



SUMITOMO CHEMICAL SINGAPORE PTE LTD





SUMITOMO CHEMICAL SINGAPORE

The global headquarters and strategic hub for MMA Business (monomer/polymer), **Sumitomo Chemical Singapore (SCS)** is Asia's largest integrated producer of MMA (Methyl Methacrylate) monomer and PMMA (Polymethyl Methacrylate).

Equipped with state-of-the-art production facilities in Jurong Chemical Island, SCS is also strategically positioned with access to one of the world's most efficient port, providing us with a competitive edge to reach out to our valued and potential customers around the world.



SUMIPEX®

SUMIPEX[®] is the registered trademark of Sumitomo Chemical for its PMMA moulding resins, manufactured in Singapore with a 150,000Mt annual production capacity. Sumitomo Chemical is one of the largest PMMA producers in Asia.

PMMA, also commonly known as acrylic, is an engineering plastic widely used in the fields of automotive, housewares, optical lens, extruded sheets, display panels, the manufacturing of light guide panels for LED television, laptop, tablet, monitor, LED Lighting and many other applications. The outstanding characteristics of PMMA have also earned it the title, "Queen of Plastics".



Milestone of SUMIPEX® Production

1999

First PMMA plant with annual production capacity of 25,000mt.

2005

De-bottlenecking of First PMMA plant to 50,000mt.

2008

Second PMMA plant began operation, increasing total annual output to 100,000mt.

2012

Third PMMA plant completed, further increasing total annual production capacity to 150,000mt.

Timeline of MMA & PMMA Capacity





HIGH FLOW AND GENERAL PURPOSE GRADES

PHYSICAL PROPERTIES

| ITEM | | TE | ST METHOD | | HIGH FLOW | GENERAL | |
|------------|--|-------------|-----------------------|-------------------|------------|-----------|---|
| | IIEM | ISO | JIS | UNIT | LG2 & LG2S | LG | |
| | Refractive Index | ISO 489 | JIS K7142 | - | 1.49 | 1.49 | |
| OPTICAL | Total Light Transmission | ISO 13468-1 | JIS K7361-1 | % | 92 | 92 | _ |
| | Haze | ISO 14782 | JIS K7136 | % | <0.5 | <0.5 | _ |
| | Coefficient of Linear Expansion | ISO 11359-2 | JIS K7197 | 1/ °C | 7X10-5 | 7X10⁻⁵ | |
| 100.00 | Vicat Softening Temperature (VST) | ISO 306 | JIS K7206 (B50) | °C | 95 | 96 | _ |
| THERMAL | Deflection Temperature Under Load 1.82 Mpa (annealed) | ISO 75-2 | JIS K7191 (Af method) | °C | 90 | 91 | _ |
| | Melt Flow Rate (MFR) 230 oC, 37.3N (3.8kgf) | ISO 1133 | JIS K7210 | g/10min. | 15 | 10 | |
| | Tensile Strength at break | ISO 527-2 | JIS K7162 | Мра | 68 | 72 | - |
| | Tensile Strain at break | ISO 527-2 | JIS K7162 | % | 2 | 3 | _ |
| MECHANICAL | Flexural Strength | ISO 178 | JIS K7171 | MPa | 110 | 115 | |
| MECHANICAL | Flexural Modulus | ISO 178 | JIS K7171 | MPa | 3000 | 3000 | |
| | Charpy Impact Strength (notched) | ISO 179-1 | JIS K7111 | KJ/m ² | 1.4 | 1.4 | |
| | Rockwell Hardness Scale M | ISO 2039-2 | JIS K7202 | - | 94 | 94 | |
| | Surface Resistivity | IEC 60093 | JIS K6911 | Ω | >1016 | >1016 | |
| | Volume Resistivity | IEC 60093 | JIS K6911 | Ω cm | >1015 | >1015 | |
| ELECTRICAL | Insulation Resistance | IEC 60167 | JIS K6911 | Ω | >1015 | >1015 | |
| | Dielectric Strength | IEC 60243-1 | JIS K6911 | kV/mm | 20 | 20 | _ |
| | Dielectric Constant (1MHz) | IEC 60250 | JIS K6911 | | 3.1 | 3.1 | |
| | Specific Gravity | ISO 1183 | JIS K7112 (A method) | - | 1.19 | 1.19 | - |
| OTUER | Mold Shrinkage | ISO 294-4 | ASTM D-955 | % | 0.2 - 0.6 | 0.2 - 0.6 | R |
| UTHER | Water Absorption | ISO 62 | JIS K7209 | % | 0.3 | 0.3 | 5 |
| | Flammability | | UL 94 | - | HB | HB | - |

