



PRIMARY INSTALLATIONS - Bonding strain gauges

When bonding the strain gauges, the most suitable adhesive should be selected for each application. A typical installation procedure is described below using the fast-curing adhesive CN.

1. Preparation

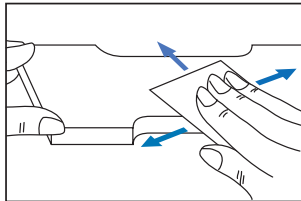
The following items are required for bonding and leadwire connection: Strain gauges, bonding adhesive, connecting terminals, test specimen, solvent, cleaning tissue for industrial use, soldering iron, solder, abrasive paper (120 - 320 grit), marking pencil, scale, tweezers, extension leadwire, polyethylene sheet, nippers.

2. Positioning

Roughly determine a location on the test specimen where the strain gauge is to be bonded.

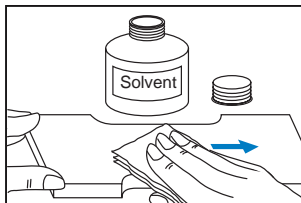
3. Surface preparation

Before bonding, remove all grease, rust, paint, etc., from the bonding area to provide a shiny metallic surface. Use abrasive paper to abrade an area somewhat larger than the bonding area uniformly and finely with abrasive paper. Finish the surface with #120 to 180 abrasive paper for steel, or #240 to 320 for aluminium.



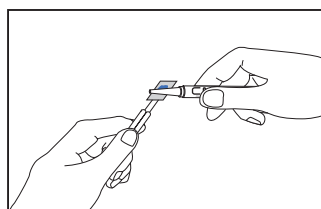
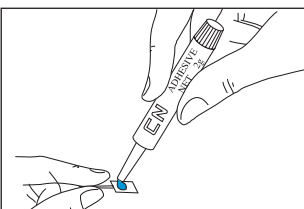
4. Fine cleaning

Clean the abraded surface with industrial tissue or cloth soaked in a small quantity of chemical solvent such as acetone. Continue cleaning until a new tissue or cloth comes away completely free of contamination. Following the surface preparation, be sure to attach the gauge before the surface becomes covered with an oxidizing membrane or becomes newly contaminated.



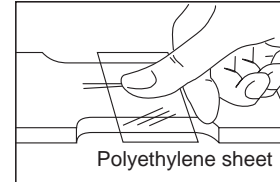
5. Applying bonding adhesive

Drop a proper amount of adhesive onto the back of the gauge base. Usually one drop of adhesive will suffice, but you may increase the number of drops according to the size of the gauge. Use the adhesive nozzle to spread the adhesive over the back surface thinly and uniformly.



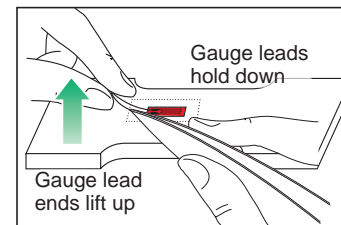
6. Curing and pressing

Place the gauge on the position, place a polyethylene sheet onto it and press down on the gauge constantly using your thumb or a gauge clamp. This should be done quickly as the curing process is completed very fast. The curing time varies depending on the gauge, test specimen, temperature, humidity and pressing force. The curing time under normal conditions is 20-60 seconds.



7. Raising gauge leads

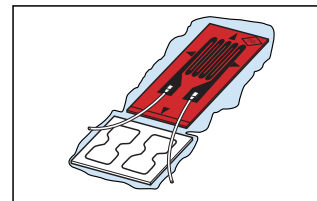
After the adhesive beneath the polyethylene sheet has been perfectly cured, raise the gauge leads. Raise the leads up to a bit inside the gauge base while pressing down the foot of the leads by tweezers not to damage the leads..



8. Bonding connecting terminals

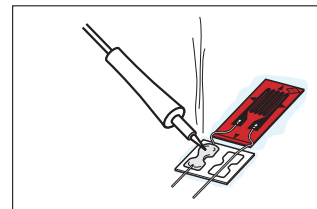
Bond the terminal close to the gauge base.

Foil type connecting terminals



9. Soldering the gauge leads

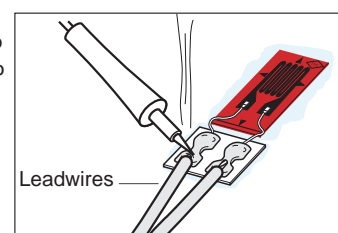
Place the gauge leads on the gauge terminal with a little slack and apply solder so that the metal foil of terminal is covered with the solder. An excess gauge leads should be twisted off by tweezers.



10. Soldering leadwires

It is recommended to plate the exposed core wires of the extension leadwires with solder preliminarily.

Solder the end of leadwire to the terminals. Take care not to excessively heat the terminal to peel off the metal foil.





PRIMARY INSTALLATIONS - Overcoating strain gauges

Water- and Moisture-proofing with SB tape and VM tape

Requirement in strain gauge coatings

- Excellent resistance to moisture and water and good electrical insulation
- Good adhesion to the strain gauge, leadwires and test specimen surface
- No constriction of the test specimen

Both of the SB and VM tapes are butyl rubber tape generally referred to as pressure-sensitive adhesive. These coating tapes are applied by being pressed onto the test specimen, and they provide excellent resistance to moisture and water.

SB tape

Butyl rubber
Temperature : -30 to +80°C
Contents : 10mm×3mm
5m long/roll

VM tape

Butyl rubber
Temperature : -20 to +80°C
Contents : 38mm×1mm
6m long/roll

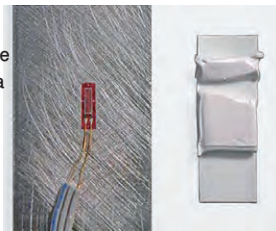


Example for leadwire integrated strain gauge

First coating with SB tape

Trimming the SB tape

With scissors, cut off one piece of tape large enough to cover the coating area and another piece 5mm to 10mm in length to fit under the leadwires.



Under-laying

Lift up the leadwires and press the smaller piece of tape onto the test specimen surface under the leadwires.



Overall coating

Press the leadwires back down onto the piece of SB tape and then press the larger piece of coating tape down onto the strain gauge.



Finish coating with VM tape

Cut a piece of VM tape slightly larger than the layer of SB tape coating and press it down onto the place so that the first coating is fully covered by the VM tape.

