

# T705/T710 THERMFLOW Application Note

## Introduction

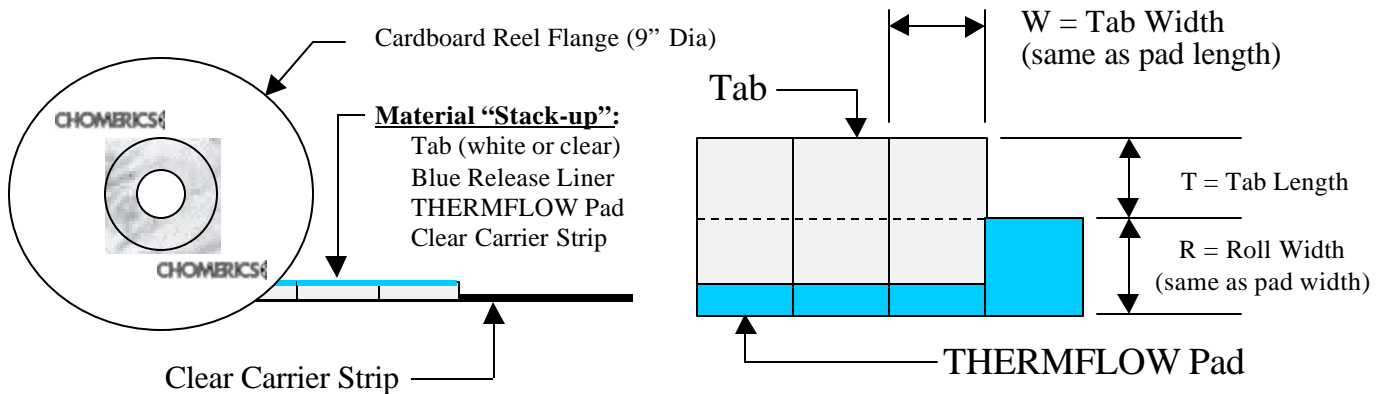
Chomerics' THERMFLOW™ T705 and T710 thermal interface pads come standard with a blue release liner on one side and a clear carrier strip on the other side. This material is typically supplied as “kiss-cut” pads on a continuous roll. In a typical application, the pad and its blue release liner are peeled off the clear carrier strip and applied to a heat sink with the blue release liner facing up. The blue release liner serves to protect the THERMFLOW pad until the heat sink is assembled to the microprocessor or other component to be cooled. The blue release liner can be peeled back and removed by hand using tweezers or the point of a knife blade. However, to speed the process of removing the blue release liner, Chomerics offers optional release liner tabs. The release liner tabs are thin polyester strips which have been attached to the blue release liner but extend beyond the area of the THERMFLOW pad to form a “tab” or “flag”. When the user is ready to assemble the heat sink to the microprocessor, the tab can easily be grasped and used to peel back and remove the blue release liner.

## Visual Indicator

Neither the blue release liner nor the optional release liner tabs contribute to removing heat from the hot component. In fact, the blue release liner is a poor thermal conductor and if not removed will dramatically increase the thermal resistance between the component and its heat sink. It is critical that the blue release liner be removed from the THERMFLOW pad prior to final assembly of the heat sink to the component to be cooled. Since the release liner tab often extends beyond the side of the heat sink, it can ensure proper assembly by acting as a visual indicator or “flag” to draw attention to a heat sink/component assembly where the blue release liner has not been removed.

## Standard Lengths

Release liner tabs are specified by the length of tab material that extends beyond the THERMFLOW pad, not the entire length of the actual tab.



Standard release liner tab width, W is the same as the length, L of the THERMFLOW pad.  
Standard release liner tab lengths, T are:

- 2.5mm (0.100 inches)
- 20.0mm (0.787 inches)

# T705/T710 THERMFLOW Application Note

## Standard Color

White is the standard color for release liner tabs. Clear or other color release liner tabs are available at additional cost. Minimum order quantities may apply.

