				Diamond Polymers Inc.
59								1.1				Hi-Tech Polymers Inc.

Resin & Compound

Type	Process	Additive	Filler/reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (ml/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compress strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compress modulus (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
ABS	EX		WF	35							7						75
ABS	EX		WF	50							8						101
ABS	EX	HS			2.5	356-446	425-536		4.6		30	54-62		93-105			30-34
ABS	EX	IM			1-2.5	374-446	428-500		4-6		30	55-62		93			32-33
ABS	EX	IR			5-12	356-464			5			54-64		85-107	30-41		34-43
ABS	EX	L			4	374-446	425-518		4-6		40	54-61		90-105			30-34
ABS	EX	MR			2.5	374-446	446-518		4-6		30	62		93			33
ABS	EX	UVS			2.5				4-6			56					28
ABS	EXF					358-482	356-518										
ABS	EXF	HS				374-446	446-518										
ABS	EXF	IM				374-446											
ABS	EXP				1.2-7	356-482	356-518		3.6	41	60-65	19-62		41-94	14-30		17-33
ABS	EXP	HS				356-446	446-536										
ABS	EXP	IM				374-446											
ABS	EXP	IR				356-464											
ABS	EXS				0.08-15	356-482	410-525		4.7	41-51	10-100	19-68		41-100	14-36		17-38
ABS	EXS		GFIR						3-5		4	62		87			36
ABS	EXS	HS				356-446	446-518										
ABS	EXS	IM				374-482											
ABS	EXS	IR				356-464											
ABS	EXS	L				374-446	446-518										
ABS	EXS	MR				374-446	446-518										
ABS	FP										17	47		75	24		28
ABS	IM				0.15-200	350-482	320-550	0.7-25	2.3-9	41-73	2-104	40-94	58-94	62-1130	23-44	17-38	22-49
ABS	IM		ARF	10				10-20	4						50		45
ABS	IM		CFL	13					1.5	152	3			172			121
ABS	IM		CFL	15					2.3			116		156			99
ABS	IM		CFL	23					1	206	2			235			178
ABS	IM		CFN	10		400-450			2-3	70	2				60		60
ABS	IM		CFN	15		400-450			0.9-1	100	2				85		85
ABS	IM		CFN	20		400			0.9						65		55
ABS	IM		CFR				10-20		2-5			50-100		90-150	35-120		30-80
ABS	IM		CFR	10		430-500	10-20	1-3.5	115-120	1-7-3.5	100	140	140	140	85-140		80-110
ABS	IM		CFR	13			10-20		1-2						170		80
ABS	IM		CFR	15		430-500	10-20	1-3	115-140	2-3-5	125	135-140	155-200	95-150			90-140
ABS	IM		CFR	20		430-500	10-20	0.16-2.25	130-173	1-2-5	140	150-170	181-235	85-200			85-180
ABS	IM		CFR	25			10-20		1						250		190
ABS	IM		CFR	3		440-480			2	88	3			55			57
ABS	IM		CFR	30		500	10-20	0.5-2	150-174	1-2-5	150-190	160-180	189-240	290			148-230
ABS	IM		CFR	35			10-20		1			185		330			250
ABS	IM		CFR	40		450-500	10-20	0.5-2	160	1	160-220	170-190	230-270	310-360			210-280
ABS	IM		CFR	8		430-480			3	100	2.5			70			37-40
ABS	IM		GBS	10		440-470	10-20	5-7	55	3-5				36-40			39
ABS	IM		GBS	15			10-20	4						40			40
ABS	IM		GBS	20		400-450	10-20	3-7	45	2				35-44			35-41
ABS	IM		GBS	30			10-20	5						50			43
ABS	IM		GBS	40			10-20	3						50			43
ABS	IM		GBS	5		430-480	10-20	2-6	82	2				32-70			35-70
ABS	IM		GFAR	17		446-500											
ABS	IM		GFIR		60-120				1-4		2	87-143		130-193			57-100

