

Getting that Great Looking Finish

A beautiful, professional quality finish adds that all-important final touch to your model. It's what gets those extra stares at the field...and makes you proud of a job well done. Some expert builders would have you believe that covering is an art that takes years of experience to develop, but the truth is that you can achieve it with some basic know-how and patience. Understanding the materials you're working with is vitally important, and, surprisingly, this is where many modelers make the biggest mistakes. Each brand of covering has unique properties. So if you learn using one type of covering and then try using those techniques with a different brand, it often leads to marginal results. I've been using UltraCote exclusively for the last 15 years. UltraCote offers several unique properties that are advantageous over other film coverings, making it easier for me to achieve and maintain a professional finish. Applying UltraCote requires its own learned techniques.

Multi-temperature, Maximum Control

UltraCote is unique in that different things happen at different temperatures. This allows for precise control during covering.

Covering with UltraCote becomes many times easier- with vastly improved results- when you understand what specific temperatures do to UltraCote, and when to use those temperatures.

220°F-Application

The adhesive is activated at just over 200° F. At the recommended application temperature of 220°, the adhesive reaches its full bonding strength. No shrinkage of the film occurs, so no distortion of the film takes place. Use the 220° application temperature when applying covering and when applying UltraCote trim pieces over UltraCote. Remember, if your iron is set at 220°, no shrinkage or distortion will occur, so there is no risk of distorting seams, trim lines or trim pieces and full bonding strength occurs.

Watch out for...

Don't press! Heat liquefies the adhesive, not pressure. Let the heat do the work and avoid gouges. It's natural to want to apply pressure, but it doesn't affect the bonding strength. If you're using a sock (highly recommended), it will be necessary to go more slowly over a given area, as it takes longer for the heat to penetrate the material. Some modelers turn up the heat to 240° when using a sock, but I prefer to stick with the 220° temperature and go at a slightly slower pace. This creates fewer air bubbles.



300°F- Shrink Onset

At 300°F, UltraCote will begin to shrink. Use this temperature after the covering is applied to tighten it, remove wrinkles and remove imperfections. It's amazing how many wrinkles can be removed at this temperature, and it's important to start removing imperfections at this minimum shrink 300° setting. UltraCote features a unique property that allows for a controlled shrink rate based on the selected temperature. While it begins to shrink at 300°, at 320°, UltraCote shrinks 18% of its total shrink rate (see chart). It's important to use the minimum temperature necessary to achieve a smooth wrinkle-free finish. Most modelers don't realize that to further shrink most brands of film covering, it must be heated above its previously exposed peak temperature. In other words, if a covering was already exposed to 320°, it will be necessary to go above 320° to further shrink the covering. Use the lowest temperature possible to achieve a smooth wrinkle-free finish at the start and you'll have the largest available shrink rate remaining, should you later need to shrink the film.

Watch out for...

Stay away from seam lines and edges! Remember, 300° is well above the adhesive activation temperature, and seams will pull away. If you have some stubborn wrinkles close to the seam line, try this trick. Soak a washcloth in cold water, then fold it twice and place it on the seam line, covering the seam but exposing the wrinkles. With your iron at 330°, quickly apply it to the wrinkled area (about 5-10 seconds). The washcloth will keep the seam cool, and prevent it from pulling apart and distorting.



350°F- Maximum Shrink

At 350°F, the maximum shrink is achieved. You won't use this setting very often, but it's important to know the total shrink temperature range. That's because the amount of shrink rate you'll have left is based on the temperature you use to shrink the covering.

For example, if you're shrinking your film using 320°, by referring to the chart, you'll find that 82% of the total remaining shrink is left. That's good! That means that, if in the future you need to re-shrink the covering, it won't be a problem. But a word of caution: use the highest temperatures only as a last resort to shrink wrinkles and imperfections. In most cases, if you need to use this much heat, you'd be better off to just replace the covering with a new piece.



Watch out for...

Stay away from seams and edges. This high temperature can cause bubbling and blistering.

Removing UltraCote®

You may come to a point when you'll need to remove or replace a piece of UltraCote.

In many cases, the covering will simply pull away, but if you're having a tough time, use your heat gun. Lift a corner of the covering, and then pull away while directing heat in the area to be removed. I just recovered the 2-year-old Reebok CAP 232 pictured here using this heat gun technique, and it looks as good as new!



Bubbles and Blemishes



[Hangar 9™ Heat Gun](#)

When your airplane sits out on a hot sunny day, you may notice that the covering bubbles and wrinkles. This is common with all brands of film covering, no matter what the manufacturers claim. But getting rid of those wrinkles is easy. You'll need a heat gun, a covering mitt, a wet washcloth, and a fine straight pin.

Heat the affected area, and notice how the air underneath the covering expands, making bubbles. As you continue to apply heat, moving in a 6" circle, it will release the adhesive bond. At first, several small bubbles will appear, but as you continue to work the area, the bubbles will join to form one large bubble. Now pop the bubble with the pin, and immediately wipe the area with a covering mitt to reattach the covering. It may take several attempts, and you'll get better after you do it a couple of times.



[Hangar 9™ Covering Glove](#)

It's important to not stay in one place for very long with the heat gun, especially if you're working with a balsa-covered foam part, as warping and damage could occur. If the affected area is close to a seam, use the wet washcloth trick to prevent the seams from distorting and pulling apart.

Preventing Heat Blemishes

Heat blemishes occur when the elevated temperature causes the trapped air in the wood to expand. With nowhere to go, the expanded air causes a bubble to form in the covering and stretches the film. When the air cools, the stretched covering remains. You'll notice this happens especially with dark colors like black or dark blue, and that this never happens on the bottom of the wing, but only the top where the sun heats the surface.



The solution? While several methods have been tried—like completely painting the wood structure with thinned white glue to prevent the air from reaching the surface—we know of only one method of preventing this from happening: don't leave your airplane in the sun! Seriously, get a cover or a tent or find some shade. Also, choosing light colors will prevent the intense heat buildup. Last summer during our hottest days, I measured the covering temperature on a dark blue airplane that had been sitting in the sun at 163°. If you keep them from getting hot, there is no problem, but, for those times when they do, practice the re-shrinking techniques mentioned above, and it will only take a few minutes to bring back that pristine finish.

Final Tip



A very good builder and pilot once shared this perspective with me. He said that, if things go well, that new airplane you're building would last several seasons. Maybe even 5 years or longer.

Wouldn't it be worth spending a little extra effort and time during building to make it the best you can?