

**Micron Optics, Inc.
os3200 Strain Gage
Installation Procedure**



Figure 1 – os3200 Strain Gage

Introduction:

An os3200 gage may be bonded to a variety of surfaces using the procedure outlined below. Successful installation requires careful attention to the details of gage installation. In particular, surface preparation and cleaning is extremely important in obtaining a secure bond.

The recommended adhesive for bonding os3200 gages to a specimen is a Loctite® Hysol® 1C-LV epoxy. This epoxy is available in an easy to use 50ml EPS Cartridge. Although it is possible to install gage with other adhesives, all performance data was obtained from gages installed with this epoxy.

1. Supplies

The following supplies are required for successful installation of the os3200 Strain Gage:

- Loctite® Hysol® 1C-LV, 50ml EPS Cartridge (Loctite 83208)
- Dual Cartridge Manual Applicator, 2:1 (Loctite 98472)
- Mix Nozzle (Loctite 98455)
- 3ml Syringe with Luer-Lok™ Tip (BD 309585)
- Dispenser Tip (EFD 5120TT-B)
- CRC Industrial Super Degreaser (No. 03110)

2. Gage Preparation

The gage comes from the factory ready to install on the specimen. No gage preparation is required prior to installation. The gage has an adhesive pre applied to the bottom surface of the gage. The adhesive is covered with a protective backing. Do not remove the protective backing until the specimen surface has been properly prepared and you are ready to install the gage.

3. Surface Preparation

3.1. Prep Surface

Mounting surface must be reasonably flat and free of surface defects. The surface should be free of rust, scale, oxides, loose paint, or other coatings. Start by degreasing the surface with CRC Degreaser or other degreaser compatible with the specimen. Abrade the surface as necessary to remove surface irregularities and contamination. It may be necessary to start with a coarse paper or grinder if the surface is very rough. Use consecutively finer paper finishing up with 400-grit silicon-carbide paper.

3.2. Pre-Position Gage

Use a spare or dummy gage to determine how the gage will be positioned on the specimen. Do not use the active gage or it will be contaminated with finger oil and contamination from the specimen surface. Note that the gage is sensitive to strains parallel to the axis of the fiber. Using a drafting pencil, burnish whatever alignment marks are necessary on the specimen for repositioning the gage.

3.3. Degrease

Thoroughly degrease mounting surface using CRC Degreaser. Isopropyl alcohol may be substituted for CRC if desired; however, it may not be as effective in removing all traces of contaminants. CRC Degreaser is preferred whenever possible. Apply a liberal amount of degreaser to the specimen surface and wipe dry with clean gauze. Repeat several times to thoroughly degrease surface.

4. Apply Gage

Remove protective backing from bottom surface of gage. Carefully position gage over test specimen and press firmly into place. If multiple gages are to be mounted in close proximity, wear latex gloves or cover gage with plastic film before pressing down on gage. This will prevent finger oil from contaminating the specimen. Gage should not be repositioned after it is in place.

5. Inject Epoxy

5.1. Prepare epoxy syringe

Place epoxy cartridge in proper dispenser. To begin using new cartridge, remove cap and dispense a small amount of adhesive, making sure both Part A and B are extruding. Attach nozzle and dispense approximately 1-2" to ensure that the mixing tip is filled with both resin and hardener. Remove plunger from 3ml Syringe and install dispenser tip on end of syringe. Insert tip of dispensing nozzle into the back of the syringe and inject epoxy into the syringe. Try to lay a bead of epoxy on the sidewall of the syringe. This will allow the air to be purged from the syringe. Insert plunger into syringe and press plunger to force air out of syringe. 1ml of epoxy is more than enough to install a handful of gages.

5.2. Inject epoxy

Wipe excess epoxy off of syringe dispenser tip. Insert dispenser tip into hole located in the center of the os3200 gage. Hold dispenser tip against gage with gentle pressure. It is not necessary to press hard. Excessive pressure may damage fiber Bragg grating. Press syringe plunger down to force epoxy into sensor. Continue to apply pressure to plunger until epoxy is visible at the two vent holes located at each end of sensor.

6. Cure

6.1. In order to minimize residual stresses within the cured epoxy, it is recommended to allow the epoxy to cure at room temperature 70°F to 80°F [20°C to 30°C].