# **EMPILON® HA50**

### Styrene Ethylene Butylene Styrene Block Copolymer

EMPILON

#### Message:

EMPILON® HA series compound are specially designed for over-molding with engineering plastic such as ABS, PC, Nylon, PETG, PBT etc. which are commonly use in the 3C industry (Computer, Communication and Consumer electronics) as well as hand held device products for soft touch, anti-slip & vibration functional purposes. Hydrogenated Styrenic Block Copolymer is the main content of this HA series compound, its hardness range is from Shore A 52 to 77. They can be processed by Double injection and co-extrusion machines or ordinary plastic injection machines with an insert molding process. EMPILON® HA-series compound are non-toxic and free of Pb, Cd, Hg, Cr6+, Sb, As, Ba, Se, halogen and DOP plasticizer, they also comply with the Restriction of the use of certain Hazardous Substance directive in electrical and electronic equipment (RoHS 2002/95/EC) and SONY SS-00259 4th that prohibit products that contain Pb, Cd, Hg, Cr6+, PBB and PBDE etc. They are 100% recyclable and comply with the Waste Electrical and Electronic Equipment directive (WEEE 2002/95/EC).

EMPILON® HA-series compound retain good mechanical properties after heating, weathering and solvent resistance testing and won't hydrolyze in water. They need 80°C ~ 90°C dehumidified hot air at least 2 hours before any molding process and need to be continually dried during operation. The HA series are Opaque or Transparent type in nature. For coloring, please select color master batch based on PE or EVA material with the exception of PVC. Higher screw speed and backpressure are necessary for better colorant dispersion.

General Information			
Features	Block Copolymer		
	Low (to no) lead content		
	Calcium content, low (to none)		
	Recyclable materials		
	Hydrolysis resistance		
	Non-toxic		
	Halogen-free		
	No antimony		
Uses	overmolding		
	Soft touch application		
RoHS Compliance	RoHS compliance		
Forms	Particle		
Processing Method	Co-extrusion molding		
	Injection molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.02	g/cm³	ASTM D792
Melt Mass-Flow Rate (MFR) (200°C/5.0 kg)	5.0	g/10 min	ASTM D1238
Molding Shrinkage <sup>1</sup>			
Flow	1.0	%	
Transverse flow	0.90	%	
Hardness	Nominal Value	Unit	Test Method
Durometer Hardness (Shore A, 10 sec)	52		ASTM D2240
Elastomers	Nominal Value	Unit	Test Method

