# Performance Coatings

The Coatings & Engineering Materials Division provides a wide variety of products, and meets our customers’ individual needs.

## Industrial Materials Dept.

<table>
<thead>
<tr>
<th>Products</th>
<th>Resin type</th>
<th>Main Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-VAN™</td>
<td>Amino resin</td>
<td>Hardener of automotive paint (body coating), PCM (electronic appliances and architecture), baking paint for metal substrate (cell-phone etc.)</td>
</tr>
<tr>
<td>ALMATEX™</td>
<td>Acrylic resin</td>
<td>PCM coating (electronic appliances and architecture), automotive paint, baking paint for metal substrate, architectural paint</td>
</tr>
<tr>
<td></td>
<td>Water-base acrylic resin</td>
<td>Architectural paint</td>
</tr>
<tr>
<td>OLESTER™</td>
<td>Acrylic polyol, Polyester polyol</td>
<td>Woodwork paint (architecture), paint for plastic substrate (electronic appliances and architecture), paint for metal substrate (electronic appliances and architecture), inorganic paint for architectural surfaces</td>
</tr>
<tr>
<td></td>
<td>UV curable resin (urethane acrylate, acrylic acrylate)</td>
<td>Primer for plastics and metals, base coating, hard coating (cell-phone, digital camera, PC etc.)</td>
</tr>
<tr>
<td>EPOKEY™</td>
<td>Modified epoxy resin</td>
<td>Baking primer for metal substrate (information devices, PCM, etc.), air drying primer for metal substrate (heavy-duty coating, etc.)</td>
</tr>
<tr>
<td>BONRON™</td>
<td>Water-base acrylic resin</td>
<td>Paper processing, impregnant for masking tape, thermal paper binder</td>
</tr>
<tr>
<td>BARIASTAR™</td>
<td>Water-base acrylic resin</td>
<td>Thermal paper overcoat</td>
</tr>
<tr>
<td>CHEMIPEARL™</td>
<td>Water-base polyolefin resin</td>
<td>Water-base rub-off agent for ink, additive for paint, heat seal agent, anti-blocking</td>
</tr>
<tr>
<td>UNISTOLE™</td>
<td>Polyolefin resin</td>
<td>Primer for polyolefin paint and adhesion, heat seal agent for polyolefin and metals</td>
</tr>
</tbody>
</table>

## Specialty Additives Dept.

<table>
<thead>
<tr>
<th>Products</th>
<th>Resin type</th>
<th>Main Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>HI-WAX™</td>
<td>Low molecular weight polyolefin</td>
<td>Slip agent, dispersant, modifier and release agent for engineering plastics, release agent for toner, additives for ink and paint, textile treatment</td>
</tr>
<tr>
<td>EXCEREX™</td>
<td>Low molecular weight polyolefin</td>
<td>Processing aid for film, sheet and injection molding, civil engineering, ink and paint modifier</td>
</tr>
</tbody>
</table>

## Polyurethane Coating Materials Dept.

<table>
<thead>
<tr>
<th>Products</th>
<th>Resin type</th>
<th>Main Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKENATE™  D-, E-, N-, WD-series</td>
<td>Polyisocyanate</td>
<td>Polyurethane curing agent for paint (automobiles, electronic appliances, woodwork, architecture and PCM, ink, adhesive)</td>
</tr>
<tr>
<td>TAELAC™ W-, WD-, WP6-, E-series</td>
<td>Water-base/solvent polyurethane resin</td>
<td>Polyurethane resin for paint (automobiles, electronic appliances, architecture and textile), ink, adhesive</td>
</tr>
<tr>
<td>MT-OLESTER™</td>
<td>Polyurethane resin (moisture cured type, urethane lacquer)</td>
<td>Urethane coating resin for single component system (woodwork, electronic materials and linoleum)</td>
</tr>
<tr>
<td>XDI [TAKENATE™ 500]</td>
<td>Xylylene Disocyanate</td>
<td>Isocyanate monomer (raw materials of polyurethane resin)</td>
</tr>
<tr>
<td>HJXDI™ [TAKENATE™ 600]</td>
<td>1,3-Bis (isocyanatomethyl) cyclotrioxane</td>
<td>Isocyanate monomer (raw materials of polyurethane resin)</td>
</tr>
</tbody>
</table>

