



















Material Comparison Sheet	HIPS (High Impact Polystyrene)	ABS (Acrylonitrile Butadiene Styrene)	GPPS (General Purpose)	PVC (Polyvinyl Chloride)	PET (Polyethylene Terephthalate)	PETG (Polyethylene Terephthalate Modified)	Ho-PP (Polypropylene Homopolymer)	Co-PP (Polypropylene Copolymer)	HDPE (High Density Polyethylene)
	 PS	 OTHER	 PS	 V	 PETE	 OTHER	 PP	 PP	 HDPE
	Styron 484	Diamond 7500	Styron 666D	kp-TH M 280/14	Wellman 61803	Eastman 6763	INEOS H02C-01	INEOS N02G-00	Total 5502
YIELD									
Specific Gravity/Density g/cm ³ ASTM D792	1.04	1.04	1.04	1.33	1.4	1.27	0.91	0.91	0.955
Material Constant	26.6 in ³ /lb	26.6 in ³ /lb	26.6 in ³ /lb	20.81 in ³ /lb	19.77 in ³ /lb	21.79 in ³ /lb	30.41 in ³ /lb	30.41 in ³ /lb	28.98 in ³ /lb
MECHANICAL PROPERTIES									
Tensile Strength psi @ yield ASTM D638 .2in/min	2,800	6,700	6,500	6,600	8,500	7,500	5,000	3,800	4,000
% Elongation @break ASTM 638 .2in/min	52%	50%	1.6%	180%	300%	400%	10%	500%	600%
Flex Modulus psi ASTM D790	277,000	315,000	457,000		360,000	300,000	237,000	195,000	200,000
TEMPERATURE PROPERTIES									
Melt Flow g/10 min. ASTM D1238 200° C/5 kg	2.8	0.5	8.0				2.2	2.5	0.35
Melt Temperature T _m °F ASTM D3417	Amorphous	Amorphous	Amorphous	Amorphous	464	Amorphous	330	320-329	264
Glass Transition T _g °F	212	212	212	194	158	176	32	-4	-166
Lower Forming Temp. °F	260	260	260	250	250	250	290	290	260
Min/Max Utilization Temp. °F	-22/150	-40/194		-20/140	-9/125 (valid only for formed gauge >10 mil)	-40/125 (valid only for formed gauge >10 mil)	Above freezing/ 220	-10/ 200	-40/150
Impact Strength ft-lb/in@73°F ASTM D256	2.1	7.5	0.3	Notch sensitive	0.75	1.9	0.8	No Break	3
Impact Strength ft-lb/in@ 0°F ASTM D256	1.2	6.5		-22° F ASTM 1790 Cold Break Temp.	0.51	0.7	brittle at cold temperatures (36°F)	1.4	Excellent
Heat Deflection °F @66psi ASTM D648 unannealed	189	176	186	162	149	147	240	200	175-196
APPEARANCE									
Haze ASTM C1003	opaque	opaque	1.00%		0.8%	0.8%	18.5%	11%	opaque
Gloss @45° ASTM D2457	70%	70%		115%	108%	108%			
BARRIER PROPERTIES									
Water Vapor Transmission Rate (WVTR) g/mil100 in ² /24 hrs/atmosphere@ 38° C,90% RH ASTM F1249	6		6	1.3	6	4	0.45	0.6	0.3
Oxygen Transmission Rate (OTR) cc/mil100 in ² /24 hours/atmosphere @23°C ASTM D3985	390		390	8	10	25	240	240	180
THERMOFORMING PROPERTIES									
Mold Shrinkage in/in ASTM D955	.003-.007	.003-.007	.003-.007	.004-.005	.003-.005	.003-.005	.010-.015	.010-.015	.012-.018
Formability 10 is easiest	10	10 If gets wet, must be ground.	5 Cannot be extruded alone.	8 Odor if heat too much. Mineral oils in filter over time.	5 Issues with crystallization.	7	4 Difficult, especially >35 mil due to heat retention, warp, shrinkage	4 Difficult, especially >35 mil due to heat retention, warp, shrinkage	4 Difficult, especially >35 mil due to heat retention, warp, shrinkage
Min/Max Gauge	.010"-.080"	.015"-.080"	cap layer only	.0075"-.035"	.010"-.060"	.010"-.060"	.020"-.080"	.020"-.080"	.020"-.080"
ELECTRICAL PROPERTIES									
Surface Resistivity ohms/sq ASTM D257	>10 ¹³			>10 ¹³		>10 ¹⁶			
FOOD and CHEMICAL CONTACT PROPERTIES									
Microwave/Oven	No	No	No	No	No	No	Yes	Yes	No
Fats, Oils, Grease	No	Not recommended	No	Yes	Good	Good	Yes	Yes	Yes
Acids	Poor	Fair	Poor	Limited	Good. Alcohols are known to cause PET to craze, or develop cracks	Good	Excellent	Excellent	Excellent
Alkalis	Poor	Fair	Poor	Limited	Good. Alcohols are known to cause PET to craze, or develop cracks	Good	Excellent	Excellent	Excellent
FDA Food Contact (Conditions Of Use & Food Types) THIS APPLIES TO THE USA ONLY!	C of U: B-H Foods: All (careful of ESCR and taste/odor)	Not FDA Approved	C of U: B-H Foods: All (careful of ESCR and taste/odor)	Food and Medical Grade available			C of U: B-H Foods: All		C of U: B-H Foods: All (careful of ESCR and taste/odor)

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MEDICAL PROPERTIES									
Drug Master File	No	No	No						Yes
Biocompatibility <small>USP Class VI</small>	No	No	Yes						Yes
Sterilization	ETO, Gamma (discolors material), No steam	No	ETO, Gamma (discolors material), No steam	ETO, Gama (discolors material), E-beam (poor), No steam	ETO, Gamma, & E-Beam	ETO (marginal), Gamma, E-Beam	ETO (tensile decreases)	ETO (tensile decreases)	ETO (tensile decreases), Gamma (yellows)
SEALING PROPERTIES									
Heat Seal	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
RF Seal	No		No	Yes	No	Yes			
Ultrasonic Weld	Yes		Yes	Yes	Yes	Yes			
ENVIRONMENTAL EXPOSURE PROPERTIES									
Flammability <small>UL 94 Classification</small>	HB	HB	HB	Self-extinguishing					HB
Environmental Stress Crack Resistance (ESCR)	Poor	Excellent	Poor	Good			Very Good	Very Good	Excellent