Tensile Stress (300% Strain)	2.35	MPa	ASTM D412
Tensile Strength	3.24	MPa	ASTM D412
Tensile Elongation (Break)	420	%	ASTM D412
Compression Set (23°C, 70 hr)	32	%	ASTM D395
Aging	Nominal Value	Unit	Test Method
Change in Tensile Strength in Air (125°C, 168 hr)	13	%	ASTM D573
Change in Ultimate Elongation in Air (125°C, 168 hr)	17	%	ASTM D573
Change in Durometer Hardness in Air (Shore A, 125°C, 168 hr)	-3.0		ASTM D573
Thermal	Nominal Value	Unit	
Brittleness Temperature	-40.0	°C	
Additional Information	Nominal Value	Unit	
Adhesion to ABS	2.4	kN/m	
Adhesion to PC	2.4	kN/m	
Screw Speed	Medium		
Injection	Nominal Value	Unit	
Injection Drying Temperature	Nominal Value 80.0 - 90.0	Unit °C	
Injection       Drying Temperature       Drying Time	Nominal Value           80.0 - 90.0           2.0	Unit °C hr	
Injection Drying Temperature Drying Time Rear Temperature	Nominal Value           80.0 - 90.0           2.0           180 - 190	Unit °C hr °C	
InjectionDrying TemperatureDrying TimeRear TemperatureMiddle Temperature	Nominal Value           80.0 - 90.0           2.0           180 - 190           185 - 200	Unit °C hr °C °C	
InjectionDrying TemperatureDrying TimeRear TemperatureMiddle TemperatureFront Temperature	Nominal Value           80.0 - 90.0           2.0           180 - 190           185 - 200           195 - 205	Unit °C °C °C °C	
InjectionDrying TemperatureDrying TimeRear TemperatureMiddle TemperatureFront TemperatureNozzle Temperature	Nominal Value           80.0 - 90.0           2.0           180 - 190           185 - 200           195 - 205           200 - 220	Unit °C hr °C °C °C °C	
InjectionDrying TemperatureDrying TimeRear TemperatureMiddle TemperatureFront TemperatureNozzle TemperatureProcessing (Melt) Temp	Nominal Value           80.0 - 90.0           2.0           180 - 190           185 - 200           195 - 205           200 - 220           190 - 210	Unit °C hr °C °C °C °C °C	
InjectionDrying TemperatureDrying TimeRear TemperatureMiddle TemperatureFront TemperatureNozzle TemperatureProcessing (Melt) TempMold Temperature	Nominal Value           80.0 - 90.0           2.0           180 - 190           185 - 200           195 - 205           200 - 220           190 - 210           40.0 - 50.0	Unit °C hr °C °C °C °C °C	
InjectionDrying TemperatureDrying TimeRear TemperatureMiddle TemperatureFront TemperatureNozzle TemperatureProcessing (Melt) TempMold TemperatureInjection Pressure	Nominal Value           80.0 - 90.0           2.0           180 - 190           185 - 200           195 - 205           200 - 220           190 - 210           40.0 - 50.0           3.43 - 4.90	Unit           °C           hr           °C           °C           °C           °C           °C           NPa	
InjectionDrying TemperatureDrying TimeRear TemperatureMiddle TemperatureFront TemperatureNozzle TemperatureProcessing (Melt) TempMold TemperatureInjection PressureInjection Rate	Nominal Value           80.0 - 90.0           2.0           180 - 190           185 - 200           195 - 205           200 - 220           190 - 210           40.0 - 50.0           3.43 - 4.90           Moderate	Unit           °C           hr           °C           °C           °C           °C           °C           NPa	
InjectionDrying TemperatureDrying TimeRear TemperatureMiddle TemperatureFront TemperatureNozzle TemperatureProcessing (Melt) TempMold TemperatureInjection PressureInjection RateBack Pressure	Nominal Value           80.0 - 90.0           2.0           180 - 190           185 - 200           195 - 205           200 - 220           190 - 210           40.0 - 50.0           3.43 - 4.90           Moderate           0.490 - 0.981	Unit °C hr °C °C °C °C °C MPa MPa	
InjectionDrying TemperatureDrying TimeProing TimeRear TemperatureMiddle TemperatureFront TemperatureNozzle TemperatureProcessing (Melt) TempMold TemperatureInjection PressureInjection RateBack PressureInjection instructions	Nominal Value         80.0 - 90.0         2.0         180 - 190         185 - 200         195 - 205         200 - 220         190 - 210         40.0 - 50.0         3.43 - 4.90         Moderate         0.490 - 0.981	Unit  C Unit  Unit Unit  Mr  C Unit Unit Unit Unit Unit Unit Unit Unit	
InjectionDrying TemperatureDrying TimeRear TemperatureMiddle TemperatureFront TemperatureNozzle TemperatureProcessing (Melt) TempMold TemperatureInjection PressureInjection RateBack PressureInjection instructionsHold Time: 5 sec.Cycle Time: 15~30 sec.	Nominal Value         80.0 - 90.0         2.0         180 - 190         185 - 200         195 - 205         200 - 220         190 - 210         40.0 - 50.0         3.43 - 4.90         Moderate         0.490 - 0.981	Unit  C Unit  Unit Unit Unit Unit Unit Unit Uni	
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