## Manufacturability/Cost Issues

Adding optional release liner tabs requires an extra manufacturing step after the roll is slit to width but before the rotary die “kiss-cutting” is done. This additional step continuously laminates the white release liner tab material onto the blue release liner. The roll can then be rotary die “kiss-cut” where the THERMFLOW pad, the blue release liner and the release liner tab are all cut through to form a roll of individual cut pieces which are still attached “side by side” on the clear carrier film.

Custom release liner tabs can be provided by individually attaching pre-cut adhesive tabs onto the blue release liner. This is a slower, manual process which results in significantly increased per tab costing. For example, if a standard, continuously applied release liner tab adds \$0.03 to the cost of a pad, then a custom, manually applied tab could add as much as \$0.07 to the cost of the thermal interface pad. However, if the end user chooses to apply custom release liner tabs as part of their assembly operation, such tabs can be purchased at reasonable prices as individual cut pieces from Chomerics’ distributor/fabricators.

## Release Liner Tab Operation (“Peel” vs. “Pull”)

For best results, the release liner tab should be used to “peel” the blue release liner back off the thermal pad as opposed to “pulling” it off. The recommended steps for release liner removal are:

1. Apply the thermal pad to the heat sink with the blue release liner facing up. **NOTE:** *Removing the blue release liner from the THERMFLOW pad prior to applying the pad to the heat sink is extremely difficult and is not recommended.*
2. Starting as close as possible to one corner of the pad, bend back the release liner tab onto itself, forming a 120 to 180 degree angle.
3. Peel back from the starting corner to the opposite corner, maintaining the 120 to 180 degree angle.
4. Use a steady pressure when peeling the release liner tab back. Jerking or yanking the tab with too much pressure can pull the tab off the blue release liner.
5. When the blue release liner and its tab have been completely removed, they can be discarded and you are ready to attach the heat sink to the component to be cooled. **NOTE:** Once removed, a slight gray haze on the bottom of the blue release liner is normal and will not effect performance of the applied THERMFLOW pad.
6. Because of its phase change nature, slight scratches or marks inadvertently made to the surface of the THERMFLOW pad before the heat sink is assembled to the component to be cooled will not affect the pad’s thermal performance.

# T705/T710 THERMFLOW Application Note

## Usage and Storage Temperature Recommendations

The maximum recommended storage temperature for THERMFLOW material is 35°C (95°F). The maximum recommended usage temperature is 30°C (86°F). The material will soften and be less user friendly to work with at higher temperatures. At cooler temperatures, the material remains firmer and will be easier to handle, dispense, and fabricate. The improved handling characteristics of a cooler material will contribute to improved yields during fabrication and assembly.

As temperature increases, the amount of gray haze left on the blue release liner after its removal will increase. At temperatures below 30°C (86°F), this should not be a concern. Because of the ability of the material to “wet out” and flow with pressure and temperature in its end use application, the loss of this tiny amount of material on the blue release liner will not effect total system thermal performance. For this same reason, small nicks, scratches and imperfections (small voids in material, etc.) in the applied pad can be tolerated without degradation in thermal performance.

It is recommended to store rolls of THERMFLOW material with optional release liner tabs such that the roll is resting on the THERMFLOW material, not on the release tabs. In this orientation there is no weight pressing down onto the release tab material, thus preventing wrinkling of the tabs and possible “telescoping” of the wound roll.

## Rework Information

There are three methods to remove T710 material from components and heat sinks. Each method may work on its own, or any combination of them will work. The three methods are *chemical*, *mechanical*, and *heat*.

The *chemical* method is to use a solvent such as toluene to dissolve the material. If toluene is not allowed in the facility, an IPA (isopropyl alcohol) can be used. IPA is not as strong as toluene, so more solvent may be needed.

The *mechanical* method is to use a scraper, such as a razor blade, wooden popsicle stick, or a plastic scraper to scrape away the T710. A slight haze may be left behind.

When *heat* is used and the material is warmed above 43°C, it behaves like thermal grease and may be wiped away easily with a cloth.

If adding another piece of T710 material onto the heat sink and component, it is not necessary to completely clean both surfaces. Residual amounts of T710 material may be left on the heat sink and component. As the material goes through its initial reflow, T710 material will flow accordingly. It is important to remove the original fiberglass mesh.