CHEIL Industries Inc.

Technical Data Sheet

SAMSUNG

STAROY® PC/ABS

HP-1000X, HP-1000H, HP-1000B
HP-1001, HR-1008B
HI-1001BN, HI-1001BS, HI-1001BG

Grades & Characteristics of STAROY® PC/ABS

Grades	Characteristics	Applications
HP-1000X	High Flow, High Heat Performance	Automotive (IP Core)
HP-1000H	High Heat Performance, High Impact Strength	Helmet
HP-1000B	High Heat Performance, High Flow	Thin Wall
HP-1001	High Impact Strength, Good Flow, Good Heat Performance	Mobile Phone
HR-1008B	Excellent Flow, Good Heat Performance	Thin Wall, Automotive (Interior)
HI-1001BN	High Flow	Mobile Phone
HI-1001BS	High Flow, High Impact Strength	Metal Plating
HI-1001BG	High Flow	Metal Plating

Physical Properties of STAROY® PC/ABS

	Method (ASTM)	Condition	Unit	HP-1000X	HP-1000H	HP-1000B	HP-1001	HR-1008B	HI-1001BN	HI-1001BS	HI-1001BG
Mechanical Properties											
Tensile Strength	D638	50mm/min	Kgf/cm^2	560	550	560	600	630	580	500	490
Flexural Strength	D790	2.8mm/min	Kgf/cm^2	840	800	810	900	880	850	700	750
Flexural Modulus				24,000	23,000	24,000	25,000	26,000	23,000	23,000	22,000
Rockwell Hardness	D785	R-scale	-	115	111	116	115	114	110	108	105
Izod Impact Strength (1/8 inch)	D256	at 23 °C	Kgf•cm/cm	60	65	55	65	60	60	70	65
		-30°C									
Thermal Properties											
Heat Distortion Temperature	D648	1.82MPa	°C	113	114	117	110	108	100	98	96
Vicat Softening Temperature	D1525	Rate B	°C	130	133	127	122	119	114	106	105
Physical Properties											
Density	D792	at 23 °C	-	1.15	1.14	1.14	1.15	1.13	1.11	1.10	1.09
Melt Flow Index	D1238	250 °C 10Kgf	g/10min	45	15	35	30	60	35	52	50
Mold Shrinkage	D955	-	%	0.5~0.7	0.5~0.7	0.5~0.7	0.5~0.7	0.5~0.7	0.5~0.7	0.5~0.7	0.5~0.7

Grade Network of STAROY® PC/ABS

Cycloy	General					Automotive							Extrusion
	C1000HF	C1110	C1110HF	C1200	C1200HF	MC1300	LG8002	MC8002	IP1000	LG9000	MC9000	MC8800	MC8100
HDT (℃)	99	107	110	113	113	99	104	107	107	107	110	127	104
FM (MPa)	2480	2345	2380	2345	2345	2070	2275	2345	2260	2310	2380	2965	2070
MI (g/10min)	7.0	8.0	12.0	7.0	19.0	14.0	6.5	9.0	14.5	17.0	22.0	10.0	
Density	1.12	1.14	1.14	1.15	1.15	1.10	1.13	1.14	1.13	1.13	1.14	1.22	1.13
	G - Good, M - Medium, LT - Low Temp, H - High, Ex - Excellent, L - Low												
Heat	M	G	G			M	M					H	
Impact	M	LT		LT	LT		LT	LT	LT			LT	LT
Flow	G		G		G	G	G	G	Ex	H	H	M	
Adhesion						G		foam	foam		foam		
Gloss							L			L			
Paintability								OK	OK		OK		OK
Specialty					Magix		UV			UV		GF	aesthetic
Application	Mobile	General	thin wall	small Applian		plating	interior	interior	interior	interior	interior	exterior	interior
				high heat	high heat		unpainted	IP & trim	IP & trim	thin wall	thin wall		
Bayblend (Recycle)	T45, DP T5(	T65 R-T60	T85			2953		T65 R-T60	T65 R-T60		T85	T88-2,4N	KU 1-1446
Staroy	HI-1001BN	HR-1008B	HP-1001	HP-1000H	HP-1000P HP-1000B	HI-1001BS HI-1001BG	X	HR-1008B	HR-1008B	X	HP-1000X	HM series	X
Lupoy	HI-5002A				HF-5000 GP-5006B			HR-5006A HR-5007A	HR-5006A HR-5007A		HR-5007AC	GP-5300	

Pre-drying

Although every STAROY PC/ABS grade is supplied in bags with inner polyethylene liner, pellets absorb moisture in the air like almost thermoplastics, and this can cause the reduction of physical properties. The material should be dried before processing, with minimum drying times being 2 hours in a high-speed dryer or four hours in a drying cabinet at 80℃. The moisture content can be checked by means of open-air shots through the nozzle of the injection cylinder without pressure. The emerging melt strand must be smooth and free of bubbles.

	Drying Condition	
Dryer Type	***Temperature***	***Time***
Air Circulating	80℃	4 ~ 6 HRs
Hopper	80℃	4 ~ 6 HRs
Dehumidifying	80℃	2 ~ 4 HRs

Processing Guide

▸ Injection Unit

A compression ratio of **2.5:1** or less and an open nozzle are recommended. Shut-off nozzles such as valve nozzle and needle nozzle can cause the carbonization and decomposition of the resin resulting in the deterioration of the properties of resin.

▸ Cylinder Temperature

Preferred cylinder temperature range is 200~260℃, and gradual temperature rise in the direction of nozzle is preferred. The melt temperature should be in the range of 240~270℃ to attain optimum properties. Higher melt temperatures may impair the mechanical properties of STAROY PC/ABS.

Cylinder Temperature	Rear	200~230 ℃
	Middle	220~250 ℃
	Front	230~260 ℃
Nozzle Temperature		230~260 ℃
Melt Temperature		240~270 ℃
Mold Temperature		40~80 ℃
Injection Pressure	kgf/㎠	600~1200
Back Pressure	kgf/㎠	10~30
Screw Speed	rpm	40~80
Injection Speed	%	40~80

Dead Space

Check the ring of screw head and nozzle fastening parts. Damaged parts of the screw and barrel can act as dead space for the resin. The resin staying in the dead space can develop black spots or burn streaks. Great care should be taken to eliminate dead space in the injection machine.

Demolding

STAROY PC/ABS is designed to be readily demolded. Only in exceptional cases, however, is the use of a suitable release agent necessary. In view of the large number of release agents on the market, preliminary tests should be carried out under simulated production conditions.

Cleaning the Cylinder

Superficial cleaning is possible by 'purging' with high-viscosity thermoplastics. High density polyethylene (HDPE) resin is very effective for cleaning. Thorough cleaning involves mechanical cleansing and polishing.

Post-molding and Surface Treatment

Post-molding treatment of finished parts or semi-finished products in STAROY PC/ABS can be carried out easily by hand or machine.
Components made of STAROY PC/ABS can be printed or painted, suitable paint systems being marketed by the coatings industry. It is also possible for a film layer to be laminated onto STAROY PC/ABS parts.
Moldings and semi-finished products can be joined by ultrasonic, vibration, friction or heated element butt welding, by revetting or flanging and also by bonding. Suitable one or two-component adhesive systems are commercially available.

Production Stoppages

After running until the injection unit is empty, the cylinder can be cooled to room temperature.