* The above data are typical laboratory values and are intended to serve as guides only

RECOMMENDED INJECTION MOULDING CONDITIONS

| | | LG / LG2 / LG2S |
|-----------------------|-----------|-----------------|
| | Temp. °C | 70 - 80 |
| PRE-DRTING CONDITIONS | Time/Hr | 4 - 6 |
| | Front °C | 225 - 245 |
| BARREL TEMP. | Middle °C | 220 - 240 |
| | Back °C | 210 - 220 |
| MOULD TEMP. | °C | 60 - 85 |
| INJECTION PRESSURE | MPa | 140 - 160 |
| HOLD PRESSURE | MPa | 20 - 100 |
| BACK PRESSURE | Gauge MPa | 1.1 - 1.4 |
| SCREW SPEED | rpm | 30 - 70 |
| COOLING TIME | sec. | 20 - 60 |
| | | |

RECOMMENDED ANNEALING CONDITIONS

| | LG / LG2 / LG2S |
|----------|-----------------|
| Temp. °C | 60 - 80 |
| Time/Hr | 4 |

APPLICATION

Used in a wide range of products such as housewares, cosmetic bottles, lens covers for electrical appliances, ornament products and etc.

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HIGH FLOW & GENERA; PURPOSE GRAD

EXTRUSION AND HEAT RESISTANT GRADES

PHYSICAL PROPERTIES

| | | тести | ALTHOD | | EXTRUSION | | |
|------------|--|-------------|--------------------------|-------------------|-----------|-----------|-----------|
| | ITEM | | | UNIT | EATROSION | | |
| | | ISO | SIC | | EX | ME | MH |
| | Refractive Index | ISO 489 | JIS K7142 | - | 1.49 | 1.49 | 1.49 |
| OPTICAL | Total Light Transmission | ISO 13468-1 | JIS K7361-1 | % | 92 | 92 | 92 |
| | Haze | ISO 14782 | JIS K7136 | % | <0.5 | <0.5 | <0.5 |
| | Coefficient of Linear Expansion | ISO 11359-2 | JIS K7197 | 1/ °C | 7X10-5 | 7X10⁻⁵ | 7X10-5 |
| | Vicat Softening Temperature (VST) | ISO 306 | JIS K7206 (B50) | °C | 104 | 108 | 109 |
| THERMAL | Deflection Temperature Under Load 1.82 Mpa (annealed) | ISO 75-2 | JIS K7191 (Af method) | °C | 99 | 99 | 101 |
| | Melt Flow Rate (MFR) 230 oC, 37.3N (3.8kgf) | ISO 1133 | JIS K7210 | g/10min. | 1.5 | 4.2 | 2 |
| | Tensile Strength at break | ISO 527-2 | JIS K7162 | Мра | 74 | 74 76 | |
| | Tensile Strain at break | ISO 527-2 | JIS K7162 | % | 5 | 4 | 4 |
| | Flexural Strength | ISO 178 | JIS K7171 | MPa | 120 | 116 | 120 |
| MECHANICAL | Flexural Modulus | ISO 178 | JIS K7171 | MPa | 3100 | 3100 | 3100 |
| | Charpy Impact Strength (notched) | ISO 179-1 | JIS K7111 | KJ/m ² | 1.4 | 1.4 | 1.4 |
| | Rockwell Hardness Scale M | ISO 2039-2 | JIS K7202 | - | 100 | 95 | 100 |
| | Surface Resistivity | IEC 60093 | JIS K6911 | Ω | >1016 | >1016 | >1016 |
| | Volume Resistivity | IEC 60093 | JIS K6911 | Ω cm | >1015 | >1015 | >1015 |
| ELECTRICAL | Insulation Resistance | IEC 60167 | JIS K6911 | Ω | >1015 | >1015 | >1015 |
| | Dielectric Strength | IEC 60243-1 | JIS K6911 | kV/mm | 20 | 20 | 20 |
| | Dielectric Constant (1MHz) | IEC 60250 | JIS K6911 | - | 3.1 | 3.1 | 3.1 |
| | Specific Gravity | ISO 1183 | JIS K7112 (A method) | - | 1.19 | 1.19 | 1.19 |
| OTHER | Mold Shrinkage | ISO 294-4 | ASTM D-955 | % | 0.2 - 0.6 | 0.2 - 0.6 | 0.2 - 0.6 |
| | Water Absorption | ISO 62 | JIS K7209 | % | 0.3 | 0.3 | 0.3 |
| | Flammability | U | L 94 | - | HB | HB | НВ |