## Polyurethane Elastomers Dept.

<table>
<thead>
<tr>
<th>Products</th>
<th>Resin type</th>
<th>Main Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKENATE™ L-series (for casting/architecture) F-series (for architecture)</td>
<td>Isocyanate terminated urethane resin</td>
<td>Prepolymer for civil engineering and architecture, castable polyurethane prepolymer</td>
</tr>
<tr>
<td>HIPRENE™ L-, AX-series (for architecture) XL-, AX-series (for architecture)</td>
<td>Isocyanate terminated urethane resin</td>
<td>Prepolymer for civil engineering and architecture, castable polyurethane prepolymer</td>
</tr>
<tr>
<td>TAKELAC™ P-, XL-series (for architecture)</td>
<td>Hydroxyl terminated urethane resin compound</td>
<td>Compound for civil engineering and architecture use</td>
</tr>
</tbody>
</table>

## Adhesives Dept.

<table>
<thead>
<tr>
<th>Products</th>
<th>Resin type</th>
<th>Main Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKELAC™ A-series</td>
<td>Polyether Polyol, Polyester Polyol</td>
<td>Adhesive for packaging films (anchorcoat agent for dry-lamination, non-solvent lamination and extrusion lamination)</td>
</tr>
<tr>
<td>TAKENATE™ A-series</td>
<td>Polyisocyanate</td>
<td>Hardener of adhesive for packaging films (anchorcoat agent for dry-lamination, non-solvent lamination and extrusion lamination)</td>
</tr>
<tr>
<td>STRUCT BOND™</td>
<td>Epoxy Resin, Acrylic Resin</td>
<td>Sealant for LCD</td>
</tr>
<tr>
<td>FTR™</td>
<td>Aromatic hydrocarbon resin</td>
<td>Hot-melt adhesive, acrylic pressure-sensitive adhesive, tackifier</td>
</tr>
</tbody>
</table>
Mitsui Chemicals offers advanced coating materials such as metal and plastic coating, bonding material of metal and plastics, etc. Moreover, we develop many kinds of environment-related products.

### Automobiles
- **Interior**
  - TAKELAC™ (urethane resin)
  - TAKENATE™ (hardener)
- **Body coating**
  - UNISTOLE™ (vinyl chloride and metal adhesive)
- **Metal long life parts**
  - OLESTER™ (Acrylic polyol)
  - TAKENATE™ (hardener)
- **Bumper**
  - UNISTOLE™ (solvent base primer)
  - U-VAN™ (hardener)
- **AI wheel coating**
  - ALMATEX™ (Powder coating)
- **Under coating**
  - TAKENATE™ (high adhesion)

### Information Devices, Electronic Appliances and Solar Cells
- **Plastic parts (housing)**
  - OLESTER™ (UV cured, acrylic polyol)
  - TAKELAC™ (hard coating)
  - TAKENATE™ (hardener)
  - HI+VAX™ (Modifier and release agent for engineering plastics)
- **Mg alloy parts (housing)**
  - ALMATEX™ (Acrylic resin)
  - U-VAN™ (hardener)
  - OLESTER™ (Acrylic polyol)
  - EPOKEY™ (Modified epoxy)
  - TAKENATE™ (hardener)
- **Metal vapor deposition parts**
  - OLESTER™ (UV primer for metal vapor deposition parts and metal substrates, hard coating)
  - TAKENATE™ (hardener)
  - HI+VAX™ (modifier and release agent for LCD)
- **Door panel and rear view mirror**
  - TAKELAC™ A
  - TAKENATE™ A (Adhesive)
  - TAKENATE™ D (Hardener)
  - TAKENATE™ W (Primer)
- **Cell coating (PCBM)**
  - ALMATEX™ (Acrylic resin)
  - U-VAN™ (Hardener)
  - EPOKEY™ (Modified epoxy)

### Architecture, Paper, Film, Ink
- **Paint for woodwork**
  - OLESTER™ (Acrylic polyol)
  - MT-OLESTER™ (Modifed cured)
  - TAKENATE™ (Urethane resin)
- **Paint for construction use**
  - ALMATEX™ (Acrylic resin)
  - OLESTER™ (Acrylic polyol)
  - TAKELAC™ (Urethane resin)
- **Thermal paper**
  - BARISTAR™ (Binder, overcoat)
  - DI-EPMFLAIR™ (Anti-sticking)
- **Base paper for decorative laminates**
  - DI-EPMFLAIR™ (Water-base acrylic resin)
  - ALMATEX™ (Water-base acrylic resin)
- **Film coating**
  - TAKELAC™ (Wax, glass barrier coating)
- **Ink additive**
  - DI-EPMFLAIR™ (Rub-off agent)
  - HI+VAX™ (Rub-off agent)

