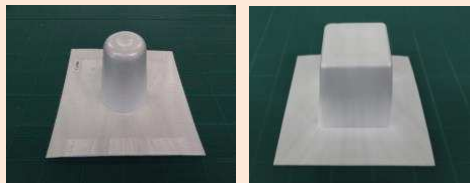


聚苯乙烯的未来

Next Stage of Polystyrene : **PSplus**

〈东洋苯乙烯的高功能性聚苯乙烯产品线〉 <Lineup of Toyo Styrene's High Functional Polystyrene>



冲压实例 Example of Deep Drawing



导光板 Light Guide Plate



热饮杯盖子 Lid for Hot Drink Cup

良好外观 PS

Good Appearance PS

导光板 Light Guide Plate

LED 照明 LED Lighting

标识牌 Signboard

ESCR-HIPS

(Environmental Stress Cracking Resistance)

(耐环境应力聚苯乙烯)

热饮杯盖子 Lids for Hot Drink Cup

油腻食品的包装 Food Packages for Oily Food

PS强度改善 Improvement of Strength

HMT-PS

(High Melt Tension PS)

(高熔融张力聚苯乙烯)

各种食品包装 Various Food Packages

泡沫冲压杯 Foamed Deep Drawing Cups

出色的透明性
Excellent Transparency

发泡PS的优良成型性
Good Moldability for Foamed PS

耐油性
Oil Resistance

常规产品 Conventional GPPS/HIPS

耐热性
Heat Resistance

低残留单体/低聚合物含量
Minimize Residual Monomer/Oligomer

TF-聚合物/TFP

可微波炉加热的食品容器
Microwavable Food Packages

阻燃
Flame Retardant

高纯度GP/HI

High Purity GP/HI

降低成型时的挥发

或减少容器的溶出物质

Reduction of Gas evolution at Molding
or Eluted Materials from Packages

阻燃化PS

Flame Retardant PS

含卤/无卤 Halogenated/Halogen-free

阻燃化PS Flame Retardant Compound PS



午餐盒
Lunch Boxes



“盖饭”包装
Package for "DONBURI"



墨粉盒
Toner Container



配电盘
Distribution Board



低单体残留容器
Packages of Low Volatile Monomer



低低聚物残留容器
Packages of Low Oligomer

在保有聚苯乙烯优点的同时
实现近于丙烯的良好外观



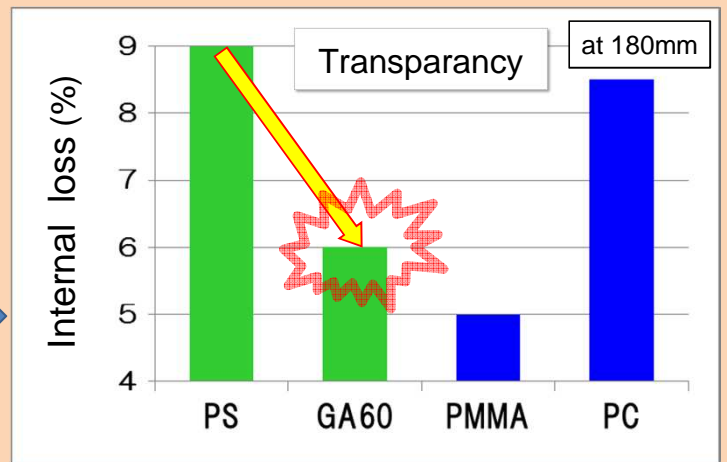
◆ 特性比较 (Property Comparison)

	PS	GA60	PMMA	PC
密度 (Specific gravity)	◎ 优秀	◎ 优秀	△ 一般	△ 一般
耐吸湿性抗变形 (Moisture absorption)	◎ 优秀	◎ 优秀	× 较差	○ 良好
每体积单价 (Price per volume)	◎ 优秀	◎ 优秀	△ 一般	△ 一般
成型性能 (Formability)	◎ 优秀	◎ 优秀	○ 良好	△ 一般
透明度 (Transparency)	○ 良好	◎ 优秀	◎ 优秀	○ 良好
发黄 (Yellowness)	△ 一般	◎ 优秀	◎ 优秀	△ 一般
色相的经时变化 (Aging Yellowing)	○ 良好	◎ 优秀	◎ 优秀	○ 良好
拉伸强度 (Strength)	○ 良好	○ 良好	○ 良好	◎ 优秀