* The above data are typical laboratory values and are intended to serve as guides only

RECOMMENDED INJECTION MOULDING CONDITIONS

| | | MH / ME |
|--------------------|-----------|-----------|
| PRE-DRYING | Temp. °C | 80 - 90 |
| CONDITIONS | Time/Hr | 4 - 6 |
| | Front °C | 240 - 260 |
| BARREL TEMP. | Middle °C | 230 - 260 |
| | Back °C | 220 |
| MOULD TEMP. | °C | 60 - 85 |
| INJECTION PRESSURE | MPa | 140 - 160 |
| HOLD PRESSURE | MPa | 20 - 80 |
| BACK PRESSURE | Gauge MPa | 0.9 - 1.4 |
| SCREW SPEED | rpm | 40 - 60 |
| COOLING TIME | sec. | 20 - 60 |

RECOMMENDED EXTRUSION MOULDING CONDITIONS

| | | EX / MH |
|-------------------|-------------|-----------|
| SCREW L/D | | 30 - 35 |
| CYLINDER TEMP. °C | Hopper Side | 200 - 210 |
| | Center Side | 230 - 240 |
| | Die Side | 240 - 245 |
| DIE TEMP. °C | | 235 - 245 |

RECOMMENDED ANNEALING CONDITIONS

| | EX / MH / ME |
|----------|--------------|
| Temp. °C | 75 - 85 |
| Time/Hr | 4 |



APPLICATION

Widely used in the automotive industry for rear tail lamps and speedometer covers. Also used for optical (sunglasses and reading glasses) lens, extrusion sheets for the manufacturing of signages and displays, sound barriers, construction applications and light guide panels for general LED lightings.

OPTICAL GRADES

PHYSICAL PROPERTIES

| ltom | | Test N | lethod | l la it | Optical | | | | | |
|------------|---|-------------|--------------------------|----------|--------------------|--------------------|--------------------|--------------------|--------------------|--|
| | item | ISO | JIS | Unit | MHN | EXN | MG5 | MGSS | MGSV | |
| | Refractive Index | ISO 489 | JIS K7142 | - | 1.49 | 1.49 | 1.49 | 1.49 | 1.49 | |
| OPTICAL | Total Light Transmission | ISO 13468-1 | JIS K7361-1 | % | 92 | 92 | 92 | 92 | 92 | |
| | Haze | ISO 14782 | JIS K7136 | % | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | |
| | Coefficient of Linear Expansion | ISO 11359-2 | JIS K7197 | 1/ °C | 7x10 ⁻⁵ | |
| | Vicat Softening Temperature (VST) | ISO 306 | JIS K7206 (B50) | °C | 109 | 104 | 106 | 106 | 103 | |
| THERMAL | Deflection Temperature Under Load 1.82 Mpa (annealed) | ISO 75-2 | JIS K7191 (Af method) | °C | 101 | 99 | 99 | 96 | 92 | |
| | Melt Flow Rate (MFR) 230 oC, 37.3N (3.8kgf) | ISO 1133 | JIS K7210 | g/10min. | 2.5 | 1.5 | 5 | 11 | 20 | |
| | Tensile Strength at break | ISO 527-2 | JIS K7162 | Мра | 76 | 74 | 75 | 73 | 70 | |
| | Tensile Strain at break | ISO 527-2 | JIS K7162 | % | 4 | 5 | 3 | 2 | 2 | |
| | Flexural Strength | ISO 178 | JIS K7171 | MPa | 120 | 120 | 115 | 94 | 94 | |
| MECHANICAL | Flexural Modulus | ISO 178 | JIS K7171 | MPa | 3100 | 3100 | 3100 | 3100 | 3100 | |
| | Charpy Impact Strength (notched) | ISO 179-1 | JIS K7111 | KJ/m² | 1.4 | 1.4 | 1.4 | 1.3 | 1.1 | |
| | Rockwell Hardness Scale M | ISO 2039-2 | JIS K7202 | - | 100 | 100 | 95 | 95 | 95 | |
| | Surface Resistivity | IEC 60093 | JIS K6911 | Ω | >1016 | >1016 | >1016 | >1016 | >1016 | |
| | Volume Resistivity | IEC 60093 | JIS K6911 | Ω cm | >1015 | >1015 | >1015 | >1015 | >1015 | |
| ELECTRICAL | Insulation Resistance | IEC 60167 | JIS K6911 | Ω | >1015 | >1015 | >1015 | >1015 | >1015 | |
| | Dielectric Strength | IEC 60243-1 | JIS K6911 | kV/mm | 20 | 20 | 20 | 20 | 20 | |
| | Dielectric Constant (1MHz) | IEC 60250 | JIS K6911 | - | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | |
| | Specific Gravity | ISO 1183 | JIS K7112 (A method) | - | 1.19 | 1.19 | 1.19 | 1.19 | 1.19 | |
| OTHER | Mold Shrinkage | ISO 294-4 | ASTM D-955 | % | 0.2 - 0.6 | 0.2 - 0.6 | 0.2 - 0.6 | 0.2 - 0.6 | 0.2 - 0.6 | |
| | Water Absorption | ISO 62 | JIS K7209 | % | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | |
| | Flammability | UL | 94 | - | HB | HB | HB | HB | HB | |