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Flexural modulus (10 ⁴ psi) (D790)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D782)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/ml) (D149)	Supplier
	73°F 125in	73°F .25in	40°F 125in	40°F 25in								
75								1.1				HiTech Polymers Inc
101								1.2				HiTech Polymers Inc
30-34	4.7	4.1		1.3	50	107		1-1.1	0.3			EniChem Spartech Compounding
32-33	4.7-7	4.1		1.3	50	107		1-1.1	0.3			EniChem GE Plastics BV, Polymerland Inc
34-43		1.3 2.6				102 113		1.2	0.21-0.3			Bayer AG, Mitsubishi Rayon America Inc
30-34	6.7	6		2.6	50	105		1	0.3			EniChem Spartech Compounding
33	4.7	4.1		1.3	50	107		1.1	0.3			EniChem
28	4					98		1.2				Diamond Polymers Inc
												BASF AG, Bayer AG
												EniChem
												EniChem
17-33	2.5-3.5	4.3 6.2	1-1.6	1.7 2.4	46 53	68-110		1	0.3			BASF AG Bayer AG Bayer Corp Plastics Div, Dow Plastics EniChem GE Plastics BV
												EniChem
												EniChem
												Bayer AG
17-38	2-12	2.8-6	0.9-4.7	0.4 2.6	46-47.22	68-116		1-1.1	0.3-1.7	7.7		BASF AG BASF Corp Bayer AG Bayer Corp Plastics Div Cheil Industries Inc DENKA Dow Plastics EniChem GE Plastics BV LNP Engineering Plastics Inc Thai Petrochemical Industry Co Ltd
36	3.4	1.9		0.6	50			1.1	0.3			EniChem
												EniChem
												EniChem GE Plastics BV
												Bayer AG
												EniChem
												EniChem
26								1.1				GE Plastics
22-49	0.4-1.2	0.7 8.3	0.2 5.7	0.4-2.8	7 9.5	80 205		1.1 3	0.22 0.45	0.33-1.6		A Schulman Inc Ashley Polymers Inc BASF AG BASF Corp Bayer AG Bayer Corp Plastics Div Cheil Industries Inc Chi Mei Industrial Co Ltd Clariant Bay Resins Daicel (USA), Inc Delta FRP MFG Inc DENKA Diamond Polymers Inc Dow Plastics DSM Engineering Plastics, EniChem Ferro Corp GE Plastics GE Plastics BV Kaneka Corp Kumho Chemicals Inc LG Chemical America Inc LNP Engineering Plastics Inc M Holland Co M A Hanna Engineered Materials Michael Day Enterprises Mitsubishi Rayon America Inc Multibase Inc Network Polymers Inc Polymer Resources Ltd Polymer Technology and Services LLC Polymerland Inc Prime Source Polymers Inc Proquigel RTP Co Shuman Plastics Inc Spartech Compounding Taita Chemical Co Ltd Thai Petrochemical Industry Co Ltd Toray Industries Inc TP Composites Inc
45					32	102		1.1	0.3			RTP Co
121						114		1.1				Nytex Composites Co Ltd (USA)
99						105		1.1				Nytex Composites Co Ltd (USA)
178						116		1.2				Nytex Composites Co Ltd (USA)
60					35			1.1	0.15			M A Hanna Engineered Materials
85								1.1	0.12			M A Hanna Engineered Materials
55								1.3	0.12			GHA Plastics Inc
30-80					30 40			1.1	0.03-0.2			RTP Co
80-110	0.8				20	108		1.1 1.2	0.18-0.4			DSM Engineering Plastics LNP Engineering Plastics Inc M A Hanna Engineered Materials RTP Co
80								1.1	0.2			RTP Co
90-140				15 23		108		1.1 1.3	0.15-0.18	0.3-0.8		LNP Engineering Plastics Inc M A Hanna Engineered Materials RTP Co
85-180	1.2				12-18	108 110		1.1-1.3	0.17-0.3			DSM Engineering Plastics LNP Engineering Plastics Inc M A Hanna Engineered Materials Nytex Composites Co Ltd (USA) RTP Co
190						109		1.1	0.16			RTP Co
57								1.1	0.3			M A Hanna Engineered Materials
148 230	0.8				11-15	110-111		1.2-1.4	0.14 0.2			DSM Engineering Plastics LNP Engineering Plastics Inc Nytex Composites Co Ltd (USA) RTP Co
250					13	110		1.2	0.15			RTP Co
210 260	0.7				6 12	110		1.2 1.4	0.1 0.2			DSM Engineering Plastics LNP Engineering Plastics Inc RTP Co
								1.1	0.25			M A Hanna Engineered Materials
37-40								1.1	0.05 0.25			M A Hanna Engineered Materials RTP Co
39								1.1	0.25			RTP Co
35 41								1.2	0.2 0.25			M A Hanna Engineered Materials RTP Co
43						110		1.3	0.2			RTP Co
43								1.4	0.2			RTP Co
35 70								1.1 1.2	0.05 0.25			M A Hanna Engineered Materials RTP Co
												GE Plastics BV
57 100	1.2 2	1.1 1.6		0.7	50	107 113		1.1 1.3	0.2			EniChem Kumho Chemicals Inc

Resin & Compound

Type	Process	Additive	Filler/reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (mil/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compres. strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compres modulus (10 ⁴ psi) (D695)	Flexural modulus (10 ⁴ psi) (D790)
ABS	IM		GFIR	10	11-3		400-520	7-20	1.6	80-105	2.4	60-94	65-123	105-156	40-140		40-110
ABS	IM		GFIR	11			475-500		2.3			70					45
ABS	IM		GFIR	15			430-500	10-20	2.8	95	3	73-80	110		75		55-68
ABS	IM		GFIR	18	22		428-500			125	3			82	69		30
ABS	IM		GFIR	17													40
ABS	IM		GFIR	2.5			450-500		4.9			60					40
ABS	IM		GFIR	20	2		400-520	7-20	0.8-5	80-120	1.4	90-142	90-140	120-185	60-95		58-99
ABS	IM		GFIR	25			440-490	10-20	1			129	153	168	100		90-103
ABS	IM		GFIR	30	1-4		428-520	7-20	0.6-4	80-135	2.3	60-145	100-170	80-227	50-140		60-128
ABS	IM		GFIR	40	0.6		430-500	12-20	1-2	110-120	2.2-5	145-160	160-190	170-200	113-150		90-140
ABS	IM		GFIR	5			450-500	10-20	3.9			63	80		60		42-50
ABS	IM		GFIR	50			430-490		1-1.5	80	2				130		130
ABS	IM		GFL	20			440-470		1-2			130		200	79		85
ABS	IM		GFL	40			440-470		1			160		187	100		110
ABS	IM		GFN	10				10-20	2-3			90		140	80-110		60-80
ABS	IM		GFN	15				10-20	1-2						150		92
ABS	IM		GFN	20				10-20	1						110		100
ABS	IM		GFN	30				10-20	1						100		110
ABS	IM		GFN	40				10-20	0.5-1						250		250
ABS	IM		GFN	5				10-20	2-3						75		65
ABS	IM		GFR	10				10-20	1-2			100	140	170	120		85
ABS	IM		GFR	20				10-20	1.2			140	170	200	200		150
ABS	IM		GFR	30				10-20	1.2			160	180	240	290		230
ABS	IM		GFR	40				10-20	1			170	190	270	360		280
ABS	IM		SSF				500-520	10-20	5-7	60	4	50-75		80-130	40		36-48
ABS	IM		SSF	10			400-450	10-20	4-6	65-71	2.2-4	50-60		90-100	38-70		35-60
ABS	IM		SSF	15				10-20	3-4						40-42		38-40
ABS	IM		SSF	4						60							35
ABS	IM		SSF	5			430-460	10-20	4-6			50-57		88-96	32-60		30-50
ABS	IM		SSF	6					4	52	2.5				40		40
ABS	IM		SSF	7			400	10-20	4-5	58	4.5				42-65		38-45
ABS	IM		SSF	7.5				10-20	5						32-42		30-38
ABS	IM		SSFL	3			450-500		5			60		110			41
ABS	IM		SSFL	5			450-500		4			57		90			38
ABS	IM		SSFL	7			450-500		4			53-58		86-114			35-43
ABS	IM		SSPF				500	15-20	5-6			75		135			50
ABS	IM		WF	20							8						59
ABS	IM		WF	35							7						75
ABS	IM		WF	50							6						101
ABS	IM	AS			30-35		428-500	10-20	4.8-5	58	2-30	45-75		75-87	30-35		25-37
ABS	IM	AS	GFIR	15			430-518		2	75	3				70		60
ABS	IM	AS	GFIR	20				10-20	2-3			70		100			70
ABS	IM	AS	GFIR	30			430-470		1.2	90	2				90		90
ABS	IM	CB					430-520	10-20	3.6	40-63	2	53		95	38-45		34-51
ABS	IM	HS			0.6-15	356-446	356-536	0.8-15	3-8		10-30	54-68		86-110	39-40		30-40
ABS	IM	HS	GFIR	10			425-500	7-17	3.6	92-99		60					50-60
ABS	IM	HS	GFIR	17			446-500										62-85
ABS	IM	HS	GFIR	20	3		425-500	7-17	2.5	121-128		85					81-114
ABS	IM	HS	GFIR	30	2.5		425-500	7-17	1.4	142		105					40
ABS	IM	HS	SSF	10					4	57	2.5				40		40
ABS	IM	HS	SSF	6					4	52	2.6				30		30

