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Version #3 (0516)  
Approved by J. S.

**Product**

Tuning Film Carbon BF Vehicle Wrapping Film

**Product Description**

This is a MACTac family of embossed colored vinyl films designed for vehicle wrapping. The Carbon Fiber faces are 5.1 mil cadmium-free polymeric vinyl, available in four gloss colors. Carbon Fiber films are coated with a high performance, low tack and micro-structured (bubble-free), permanent, solvent acrylic adhesive for easy application. The adhesive is protected by an 80# micro-embossed, polycoated release liner for added stability and layflat with a light grey 'MACTac' back printing

The Tuning Film Matte white and Matte black faces are 3.9-mil cadmium-free polymeric vinyl films coated with high performance, repositionable, clear acrylic adhesive. This product utilizes an 83# white kraft liner for stability and layflat with blue 'MACTac' backprinting.

Finish	Stock Number
Carbon Fiber Black	TFL1088BF
Carbon Fiber White	TFL1028BF
Carbon Fiber Silver	TFL1068BF
Carbon Fiber Graphite	TFL8801BF
Tuning Matte Black	TF0088
Tuning Matte White	TF0028

These films are outstanding choices for adding unique looks to a number of different surfaces such as internal or external vehicle parts, above-the-water boat hull wrapping, furniture finishing and electronic equipment wraps like on cell phones, computer covers, etc.

**Physical Properties**

Property	Typical Values		Test Method
<b>Thickness, inches (mm)</b> Face plus adhesive	<b>Carbon Fiber</b> 0.0061 (0.130)	<b>Matte</b> 0.0047 (0.12)	ASTM D-645 (ISO 543)
<b>Face Material Data, 68°F (20°C)</b> Tensile strength lb./in. (N/15mm) Elongation % at break	> 12 (40) > 150%	>9.8 (27) >150%	DIN 53455-5
<b>Peel Adhesion lb./in. (N/25 mm)</b> 180° on Stainless Steel -20 min.	2.8 (13)	4.6 (20)	ASTM D-903 (FTM-1)

- 24 hr. - 1 week	3.4 (15) 3.7 (16)	6.8 (30) 8.0 (35)	
<b>Dimensional Stability, %</b> 48 hours @ 158°F	< 0.3	< 0.3	FTM- 14 10" x10" Sample Bonded to aluminum
<b>Temperature Range</b> Application: End Use:	50° to 104°F (10° to 40°C) -40° to 194°F (-40° to 90°C)		
<b>Flammability</b>	Self-extinguishing		ISO 3795

- Values given are typical for unprocessed product and are not for use as specifications. Processing may change the values.

## Durability

Vertical exposure (Horizontal exposure: reduced by 50%):

	Vertical application (years)			Horizontal application (years)		
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3
TF black matt	10	7.5	5	6	4.5	Not Recommended
TF white mat	10	7.5	5	6	4.5	Not Recommended
TF Carbon Fiber black BF	5	4	2.5	3	2	Not Recommended
TF Carbon Fiber white BF	5	4	2.5	3	2	Not Recommended
TF Carbon Fiber Graphite BF	4	3	2	2	1.5	Not Recommended
TF Carbon Fiber Silver BF	4	3	2	2	1.5	Not Recommended
TF Carbon Fiber Gold BF	4	3	2	2	1.5	Not Recommended

### Zone 1: North America, North, West, Central & Eastern Europe

(Excluding desert areas of the USA which are in zone 3)

### Zone 2: Central & South America, South Europe, Asia Pacific, Australia South coastal (Perth to Brisbane), New Zealand

### Zone 3: Greater Middle East, Africa, Australia, USA (Arizona, California, Florida, Nevada, New Mexico, Texas, Utah), and Mexico.

## Shelf Life

Tuning Films have a two year shelf life when stored between at 60- 80°F (15 - 25°C) and 50% relative humidity or less.

## Removability

Tuning Films remove cleanly *with heat*.

## Chemical Resistance

This product is resistant to most oils and grease, fuels, aliphatic solvents, weak acids, salts and Alkalies.

## Limitations

- 1) The user is responsible for determining the product's suitability, including adhesion and if needed, removal characteristics when used in applications other than listed specifically in this Performance Guide.
- 2) If there are any questions about applications, please contact your Mactac sales representative to discuss your requirements for recommendations.
- 3) If this is a printed Performance Guide it is an uncontrolled document. Please check the Mactac website for the latest, most up-to-date version

## Recommendations

### On flat or slightly curved surfaces:

Apply directly on the substrate by the dry application method.

#### 1) On convex areas:

Heat the film with a heat gun before stretching it over the convex area.

#### 2) On corrugated or concave areas:

If the film is stretched into a corrugation it may pop-out after a few weeks. It is, therefore, recommended to cut the film and to apply it in the corrugation without tension.

#### 3) On rivets:

Apply the film over the rivet with high pressure and heat it with a heat gun (temperature over 500°C). The film may lift slightly after few weeks.

#### 4) Marine applications:

We strongly recommend edge sealing.

**CALL 1-800-321-8834 for additional product information**

**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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