

Application Overview for Watercraft MACmark® Tuning Films

Thank you for your interest in MACtac®'s Tuning Film media. Our micro-structured air egress technology provides the best opportunity for a successful application!

1) Our Textured series is best suited for flat to moderately curved surfaces normally found in a typical boat wrap. The Silver Moon, Black Leather, Carbon Fiber, and Brushed Metal vinyl films, are easy to handle, fast to apply, and brilliant as a final product. Recommended for flat to simple curves such as:

- a. Decals & accents
- b. Stripes
- c. Identification markings
- d. Interior dash
- e. Accessories such as laptops, cell phones, etc.

2) Our Sublime and Iridescent Films are also suited for flat and moderately curved surfaces; in addition, they are exceptional on complex surfaces. This 3.4 mil proprietary vinyl film is an easy to handle high gloss, or zero glare, matte finished product. These products are recommended for 2 and 3-dimensional curves such as:

- a. Everything above plus;
- b. Full wraps
- c. Moderate to complex boat wraps
- d. Boat trailers

Questions? Your MACtac sales representative can put you in touch with our technical support to help.

Preparing the media for application:

1. Did you select the correct media for your application? Sublime and Iridescent are the films for complex surfaces as found on personal watercraft.
2. The textured Tuning Films are not recommended for full complex wraps.
3. Is the media within proper shelf-life (2 years D.O.M.) and has it been stored in a reasonably controlled environment (ideal is 60° - 80°F @ 50% R.H.)?

Pre-application Planning (Application Checklist):

Prior to application, plan your steps for a successful wrap by using the following checklist:

1. The ideal location for an installation is indoors in a controlled environment. If this is not possible, do your best to protect the surface from changes in temperature, moisture, wind and dust as these will negatively affect the integrity of the application. The watercraft has to be out of water and dry for at least 24 hours.
2. All trim items that can safely be removed should be prior to the wrap. This includes: rub rails, name plates, lighting fixtures, silicone caulk, etc.
3. Inspect the watercraft and fill out the proper inspection sheet (TA2108) and send it to MACtac. This is required to qualify for the MACtac Vehicle Wrap Warranty. Identify potential points of

failure like: poor paint jobs, rust, dents, nicks, scratches, seams, silicon seals, rough textured plastic surfaces, repaired areas and rubber window gaskets. The adhesive is designed to adhere to the painted or gel coated surface; it doesn't stick to silicone, rubber, etc. The material must be trimmed around these areas!

4. Conduct a tape test with 610-tape, to insure a sound paint job. Identify areas that have been repainted, chipped, cracked gel coat or show rust. These areas may result in paint damage upon graphic removal and must be noted on the vehicle inspection report. (Ref. TA2108).
5. The surface of the watercraft must be cleaned 24 hours prior to application and kept indoors to allow drying. If not possible, at the very least keep it covered to protect from morning dew which will re-wet critical areas, like seams and rivets which then must be re-dried prior to application. Some of today's modern finishes and finish enhancers like marine waxes and paint conditioners require using Xylene (a.k.a. Xylol) as a cleaner to remove. Before using harsh solvents, first test a small out of sight area to insure there will be no damage to the finish! If cleaning with Xylene is necessary, make sure you re-clean with alcohol to remove any of the Xylene residues! Be sure to follow directions on the can and to use Personal Protection Equipment. (Ref: TA2032 Technical Assistance bulletin) for complete cleaning recommendations.
6. Just prior to application, the watercraft should be wiped down with isopropyl alcohol. Wipe with a wet rag and then towel off with a dry rag, do not simply allow evaporation. Pay special attention to edges, seams, around moldings and gaskets and where objects were removed. Use compressed air or a heat gun to ensure dryness.
7. The recommended surface temperature of the watercraft for application must be above 60°F.
8. Lay out your graphics and tape to the watercraft to ensure everything lines up correctly.

Tool kit:

The standard toolkit for watercraft applications is:

- ✚ • A temperature adjustable industrial heat gun or propane torch (be very careful with a propane torch as it's very easy to gloss the textured and matte finishes)
- ✚ • A hard and soft squeegee, or a hard squeegee with a low friction sleeve
- ✚ • A sharp knife with many replacement blades!
- ✚ • Tape measure and positioning tape
- ✚ • Air release tool (straight pin)
- ✚ • Cotton gloves
- ✚ • And a helper (if possible)!
- ✚ • 610 tape for snap tape test
- ✚ • Masking tape
- ✚ • Edge sealer tape, or liquid edge sealer

Application:

Important note: It is critical to keep the graphic above the water line and the hard water line, the area where the boat crashes on to the water when travelling at high speeds. Any graphic wrapped below these lines will not be warranted. Specifications are available from the boat manufacturer to determine hard water line.