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Flexural modulus (10 ⁴ psi) (D790)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
	73°F 125in	73°F 25in	40°F 125in	40°F 25in								
40-110	1-1.7	1.3-2.2			20-38	60-118		1-1.3	0.2-0.35	0.93		Chase Plastic Services Inc Clariant Bay Resins ComAlloy International Corp Daicel (U SA) Inc Diamond Polymers, Inc DSM Engineering Plastics GHA Plastics Inc LG Chemical America Inc LNP Engineering Plastics Inc M A Hanna Engineered Materials Michael Day Enterprises, Nyltex Composites Co Ltd (USA) Polymerland Inc Prime Source Polymers, Inc RTP Co Thermofil Inc Toray Industries Inc
45	1.2							1.1				Polymerland, Inc
55-68	1-1.1				20-26	105		1-1.1	0.19-0.2	0.8		GHA Plastics Inc M A Hanna Engineered Materials Polymerland Inc Prime Source Polymers Inc RTP Co
30						121		1.2				Bayer AG Dow Plastics EniChem
40	2.5							1				Polymerland Inc
58-99	1-1.5	2			19-30	59-124		1-1.4	0.01-0.35	0.7-0.8		Chase Plastic Services Inc ComAlloy International Corp Daicel (U SA) Inc DSM Engineering Plastics GHA Plastics Inc LG Chemical America Inc LNP Engineering Plastics Inc M A Hanna Engineered Materials Michael Day Enterprises Nyltex Composites Co Ltd (USA) Polymerland, Inc Prime Source Polymers Inc RTP Co Toray Industries Inc
90-103	3.3				17	109		1.2-1.4	0.17			DSM Engineering Plastics RTP Co
60-128	0.9-1.2	1.8			16-24	64-124		1-1.5	0.04-1.2	0.6-0.7		Chase Plastic Services Inc ComAlloy International Corp Daicel (U SA) Inc DSM Engineering Plastics Ferro Corp GHA Plastics Inc LG Chemical America Inc LNP Engineering Plastics Inc M A Hanna Engineered Materials Nyltex Composites Co Ltd (USA) Polymerland Inc Prime Source Polymers Inc RTP Co Toray Industries Inc
90-140	1.2				12-15	102-124		1.4	0.1-0.2	0.5		DSM Engineering Plastics LNP Engineering Plastics Inc, M A Hanna Engineered Materials Prime Source Polymers Inc RTP Co
42-50	1.5				40	104		1.1	0.2			Polymerland Inc RTP Co
130								1.5	0.1			M A Hanna Engineered Materials
85		2				90		1.2	0.2			DSM Engineering Plastics
110		2.5				95		1.4	0.2			DSM Engineering Plastics
60-80					28			1.1	0.2			RTP Co
92								1.2				RTP Co
100					18			1.2	0.2			RTP Co
110					19			1.2	0.2			RTP Co
250								1.4	0.2			RTP Co
65								1.1	0.2			RTP Co
85					20	108		1.1	0.18			RTP Co
150					18	108		1.1	0.17			RTP Co
230					15	110		1.2	0.16			RTP Co
280					12	110		1.2	0.14			RTP Co
36-48					45	108		1.1-1.2	0.03-0.33			ComAlloy International Corp LNP Engineering Plastics Inc RTP Co
35-60					41-50			1.1-1.4	0.15-0.3			M A Hanna Engineered Materials RTP Co Ticona
38-40					42			1.2	0.3			RTP Co
35	1.2							1.1				DSM Engineering Plastics
30-50	1.2				43-45			1.1-1.4	0.3			DSM Engineering Plastics RTP Co
40								1.1				Ticona
38-45	1.2				44			1.1	0.25-0.3			DSM Engineering Plastics GHA Plastics Inc RTP Co
30-38					44-45			1.1	0.3			RTP Co
41								1.1				DSM Engineering Plastics
38								1.3				DSM Engineering Plastics
35-43								1.1-1.3				DSM Engineering Plastics
50								1.1	0.3			LNP Engineering Plastics Inc
59								1.1				HiTech Polymers Inc
75								1.1				HiTech Polymers Inc
101								1.2				HiTech Polymers Inc
25-37	2.6-6.4	2.2-5.5				92-110		1-1.3	0.3			Bayer AG Dow Plastics EniChem LG Chemical America Inc, M A Hanna Engineered Materials RTP Co
								1.2	0.2	0.8		BASF AG M A Hanna Engineered Materials
60								1.2	0.3			RTP Co
								1.3	0.18	0.7		M A Hanna Engineered Materials
34-51					25	112		1.1	0.03-0.15			ComAlloy International Corp M A Hanna Engineered Materials RTP Co
30-40	2.2-4.3	2-3.7	0.8-1.1		42-67	110-115		1-1.2	0.3			Chi Mei Industrial Co Ltd Daicel (U SA) Inc Dow Plastics EniChem GE Plastics BV Spartech Compounding
50-60					30			1.3	0.3			Daicel (U SA) Inc Spartech Compounding EniChem
62-85					14-22	115		1.2-1.3	0.3			Daicel (U SA) Inc Spartech Compounding
81-114					12-17	115		1.2-1.4	0.3			Daicel (U SA) Inc Spartech Compounding
40								1.3				Ticona
30								1.3				Ticona

