**PRODUCT/PROCESS CHANGE NOTICE (PCN)**

<table>
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<tr>
<th>PCN #: A-0401-01</th>
<th>DATE: 1/20/2004</th>
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<tr>
<td>Product Affected: SOIC package family (see attachment for affected part #s).</td>
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<tr>
<td>Date Effective: 4/20/2004</td>
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<tr>
<td>Contact: Geoffrey Cortes</td>
<td></td>
</tr>
<tr>
<td>Title: Manager, Corporate Quality &amp; Reliability</td>
<td></td>
</tr>
<tr>
<td>Phone #: (408) 492-8321</td>
<td></td>
</tr>
<tr>
<td>Fax #: (408) 727-2328</td>
<td></td>
</tr>
<tr>
<td>E-mail: <a href="mailto:Geoffrey.Cortes@idt.com">Geoffrey.Cortes@idt.com</a></td>
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<tr>
<td>Attachment: Yes</td>
<td>No</td>
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<tr>
<td>Samples: See attachment</td>
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**DESCRIPTION AND PURPOSE OF CHANGE:**

- Die Technology
- Wafer Fabrication Process
- Assembly Process
- Equipment
- Material
- Testing
- Manufacturing Site
- Data Sheet
- Other

ITD has qualified the SOIC (Small Outline Integrated Circuit) package family using a new mold compound material Sumitomo EME-G600 series and a new die attach material Ablestik 8290. This notification is to advise our customer of qualification and addition of new assembly material. Please see attachment for qualification data and additional details.

**RELIABILITY/QUALIFICATION SUMMARY:**

Please see attached reliability qualification data.

**CUSTOMER ACKNOWLEDGMENT OF RECEIPT:**

ITD records indicate that you require written notification of this change. Please use the acknowledgement below or E-Mail to grant approval or request additional information. If ITD does not receive acknowledgement within 30 days of this notice it will be assumed that this change is acceptable.

ITD reserves the right to ship either version manufactured after the process change effective date until the inventory on the earlier version has been depleted.

Customer: ___________________________  ☐ Approval for shipments prior to effective date.

Name/Date: ___________________________  E-Mail Address: ___________________________

Title: ___________________________  Phone#/Fax#: ___________________________

**CUSTOMER COMMENTS:** ____________________________________________

**IDT ACKNOWLEDGMENT OF RECEIPT:**

RECD. BY: ___________________________  DATE: ___________________________
ATTACHMENT - PCN #: A-0401-01

PCN Type: Assembly Material Change
Data Sheet Change: None
Detail Of Change: A new mold compound material and a new die attach material has been qualified for SOIC (Small Outline Integrated Circuit) package family. The successful completion of this qualification has improved IDT’s support of current and future production needs for components that meet 260ºC peak reflow temperature. There is no change in Moisture Sensitive Level (MSL). Products will be shipped at the existing MSL and each shipment is labeled with the correct MSL. Please refer to the label on each shipment for MSL information.

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<tr>
<td>Mold Compound</td>
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<tr>
<td>Material</td>
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<tr>
<td>Die Attach Material</td>
<td>Ablestik 8390,</td>
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<td>Ablestik 84-1LMISR4</td>
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Please see attachment for affected part #s (Appendix - 1).

Samples are not built ahead of the change and are limited to selective devices. Please contact your local field sales representative for sample availability and additional information.
### ATTACHMENT - PCN #: A-0401-01

**Qualification Plan #:** P02-11-05 / P02-11-11  
**Test Vehicle:** IDT6116 / IDT72413

#### Qualification Test Plan and Results:

<table>
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<tr>
<th>Test Description</th>
<th>Test Method</th>
<th>Test Results IDT6116 (SS / # of Fails)</th>
<th>Test Results IDT72413 (SS / # of Fails)</th>
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<tr>
<td>* High Accelerated Stress Test (Biased, 130 °C/85% RH, 100 Hrs)</td>
<td>JESD22-A110-B</td>
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<td>* Temperature Cycling (-65 °C to 150 °C, 500 cycle)</td>
<td>JESD22-A104-B</td>
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<td>* Auto Clave (121 °C, 2 ATM, 168 Hrs)</td>
<td>JESD22-A102-C</td>
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<td>High Temperature Life Test (1000 Hrs @125 °C or equivalent)</td>
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<td>High Temp Bake (1000 Hrs @150 °C)</td>
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<td>Resistance to Solvents</td>
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**Notes:**  
* Test requires moisture pre-conditioning sequence per JESD22-A113C.
### ATTACHMENT - PCN #: A-0401-01

#### Appendix - 1

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Note: For T & R (shipping method) "8" is added to the part number and for industrial grade, letter "I" is added to the part number.
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<td>IDT74LVC829ATSO</td>
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Note: For T & R (shipping method) "8" is added to the part number and for industrial grade, letter "I" is added to the part number.
EME-G600

