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Version #21 (0816)
Approved by J. S.

Product



IMAGin® STR328

Product Description

STR328 is a 3.4-mil **matte opaque** white, PVC film designed for the production of **outdoor sidewalk and parking lot 'floor' graphics**. The product is coated on one side with a 3-mil thick, **aggressive, permanent**, blended acrylic/rubber pressure sensitive adhesive that bonds well to flat or slightly rough, pedestrian traffic surfaces like concrete and asphalt. The adhesive is protected with a 90# polycoated 2-side SuperFlat™ liner. The film face is designed for excellent printability with solvent, eco-solvent, latex and UV-cured inkjet printers and is also printable with UV or solvent screen inks*. StreetRAP used as an exterior floor graphic must be laminated with **Permacolor® PF6600**, a 6-mil textured PVC overlaminating film which exceeds ANSI/NFSI B101.3 and B101.1 specifications for a “High Traction” surface.

StreetRAP combined with standard 2- to 3-mil overlaminating films is great for vertical indoor concrete surfaces like support pillars and smooth to slightly rough concrete or cinder block walls or those tough to adhere to applications like the low surface energy plastics used in polyethylene trash and storage bins.

Physical Properties

Property	Typical Values	Test Method
Quick Tack lb. /in² (N/25mm) Stainless Steel	7.5 (33)	PSTC-3
Peel Adhesion lb./in. (N/25 mm) 180° on Stainless Steel - 30 min. - 24 hr.	7.0 (30) 8.0 (35)	PSTC-1 (CTM-25)
Shear, Hours to fail Stainless steel - 5# weight @ 72°F	200+	PSTC-7
Dimensional Stability, inches (mm) 48 hours @ 158°F	max 0.5	Mactac CTM-21 Bonded to aluminum
Temperature Range Minimum Application: End Use:	50°F (+10°C) 32°F to 225°F (0°C to 107°C)	
Surface Burning Characteristics (Meets ANSI, NFPA, and IFC as class A) Flame Spread Smoke Density	10 25	ASTM E84-01 or ANSI/NFPA 255 or IFC 8-1

Slip Resistance

PF6600 6-mil overlaminating film is required for StreetRAP floor graphics.

Wet DCOF Value	Slip Resistance Potential	Action
>0.45 (inclines), 0.42 (level)	High -- lower probability of slipping	Monitor DCOF regularly and maintain cleanliness.
0.30 - 0.45 (inclines), 0.30 - 0.42 (level)	Acceptable -- increased probability of slipping	Monitor DCOF regularly and maintain cleanliness. Consider traction-enhancing products and practices where applicable for intended use.
<0.30	Low -- higher probability of slipping	Seek professional intervention. Consider replacing flooring and/or coating with high-traction products.

Various standards-making authorities have developed different methods for evaluating the slip-resistance characteristics of walkway materials. Organizations' including the American Society of Testing and Materials (ASTM), the American National Standards Institute (ANSI), and the National Floor Safety Institute (NFSI), has established different slip-resistance test protocols. The standard, ANSI/NFSI B101.3, is the newest, most consistent and government mandated specification based on a DCoF (Dynamic Coefficient of Friction) test protocol and one of the few to be approved for testing on wet surfaces. The previous standard, ASTM C1028, has been withdrawn as an unreliable test method and has not been replaced.

According to ANSI/B101.1 – Maintaining a High Traction surface is the responsibility of the landowner. To maintain outdoor floor graphics using StreetRAP an PF6600 occasionally clean the surface with a brush and soap and water cleaner to maintain a “High Traction” rating and a safe walking surface. If this cannot be done the graphic must be removed once it loses its safe traction rating.

Durability

1. The outdoor durability of a completed StreetRAP floor graphic is up to 3 months for pedestrian traffic on smooth to slightly rough surfaces.
2. The outdoor durability of the unprinted film is 5 years on vertical surfaces.

Shelf Life

2 years from D.O.M. when stored at 60/77°F (15/25°C) and 50% relative humidity in the original package.

Removability

1. To remove; lift one edge, you may need a putty knife to get an edge started, and pull using short, quick tugs. Keep the angle low, (less than 45°) for best results.
2. Removal is much easier when done in the cool early morning hours. Do not use heat to assist in removal as heat will actually increase the bond of this adhesive.
3. If any residual adhesive residue is present after removal of the graphic, Citrus or solvent based-adhesive removers will clean the residue.

Approved Print Materials

Screen Printing:		HP Indigo	<input type="checkbox"/>
UV Cured	<input checked="" type="checkbox"/>	Off-set	<input type="checkbox"/>
Solvent	<input checked="" type="checkbox"/>	Off-set UV	<input type="checkbox"/>
Digital: UV Inkjet	<input checked="" type="checkbox"/>	Thermal Transfer	<input type="checkbox"/>
Eco-solvent	<input checked="" type="checkbox"/>	Flexographic *	<input checked="" type="checkbox"/>
True solvent	<input checked="" type="checkbox"/>	Laser	<input type="checkbox"/>
Latex	<input checked="" type="checkbox"/>	Jetrion	<input type="checkbox"/>

* **Flexographic Printing** requires a topcoat. WVG000113 has been approved by ACTEGA Coatings and Sealants (www.altana.com) as in-line coat-able ink primers.