Compress. modulus (10 ⁴ psi) (D695)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D686)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
	Flexural modulus (10 ⁴ psi) (D790)	73°F 125in	73°F, 25in	40°F 125in								
25-36	3 8-6 7	2 8-6 4		1 1 3	50	96 110		1-1 1	0 3			EniChem Polymerland Inc
85					20			1 2	0 18	0 8		GHA Plastics Inc
24-43	2 5-4 4	1 3-3 9			38 72	83 114		1 1-1 3	0 21-0 3			Bayer AG Chi Mer Industrial Co Ltd Daicel (U SA), Inc Dow Plastics EniChem GE Plastics GE Plastics BV LG Chemical America Inc, Mitsubishi Rayon America Inc Nytex Composites Co Ltd (USA) Polymer Technology and Services LLC Polymerland Inc Proquigel RTP Co Spartech Compounding Taita Chemical Co Ltd Thai Petrochemical Industry Co Ltd
85-96					27 28			1 2	0 2			RTP Co
90-110	0 6 0 9				5			1 2-1 3	0 18-0 4			DSM Engineering Plastics M A Hanna Engineered Materials RTP Co
48-70		1-1 1			28-30	114		1 3-1 4	0 2 0 3			Daicel (U SA) Inc DSM Engineering Plastics LNP Engineering Plastics Inc M A Hanna Engineered Materials
68-94					14-23	59-116		1 3-1 4	0 16-0 3			EniChem Daicel (U SA) Inc DSM Engineering Plastics M A Hanna Engineered Materials
100 130					11 17	64 116		1 4-1 5	0 14-0 3			Daicel (U SA), Inc DSM Engineering Plastics LNP Engineering Plastics Inc M A Hanna Engineered Materials
55-100					28			1 3	0 18-0 2			RTP Co
175								1 5	0 2			RTP Co
120-250						110		1 4-1 6	0 18-0 2			RTP Co
45					30			1 3	0 2			RTP Co
48								1 2	0 32			LNP Engineering Plastics Inc
45								1 5	0 3			RTP Co
40								1 5	0 4			RTP Co
35-40	1 1				43			1 3-1 4	0 3			DSM Engineering Plastics, RTP Co
25-41	2 3-6 7	1 5-6 4		0 6-3	50	96 117		1-1 3	0 3			EniChem, Michael Day Enterprises Spartech Compounding
50												Spartech Compounding
62												EniChem
81								1 2				Spartech Compounding
30-39					52	96 100		1 1 1 3	0 19-0 3			LNP Engineering Plastics Inc M A Hanna Engineered Materials RTP Co
75								1 2	0 1			M A Hanna Engineered Materials
50								1 2	0 2			RTP Co
110-130					18			1 4-1 5	0 12-0 16			LNP Engineering Plastics Inc RTP Co
33-38					50			1-1 1	0 19 0 3			LNP Engineering Plastics Inc M A Hanna Engineered Materials RTP Co
57	1 4							1 1				DSM Engineering Plastics
110 130								1 3-1 5	0 12 0 16			LNP Engineering Plastics Inc RTP Co
96		2 4		0 8	44-50	112		1 1 1	0 3 0 4	1 8		BASF Corp EniChem
26 36	2 4 6	2 1-2 4		0 6	41-53	98-113		1-1 3	0 25-0 3			EniChem Bayer AG Clariant Bay Resins Daicel (U SA) Inc Diamond Polymers Inc EniChem Polymerland Inc RTP Co Spartech Compounding
85					20	122		1 2	0 18	0 8		GHA Plastics Inc M A Hanna Engineered Materials
13-43	2 1 10 6	1 7 3			61 64	80 120		1-1 1	0 3			BASF AG, Bayer AG Chi Mer Industrial Co Ltd Div Dow Plastics GE Plastics GE Plastics BV Kumho Chemicals Inc Proquigel Taita Chemical Co Ltd
												Bayer AG
												EniChem
												EniChem GE Plastics BV
												Bayer AG
												EniChem
												EniChem
13-44	2 1-10 6	0 7-7 3		0 4-2 8	42 53	80 120		0 7 1 1	0 3			Bayer AG Div Kumho Chemicals, Inc Mitsubishi Rayon America Inc Proquigel
34-43		1 3-2 6				102 113		1 2	0 21-0 3			Mitsubishi Rayon America Inc
												Rohm GmbH Chemische Fabrik
												Rohm GmbH Chemische Fabrik
												Rohm GmbH Chemische Fabrik
												Rohm GmbH Chemische Fabrik
												Rohm GmbH Chemische Fabrik
26	3 3				67	108		1 1				Bayer Corp Plastics Div
												Rohm GmbH Chemische Fabrik
												Rohm GmbH Chemische Fabrik
												Rohm GmbH Chemische Fabrik
												Rohm GmbH Chemische Fabrik
30	17 8		4 6		57	95		1 1				Bayer AG Bayer Corp Plastics Div

