

以品质立天下

STAND THE WORLD WITH QUALITY



双象光学材料

Double Elephant Optical Material

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DOUBLE ELEPHANT

产品介绍手册

PRODUCT BROCHURE

光学级聚甲基丙烯酸甲酯树脂 PMMA



双象

双象光学材料

DOUBLE ELEPHANT OPTICAL MATERIAL



2012年

公司成立于2012年
Founded in 2012

30亿元

总投资30亿元
Total investment is RMB 30 billion

20万吨

年产20万吨PMMA
Annual capacity of 200,000 tons

企业简介 COMPANY PROFILE

苏州双象光学材料有限公司成立于2012年, 位于江苏省张家港保税区, 年产能8万吨光学级聚甲基丙烯酸甲酯树脂PMMA。

重庆双象光学材料有限公司成立于2021年, 位于重庆市长寿区, 年产30万吨光学级聚甲基丙烯酸甲酯树脂PMMA和苯乙烯-甲基丙烯酸甲酯树脂MS。

双象光学也提供高性能光学级PMMA, 产品广泛广泛应用于LCD导光板、LED照明器材、光导纤维、飞机座舱玻璃、防弹玻璃、汽车尾灯。

Suzhou Double Elephant Optical Material Co.,Ltd. is located in Zhangjiagang free trade zone, Jiangsu province in year of 2012 with annual production capacity of 80,000 tons. Chongqing Double Elephant Optical Material Co.,Ltd. is located in Changshou District, Chongqing in 2021 with annual production capacity of 300,000 tons of optical-grade PMMA/MS resins. Double Elephant also delivers high-performance optical PMMA resins, which are widely used in LCD light guiding plate, LED lighting equipment, optical fiber, aircraft cockpit glass, bulletproof glass and automotive tail lamps.

以品质立天下 STAND THE WORLD WITH QUALITY

SX-301

流动性好 易于注塑

Good fluidity and easy for injection molding.

适用于造型复杂、成型流动路径长的产品, 如工艺品、复杂形状的日用器具。

Suitable for complicated shape and long molding path, such as handicrafts, packaging boxes, home appliances.



SX-302

流动性中等 较好耐热性 易加工成型

Balanced fluidity, heat resistance, mechanical strength and light transmittance.

适用于注塑成型的餐具、工艺品以及共挤装饰板材料等。

Suitable for simple mold, overlayer of co-extrusion sheets& siding, such as magnifier, nameplate, signs, cup container

SX-304

流动性低, 具有良好注塑成型性能、

耐热性和机械强度, 优异的透光率。

Low fluidity, good injection molding property, heat resistance and mechanical strength, excellent light.

适用于照明灯具、汽车灯具、汽车仪表盘、液晶显示导光板。

Suitable for lighting, automotive lighting, automotive dashboard, LCD light guide plate.





SX-304H

流动性低, 具有良好注塑成型性能、
耐热性和机械强度, 优异的透光率。
Base on SX-304, improve the fluidity.

适用于脱模成型要求高的产品, 如注
塑导光板, 透镜, 反射器等。

Suitable for injection molding lightguide plate,
lens, reflector, etc.



SX-KC-2

高抗冲, 良好的流动性, 高耐候性
High impact resistance, good fluidity,
high weather resistance

适用于汽车灯具、笔、显示面板, 注塑照明
面罩等。

Suitable for car lamps, pens, display panel ,
injection molding lighting masks, etc.

SX-306

具有更低流动性和更好的挤压成型性能。
Lower mobility and better extrusion molding
performance.

适用于薄壁、厚壁挤出照明导光板、扩散
板、液晶显示导光板。

Suitable for thin, thick wall extrusion lighting light
guide plate, diffusion plate, liquid crystal display
light guide plate.



SX-7S

用于注塑光学元件
For injection-molded optical and technical items

用于注塑成型的光学和技术项目。
For injection-molded optical and technical items.



SX-KC-1

高抗冲, 良好的流动性, 高耐候性
High impact resistance, good fluidity,
high weather resistance

适用于汽车灯具、笔、显示面板, 注塑照明
面罩等。

Suitable for car lamps, pens, display panel ,
injection molding lighting masks, etc.



SX-8S

流动性低, 具有良好注塑成型性能、耐热性
和机械强度, 优异的透光率。
Lower mobility and better injection molding
performance.

适用于照明灯具、汽车灯具、汽车仪表盘、
复杂形状的灯具。

Suitable for lighting lamps, automobile lamps,
automobile instrument panels and lamps with
complex shapes.