* The above data are typical laboratory values and are intended to serve as guides only

RECOMMENDED INJECTION MOULDING CONDITIONS

| | | MGSS | MGSV | MG5 |
|--------------------|-----------|-----------|-----------|-----------|
| PRE-DRYING | Temp. ∘C | 80 - 85 | 70 - 80 | 80 - 90 |
| CONDITIONS | Time/Hr | 4 - 6 | 4 - 6 | 4 - 6 |
| | Front °C | 220 - 235 | 225 - 245 | 240 - 260 |
| BARREL TEMP. | Middle °C | 215 - 225 | 220 - 240 | 230 - 260 |
| | Back °C | 210 | 210 - 220 | 220 |
| MOULD TEMP. | °C | 60 - 85 | 60 - 85 | 60 - 85 |
| INJECTION PRESSURE | MPa | 140 - 160 | 140 - 160 | 140 - 160 |
| HOLD PRESSURE | MPa | 20 - 80 | 20 - 100 | 20 - 80 |
| BACK PRESSURE | Gauge MPa | 0.9 - 1.4 | 1.1 - 1.4 | 0.9 - 1.4 |
| SCREW SPEED | Rpm | 40 - 60 | 30 - 70 | 40 - 60 |
| COOLING TIME | Sec. | 20 - 60 | 20 - 60 | 20 - 60 |
| | | | | |

RECOMMENDED

EXTRUSION MOULDING CONDITIONS

| | | EXN / MHN |
|-------------------|-------------|-----------|
| SCREW L/D | 30 - 35 | |
| | Hopper Side | 200 - 210 |
| CYLINDER TEMP. °C | Center Side | 230 - 240 |
| | Die Side | 240 - 245 |
| DIE TEMP. °C | | 235 - 245 |

RECOMMENDED ANNEALING CONDITIONS

| | MHN / EXN / MG5 / MGSS / MGSV |
|----------|-------------------------------|
| Temp. °C | 75 - 85 |
| Time/Hr | 4 |

APPLICATION

Most commonly use material in the production of light guide panels for electronic displays such as LED televisions, monitors, notebooks and tablets.