Resin & Compound

Type	Process	Additive	Filler/reinft	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (mil/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compress strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compress modulus (10 ⁴ psi) (D695)
ABS+PA	EX				14	480-527	482-527			46-57	90-150	53-62		89-102	25-33	
ABS+PA	EXP					482-527	482-527									
ABS+PA	EXS				14	480-527	482-527			57	150	62		102	33	
ABS+PA	IM				2.5-7.2	482-527	460-527	6-12	1-10		140-360	43-63		60-109	25-30	
ABS+PA	IM		GFIR				482-527									
ABS+PA	IM		GFIR	15	0-1		480-530	8-15	4-5		3.5-4.1	109-120		162-188	67-75	
ABS+PA	IM		GFIR	20	5											
ABS+PA	IM		GFIR	8	3											
ABS+PA	IM	UVS			5.5-9.5											
ABS+PBT	COT		GFIR	30			465-500		3-5		2-2	179		255		
ABS+PBT	COT		GMN	30			465-500		2-4		2-1	135		203		
ABS+PBT	COT	HS	GFIR	15			465-500		3-6	122-135	2-6			168-185		
ABS+PBT	COT	HS	GFIR	30			465-500		2-6	171-179	2-2.4			213-270		
ABS+PBT	COT	IR	GFIR	15			465-500		3-6	122-135	2-6-2.7			168-185		
ABS+PBT	COT	IR	GFIR	20			465-500		2.5-4.5	141	2-5					
ABS+PBT	COT	IR	GFIR	30			465-500		2-6	170-179	2-2.4			213-270		
ABS+PBT	COT	IR	MNF	40			465-500		2-4.5	156	1-3					
ABS+PBT	EX				12				2-5			75-95		140	39	
ABS+PBT	IM				12		465-520	8-14	2-14			40-100	60-95	109-140	30	
ABS+PBT	IM		GFIR		13-35				2			129-179		143-215		
ABS+PBT	IM		GFIR	22			465-500		2-4	131						
ABS+PBT	IM		GFIR	30			465-518		3-6		2-2	179		255		
ABS+PBT	IM		GMN	30			465-500		2-4		2-1	135		203		
ABS+PBT	IM	HS					465-500		6-9		18-100	61-63		91-95		
ABS+PBT	IM	HS	GFIR	15			465-500		3-7	121-135	2-6-3			168-185		
ABS+PBT	IM	HS	GFIR	20			465-500		2-5.5	132-139	2-4-2.7			192-199		
ABS+PBT	IM	HS	GFIR	30			465-500		2-6	156-179	2-2.4			213-270		
ABS+PBT	IM	HS	GMN	30			465-500		2-4	138	1-9			200		
ABS+PBT	IM	HS	GMN	40			465-500		2-3	159	1-2			213		
ABS+PBT	IM	IR					465-500		6-9		10-100	61-63		91-95		
ABS+PBT	IM	IR	GFIR	10			465-500		3-7	98-102	2-6-2.7					
ABS+PBT	IM	IR	GFIR	15			465-500		3-7	121-135	2-6-3			168-185		
ABS+PBT	IM	IR	GFIR	20			465-500		2.5-5	132-141	2-4-2.7			192-199		
ABS+PBT	IM	IR	GFIR	30			465-500		2-6	155-179	2-2.4			213-270		
ABS+PBT	IM	IR	GMN	30			465-500		2-4	138	1-9			200		
ABS+PBT	IM	IR	GMN	40			465-500		2-3	159	1-2			213		
ABS+PBT	IM	IR	MNF	30			465-500		2.5-4.5	142	1-9					
ABS+PBT	IM	IR	MNF	40			465-500		2-4.5	156	1-3					
ABS+PBT	IM	MR	GFIR	30			500-536									
ABS+PC	BM				3-6.5		385-415		7	65-76	70-90	75-77		120-126	30	
ABS+PC	BM	IR														
ABS+PC	CEX				3				7	65	125	77		120		
ABS+PC	EBM								4-7		100	76		112	30	
ABS+PC	EX				0.6-7.5		460-536		3-6	76	90-112	59-84		116-126	30	
ABS+PC	EX	IM														
ABS+PC	EX	IR														
ABS+PC	EX	MR														
ABS+PC	EXS				2-3		480-500		5-7	57-65	60-125	74-78		120-140		
ABS+PC	EXS		GFIR		1-5				4	68		78		160		
ABS+PC	FP								5-7	61	3-4			116		
ABS+PC	IBM				3				6	77	115	78		121	33	
ABS+PC	IM				0.8-100		430-575	0.9-20	3-8	57-87	25-150	59-97	105-115	87-150	30-41	
ABS+PC	IM		CFN	10				10-20	1-2						100	
ABS+PC	IM		CFN	20				10-20	0.5-1.5						170	
ABS+PC	IM		CFR					10-20	1-2			150-160		220-230	100-110	
ABS+PC	IM		CFR	10				10-20	1-2					110		
ABS+PC	IM		CFR	13				10-20	1					100		
ABS+PC	IM		CFR	20				10-20	0.5-1					160		
ABS+PC	IM		CFR	30				10-20	0-1.1					190		
ABS+PC	IM		CFR	40				10-20	0-1.05					210		

