



## PRODUCT DATA SHEET

### STANDARD GLASS TRANSFER TAPES \*

G-1001, G-1002, G-1003, G-1004, G-1005 and G-1009

G-1001 Glass Transfer Tape contains a high lead-borosilicate glass frit with a thermal expansion of  $84 \times 10^{-7}$  in/in/ $^{\circ}$ C. This Glass Transfer Tape is generally applicable for low temperature glazing and sealing of ceramics, glass and certain metals. It is adaptable for glazing ferrite materials because of its excellent thermal expansion match. It can also be used satisfactorily for protective glazing of sensitive devices. The produced glaze will be readily attacked by acids. The glazing step should be performed in air.

G-1002 Glass Transfer Tape contains a lead-borosilicate glass frit with a thermal expansion of  $70 \times 10^{-7}$  in/in/ $^{\circ}$ C. It is ideally suited for glazing alumina and beryllia materials because of its excellent thermal expansion match. The produced glaze will be readily attacked by acids due to the characteristics of the glass frit. The glazing step should be performed in air.

G-1003 Glass Transfer Tape contains a lead-alumina-silicate glass frit with a thermal expansion of  $70 \times 10^{-7}$  in/in/ $^{\circ}$ C, which provides an excellent match to alumina and beryllia. No alkaline is present in the glaze composition. The few alkaline ions present are tied up. In this way migration is not possible. The surface finish of the glaze is as low or lower than 1 microinch. The surface roughness is in the range of 45-50 Angstroms. This can be considered as an optically flat surface. The main use of this Glass Tape is in the glazing of substrates for thin film circuitry where good acid resistance and ultra smooth surface finish is required. The glazing should be performed in neutral or air atmosphere; reducing atmosphere cannot be used because of the presence of lead oxide in the glass.

G-1004 Glass Transfer Tape contains a borosilicate glass frit with a thermal expansion of  $46 \times 10^{-7}$  in/in/ $^{\circ}$ C, which provides an excellent match to Kovar. This Glass Transfer Tape is generally used for sealing and glazing Kovar materials. The produced glaze has an excellent acid resistance. Both air and reducing atmosphere can be used: there is no lead oxide present in the glass frit composition.

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G-1005 Glass Transfer Tape contains a lead-zinc-borosilicate glass frit with a thermal expansion of approximately  $50 \times 10^{-7}$  in/in/ $^{\circ}$ C. It is a green colored glass material due to the copper content in its composition. This Glass Transfer Tape is used for low temperature sealing and glazing of Kovar. The produced glaze is readily attacked by acids. The glazing step should be performed in neutral atmosphere or air.

G-1009 Glass Transfer Tape contains a high lead oxide glass frit with a considerable amount of zinc-oxide as the second largest constituent. Its thermal expansion is between  $80 - 90 \times 10^{-7}$  in/in/ $^{\circ}$ C. This glass frit is a devitrifying type material: crystallization will start rapidly over  $440^{\circ}$ C. It is suggested to preglaze the parts to be sealed at  $400^{\circ}$ C following the curve as indicated below. The sealing step should be performed at  $440^{\circ}$ C for a long period (approximately 40 - 60 minutes) or at  $490^{\circ}$ C for a short period (approximately 5 - 8 minutes). The preglazing step should be performed in air; the sealing step can be performed in air or neutral atmosphere.

In addition to these Glass Tapes, see our Glass Transfer Tapes - G-1000 Series.