SPECIAL GRADES

PHYSICAL PROPERTIES

| l to m | | Test N | Test Method | | Chemical Resistance | | |
|-------------|--|-------------|--------------------------|-------------------|---------------------|--|--|
| | Item | ISO | JIS | Unit | EP | | |
| | Refractive Index | ISO 489 | JIS K7142 | - | 1.49 | | |
| OPTICAL | Total Light Transmission | ISO 13468-1 | JIS K7361-1 | % | 92 | | |
| | Haze | ISO 14782 | JIS K7136 | % | <0.5 | | |
| | Coefficient of Linear Expansion | ISO 11359-2 | JIS K7197 | 1/ °C | 7x10 ⁻⁵ | | |
| THERMAL | Vicat Softening Temperature (VST) | ISO 306 | JIS K7206 (B50) | °C | 109 | | |
| THERWAL | Deflection Temperature Under Load 1.82 Mpa (annealed) | ISO 75-2 | JIS K7191 (Af method) | °C | 101 | | |
| | Melt Flow Rate (MFR) 230°C, 37.3N (3.8kgf) | ISO 1133 | JIS K7210 | g/10min. | 0.7 | | |
| | Tensile Strength at break | ISO 527-2 | JIS K7162 | Мра | 76 | | |
| | Tensile Strain at break | ISO 527-2 | JIS K7162 | % | 4 | | |
| MECHANICAL | Flexural Strength | ISO 178 | JIS K7171 | MPa | 120 | | |
| WIECHANICAL | Flexural Modulus | ISO 178 | JIS K7171 | MPa | 3100 | | |
| | Charpy Impact Strength (notched) | ISO 179-1 | JIS K7111 | KJ/m ² | 1.3 | | |
| | Rockwell Hardness Scale M | ISO 2039-2 | JIS K7202 | | 100 | | |
| | Surface Resistivity | IEC 60093 | JIS K6911 | Ω | >1016 | | |
| | Volume Resistivity | IEC 60093 | JIS K6911 | Ωcm | >1015 | | |
| ELECTRICAL | Insulation Resistance | IEC 60167 | JIS K6911 | Ω | >1015 | | |
| | Dielectric Strength | IEC 60243-1 | JIS K6911 | kV/mm | 20 | | |
| | Dielectric Constant (1MHz) | IEC 60250 | JIS K6911 | | 3.1 | | |
| | Specific Gravity | ISO 1183 | JIS K7112 (A method) | 3- | 1.19 | | |
| OTHER | Mold Shrinkage | ISO 294-4 | ASTM D-955 | % | 0.2 - 0.6 | | |
| | Water Absorption | ISO 62 | JIS K7209 | % | 0.3 | | |
| | Flammability | UL | 94 | | HB | | |

* The above data are typical laboratory values and are intended to serve as guides only

RECOMMENDED INJECTION MOULDING CONDITIONS

| | | EP |
|--------------------------|-----------|-----------|
| PRE-DRYING CONDITIONS | Temp. °C | 80 - 90 |
| | Time/Hr | 4 - 6 |
| BARREL TEMP. | Front °C | 240 - 260 |
| | Middle °C | 230 - 260 |
| | Back °C | 220 |
| MOULD TEMP. | °C | 60 - 85 |
| INJECTION PRESSURE | MPa | 140 - 160 |
| HOLD PRESSURE | MPa | 20 - 80 |
| BACK PRESSURE | Gauge MPa | 0.9 - 1.4 |
| SCREW SPEED | Rpm | 40 - 60 |
| COOLING TIME | Sec. | 20 - 60 |

RECOMMENDED EXTRUSION MOULDING CONDITIONS

| | | EP |
|-------------------|-------------|-----------|
| SCREW L/D | | 30 - 35 |
| CYLINDER TEMP. °C | Hopper Side | 200 - 210 |
| | Center Side | 230 - 240 |
| | Die Side | 240 - 245 |
| DIE TEMP. °C | | 235 - 245 |

RECOMMENDED

ANNEALING CONDITIONS

| | EP |
|----------|---------|
| Temp. °C | 75 - 85 |
| Time/Hr | 4 |

Introduction and Application Of EP Grade

A grade with unique characteristics. Though EP grade has a lower melt flow rate compare to typical PMMA grades but it has a higher spiral flow length, meaning that it is ideal for both injection and extrusion usage. To add on, this grade has stronger chemical resistance in comparison to typical PMMA grades, hence, it is use widely in the automotive industry for the manufacturing of rear tail lamps and for applications which requires higher chemical resistance, such as cosmetic bottles and containers.