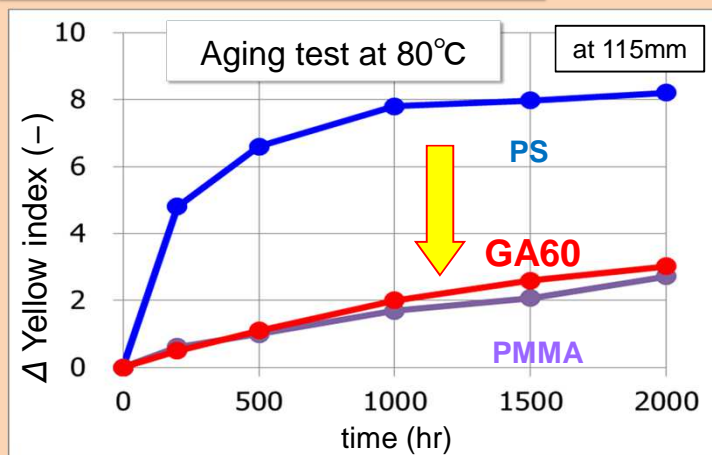
◎:Excellent ○:Good △:Fair ×:Poor

光透过率 (器具内部的光损失)

	Light Path	PS	GA60	PMMA	PC	TFA
Internal Loss (%)	2mm	≒0	≒0	≒0	≒0	≒0
	100mm	5	3	2.5	5	5
	180mm	9	6	5	8.5	8.5



加热到80℃的试验 (发黄的变化)



日常用途 (Applications)

- 导光板等光程较长的光学材料
Light guide plates
- 照明器具
Lightings, Optical Components etc.

HMT-PS使用了我们独有的聚合技术，熔融张力非常高。

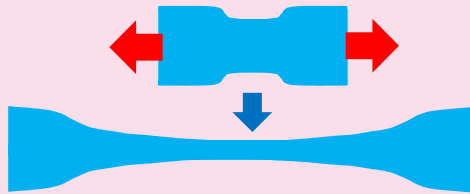
HMT-PS has very high Melt Tension by our own polymerization technology.

是用来制造薄板/薄膜的理想材料。

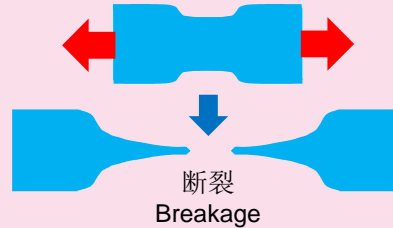
Good material for SHEET/FILM productoin.

HMT-PS的成型产品具有良好的可成型性和厚度均匀性。

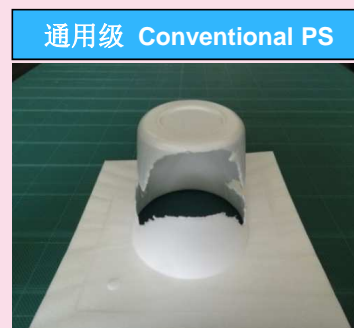
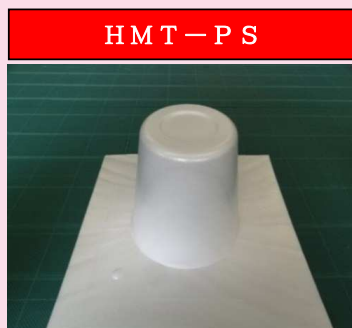
高应变硬化 High strain-Hardening
(HMT-PS)



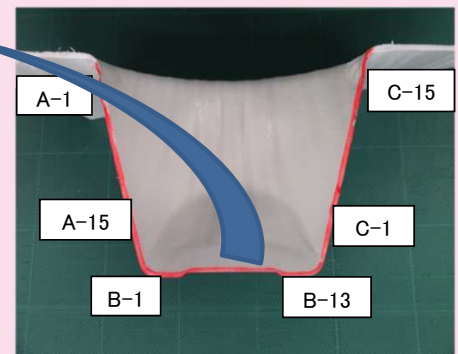
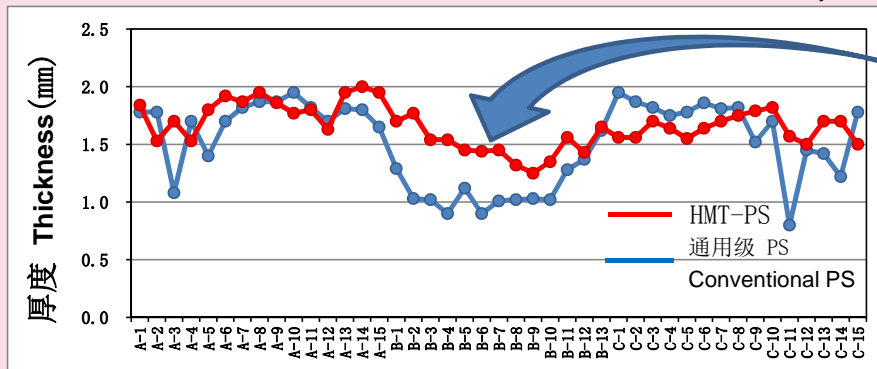
低应变硬化 Low strain-Hardening
(通用级 Conventional PS)



