Selection of covering materials

Overview of covering materials

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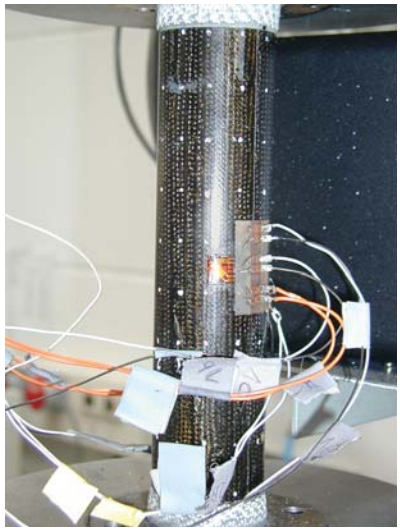


The quality of a strain gage measuring point depends not only on the SG itself, but also and primarily on the type of installation and its design. A properly functioning measuring point requires thorough preparation of the installation surface, correct connections, and also a protective covering.

Immediately after the SG is installed on the surface of the component (after contacting of connection lines and the measuring point test are complete) the measuring point must be protected from environmental influences by a covering material.

When selecting the covering material, consider the following factors:

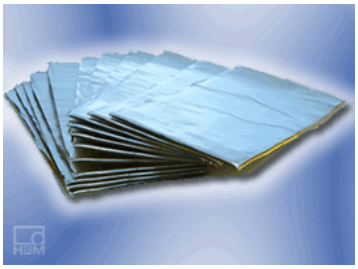
- Ambient conditions during the measurement
- The duration of the measurement or the required service life of the measuring point
- Required measurement accuracy
- The measuring object must not be stiffened in an impermissible manner
- Material that comes in contact with the measuring point, including the connection cable, must have a very high insulation resistance and must not be capable of triggering any chemical reactions or corrosion.

Use of the covering material is subject to the following requirements:

- The measuring point must be in flawless condition before being covered, meaning it is free of dirt, moisture, perspiration, and soldering residue.
- A sufficiently large area must be covered. The covering should extend at least one to two centimeters over the edges of the adhesive.
- Cable entries must be very carefully sealed. The covering material must surround the ends of the wire on all sides, including the bottom, to ensure that no channels or capillaries form through which moisture could penetrate inside the covering.
- Only covering materials approved by DMS manufacturers may be used! For example, silicones available on the construction market are very rarely free of acetic acids, which will destroy the SG and adhesive over time.

Following are a few examples of the most common uses for covering material:

AK22 is a tough, permanently plastic putty which can easily be kneaded onto the measuring point. It provides excellent protection against the elements and moisture.
Temperature usage range (in air): -50°C to +170°C



ABM75 is a permanently plastic putty with an aluminum foil diffusion barrier. ABM75 can also be kneaded onto the measuring point.
Temperature usage range (in air): -196°C to +75°C

Nitrile rubber **NG150** is an air-drying lacquer used to protect measuring points that operate at very low temperatures and in liquefied gasses (not oxygen). NG150 also exhibits good resistance to oil and gasoline.
Temperature usage range (in air): -269°C to +150°C

Silicone rubber **SG250** is a transparent, solvent-free covering material which features excellent protection against moisture and water (at room temperature). The rubber-like topcoat also offers good mechanical protection.
Temperature usage range (in air): -70°C to +180°C, for brief periods to +250°C

Polyurethane lacquer **PU120** is an air drying lacquer that provides suitable measuring point protection against contact (perspiration on hands), dust, and normal air humidity (in moderate climate zones).
Temperature usage range (in air): -40°C to +120°C

Silicone resin **SL450** is a hot-curing resin used to protect high-temperature measuring points. Curing takes place at temperature levels from 95°C to 315°C.
Temperature usage range (in air): -50°C to +450°C

The problem of protecting measuring points is so multi-faceted that no universally valid instructions can be given.

Absolute protection for an unlimited period of time is only possible with a hermetically sealed metallic enclosure. This type of protection can be implemented for standard commercial transducers. However, hermetically enclosing strain gages for experimental purposes can only be implemented with extremely high overhead or not at all.