

Styrene methacrylate copolymer



Nippon Steel &  
Sumikin Chemical Co., Ltd.

## TECHNICAL SHEET OF ESTYRENE® MS

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## 1.Introduction of ESTYRENE® MS

ESTYRENE® MS is a styrene(St)-methylmethacrylate(MMA) copolymer designed for replacing a commodity products made of PMMA. ESTYRENE® MS has excellent following appearance:

- 1.Sparkling clarity
- 2.Ease of processing compared with PMMA
- 3.Low water absorption compared with PMMA
- 4.Good weather resistance

ESTYRENE ® is a registered trademark of Nippon Steel Chemical Co., Ltd. .

## 2. Features and application of ESTYRENE® MS

Features of each grade of ESTYRENE® MS are as follows:

- MS-200
- Ease of processing
  - Low moisture , high refractive index
  - Can be blended with K-Resine at any level to  
modify impact strength , flexibility etc.

Application:Optical lens,Electric appliances etc

- MS-600
- Sparkling clarity
  - Good weather resistance
  - Good scratch resistance

Application:Mag cups,housewares,bathroom accessories,lamp  
shald,signbord etc

K-Resin : Trademark of Phillips Chemical Company.

All grades are complied with the self-restrictive standards of Japan hygienic olefin and styrene plastics  
association for food contact application.

### 3. Property data table of ESTYRENE® MS

Test Items	Test Method	Condition	Unit	ESTYRENE	ESTYRENE
				MS-200	MS-600
Izod Impact Strength	ASTM 256	D Thickness 6.4mm notched	Kj/m2 kgf·cm/cm2	1.4 (1.4)	1.4 (1.4)
Flexural Strength	JIS K 7210 [ISO 1133]	3mm/min	MPa kgf/cm2	110 (1,120)	110 (1,120)
Flexural Modulus	ASTM 790	D 3mm/min	MPa kgf/cm2	3,420 (34,900)	3,350 (34,200)
Tensile Strength	ASTM 638	D 5mm/min	MPa kgf/cm2	58.4 (600)	77.1 (790)
Tensile Elongation	ASTM 638	D 5mm/min	%	3.0	4.5
Melt Flow Rate	JIS K 7210 [ISO 1133]	200°C,5kgf	g/10min	1.6	1.0
		230°C,3.8kgf	g/10min	6.0	5.0
Deflection Temperature Under Load	JIS K 7191-2 [ISO 75-2]	120°C 1.80Mpa	°C	79	79
Vicat softening Point.	ASTM 1525	D 120°C/h,5kg	°C	101	103
Rockwell Hardness	JIS 7202	K 60kgf,1/4in	M scale	75	85
Specific Gravity	JIS 7112	K	-	1.08	1.13
Light transmittance	ASTM D1003	4.0mm	%	90	92
Refractive index	ASTM D542		-	1.57	1.53
Water absorption	JIS 7209	K	%	0.10	0.15
Flammability	UL 94		-	HB	HB

1) The above data represent the typical values of our resin performance and are not used as our sales specification or guaranteed values.

#### 4. Typical Processing of ESTYRENE® MS

MS is a low moisture absorption compared with PMMA but pre-drying is recommended.

Molding conditions is as followed as below, but it is of a general nature to serve as a guide, so it is necessary to modify these conditions as experince indicates, depending upon the characteristics of the processing equipment and the mold or die to obtain the desired results.

		MS-200	MS-600
Pre-drying	°C	80	85
	Hrs.	2.0~3.0	3.5~5.0
Cylinder temp.	°C	220~250	220~260
Mold temp.	°C	40~60	40~70
Injection pressure	kg/cm2	400~1,400	600~1,400