1. Application should begin at the back of the watercraft or from the bottom up for horizontal panels. This allows for all overlaps to face the back or the bottom which prevents wind and water from causing a premature failure. Seams should have a 1 inch overlap.
2. Use firm pressure on the squeegee to apply the media to the surface, starting at the high points in the middle and working out toward the edges.
3. For channels, wherever possible lay the media through the channel rather than bridging and stretching the media. Any vinyl film can exhibit shrinking or tenting when overstretched or overheated.
4. In many cases it is not possible to work through the entire complex curve. In this case bridging is the only option. Tuning Films Sublime and Iridescent can be stretched up to 150% into recesses. However, the Tuning Films textured have a max of less than 100%. Areas that will result in the film being stretched any further must be cut to relieve tension.
5. In many difficult areas, a thin layer of an adhesive promoter or acrylic spray primer can enhance adhesion. Be sure to use the primer sparingly and allow it to completely cure according to the directions on the can, prior to graphic application.
6. To properly bridge a gap, apply the film to the flat areas first as indicated above. Use heat to soften the film, somewhere around 180° to 200°F. Immediately stretch the film into the groove, starting at the middle of the groove and working out to both sides. Sometimes using a cotton

glove or soft cloth instead of a squeegee is the way to go. Since the film cools quickly, it is important to work in small areas and continue to heat the film as your work moves along.

7. Finally, after the film has been applied, to eliminate the stretching stresses created in this application, you must heat the film to a higher temperature, about 220°F. Move the heat source slowly. Now that the film has been applied you are also heating the body of the watercraft and it takes more heat to achieve the final temperature requirement. Using a no-touch heat gauge is strongly recommended to ensure this very important step is done correctly.
8. Edges, seams and trim should now be cut and re-squeegeed to ensure good adhesion. It is a very good idea to also use high heat along these areas to speed up the adhesive build and ensure a good application. Do not wrap films around 180° turns as this will most likely result in failure.
9. Do not wrap any silicone edges or similar surfaces. Vinyl will not adhere to rubber or silicone. Be sure to trim away at least 1/8" from any silicone or rubber seals or edges.
10. Be sure to overlap the graphic on the nose of the watercraft 4-6 inches. Start with the first side, and wrap over the nose 2-3 inches, and then wrap the second side over the nose 2-3 inches creating a 4-6 inch total overlap.
11. Once all edges have been post-heated and re-squeegeed apply a 1/2" tape sealer to all edges and seams. Or a layer of liquid edge sealer can be used as well.
12. Be sure to re-caulk areas where you removed the silicone caulk before. Keep a tight bead and go right over the vinyl. Many people use masking tape to make the "perfect bead".
13. MACTac's B-Free adhesive employs air egress technology that allows air to flow easily in all directions. This will minimize the need to pop bubbles. However, it is still possible to get an occasional bubble due to our adhesive having very small channels which will completely wet out during the squeegee process. Should a bubble appear use an air release tool or pin to prick the bubble. Do NOT use a knife as this starts a tear which can result in a failure.

Tips and Tricks for Successful Applications:

1. Know your surface and its limitations (gaskets, rust, channels)
2. Fill out and submit the vehicle inspection report as required for warranty coverage.
3. Provide a controlled environment and a clean watercraft.
4. Always use a sharp knife for trimming (snap-off or replace blades frequently).
5. Use an air release tool, not a knife, to relieve air bubbles.
6. Heated media applied to cold metal will cool quickly. Apply enough heat to do the job correctly and work in small areas.
7. Use heat to soften the film prior to stretching.
8. Use heat to relax and set the film memory after it has been stretched into the channels. This also allows the adhesive to build to a high bond quickly.
9. Seams and edges are common failure points. Be sure that edges are clean and dry. Cut all seams and then heat and re-burnish all edges to insure a good bond.
10. Apply a 1/2" tape sealer to all edges and seams. Or use a liquid edge sealer.
11. Do not over-heat or over-stretch the graphic media. Channels that result in the film being stretched too far must be cut.
12. After all the films has been applied, go back and apply heat to the graphic to a high temperature, 200 to 250°F, especially in the areas where the vinyl has been stretched to relieve stresses created by stretching.

Application Examination checklist:

IMPORTANT NOTICE: The information given and the recommendations made herein are based on our research and are believed to be accurate, but no guarantee of their accuracy or completeness is made. In every case, user shall determine before using any product in full scale production, or in any way, whether such product is suitable for user's intended use for their particular purpose under their own operating conditions. User assumes all risk and liability whatsoever in connection with their use of any product. The products discussed herein are sold without any warranty as to merchantability or fitness for a particular purpose, or any other warranty, express or implied. No representative of ours has any authority to waive or change the foregoing provisions, and no statement or recommendation not contained herein shall have any force of effect unless in an agreement signed by the officers of seller and manufacturer. Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent without authority from the owner of the patent. The following is made in lieu of all warranties, express or implied: Seller's and manufacturer's only obligation shall be to replace or credit such quantity of the product proved to be defective at its discretion.

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All watercraft must be inspected prior to application to identify any possible problem areas. These are areas that will result in adhesion problems or areas that may result in paint damage upon graphic removal. Note the areas on the attached inspection templates and have the templates signed by the applicator and the watercraft owner. These noted problem areas will not be covered under any MACtac warranty. It is the graphic printer's responsibility to ensure the necessary signatures are obtained and submitted to MACtac for warranty consideration.

1. Inspect watercraft and locate any potential 'problem' areas.
2. Locate and mark the correct template where there is chipped paint or gel, rust spots, dents, deep scratches, oxidation, etc.
3. Note any areas where the watercraft has been re-painted. Check these areas for paint anchorage using a strip of an aggressive tape and a squeegee.
4. Confirm surface temperature and record.
5. Submit completed inspection report to MACtac Graphics Technical Marketing Manager.

You can fax it to MACtac at:
330.686.3950

Or mail it to:
MACtac Graphics
c/o Technical Marketing Manager
4560 Darrow Rd. Stow, OH 44224

Or email it to:
jjstadelman@bemis.com