Application of the F-601 adhesive

Characteristics and application

F–601 adhesive is a high temperature adhesive and is made out of an epoxy resin and mixed with a modified phenolic resin. It has a low linear expansion coefficient, wide temperature range, high insulation, small creep and low hysteresis. By its stable performance it is suitable for the bonding of gauges on ceramics and glass.

The operating temperature for this adhesive is:

– From –60℃ up to +250℃

F–601 is suitable for BA 150℃ and BB and BAB 250℃ high temperature strain gauges.

Storage

F–601 is a one component adhesive which has an orange colour. F–601 has a solid filler in it and has to be stirred before usage. When the adhesive is too thick, a little butanone has to be added to make it thinner. F–601 should be stored at low temperatures to avoid degradation under normal or high temperatures which will turn it into a sort of gel. Tighten the bottles cap to avoid humidity from reaching the adhesive. The F–601 adhesive has a storage life of 8 months when kept at 10℃ .

Method of application

1. The surface where the gauge will be attached should be sand–blasted or polished and cleaned well with acetone and butanone.
2. Use anhydrous ethyl alcohol to clean the tools, Teflon film and the strain gauge which will be bonded.
3. Coat the area where the strain gauge is going to be attached with F–601 adhesive and let it dry for 20 minutes. Now apply a another layer of F–601 and let it dry for 4 hours. Now put it in the oven, heat the oven to 60℃ from room temperature at a speed of 2℃ /minute. Keep the element at this temperature for 1 hour. Now let it cool down and after this, put the element back in the oven and heat it up to 150℃ at a speed of 2℃ /minute. Keep at this temperature for 1 hour. Now let it cool down to 80℃
4. Now take the element out of the oven and coat and bond the gauge in the right position, cover it with Teflon film and squeeze out the bubbles or spare adhesive from under the gauge. This is done in the axial direction of the gauge.
5. Cover the Teflon film with a rubber and a metal plate as soon as possible and apply a pressure of 0.1– 0.3 MPa and put the element with the gauge pressured on it in the oven.
6. For Gauges up to a temperature of 150℃ : Heat up the oven to 100℃ at a speed of 2℃ /minute. Keep the gauge in the oven for one hour. After this, heat it up to 150℃ at a speed of 2℃ /minute. Now keep the element at this temperature for three hours. After this cool the element back down to room temperature and release the clamp and metal plate, rubber and Teflon film. Then, heat it up to 170℃ at a speed of 2℃ / minute. Now keep the element at this temperature for two hours. Now cool the element down to room temperature.
7. For Gauges up to a temperature of 250℃ : Heat up the oven to 100℃ at a speed of 2℃ /minute. Keep the gauge in the oven for one hours. After this cool the element back down to room temperature and release the clamp and metal plate, rubber and Teflon film. Then, heat it up to 150℃ at a speed of 2℃ /minute. Now

Bonding adhesive

keep the element at this temperature for two hours. Then, heat it up to 250℃ at a speed of 2℃ /minute. Now keep the element at this temperature for 4 hours. Now cool the element down to room temperature

8. The F–601 adhesive is now suitable to be used in an environment in which the humidity is less than 65%.

Caution

1. Make sure to take the F–601 adhesive out of the refrigerator 2 hours prior to using it and try using it only when the liquids temperature is the same as the environmental temperature
2. Make sure the adhesive is homogenous otherwise this might influence the bonding characteristics of the adhesive.
3. During usage, the adhesives bottle should be as far away from heat and light sources. This is due to the adhesive reacting with higher temperature and light to volatize faster.
4. When done using the adhesive it is advised to screw the bottle cap on as soon as possible. This way volatizing of the adhesive is avoided and the coating quality is not degraded.
5. Clean the tools used after bonding the gauges. This way contamination and impurities by external factors can be avoided at next use.