Flexural modulus (10 ⁴ psi) (D790)
25-30
30
16-30
55-63
138
132
78-83
127-145
78-83
94
127-145
170
40-48
27-48
64-122
84
118-138
132
28-34
77-83
85-94
119-145
134
170
28-37
63-70
77-83
85-94
119-145
134
170
140
170
30-33
34
30
25-36
33-41
50
38
35
25-42
80
140
90-100
100
100
180
200
220

Compress modulus (10⁴ psi) (D695)

Flexural modulus (10 ⁴ psi) (D790)	Izod Impact (D256)				Coefficient of linear thermal expansion, flow (in/in F) (D696)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/ml) (D149)	Supplier
	73°F 125in	73°F 25in	40°F 125in	40°F 25in								
25-30	16.9 17.8		1.9-4.6		57	80-95		1.1				Bayer AG Bayer Corp Plastics Div
												Bayer AG
30	17.8		4.6		57	95		1.1				Bayer AG Bayer Corp Plastics Div
16-30	15-20	14-20	1.5-2.3	1.3-2.3	50-66	69-105		1.1	0.2-1.5	4-3-5.5		Bayer AG Bayer Corp Plastics Div Chase Plastic Services Inc DSM Engineering Plastics Michael Day Enterprises
												Bayer AG
55-63	2.1	2.6	1.3	1.1-1.2	25-26	101-107		1.2				Bayer Corp Plastics Div
					2							DSM Engineering Plastics
					28							DSM Engineering Plastics
												DSM Engineering Plastics
138	1.5				34			1.5	0.15			Daicel (U SA) Inc
132	1.1				30			1.5	0.15			Daicel (U SA) Inc
78-83	1.1				17			1.4	0.15			Daicel (U SA) Inc
127-145	1.5				11			1.4-1.6	0.15			Daicel (U SA) Inc
78-83	1.1-1.3				17-37			1.4	0.15			Daicel (U SA) Inc
94	1.3				37			1.4	0.15			Daicel (U SA) Inc
127-145	1.5				11-37			1.4-1.6	0.15			Daicel (U SA) Inc
170	1.3				30			1.6	0.15			Daicel (U SA) Inc
40-48					32	45-60		1.1-1.2				BP Chemicals Inc
27-48	0.9-13.2				32	60-106		1.1-1.2				BP Chemicals Inc , Daicel (U SA) Inc GE Plastics
64-122	1.2-2.7	1.2-2.1				115-120		1.3				Kumho Chemicals Inc
84	1.3							1.3				Daicel (U SA) Inc
118-138	1.5				34			1.4-1.5	0.15			Daicel (U SA) Inc
132	1.1				30			1.5	0.15			Daicel (U SA) Inc
28-34	0.7-1.1				56			1.2-1.3	0.15			Daicel (U SA) Inc
77-83	1.1				17			1.3-1.4	0.15			Daicel (U SA) Inc
85-94	1.3-1.5				17			1.3-1.4	0.15			Daicel (U SA) Inc
119-145	1.5-1.7				11			1.4-1.6	0.15			Daicel (U SA) Inc
134	1.1				17			1.5	0.15			Daicel (U SA) Inc
170	1.3				17			1.6	0.15			Daicel (U SA) Inc
28-37	0.7-1.1				56			1.2-1.4	0.15			Daicel (U SA) Inc
63-70	0.7-0.9							1.4				Daicel (U SA) Inc
77-83	1.1-1.3				17-37			1.3-1.4	0.15			Daicel (U SA) Inc
85-94	1.3-1.5				17-37			1.3-1.4	0.15			Daicel (U SA) Inc
119-145	1.5-1.7				11-37			1.4-1.6	0.15			Daicel (U SA) Inc
134	1.1				17			1.5	0.15			Daicel (U SA) Inc
170	1.3				17			1.6	0.15			Daicel (U SA) Inc
140	1.1							1.6				Daicel (U SA) Inc
170	1.3				30			1.6	0.15			Daicel (U SA) Inc
												Bayer AG
												Bayer AG
30-33	10-13				43			1.1-1.2				Bayer Corp Plastics Div Dow Plastics
												Bayer AG
34	13.6		8		41	115		1.1	0.15	0.32		Dow Plastics
30					45			1.1	0.1	0.4		GE Plastics
25-36	9-13		4		39	110-118		1.1-1.2	0.2			Bayer AG Bayer Corp Plastics Div Diamond Polymers Inc EniChem Kotec Corp
												Dow Plastics
												Bayer AG
												Dow Plastics
33-41	4-13.6		8		37-41	115-120		1.1	0.15	0.32		Dow Plastics
50	3				33	120		1.2	0.15	0.32		Dow Plastics
38								0.9	0.2	0.6		Bayer Corp Plastics Div
35	13				40			1.1	0.53			Dow Plastics
25-42	4-14.1	5.5-10.6	3.9-8	2-4.3	25-50	100-123		1.1-1.3	0.1-0.7	0.02-0.4	457-619	Ashley Polymers Inc Bayer AG Bayer Corp Plastics Div Custom Resins Group Diamond Polymers Inc Dow Plastics DSM Engineering Plastics EniChem GE Plastics GE Plastics BV GHA Plastics Inc Kaneka Corp Kotec Corp Kumho Chemicals Inc LG Chemical America Inc LNP Engineering Plastics Inc , Mitsubishi Engineering-Plastics Corp Multibase Inc Nyltex Composites Co Ltd (USA) Polymer Resources Ltd Polymer Technology and Services LLC Polymerland Inc Proquigel Sam Yang Co Ltd Shunkong Synthetic Fiber Corp Spartech Compounding
80								1.2	0.1			RTP Co
140								1.3	0.1			RTP Co
90-100								1.2	0.1			RTP Co
100								1.2	0.1			RTP Co
100								1.4				RTP Co
180								1.3	0.1			RTP Co
200								1.3	0.1			RTP Co
220								1.4	0.1			RTP Co

