

ULTRA-LOW STRESS DIE ATTACH ADHESIVE FOR STRESS SENSITIVE DEVICES

EAST HANOVER, N.J. - Zymet is offering an ultra-low stress die attach adhesive, **TC-601.1**, uniquely suited for bonding of stress sensitive devices such as microelectronic and micro-machined sensors. In the case of a microelectronic sensor, bending can generate unwanted piezoelectric signals. In the case of a micro-machined device, bending can interfere with the motion of delicate mechanical devices.

Bonding of materials with mismatched CTE's can result in bending. This can be measured as radius of curvature through a technique called laser interferometry. Figure 1 illustrates the technique.

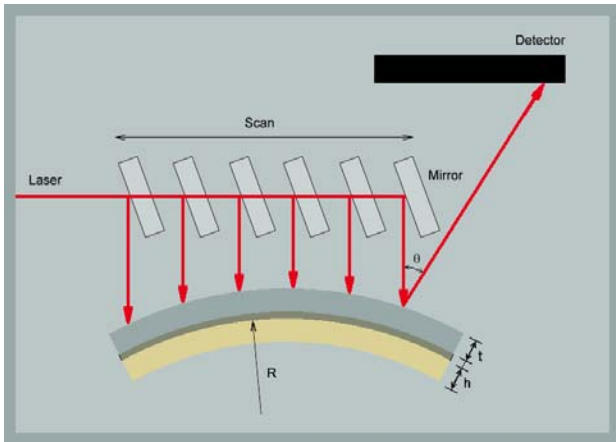


Figure 1. Radius of curvature by laser interferometry.

In a comparative test, a 250 x 250 mil silicon die is bonded to a copper leadframe. Using a conventional silver-filled epoxy, the radius of curvature of the die was 1000 mm at room temperature. Bonded with **TC-601.1**, radius of curvature was 100,000 mm. Both adhesives are cured at 150°C.

Bending stress can be calculated from the radius of curvature. Figure 2 shows bending stress of the die bonded with silver-filled epoxy. There is no curvature or stress at the 150°C cure temperature. As the assembly cools, curvature and stress increase.

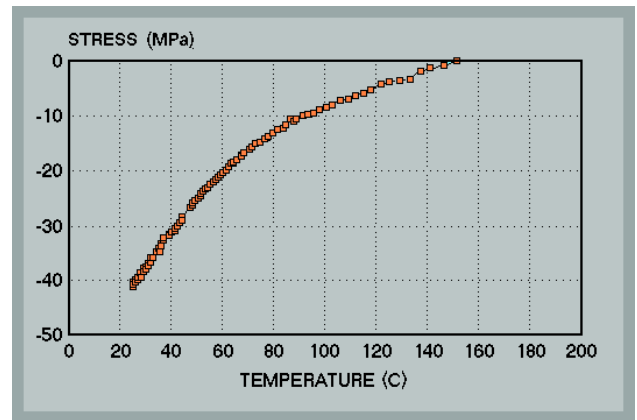


Figure 2. Bending stress with silver-filled epoxy.

Figure 3 shows bending stress of the die bonded with **TC-601.1**. The differential expansion of the two substrates is fully absorbed by the adhesive and both the die and the substrate remain flat and stress free over the entire temperature range.

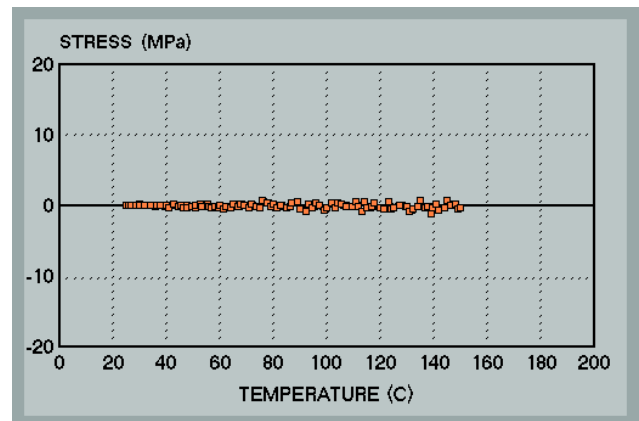


Figure 3. Bending stress with **TC-601.1**

TC-601.1 is electrically insulating and thermally conductive. It is a soft paste designed for syringe dispensing. For more information, contact Zymet, Inc., East Hanover, NJ. Requests for information may be submitted by Email to info@zymet.com.