Strain Gage Bonding Procedure

The strain gage bonding method differs depending on the type of the strain gage, the applied adhesive and operating environment. Here, for strain measurement at normal temperatures in a room, we show how to bond a typical strain gage (leadwire-equipped KFGS gage) to a test piece (mild steel specimen) using quick-curing adhesive (cyanoacrylate adhesive CC-33A).

1. Select strain gage. Select the strain gage model and gage length which meet the requirements of the measuring object and purpose. For the linear expansion coefficient of the gage applicable to the measuring object, refer to Linear Expansion Coefficients of Materials (page 9-1).

2. Remove rust and paint. Using a sand cloth (#320), polish the strain-gage bonding site over a wider area than the strain gage size. Wipe off paint, rust and plating, if any, with a grinder or sandblast before polishing.

3. Remove grease from bonding surface and clean. Using an industrial tissue paper dipped in acetone, clean the gage bonding site. Strongly wipe the surface in a single direction to collect dust and then remove by wiping in the same direction. Reciprocal wiping causes dust to move back and forth and does not ensure cleaning.

4. Decide bonding position. Mark the measuring site in the strain direction. Use a 4H pencil or a marking-off pin. When using a marking-off pin, take care not to deeply scratch the gage bonding surface.

5. Apply adhesive. Ascertain the back and front of the strain gage. Apply a drop of adhesive (CC-33A) to the back of the strain gage.

6. Bond strain gage. After applying a drop of the adhesive, put the strain gage on the measuring site while lining up the center marks with the marking-off lines. Cover the strain gage with the accessory polyethylene sheet.

7. Press strain gage. Press it over the sheet with a thumb. Quickly perform steps 5 to 7 as a series of actions.

8. Complete bonding work. After pressing the strain gage with a thumb for one minute or so, remove the polyethylene sheet and make sure the strain gage is securely bonded. The above steps complete the bonding work. However, good measurement results are available after 60 minutes of complete curing of the adhesive.