Resin & Compound

Type	Process	Additive	Filler/reinf	Filler %	Melt flow (g/10 min) (D1238)	Melt temp (°F)	Process temp (°F)	Injection pressure (10 ³ psi)	Mold shrinkage (linear-flow) (mil/in) (D955)	Tensile strength at break (10 ² psi) (D638)	Tensile elongation at break (%) (D638)	Tensile strength at yield (psi) (D638)	Compress strength (psi) (D695)	Flexural strength at yield (psi) (D790)	Tensile modulus (10 ⁴ psi) (D638)	Compress modulus (10 ⁴ psi) (D695)
ABS+PC	IM		GFIR	10	1.5				4	68		78		160		
ABS+PC	IM		GFIR	10	2.6		464-575	15-20	3.5	68-87	4.5	71-94		130-160	60	
ABS+PC	IM		GFIR	15	2.4				2.5-3	120	2.6	120		200		
ABS+PC	IM		GFIR	20			464-536	15-20	2-3.5	109	2	109-149		185-189	100	
ABS+PC	IM		GFIR	30			464-536	15-20	2-3.1			159		216	140	
ABS+PC	IM		GFL	25			520-540					152	257	226	116	
ABS+PC	IM		GFL	40			530-550					198	316	293	179	
ABS+PC	IM		GFN	10				10-20	1.5-2.5			120		180-185	100-110	
ABS+PC	IM		GFN	15				10-20	1.5-2.5			140		200-210	130-150	
ABS+PC	IM		GFN	20				10-20	1.2			160		220-240	150-190	
ABS+PC	IM		GFN	5				10-20	2.5-3.5			95		160	60	
ABS+PC	IM		MNF	2			530-540		5-7	68	90	79		135	42	
ABS+PC	IM		SSF	10				10-20	5-7						49	
ABS+PC	IM		SSF	15				10-20	5-7						50	
ABS+PC	IM		SSF	5				10-20	6-7						45	
ABS+PC	IM		SSF	7.5				10-20	5-7						47	
ABS+PC	IM		LN	15			464-518	8.5-17.1	2.5-3.5			135		213		
ABS+PC	IM		LN	30			464-518	8.5-17.1	2-3.5			178-185		263-277	28-30	
ABS+PC	IM	AS						10-15	5-9			64-65		95-100	65	
ABS+PC	IM	AS	GFIR	20				10-15	1-3			80		120	65	
ABS+PC	IM	HS					446-554	7-14	4-6			80-100		75	114-127	
ABS+PC	IM	HS	GFIR	10					2.5	101-114	2			156-172		
ABS+PC	IM	HS	GFIR	20					1-4	125-142	2			178-195		
ABS+PC	IM	HS	GFIR	30					1-3	142-182	2			199-230		
ABS+PC	IM	IM					446-535	7-14	4-6			70-80	75-77	122-127		
ABS+PC	IM	IM	GFIR	10					2.5	101-114	2			156-172		
ABS+PC	IM	IM	GFIR	20					1.4	125-142	2			178-195		
ABS+PC	IM	IM	GFIR	30					1.3	142-182	2			199-230		
ABS+PC	IM	IR			7.45		428-540	5.7-16	4-8	64-81	26-100	64-67		95-145	30-40	
ABS+PC	IM	IR	CFN	10				10-20	1.2						110	
ABS+PC	IM	IR	CFN	20				10-20	0.5-1.5						180	
ABS+PC	IM	IR	CFR					10-20	1-2			170		240	115-125	
ABS+PC	IM	IR	CFR	10				10-20	1-2					125		
ABS+PC	IM	IR	CFR	20				10-20	0.5-1					160		
ABS+PC	IM	IR	CFR	30				10-20	0.1-1					200		
ABS+PC	IM	IR	CFR	40				10-20	0.1-0.5					220		
ABS+PC	IM	IR	GFIR	10			15-20		2.5	101-114	2			156-172	70	
ABS+PC	IM	IR	GFIR	15			15-20		2					90		
ABS+PC	IM	IR	GFIR	20			464-536	15-20	1-4	125-142	2		160	178-195	120	
ABS+PC	IM	IR	GFIR	30				15-20	1-3	142-182	2			199-230	140	
ABS+PC	IM	IR	SSF	10				10-20	5-6					40		
ABS+PC	IM	IR	SSF	12				10-20	0.5-1.5					130		
ABS+PC	IM	IR	SSF	15				10-20	4.5-5.5					42		
ABS+PC	IM	IR	SSF	5				10-20	6-7					38		
ABS+PC	IM	IR	SSF	7.5				10-20	5-6					39		
ABS+PC	IM	L					480-500		5-6		35-110	75-86		140		
ABS+PC	IM	LPTFE	GFIR	20				10-20	2					100		
ABS+PC	IM	MR														
ABS+PC	IM	MR	GFIR	10												
ABS+PC	IM	MR	GFIR	20												
ABS+PC	IM	UVS						10-15	6						33	
ABS+PC	SFM				10		525-575		4-6	67	60	84		133	35	
ABS+PC	T				2		464-536		5-7	62	60	78		124		
ABS+PC	T	IR					428-536									
ABS+PVC	EX				1.2-1.5	350-420	360-440					63-65				
ABS+PVC	EXP					390-410	390-410		5	46-58		58-66	64-73	103	33-42	
ABS+PVC	EXS					390-410	390-410		5	58		66	73		42	
ABS+PVC	IM				1.2-1.50	350-420	360-440	10-15	4-25	46-58		58-86	64-145	85-143	27-42	
ABS+PVC	T											47-50		57-77		
ABS+PVC	V											13-50	3	25-77		
ABS+TPU	EXS				25-40		410		5-7	40	180-200	35-39		7-11		
ABS+TPU	IM				25-58		410		5-7	40-51	180-300	35-51		1-11		