Comparison of Spiral Flow Length



Cylinder Temperature(°C)

Comparison of Chemical Resistance



COMPARISON

SUMIPEX® WITH OTHER TRANSPARENT RESINS

Total Light Transmission



Weather Resistance



Rockwell Hardness (ISO-2039-2)



CHEMICAL RESISTANCE

| Suitable for SUMIPEX® | Unsuitable for SUMIPEX® | |
|---|---|--|
| Aliphatic Hydrocarbon | Chlorinated Aliphatic Hydrocarbon | |
| Oils and Fats | Aromatic Hydrocarbon | |
| Inorganic Salt Solution | Alicyclic Hydrocarbon | |
| Gas | Ketone | |
| Dilute Acid | Alcohol | |
| Alkali | Ether | |
| Dilute Alcohol | Ester | |
| Antifreeze Liquid | Methlene Chloride, Chloroform, Carbon Tetrachloride | |
| Paraffin, Hexane | Benzene, Toulene, Xylene | |
| Turpentine Oil, Olive Oil | Cyclohexane | |
| Salt Water | Acetone, MEK | |
| Oxygen, Nitrogen, Carbon Dioxide | Methyl Alcohol | |
| Dilute Hydrochloric Acid, 30% Sulfuric Acid | Diethyl Ether | |
| Sodium Carbonate, Sodium Hydroxide | Plasticizer (DOP, DBP, ETC), Ethyl Acetate | |
| 10% Methyl Alcohol | | |
| Ethylene Glycol | | |

* This list may not be exhaustible and is intended to serve as a general guideline only.

AUTHORISED STANDARDS

The below standards/certifications has been tested on specific Sumipex® grades only.

- UL Standard
- RoHs (Restriction of Use of Hazardous Substances) [Directive 2002/95/EC]
- With reference to U.S. 21 CFR Food and Drug Administration (Part 177.1010 Clause B)
- Automotive Safety Standard (FMVSS) [USA]
- AMECA [MH and ME grade for clear, red, yellow, gray and brown]

* Please refer to AMECA list for more details

UL: Underwriters Laboratories FMVSS: Federal Motor Vehicle Safety Standard SAE: Society of Automotive Engineers, Inc.

TYPES OF PACKAGING



25KG Paper Bag & Resin Bag







19,000KG Seabulk Bag

IMPORTANT NOTES WHEN USING SUMIPEX®

TO ACHIEVE OPTIMAL QUALITY IN MOULDED PRODUCTS, PLEASE TAKE NOTE OF THE FOLLOWING.

Dust Prevention

- Handle SUMIPEX[®] in a clean/dust-free environment.
- When opening bag, take special care to prevent foreign matters from entering the bag.

Contamination Prevention

• All equipments and parts (E.g. hopper, dryer, barrel, screw, nozzle and etc.) should be thoroughly cleaned before coming into contact with SUMIPEX[®].

Moisture Prevention

• SUMIPEX[®] should be stored in a dry environment.

HANDLING AND STORAGE

SUMIPEX[®] is a thermoplastic, and is flammable and soluble in organic solvents. Before using SUMIPEX[®], please refer to the Safety Data Sheet (SDS) separately prepared by us. The following information are general precautions and guidelines in the handling and storage of SUMIPEX[®].

Health and Safety

During the operations of drying and processing of SUMIPEX[®], local exhaust ventilation and personal protective equipments (eye goggle, gloves, respirator and etc.) are necessary.

- SUMIPEX[®] releases gases due to drying, melting and thermal decomposition. Avoid inhaling and contact with eyes and skin.
- Do not touch hot resin directly
- If feeling unwell due to inhalation, rest in a well-ventilated place and if necessary, consult a doctor.

Flammability

Do not use/place SUMIPEX[®] near flames and other sources of ignition.

- SUMIPEX[®] is flammable. Should it catch fire, toxic gases containing Carbon Monoxide can be generated due to incomplete combustion.
- In case of fire, use water, carbon dioxide or foam/powder extinguishing media to put out the fire.

Disposal

For disposal of SUMIPEX[®], engage an authorised contractor or consult the relevant local government agencies. Disposal should be conducted in accordance with state and local regulations.

Storage

- SUMIPEX[®] should be stored in accordance with state and local regulations.
- In case of spillage, remove pellets immediately to prevent potential slipping hazard.
- SUMIPEX[®] should be kept away from direct sunlight, water and moisture and be stored at ambient temperature.

Others

All technical information and data in this brochure are believed to be accurate and reliable. However, we do not guarantee results, freedom from patent infringement, or suitability of our products for any resultant application.

* This information is prepared based on the materials, information and data currently available to us. Revisions will be made when new knowledge or information is obtained.

NOTES

NOTES







ISO 9001:2008 Certificate No.: SNG 0160221



ISO 14001:2004 Certificate No.: SNG 0190095

