5-1,3Chome, Doucho, Takatsuki-shi, Osaka, Japan.
Outline

1963 : Establishment of “SANYU RESIN CO., LTD.” → Construction · Electronic Materials
1984 : Establishment of “JAPAN REC CO., LTD.” → Semiconductor Materials
1996 : Establishment of “SANYU JUSHI SDN,BHD.” in Malaysia.
2001 : “SANYU RESIN” merged with “JAPAN REC”.
                   The new company name is “SANYU REC CO., LTD.”
2008 : Establishment of “SANYU REC (MALAYSIA)SDN.BHD.” → Asia regional sales offices
2012 : Establishment of “SANYU REC INDIA LIASON OFFICE” → Liaison office

Capital : JP¥95million

Staff strength : 174 including 45 technical employees

Office : Headquarters plant／Osaka office
       3-5-1 Doucho Takatsuki Osaka
       Tokyo sales office
       1-15-4 Nihonbashi Chuo-ku Tokyo
Production base

Japan (Osaka)

Malaysia (Selemban)

China (Shanghai)

SANYU REC Co., Ltd. (JAPAN-OSAKA)

Products: Urethane compound  
Epoxy compound  
Silicone compound  

Production Qty.: 10,000 t/Year  
ISO-9001・14001

SANYU JUSHI SDN.BHD. (MALAYSIA-SELEMBAN)

Senawang Industrial Park

Products: Urethane compound  
Epoxy compound  
Acrylic compound  

Production Qty.: 1,600 t/Year  
ISO-9001・14001

SHANGHAI SANYU RESIN Co.,Ltd. (CHINA-SHANGHAI)

185 Forward Road, Jiading District

Products: Urethane compound  
Epoxy compound

Production Qty.: 1,500 t/Year  
ISO-9001・14001
**Strong points**

- Over half a century, we have experience in the formulation of various resin materials.
- Construction, electronic, semiconductor and LED materials, we can propose a material product in a wide range of fields.
- We are maintaining the No.1 market share in several application fields.

**Awards**

![Certificate Image]

Excellent Company of OSAKA

![Certificate Image]
Our Business

Electronic Materials Department

Development

Urethane materials
Epoxy materials
Silicone materials

Manufacture

Sale

Construction Materials Department

Semiconductor Department

R&D Department
Electronic Materials Department

Product line of Electronic Materials Dept.
- Electronics board
- The automotive and electrical components
- Chip components
- Capacitor / hybrid IC
- UV-curable coating material, etc.
Construction Materials Department

Product line of Construction Materials Dept.

- Adhesives for construction and public works
- Adhesives for Industrial applications
- Lining materials for water supply and sewerage systems
Product Line-up of Semiconductor Department

- Capillary flow underfill (CUF)
- LCM (Liquid compression mold, FOWLP/FIWLP)
- Mold UF Materials (Liquid MUF)
- Die Attach Materials
- High Thermal Conductive encapsulation materials
- Sheet/Film materials
- Pressure Oven & VPES
Semiconductor Department

Product line of LED and Lighting field

- Encapsulant for LED
- Lens molding
- Die attach for LED
- Silicone application products etc.
Product Line-up of Semiconductor Department

- CUF (Capillary UnderFill)
- LMUF (Liquid MUF)
- Mold Sheet
- NCP
- Die Attach

- Panel size
- CUF (Capillary UnderFill)
- LMUF (Liquid MUF)
- Mold Sheet
- NCP
- Die Attach

Product Line-up of Semiconductor Department

- CUF (Capillary UnderFill)
- LMUF (Liquid MUF)
- Mold Sheet
- NCP
- Die Attach

- Panel size
- CUF (Capillary UnderFill)
- LMUF (Liquid MUF)
- Mold Sheet
- NCP
- Die Attach

3D package

- Panel size
- Granulated powder

Time Stream
# Underfill materials

**CUF (Capillary flow underfill materials)**

<table>
<thead>
<tr>
<th>Item</th>
<th>BUF-483</th>
<th>BUF-428</th>
<th>EZ-403</th>
<th>EZ-451</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application</strong></td>
<td>Repairable Drop impact resistance</td>
<td>W-CSP Board Level</td>
<td>FC-CSP, FC-BGA</td>
<td>FC-BGA Board Level</td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td>Low Tg Low Modulus</td>
<td>High Tg Low CTE</td>
<td>Ultra fine filler (Ave/Max : 0.1/1.0)</td>
<td>Low CTE (23ppm)</td>
</tr>
<tr>
<td><strong>Curing condition</strong></td>
<td>120°C/10min</td>
<td>120°C/10min</td>
<td>150°C/1hr</td>
<td>150°C/1hr</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>5°C</td>
<td>5°C</td>
<td>-40°C</td>
<td>-20°C</td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td>White</td>
<td>Black</td>
<td>Black</td>
<td>White</td>
</tr>
<tr>
<td><strong>Viscosity (Pa·s)</strong></td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td><strong>Tg(°C)</strong></td>
<td>27</td>
<td>37</td>
<td>93</td>
<td>130</td>
</tr>
</tbody>
</table>
Liquid MUF (Mold Underfill)