耐化学药品性 Chemical resistance

| 适用药品 Chemicals which can be used | | 不适用药品 Chemicals which must not be used | |
|---|--------------------------------|--|---|
| 无机盐水溶液 Inorganic salt aqueous solution | 氯化钠 Sodium chloride | 芳香族碳氢化合物 Aromatic hydrocarbons | 苯、甲苯、二甲苯 Benzene, toluene, Xylene |
| 稀酸 Dilute acid | 30%盐酸 30% hydrochloric acid | 酮 Ketone | 丙酮、丁酮 Acetone, butanone |
| 碱 Alkali | 氢氧化钠 Sodium hydroxide | 卤代碳氢化合物 Halogenated hydrocarbons | 三氯甲烷、四氯化碳 Chloroform and carbon tetrachloride |
| 低浓度酒精 Low concentration alcohol | 10%甲醇 10% methanol | 醚 Ether | 乙醚 Ether |
| 脂肪族碳氢化合物 Aliphatic hydrocarbons | 乙烷 Ethane | 酯 Ester | 乙酸乙酯 Ethyl acetate |
| 油脂类 Oil class | 汽油、橄榄油 Gasoline, olive oil | 高强酸 High acid | 35%盐酸、70%硫酸 35% hydrochloric acid 70% sulfuric acid |

挤压成型条件 Extrusion conditions

| 级别 | SX-304 | SX-306 | SX-8S | |
|---------------------------|-------------------|-----------|-----------|-----------|
| 螺杆L/D Screw L/D | 25-35 | 25-35 | 25-35 | |
| 料筒温度 Cylinder temperature | 料斗 Hopper | 200-230°C | 200-230°C | 210-240°C |
| | 中部 In the middle | 220-240°C | 220-240°C | 220-260°C |
| | 模具位置 Die position | 220-240°C | 220-240°C | 220-260°C |
| 模头温度 The die temperature | 220-240°C | 220-240°C | 220-260°C | |



以上条件仅供参考, 具体设定以实际状况为准。
The above conditions are for reference only, specific set will be subject to the actual situation.

注塑成型条件 Injection molding conditions

| 级别 Grade | SX-301 | SX-302 | SX-304/SX-306 /SX-304H | |
|-----------------------------------|------------------|------------------|------------------------|------------------|
| 预干条件 Dry conditions in advance | 70-80°C 4-6hr | 75-85°C 4-6hr | 80-90°C 4-6hr | 80-90°C 4-6hr |
| 料筒温度 Cylinder temperature | 170-240°C | 190-240°C | 210-260°C | 210-260°C |
| 模具温度 Mold temperature | 60-85°C | | | |
| 注塑压力 Injection pressure | 80-140MPa | 80-140MPa | 80-140MPa | 80-140MPa |

退火条件 Annealing conditions

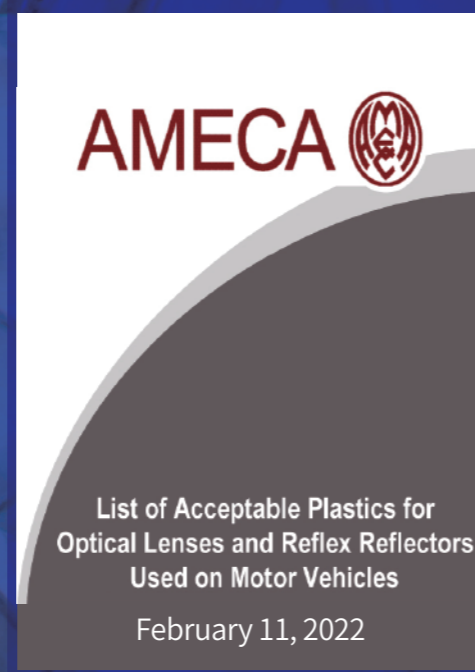
| 级别 Grade | SX-301 | SX-302 | SX-304 / SX-304H / SX-306 | SX-8S |
|--------------------|---------|---------|---------------------------|---------|
| 温度 The temperature | 65-70°C | 70-75°C | 85-90°C | 85-90°C |
| 时间 Time | 1-3hr | 1-3hr | 1-3hr | 1-3hr |



