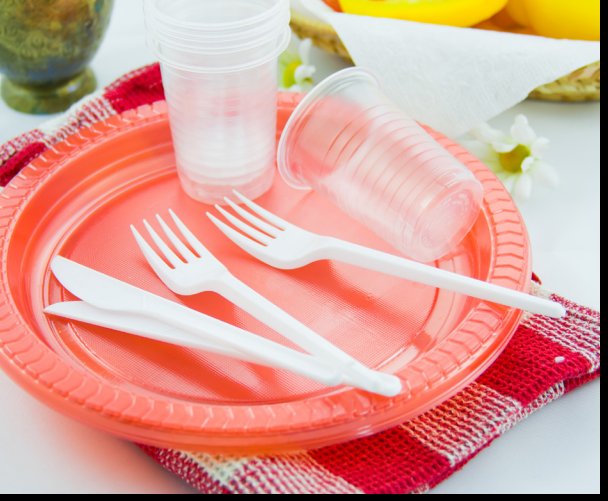

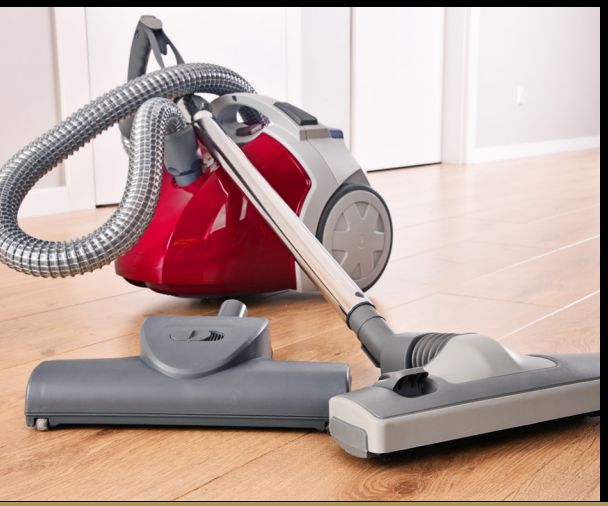

ENTEC

BRAND OVERVIEW

HYRENE®

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HYRENE® BRAND OVERVIEW

Entec Polymers generic prime options for GPPS and HIPS offer a diverse product portfolio along with the quality customer's expect in today's market. Our line card of GPPS and HIPS is shown below. Like other amorphous products, general thermal and mechanical properties vary inversely with melt flow. Lower melt flow offers superior properties but can be more difficult to process in thinner walled injection molded parts.

Grade	Type	Density (g/cc) ASTM D792	MFI (g/10min) ASTM D1238	Tensile Strength (x10^3 psi) ASTM D638	Flex Mod (x10^3 psi) ASTM D790	Izod (ft lb/in) ASTM D256	Vicat (F) ASTM D1525
PS-CRY1.5	GPPS	1.04	1.5	7600	463	<0.5	227
PS-CRY3	GPPS	1.04	3	7250	478	<0.5	224
PS-CRY8	GPPS	1.04	8	6500	492	<0.5	217
PS-CRY14	GPPS	1.04	14	6280	480	<0.5	209
PS-CRY18	GPPS	1.04	18	3200	475	<0.5	207
PS-CRY19	GPPS	1.04	19	6100	471	<0.5	206
PS-HI3/2	HIPS	1.04	3	3400	273	2.4	213
PS-HI3/3	HIPS	1.04	3	2900	239	2.8	211
PS-HI3/4	HIPS	1.04	3	3200	293	3.8	206
PS-HI6/2	HIPS	1.04	6	3800	290	2.2	212
PS-HI8/2	HIPS	1.04	8	3770	288	2.4	212
PS-HI13/2	HIPS	1.04	13	2900	256	2.6	190
PS-HI16/2	HIPS	1.04	16	3630	341	2.1	201
PS-MI 14/1.3	MIPS	1.04	14	3600	370	1.3	200

HYRENE® BRAND OVERVIEW

ADVANTAGES OF GPPS

High Stiffness

Excellent Transparency

Low Melt Viscosity/ Easy Processability

ADVANTAGES OF HIPS

Improved Toughness Compared To PS

Opaque

Low Melt Viscosity/ Easy Processability

DISADVANTAGES OF GPPS

Tends To Be Brittle

Poor Chemical (Hydrocarbon) Resistance

Poor UV Resistance

DISADVANTAGES OF HIPS

Lower Stiffness Than Crystal PS

Poor Chemical (Hydrocarbon) Resistance

Poor UV Resistance

PROCESSING CONDITIONS

		GPPS			HIPS		
MELT INDEX		**1-5**	**5-14**	**15+**	**3-7**	**8-14**	**15+**
Melt	˚F	440	430	420	440	440	430
Nozzle	˚F	440	430	410	440	440	430
Front	˚F	440	430	410	440	440	430
Middle	˚F	430	415	400	430	420	400
Rear	˚F	370 - 380					
Mold Temperature	˚F	90 - 110					
Injection Pressure	PSI x 103	10-12	9-11	8-10	10-12	9-11	8-10
Injection Speed		Fast, >2"/s					
Holding Pressure	PSI x 103	6-8	5-7	4-6	6-8	5-7	4-6
Back Pressure	PSI (min)	25					
Screw Speed	RPM (min)	60					
Cushion	Inches	0.1" - 0.2"					