It is suitable for narrow gap filling and large panel size package. We can propose suitable materials for each process. (Vacuum printing encapsulation, dispensing and compression molding)

<table>
<thead>
<tr>
<th>Item</th>
<th>EF-300T</th>
<th>EF-400</th>
<th>EF-364S2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>Standard</td>
<td>PCBT resistance</td>
<td>Low modulus Low warpage</td>
</tr>
<tr>
<td>Tg</td>
<td>60°C</td>
<td>50°C</td>
<td>30°C</td>
</tr>
<tr>
<td>Shear Modulus</td>
<td>17GPa</td>
<td>11GPa</td>
<td>13GPa</td>
</tr>
<tr>
<td>CTE</td>
<td>18ppm</td>
<td>17ppm</td>
<td>15ppm</td>
</tr>
</tbody>
</table>
FI/FO WLP

It has good flow property, and is suitable for large size wafer due to low stress of the material. The problem of the warpage can be decreased because of low CTE and low stress.

<table>
<thead>
<tr>
<th>Item</th>
<th>EF-364S3</th>
<th>EA-289DUA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>Low warpage</td>
<td>FO WLP</td>
</tr>
<tr>
<td></td>
<td>High adhesion</td>
<td>Low CTE</td>
</tr>
<tr>
<td>Application</td>
<td>Fan-in WLP</td>
<td>Fan-out WLP</td>
</tr>
<tr>
<td>Filler top size</td>
<td>25um</td>
<td>25um</td>
</tr>
<tr>
<td>Tg</td>
<td>30°C</td>
<td>170°C</td>
</tr>
<tr>
<td>Shear Modulus</td>
<td>10GPa</td>
<td>19GPa</td>
</tr>
<tr>
<td>CTE</td>
<td>15ppm</td>
<td>5ppm</td>
</tr>
</tbody>
</table>
Epoxy mold sheet

This is suitable for encapsulation of MEMS such as SAW-filter.
This is suitable for WLP and MUF, especially, encapsulation of large area at one time.
Higher thermal conductivity and Low-temperature fast curing varieties are under developing.

<table>
<thead>
<tr>
<th>Item</th>
<th>SLS-523</th>
<th>SLW-439</th>
<th>SLW-205</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>High viscosity</td>
<td>Low warpage</td>
<td>Thermal conductivity</td>
</tr>
<tr>
<td></td>
<td>Making hollow shape</td>
<td></td>
<td>High Tg</td>
</tr>
<tr>
<td>Applications</td>
<td>MEMS SAW filter</td>
<td>WLP / PLP MUF</td>
<td>Power device Adhesion</td>
</tr>
<tr>
<td>Thickness</td>
<td>250μm</td>
<td>200-400μm</td>
<td>100-450μm</td>
</tr>
<tr>
<td>Tg</td>
<td>80°C</td>
<td>190°C</td>
<td>160°C</td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>-</td>
<td>-</td>
<td>3.7W/m·K</td>
</tr>
</tbody>
</table>
# Die Attach materials

It is die attach material with low stress and high reliability to fit for each semiconductor and PKG. The problem of the void and bleeding can be solved. This DA has fine filler (for low bond line thickness).

![Die Attach material diagram](image)

<table>
<thead>
<tr>
<th>Item</th>
<th>SD-215</th>
<th>SD-303</th>
<th>SD-850</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Features</strong></td>
<td>High adhesion / Low warpage</td>
<td>Low stress Good workability</td>
<td>Conductive /High adhesion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For BGA / CSP</td>
<td>/High thermal Conductivity</td>
</tr>
<tr>
<td><strong>Resin type</strong></td>
<td>Epoxy</td>
<td>Hybrid</td>
<td>Epoxy</td>
</tr>
<tr>
<td><strong>Cure condition</strong></td>
<td>150°C/10min</td>
<td>150°C/60min</td>
<td>120°C/60min</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td>15 Pa·s</td>
<td>13 Pa·s</td>
<td>70 Pa·s</td>
</tr>
<tr>
<td><strong>Thixotropic ratio</strong></td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>
Encapsulation Process (VPES & Pressure oven)

Mold-underfill application (VPES+Pressure cure)

VPES (Vacuum Printing Encapsulation System)

Squeegee

Liquid material

Metal mask

Under the vacuum

The atmosphere

Pressure Oven

Under the pressure

dicing

Image
VPES-Ha IV: Special Vacuum Printing System is designed for the liquid encapsulation of the semiconductor packages, micro via filling, LED chip encapsulations, etc where the void less encapsulation is highly required on the various package applications on the research and development purpose as well as the mass production purposes.

HP-5050AAH is specially designed to heat the work inside the chamber with the evenly applied compressed air to the work with which it will help to remove and vanish the residual air voids for the resin systems and adhesives to achieve the maximum bonding strength and also the complete cure properties.