



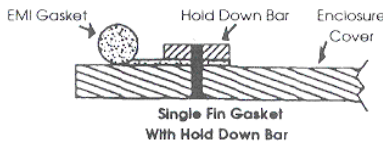
# TECH NOTES

LAIRD TECHNOLOGIES

#134

## ADHESIVE FIN EMI SHIELDING GASKET

FIGURE 1



In many applications utilizing a single-fin type EMI shielding strip, mounting is accomplished by securing the fin portion of the gasket with a hold-down bar as shown in Figure 1, or by bonding the fin to an enclosure interface with a non-conductive adhesive.

Both of these methods, although effective as a means of holding the gasket in place, are time consuming during installation.

To reduce installation time and make installation more cost effective, Instrument Specialties now offers single-fin gasket products supplied with a high strength, pressure-sensitive adhesive affixed to the fin of the gasket.

The user peels the protective backing from the adhesive and adheres the gasket in place. As shown in Figure 2, the adhesive can be applied to the underside of the fin or to the top side of the fin.

This alternative is given to accommodate the mounting methods shown in Figure 3, depending on how the gasket is to be adhered.

FIGURE 2

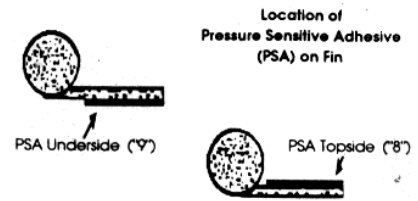
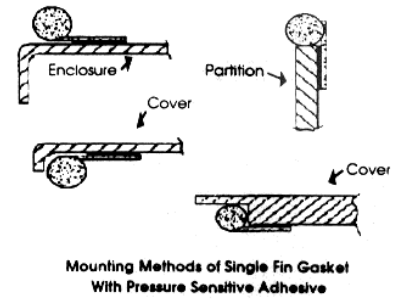


FIGURE 3



TO ORDER insert "9" OR "8" in place of "0" for the part number as shown in the following example: 8103-0109-40 - regular part number without adhesive backing  
8103-9109-40 - with adhesive backing on the underside of the fin  
8103-8109-40 - with adhesive backing on the top side of the fin

### GASKET ADHESION PREPARATION PROCEDURE

■ Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and thus improves bond strength.

■ To obtain optimum adhesion the bonding surfaces must be clean, dry, and well unified. Typical surface cleaning solvents are isopropyl alcohol/water mixture (rubbing alcohol) or heptane.

■ Ideal application temperature range is 70°F to 100°F (21°C to 38°C). In some cases bond strength can be increased and ultimate bond strength can be achieved more quickly by exposure of the bond to elevated temperatures for one hour.

2. Minimum particle size. Since CBD can be caused only by inhalation, the beryllium particles must be of a respirable size. In order to develop CBC, beryllium particles must be small enough (less than ten microns to enter and be retained in the air sacs in the lower portion of the lung. Particles larger than ten microns are filtered out by the nose hair or trapped in the mouth or the lining of the bronchial tube before reaching the air sacs of the lung. These particles will be swallowed and then excreted through the gastrointestinal tract without ill effect.
3. Adequate concentration. A sufficient number of these minute, respirable beryllium particles must enter the lung to induce an immunological reaction. This threshold level, below which no reaction occurs, may vary from one susceptible individual to another. Accordingly, airborne concentrations of beryllium should be kept as low as possible. The OSHA standard intended to address CBD is an average concentration over an eight hour day not to exceed two micrograms of beryllium per cubic meter of air measured. Thus, in any event, airborne concentrations of beryllium should never be permitted to exceed the approved standard.

## **SUMMARY**

There is no known skin hazard connected with touching or handling solid forms of beryllium oxide, metallic beryllium or beryllium-containing alloys. Beryllium is not radioactive and presents no radiation hazard. There is no known hazard connected with the ingestion of beryllium. The hazard associated with CBD is due exclusively with inhalation.

## **CANCER**

The question of whether occupational exposure to beryllium causes cancer has been examined extensively for the past three decades without producing any study that would demonstrate that beryllium exposure causes human cancer.

The most recent and most extensive human study involved over 9,000 workers employed in the beryllium industry between 1940 and 1969 at seven different plants. The two oldest plants, which operated in the 1940's, had no engineering controls in that period and workers were exposed to massive levels of airborne beryllium. The remaining five plants had varying degrees of engineering controls over the years and, therefore, a lower level of airborne beryllium. Workers in these five plants showed fewer lung cancers than would be expected in a comparable population, whereas workers in the two oldest plants showed a slightly larger number than would be expected. When the authors of the study adjusted for smoking, this excess was reduced to a level only slightly above expected, a level of excess comparable to that seen in passive smokers.

There are three plausible explanations for these results, but none is more than an educated guess. The first explanation would be pure chance. Having five points falling just below the mean and two falling just above would fit a random probability pattern, with the age and condition of the plants being pure coincidence. A second explanation would be that beryllium is weak carcinogen at the massive doses level seen in the two oldest plants ( a thousand-fold higher than current occupational exposure levels), but at today's exposure levels, it is not an effective carcinogen. The third explanation is smoking. Critics of the study contend that the smoking adjustment made by the authors of the study was inadequate and that when the dates are properly adjusted for factors unrelated to beryllium, such as smoking, all excess disappears, even in the two oldest plants.

Regardless of the explanation selected, the plain fact is that there is no evidence that the thousands of beryllium workers in the industry today have any excess risk of cancer when compared to the general population.

## **REFERENCE**

"Beryllium Biomedical and Environmental Aspects", ed. Rossman, M.D., Williams & Williams, Baltimore, 1991.

This information applies to a specific manufacturing operation. If you need additional information on safe handling practices or technical data on beryllium products, contact the Laird Technologies Engineering at 570-424-8510.

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