TYPICAL PROPERTIES:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>TEST METHOD</th>
<th>UNIT</th>
<th>VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPIRAL FLOW</td>
<td>SB-U-03-005</td>
<td>cm</td>
<td>80</td>
</tr>
<tr>
<td>GEL TIME (at 175°C)</td>
<td>SB-U-03-005</td>
<td>sec</td>
<td>27</td>
</tr>
<tr>
<td>THERMAL EXPANSION α1</td>
<td>SB-U-02-002</td>
<td>X 10^3 1/°C</td>
<td>1.0</td>
</tr>
<tr>
<td>THERMAL EXPANSION α2</td>
<td>SB-U-02-002</td>
<td>X 10^3 1/°C</td>
<td>3.9</td>
</tr>
<tr>
<td>Tg</td>
<td>SB-U-02-002</td>
<td>°C</td>
<td>135</td>
</tr>
<tr>
<td>THERMAL CONDUCTIVITY</td>
<td>SB-U-02-004</td>
<td>W/m °C</td>
<td>92 x 10^3</td>
</tr>
<tr>
<td>FLEXURAL STRENGTH (at 25°C)</td>
<td>SB-U-01-001</td>
<td>N/mm²</td>
<td>185</td>
</tr>
<tr>
<td>(at 240°C)</td>
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<td></td>
<td>21</td>
</tr>
<tr>
<td>FLEXURAL MODULUS (at 25°C)</td>
<td>SB-U-01-002</td>
<td>X 10^2 N/mm²</td>
<td>240</td>
</tr>
<tr>
<td>(at 240°C)</td>
<td></td>
<td></td>
<td>7.2</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY</td>
<td>SB-U-03-018</td>
<td></td>
<td>1.98</td>
</tr>
<tr>
<td>VOLUME RESISTIVITY (at 150°C)</td>
<td>SB-U-00-004</td>
<td>Ω-cm</td>
<td>1 x 10^12</td>
</tr>
<tr>
<td>UL FLAME CLASS</td>
<td>SB-U-03-003</td>
<td>UL-94</td>
<td>V-0</td>
</tr>
<tr>
<td>WATER ABSORPTION (boiling, 24h)</td>
<td>SB-U-03-002</td>
<td>% weight gain</td>
<td>0.13</td>
</tr>
<tr>
<td>EXTRACTED Na⁺</td>
<td>SB-U-04-043</td>
<td>ppm</td>
<td>1</td>
</tr>
<tr>
<td>EXTRACTED Cl⁻</td>
<td>SB-U-04-043</td>
<td>Ppm</td>
<td>5</td>
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TYPICAL, NOT GUARANTEED PROPERTIES

MOLDING AND POST MOLD CURE CONDITIONS:

<table>
<thead>
<tr>
<th></th>
<th>STANDARD</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSFER PRESSURE</td>
<td>80 x 10^3 Pa</td>
<td>70-120 x 10^3 Pa</td>
</tr>
<tr>
<td>MOLD TEMPERATURE</td>
<td>180°C</td>
<td>175-185°C</td>
</tr>
<tr>
<td>CURE TIME (C or A)</td>
<td>C/90 sec</td>
<td>70-120 sec</td>
</tr>
<tr>
<td>POST-MOLD CURE TEMP</td>
<td>175°C</td>
<td>170-180°C</td>
</tr>
<tr>
<td>POST-MOLD CURE TIME</td>
<td>6 h</td>
<td>4-8 h</td>
</tr>
</tbody>
</table>

*Conventional or Auto

rev. Feb.'03
ABLEBOND® 8290

MEDIUM STRESS DIE ATTACH ADHESIVE

DESCRIPTION
Ablebond® 8290 medium stress die attach adhesive is designed for high reliability leadframe packaging applications. This electrically conductive adhesive offers improved JEDEC performance and can be used in a variety of package sizes.

FEATURES
- Low stress
- Improved JEDEC performance
- Use for a variety of die sizes

<table>
<thead>
<tr>
<th>TYPICAL UNCURED PROPERTIES</th>
<th>TEST DESCRIPTION</th>
<th>TEST METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filler Type</td>
<td>Silver</td>
<td></td>
</tr>
<tr>
<td>Viscosity @ 25°C</td>
<td>9,000 cP</td>
<td>Brookfield CP-51 @ 5 rpm</td>
</tr>
<tr>
<td>Thixotropic Index</td>
<td>5.9</td>
<td>Viscosity @ 0.5 rpm/Viscosity @ 5 rpm</td>
</tr>
<tr>
<td>Work Life @ 25°C</td>
<td>24 hours</td>
<td>25% increase in viscosity @ RT</td>
</tr>
<tr>
<td>Estimated Storage Life @ -40°C</td>
<td>1 year</td>
<td></td>
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</tbody>
</table>

CURE PROCESS DATA

<table>
<thead>
<tr>
<th>Weight Loss on Cure</th>
<th>2.5%</th>
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</thead>
<tbody>
<tr>
<td>10mm x 10mm Si die on glass slide</td>
<td>10mm x 10mm Si die on glass slide</td>
</tr>
</tbody>
</table>

- Alternate Cure Condition¹
  - Ramp 30 minutes to 175°C and hold 60 minutes

¹ Alternate cure recommended for larger die sizes for void minimization.

Typical properties are not intended to be used as specification limits. If you need to write a specification, ask for our Standard Release Specification.