To achieve the best possible print quality, please make sure that the correct ICC profiles or printer settings are used. Profiles can be obtained from our Distributors or can be downloaded from www.mactac.com. Printer and heater settings and ICC profiles can also be downloaded from some O.E.M. or software manufacturer's websites.

The ICC profiles are provided solely as a customer resource. Print environment, the individual nature of printing systems, inks and software can significantly affect output. It is the customer's responsibility to determine the suitability of any profile for use in their specific print environment.

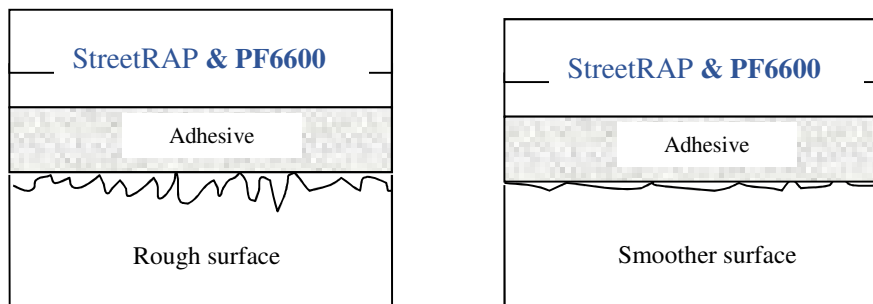
Limitations

1. StreetRAP is not intended to be used as a conformable wall wrapping film.
2. StreetRAP used on sealed concrete may result in a **permanent application** and will not be easily removed. Always test first in an inconspicuous area.
3. StreetRAP on varnished surfaces and soft walls like stucco or drywall will **damage** the surface upon removal. Always test first in an inconspicuous area.
4. StreetRAP is **not** designed for use with vehicular traffic. Short term applications, like for special events or parades that last a couple days are acceptable. At the end of the special event immediately remove the graphic before regular traffic resumes.
5. StreetRAP used on some concrete surfaces, typically with newly poured concrete, may fail due to **efflorescence** which is beyond Mactac's control and therefore no claim for successful application or removal is made by MACTac in this instance. **Efflorescence** is a powdery white material that forms on the surface of the concrete and is caused by calcium hydroxide which is naturally in the concrete after it sets. ***As water moves out of the concrete it carries with it some of this calcium hydroxide, which then reacts with carbon dioxide in the air to become calcium carbonate,*** then coating the PS adhesive resulting in failure of the graphic from the concrete.
6. **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.**
7. **If there are any questions about applications, please contact your Mactac sales representative to discuss your requirements for recommendations.**
8. **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

Always test your combination of IMAGin products, inks and laminating films prior to commercial use.

- 1) **Printing Conditions:** Print in conditioned pressroom at $\pm 73^{\circ}\text{F}$ (23°C) and 50% RH. The maximum allowable ink saturation is 270%.
- 2) **Drying Requirements:** Solvent, Eco-solvent and Mild-solvent inkjet prints require 24 - 48 hr. drying time - open to the air. Inks do not dry when printed media is rolled up. The prints must be dry prior to lamination.
- 3) **Laminating Conditions:** Overlamination of the inkjet-printed material with **PERMACOLOR® PF6600** is required for a high traction (a.k.a. slip resistant) StreetRAP.
- 4) **Transportation Conditions:** To allow for easy transportation, StreetRAP series can be rolled up, with the image out, with a minimum diameter of 6 inches (15cm). During transportation or storage, avoid exposing them to extreme temperature and humidity changes.
- 5) **Application Requirements:** The surface must be ***absolutely dry***, clean and in reasonably good condition.
 - a) StreetRAP must be applied in dry weather to a dry surface at temperatures above 50°F (10°C) on days the temperature is expected to rise to at least 70°F (21°C). For example: if it rained the day before or early morning, allow 24 hours of dry weather for the concrete surface to dry out.
 - b) Heat helps the adhesive flow to the rough surface to create a better bond. Do not attempt to apply graphics late in the day when the temperature is expected to cool down.
 - c) The rougher the surface the less contact the adhesive will have and the less chance your graphic has for success.



Adhesive contact is much better on smoother surfaces!

- d) To clean the surface, use a brush or stiff bristle broom to remove dirt and dust, sand and gravel or other loose contaminants. Do not use water or cleaners which will cause the surface to become wet.
- e) Bridge graphics over seams if needed; do not force the graphic down into the seam.
- f) Once aligned, pull back 1-2 inches of the liner to expose the adhesive to align and start the application. Remove 6 - 10 inches of liner at a time and using a firm squeegee or a firm, short bristle brush with very firm pressure, forcing the adhesive down into the surface. Continue with 6 - 10 inches at a time to eliminate air bubble, complete the application.
- g) Once complete go back over all edges again to make sure they are in full contact to the surface.
- h) If possible trim sharp corners to a rounded radius to help minimize edge lifting.
- i) On rougher surfaces use heat and pressure to conform at least 1" of the graphic edge down into the surface.

- j) If needed, use a 1" overlap to seam the graphic. Do not have multiply layers of overlap on your graphic. This creates excessively high levels which may result in trips, falls and injuries. Stagger your overlaps as necessary.



- *Values given are typical for unprocessed product and are not for use as specifications. Processing may change the values.'*
- *Product reinforced with 2-mil polyester during adhesion tests.*

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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