Application Guide

INTRODUCTION:

Chomerics THERM-A-GAP™ T635 and T636 are the latest development in Chomerics fully cured, dispensable, form-in-place thermal gap filler products. These products are pre cured and require neither a mixing step nor a cure cycle. They are dispensed onto a component, the heat sink or chassis is assembled over the material, and the product is ready for shipment. The relative ease of application of these materials also makes them ideal for rework and field repair.

TYPICAL APPLICATIONS:

These materials require very low closure force to conform to highly variable surfaces so they are ideal for circuit boards where multiple packages of variable height have to be thermally connected to a heat sink or enclosure. They are ideally suited for filling gaps between .010 - .200 inches where their low deflection force will not place undue stresses on component leads or solder joints. T-635 and T636 can be applied to all commercially clean metal, ceramic and plastic surfaces. T635 and T636 do not slump or sag after being dispensed.

PACKAGING:

T635 and T636 are packaged in one of the following standard packages:

10 cc syringes - samples
30 cc syringes - small volume production, rework
180 cc cartridge
300 cc cartridge
360 cc cartridge

APPLICATION INSTRUCTIONS:

Surface Preparation:

T635 and T636 require no surface preparation before application as long as the surfaces are not visibly contaminated. If obvious contamination exists, remove the contaminant before applying the products.

Suggested Dispensing Equipment:

10 cc syringe - manual dispensing.
30 cc syringe - Semco Semmatic Series 1800, 1900 and 2000 time – pressure dispensers.
- EFD Ultra 2400 positive displacement dispenser
180 and 360 cc cartridge - Semco Model 250 A sealant gun or equivalent.
- EFD Ultra 2400 positive displacement dispenser
300 cc cartridge – Semco Model 550 sealant gun

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Application Process:

1. Remove the end cap from the selected container.
2. Install the container in the appropriate dispenser following the manufacturer's instructions.
   Note: Do not connect the dispenser to the air supply until the container has been properly installed in the dispenser
3. Cut dispense tip to the desired diameter. Diameter should be sized to deliver the required flow rate as well as the desired bead size.
   Note: An orifice cut to a 0.150 inch diameter will deliver a 0.15 inch bead at the rate of 10cc/min.
4. Connect air dispense system to air supply. Set air supply to 100 psi.
5. Set dispense tip onto the surface where the product is to be applied. Hold syringe or cartridge at a slight angle to the surface, approximately 30 degrees.
6. Apply air pressure by depressing foot pedal or squeezing the trigger to start the material flow onto the surface.
7. Swipe the tip against the surface using light hand pressure after the material has been applied. This allows the bead of material to "break off" from the dispense tip.

CALCULATION OF VOLUME TO DISPENSE

1. The required volume is heat transfer area times distance between surfaces.
2. Calculate the "effective heat transfer area" as follows:
   - for a plastic package, use the length or width as the diameter and calculate the circular area to be covered from $A = \frac{1}{4} p D^2$. This area covers the center of the package where most of the heat transfer takes place.
   - for metal or ceramic lid packages, use the diagonal of the package as the diameter to calculate the heat transfer area. This will insure that the whole surface is covered.
   - for enhanced packages containing a metal slug, use the diameter of the metal slug to calculate the area to be covered.
3. Estimate the distance from the device to the cold surface. To prevent any possibility of an air gap, use the nominal gap plus the expected tolerance as the height.
4. Examples: Convert unit to cm prior to calculating since volume of material will be in cc.

A. for a 31 mm metal lid package with a 2 +/- 0.1 mm gap
   Diagonal = $(3.1*3.1 + 3.1*3.1)^{1/2}$ = 4.38

   0.25 x 4.38 x 4.38 x 3,1416 x 0.21 = 3.16 cc of material

B. for a 24 mm plastic package with a 3 +/- 0.2 mm gap,

   0.25 x 2.4 x 2.4 x 3.1416 x 0.32 = 1.45 cc of material

REWORK:

Rework of assemblies containing T-635 or T636 materials is made easy by the nature of these materials. They require very small force to separate the component from the heat dissipating surface. This is due to the fact that the cohesive strength of these products is very low and the material is easily broken. To separate the two surfaces, simply apply a slight lifting force to one surface and very shortly it will separate from the other surface.

Once the two surfaces are separated, excess material from the joint can be wiped away tissue or a lint free rag. New material can be placed on the surfaces when ready to assemble.

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