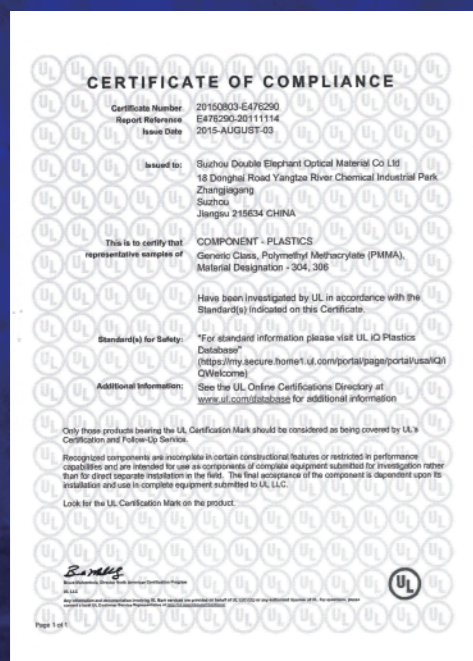
认证证书 APPLICABLE STANDARDS



FDA认证 FDA Certification



AMECA认证标准



UL认证 UL Certification



IATF 16949



实验室
LABORATORY



烘箱室
LAB-BAKING OVEN ROOM



熔指检测仪
Melt flow indexer



滴定仪
TITRATOR



GC气相色谱仪和紫外分光光度计
GAS CHROMATOGRAPH & ULTRAVIOLET SPECTROPHOTOMETER



维卡/热变形温度测试机
HDT/VICAT APPARATUS



台式分光光度仪
HOTOSPECTROMETER COLOREYE



暗房
DARKROOM

Table of Performance Parameters of Each Model

| Items 项目 | Test standards 测试标准 | Unit 单位 | Optical grades 光学级 | | | | | Heat resistance 高耐高温 | | | High impact resistant 高抗冲 | |
|--|---------------------|---------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------|--------------------|--------------------|---------------------------|--------------------|
| | | | SX-301 | SX-302 | SX-304H | SX-305 | SX-306 | SX-304 | SX-7S | SX-8S | SX-KC1 | SX-KC2 |
| Refractive index 折射率 | ISO489 | - | 1.49 | 1.49 | 1.49 | 1.49 | 1.49 | 1.49 | 1.49 | 1.49 | 1.49 | 1.49 |
| Transmittance 透光率 | ISO13468-1 | % | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 90 | 90 |
| Fuzzy Coefficient(Haze) 模糊系数(Haze) | ISO-14782 | % | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | <2 | <2 |
| Coefficient of linear thermal expansion 线膨胀系数 | ISO11359-2 | 1/°C | 7×10^{-5} | 7×10^{-5} | 7×10^{-5} | 7×10^{-5} | 7×10^{-5} | 7×10^{-5} | 7×10^{-5} | 7×10^{-5} | 7×10^{-5} | 7×10^{-5} |
| Vicat Softening temperature(VST) 维卡软化温度(VST) | ISO306 | °C | 89 | 89 | 100 | 105 | 105 | 107 | 106 | 108 | 99 | 99 |
| Load heat distortion temperature 1.82Mpa 1.82MPa负荷热变形温度 | ISO75-2 | °C | 84 | 84 | 94 | 98 | 98 | 100 | 96 | 98 | 92 | 92 |
| 230°C 3.8kg melt flow index 230°C3.8kg熔融流动系数 | ISO1133 | g/10min | 13 | 9.5 | 2.7 | 1.5 | 1.6 | 2.2 | 6.2 | 3.1 | 4 | 3 |
| Tensile modulus 抗拉模量 | ISO527 | Mpa | 3200 | 3200 | 3200 | 3200 | 3300 | 3300 | 3200 | 3300 | 2600 | 2200 |
| Tensile strength 屈服应力 | ISO527 | Mpa | 67 | 70 | 70 | 70 | 74 | 76 | 73 | 77 | 65 | 55 |
| Charpy impact strength Charpy 冲击强度 | ISO179-1 | KJ/m2 | 20 | 20 | 20 | 20 | 25 | 22 | 20 | 20 | 50 | 70 |
| Charpy impact strength(with notch) Charpy冲击强度(带缺口) | ISO179-1 | KJ/m2 | 1.3 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 3 | 4 |
| Density 比重 | ISO1183 | - | 1.19 | 1.19 | 1.19 | 1.19 | 1.19 | 1.19 | 1.19 | 1.19 | 1.17 | 1.16 |
| Water absorption 吸水率 | ISO62 | % | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 |
| Flame retardant 阻燃性 | UL94 | - | HB | HB | HB | HB | HB | HB | HB | HB | HB | HB |
| Rockwell hardness 洛氏硬度 | ISO178 | Mpa | 90 | 93 | 93 | 93 | 98 | 101 | 108 | 105 | 93 | 92 |