12/01
<table>
<thead>
<tr>
<th>PHYSIOCHEMICAL PROPERTIES - POST CURE</th>
<th>TEST DESCRIPTION</th>
<th>TEST METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ionics Chloride 16 ppm Sodium 12 ppm Potassium 1 ppm</td>
<td>Teflon flask 5 gm sample 20-40 mesh 50 gm DI water 100°C for 24 hours</td>
<td>PT-13</td>
</tr>
<tr>
<td>Glass Transition Temperature 38°C</td>
<td>TMA penetration mode TMA expansion mode</td>
<td>MT-14 MT-9</td>
</tr>
<tr>
<td>Coefficient of Thermal Expansion Below Tg 81 ppm/°C Above Tg 181 ppm/°C</td>
<td>Dynamic mechanical thermal analysis using &lt;0.5mm thick sample</td>
<td>MT-12</td>
</tr>
<tr>
<td>Dynamic Tensile Modulus @ 25°C 3100 MPa (440 Kpsi) @ 150°C 140 MPa (20 Kpsi) @ 250°C 120 MPa (17 Kpsi)</td>
<td>Dynamic vapor sorption after 85°C/85% RH exposure</td>
<td>PT-65</td>
</tr>
<tr>
<td>Moisture Absorption @ Saturation 0.71%</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>THERMAL ELECTRICAL PROPERTIES - POST CURE</th>
<th>TEST METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Conductivity 1.6 W/mK Volume Resistivity 0.008 ohm-cm</td>
<td>Laser Flash 4-point probe PT-96 PT-46</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MECHANICAL PROPERTIES - POST CURE</th>
<th>TEST METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Die Shear Strength @ 25°C 15 kgf/die</td>
<td>2x2mm Si die Ag/Cu LF (80 x 80 mil) 12.7 x 12.7 x 0.38 mm Si die (500 x 500 x 15mil) on 0.2mm thick leadframe</td>
</tr>
<tr>
<td>Chip Warpage vs. Post Cure Thermal Process 200°C + Post Mold Bake (4 hours @ 175°C) 18 µm 32 µm</td>
<td></td>
</tr>
</tbody>
</table>

Typical properties are not intended to be used as specification limits. If you need to write a specification, ask for our Standard Release Specification.

APPLICATION GUIDELINES

SHIPMENT
This Ablestik product is packed and shipped in dry ice at -80°C. Inside every dry ice shipment of Ablestik's products is a small packet containing the ABLECUBE. This is a small blue cube which retains its shape at -40°C. If the ABLECUBE is exposed to temperatures higher than -40°C, the cube will melt.

Please check the state of the ABLECUBE to ensure the integrity of the shipment. If the ABLECUBE has melted upon Receiving Inspection, place the entire shipment in a -40°C freezer and contact your Ablestik Customer Service or Sales Representative.

UNPACKING
Transfer the syringes from the dry ice to a -40°C freezer without ANY delays. Freezethaw voids will form in the syringes if the syringes are repeatedly thawed and refrozen.

STORAGE
This Ablestik product must be stored at -40°C. The shelf life of the material is only valid when the material has been stored at the specified storage condition. Incorrect storage conditions will degrade the performance of the material in both handling (e.g. dispensing or screen printing) and final cured properties.
ABLEBOND® 8290

MEDIUM STRESS DIE ATTACH ADHESIVE

**THAWING**
Allow the container to reach room temperature before use. After removing from the freezer, set the syringes to stand vertically while thawing. Refer to Syringe Thaw Time chart below for the thaw time recommendation.

DO NOT open the container before contents reach ambient temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.

DO NOT re-freeze. Once thawed to room temperature, the adhesive should not be re-frozen.

Apply enough adhesive to achieve a 25-50 µm (1-2 mil) wet bondline thickness, dispensed with approximately 25% - 50% filleting on all sides of the die. Alternate dispense amounts may be used depending on the application requirements. Star or cross-shaped dispense patterns will yield fewer bondline voids than the matrix style of dispense pattern. Contact Ablestik Technical Service Department for detailed recommendation on adhesive application, including dispensing.

**CURE**
Ablebond 8290 adhesive can be cured in conventional box ovens per the recommended cure condition. Refer to the Cure Process Data section of the Technical Data Sheet for the recommended cure cycles.

**AVAILABILITY**
Ablebond adhesives are packaged in syringes or jars per customer specification. Available package sizes range from 1cc to 30cc and 1 ounce to 1 pound. For details, refer to the Ablestik Standard Package Data Set or contact your Customer Service representative.

**ADHESIVE APPLICATION**
Thawed adhesive should be immediately placed on dispense equipment for use. If the adhesive is transferred to a final dispensing reservoir, care must be exercised to avoid entrapment of contaminants and/or air into the adhesive. Adhesive must be completely used within the product's recommended worklife of 24 hours. Silver-resin separation may occur if the adhesive is left out at ambient beyond the recommended worklife.
CAUTION This product may cause skin irritation in sensitive persons. Avoid skin contact. If contact does occur, wash area immediately with soap and water. Please refer to Material Safety Data Sheet (OSHA) for more details.

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