### Example of Coating using our Division’s Products
- **Automobile exterior (car body)**
  - ALMATEX™
  - U-VAN™
  - TAKENATE™
- **Smartphone・Cell-phone (housing and screen)**
  - OLESTER™ A
  - TAKENATE™ A
  - TAKENATE™
- **Thermal paper (POS label)**
  - BARISTAR™
  - BARIFONE™
- **Gas barrier film (food package)**
  - OLESTER™ A
  - TAKENATE™ A
  - TAKENATE™
- **Flexographic ink (cardboard box)**
  - WAX particle
  - CHEMFLAIR™
- **Adhesive for films (food package)**
  - TAKENATE™ A
  - TAKENATE™ A

Color codes (●) indicate our division’s products.

- **Features**
  - *Higher adhesion* • *Toughness*
  - *Flexibility* • *Water resistance*
  - *Solvent resistance* • *Plasticizer resistance* • *Heat resistance* • *Water resistance* • *Brightness* • *Chemical resistance*
### Adhesives

**Mitsui Chemicals** contributes to various adhesives and bonding materials with functional, safety, and health considerations based on polyurethane and oligomer technology.

<table>
<thead>
<tr>
<th>Type</th>
<th>Features</th>
<th>Applications</th>
</tr>
</thead>
</table>
| **TAKELAC™** | - Adhesive interpenetration of polyurethane with metals  
- Low-temperature heat sealing | - Packaging adhesive  
- Polyethylene terephthalate (PET)  
- Polyethylene (PE)  
- Polypropylene (PP)  
- styrene-butadiene rubber (SBR) |
| **TAKENATE™** | - Adhesive interpenetration of polyurethane with metals  
- Low-temperature heat sealing | - Packaging adhesive  
- Polyethylene terephthalate (PET)  
- Polyethylene (PE)  
- Polypropylene (PP)  
- styrene-butadiene rubber (SBR) |
| **HIPRENE™**  | - Soft-grip performance  
- Crack elongation property  
- Water resistance  
- Adhesive properties     | - Roofing  
- Insulation  
- Adhesive for architecture |
| **TAKELAC™**  | - Adhesive interpenetration of polyurethane with metals  
- Low-temperature heat sealing | - Packaging adhesive  
- Polyethylene terephthalate (PET)  
- Polyethylene (PE)  
- Polypropylene (PP)  
- styrene-butadiene rubber (SBR) |

### Heat-Sealing

**UNISTOLE™**
- Adhesive between polyolefin and metals  
- Easy peel-off package, FTP package  
- Adhesive interpenetration of polyolefin with metals  
- Low-temperature heat sealing

### Elastic Materials

**Polyurethane Propolomer**
- Propolomer for civil engineering and architecture  
- Flooring  
- Waterproof coat (hand-painted and spray)  
- Ground pavement (athletics stadium and track)

**TAKENATE™**
- L-series  
- F-series  
- P-series, XL-series

**HIPRENE™**
- L-series  
- U-series  
- X-series  
- A-series

**Low Molecular Weight Polyolefin**
- Mitsui Chemicals offers low molecular weight polyolefin polymers using our catalytic technology, which can be used not only for slip agent, dispersant and release agent, but also modifier for engineering plastics.

### Low Molecular Weight PE-PP

**HI-WAX™**
- PE WAX  
- PP WAX

**EXCEREX™**
- Metalloocene PE WAX

**Features**
- High crystallinity  
- High chemical resistance  
- Good compatibility and affinity

**Applications**
- Pigment dispersant (masterbatch) and ink  
- Paint modifier and textile treatment  
- Modifier and release agent for engineering plastics  
- Slip agent for PVC  
- Release agent for toner

**Features**
- Heat stability  
- Good compatibility with various plastics and elastomers  
- Good adhesion at high temperature  
- Narrow composition distribution  
- Narrow molecular weight distribution  
- Non-sticky