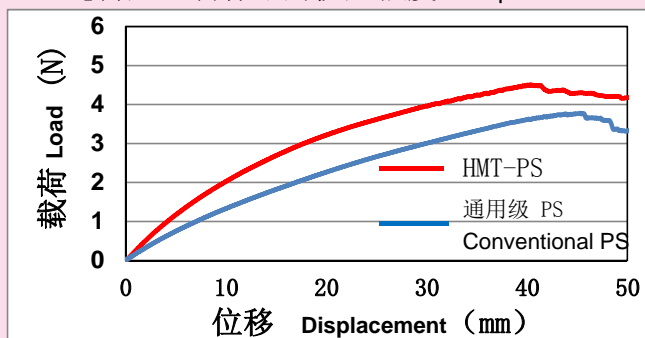
[PSP 成型测试 Forming test]



[食品包装容器厚度均匀性 Food container thickness uniformity]



[食品包装容器的抗压强度 Compression strength of food container]



测量方法
Measuring method



HIPS 聚苯乙烯板成型包装
HIPS sheet formed package



[用途 Application]

- 聚苯乙烯纸 (PSP, 用于食品包装容器的成型膨胀板)
Polystyrene Paper (PSP, Foamed expansion sheet for food container)
- 膨胀聚苯乙烯板 (XPS, 泡沫隔热材料)
Expanded Polystyrene board (XPS, Foamed heat insulation material)
- 双向拉伸聚苯乙烯(BOPS)
Biaxial Oriented Polystyrene(BOPS)
- 注射吹塑成型产品
Injection blow formed productions
- 吹胀膜
Inflation films
- HIPS 聚苯乙烯板成型包装

东洋苯乙烯的阻燃聚苯乙烯的谱系 Flame Retardant Polystyrene

东洋苯乙烯的阻燃PS，是具备确实的阻燃性能的聚苯乙烯。

Toyo Styrene Flame Retardant PS is a polystyrene resin with a certain flame-retardant.

拥有卤化阻燃塑料及非卤化阻燃塑料的各种等级。

By the flame-retardant class, we have not only V-2/V-0 series but also 5VA that is usually difficult in PS systems.

各阻燃级别中除V-2、V-0之外，还有通常PS系难以达到的5VA/5VB。分别被家电、OA设备、住宅设备等依据需求采用。

It has been adopted in response to needs such as consumer electronics, OA equipments and housing equipments.

◆ 代表牌号摘录 Representative grade



液晶电视—后盖 LCD TV-B/C

高强度·热稳定

High Strength and Heat Stability

无卤素型 Non-Halogen :NR5 (5VB)



液晶显示器后盖 LCD

高流动·良耐热

High Flow and Good Heat Resistance

卤素型 Halogen type :FS100S (V-0)

高流动·良耐光

High Flow and Good Light Resistance

卤素型 Halogen type :J2 (V-2)

阻燃聚合塑料 Flame-Retardant Compound Resin

卤素/无卤素阻燃聚合物

Halogen/Non-Halogen type



分电盘 Distribution Board

高循环·高耐热蠕变

High Cycle Molding and High Heat Creep Endurance

卤素型 Halogen type :LH30 (V-2)

无卤素型 Non-Halogen :LX20 (V-2)

热稳定·超耐光

Heat Stability and Super Light Resistance



硒鼓容器 Toner Container

卤素型「ES150」
UL standard "1.5mm/5VA"

世界首例*1) 具备阻燃性能的聚苯乙烯塑料
The world's-first performance*1)

*1) SPS (向规聚苯乙烯) 除外 except for SPS

具备最高级别的阻燃性能 (5VA) 和优异的耐光性，东洋苯乙烯充满信心地阻燃规格 FRPS of the TOYO STYRENE confidence having highest flame retardant performance and superior lightfastness.

【用途示例1】空调电气箱
【example:1】Electrical box for air conditioner

【用途示例2】电表箱
【example:2】Wattmeter box

【用途示例3】复印机
【example:3】Copying Machine



◆ 阻燃母炼胶应用例 FR-PS Masterbatch

名称 Name	使用方法 Direction
阻燃母炼胶 (V-0用) : 溴素系 Flame-retardant MB (V-0) : Halogen type	通过调节阻燃母炼胶的混入比例，和客户指定的任意塑料 (相容系) 相混合，可以达到所希望的阻燃塑料混合物。 Good control for combination ratio between MB & Resin: Enable customer to design FR-HIPS which is suitable for anticipated Flame Retardance by mixed with optional resins. (compatibility is needed)
阻燃母炼胶 (V-2用) : 溴素系 Flame-retardant MB (V-2) : Halogen type	

阻燃-母胶粒 FR-MB
(溴素浓度: x%)
(Bromine contents: x%)

+

—客户选择 Options by Customers—

稀释塑料
Thinner Base Resin
(PS)

可塑化
Plasticization
(挤出、加工)
(Extrusion, Processing)

粒混合比例管理 Ratio between MB & Resin must be controled.

阻燃塑料组成物
Finished FR-HIPS
V-0 or V-2

注) 色相为黑: 可商谈原色供货
※ Color: All color and Black color