Flexural modulus (10 ⁴ psi) (D790)	73
50	3
47-60	1.5
66	2.1
85-90	1.2
107-130	
106	
162	
90	
120	
150	
60	
42	6
40	
40	
36	
38	
71	
119-124	
28	
60	
31	11
56-57	
79-87	
108-118	
31-33	12
56-57	
79-87	
108-118	
28-40	8-
90	
150	
100-110	
110	
200	
230	
260	
56-57	
75	
79-100	
108-130	
55	
120	
57	
45	
50	
33-37	9
95	
34	
40	
33	7
34-35	16
35	
23-40	16
21-27	2
21-29	2
10-15	
5-15	

Compress modulus (10 ⁴ psi) (D895)	Izod impact (D256)				Coefficient of linear thermal expansion, flow (in/in-F) (D896)	Rockwell hardness (D785)	Durometer hardness (scale 1) (D2240)	Specific gravity (sp gr 23/23C) (D792)	Water absorption @ 24 hrs (D570)	Water absorption @ equil (D570)	Dielectric strength (V/mil) (D149)	Supplier
	Flexural modulus (10 ⁴ psi) (D790)	73°F 125in	73°F 25in	40°F 125in								
50	3				33	120	12	0.15	0.32			Dow Plastics
47-60	15-43				22-33	115-120	12	0.15-0.2	0.32-0.6			Bayer AG Bayer Corp Plastics Div Dow Plastics, EniChem Mitsubishi Engineering-Plastics Corp RTP Co
66	21				32	120	12	0.15	0.32			Dow Plastics
85-90	14				12-18	115-117	13-14	0.12-0.2	0.6			Bayer AG Bayer Corp Plastics Div EniChem Mitsubishi Engineering-Plastics Corp RTP Co
107-130					9	116-117	13-15	0.1-0.15				Bayer AG Mitsubishi Engineering Plastics Corp RTP Co
106							14					Ticona
162							15					Ticona
90					20		12-13	0.1				RTP Co
120					18		12-13	0.1				RTP Co
150					16		13-14	0.1				RTP Co
60					22		12	0.1				RTP Co
42	6				35	115	12					Dow Plastics
40							12	0.1				RTP Co
40							13	0.1				RTP Co
36							12	0.1				RTP Co
38							12	0.1				RTP Co
71						77	13					LG Chemical America Inc
119-124						82-83	14					LG Chemical America Inc
28							12	0.2				RTP Co
60							14	0.2				RTP Co
31	11-13	37-11			42		11-13					Daicel (U SA) Inc GE Plastics BV
56-57		11-2			31-34		12-13					Daicel (U SA) Inc
79-87		11-15			19-23		13-14					Daicel (U SA) Inc
108-118		13-15			16-18		14					Daicel (U SA) Inc
31-33	12-13	11			42-44		11					Daicel (U SA) Inc Dow Plastics GE Plastics BV
56-57		11-2			31-34		12-13					Daicel (U SA) Inc Dow Plastics
79-87		11-15			19-23		13-14					Daicel (U SA) Inc
108-118		13-15			16-18		14					Daicel (U SA) Inc
28-40	8-14	26-37	35		35-46	110-122	11-13	0.1-0.2				Ashley Polymers Inc Bayer AG Bayer Corp Plastics Div Daicel (U SA) Inc EniChem GE Plastics BV Nyltex Composites Co Ltd (USA) Polymer Resources Ltd Polymer Technology and Services LLC Polymerland Inc RTP Co Sam Yang Co Ltd
90							13	0.1				RTP Co
150							14	0.1				RTP Co
100-110							12-13	0.1				RTP Co
110							12	0.1				RTP Co
200							13	0.1				RTP Co
230							14	0.1				RTP Co
260							14	0.1				RTP Co
56-57		11-2			31-34	118	12-13	0.1				Daicel (U SA) Inc RTP Co
75						118	13	0.1				RTP Co
79-100		11-15			19-23	118	13-14	0.1				Bayer AG Daicel (U SA) Inc Dow Plastics RTP Co
108-130		13-15			16-18		14	0.1				Daicel (U SA) Inc RTP Co
55							14	0.12				RTP Co
120							14	0.1				RTP Co
57							14	0.12				RTP Co
45							13	0.1				RTP Co
50							13	0.12				RTP Co
33-37	9-19		35			118	11-12	0.12				Michael Day Enterprises
85							14	0.1				RTP Co
												Dow Plastics
												Dow Plastics
												Dow Plastics
												RTP Co
34						116	11	0.15				Dow Plastics
40	10				35	119	12					Dow Plastics
33	7-4				39	115	11	0.15	0.32			Bayer AG Dow Plastics EniChem
												Bayer AG
					52	103-105	12					Shuman Plastics Inc
34-35	6-5		0.8		56	99-102	12					Geon Co Novatec Plastics & Chemicals Co Inc
35						102	12					Novatec Plastics & Chemicals Co Inc
23-40	6-5	22-28	0.8		43-56	99-118	12-14	0.08-0.3				Geon Co Kumho Chemicals Inc Novatec Plastics & Chemicals Co Inc RTP Co Shuman Plastics Inc
21-27	3-7				46	95-98	12					Div
21-29	2-7-7				46	64-98	0.6-1.3					Div
10-15					49-50		11					Dow Plastics
5-15					49-58		11					Dow Plastics