

Version #6 (0817)  
Approved by J. S.

## Product

MACal® 9800Pro & Pro SL  
High Performance Vinyl Series

## Product Description

Exclusive Mactac films designed for high performance permanent marking applications. The face is a 2.6-mil cadmium-free vinyl, which are durable yet highly flexible for conformability over difficult surfaces and has an **enhanced high gloss** finish. The product is coated with a high performance, permanent, clear acrylic adhesive for 9800Pro and a durable white acrylic adhesive for 9800ProSL. These products utilize an 83# white kraft liner for stability and layflat with blue backprinting. The products exhibit excellent dimensional stability and are designed for superior cutting and weed ability. Mactac offers a wide variety of standard high gloss colors with MACal® 9800Pro, and ultra-bright, luminous colors with MACal® 9800ProSL.

## Typical Applications

- Fleet marking
- Container decals
- Equipment identification
- Window graphics and signs

## Physical Properties

Property	Typical Values	Test Method
<b>Thickness in inches</b>		ASTM D-645
Film plus adhesive 9800Pro	0.0037 (0.095)	
Film plus adhesive 9800SL	0.0039 (0.10)	
<b>Peel Adhesion</b>		ASTM D-903
180° on Stainless Steel		
- 20 min.	4.0 (16)	
- 24 hr.	4.1 (18)	
- 1 week	4.6 (20)	
<b>Face Material Data, 68°F (20°C)</b>		DIN 53455
Tensile strength lb./in. (N/15mm)	>9.8 (27)	
Elongation % at break	>150%	
<b>Dimensional Stability (shrinkage) in Percent</b>	< 0.10	FTM- 14
48 hours @ 158°F	<0.4% - 9800SL	10" x10" Sample (70 ° C) Bonded to Aluminum
<b>Temperature Ranges</b>		
Application:	45° to 104°F (8° to 40°C)	
End Use:	-40° to 194°F (-40° to 90°C)	
<b>Flammability</b>	Self-extinguishing	ISO 3795

## Durability

The durability of these products is; White and black - 8 years outdoor, all other colors - 7 years and metallic's - 5 years outdoors. This use-life estimate is based upon accelerated age studies based on vertical applications under "normal" temperate climates.

## Printability

Printability is not warranted. However, we have created the following guidelines if printing is desired:

- 1) For **screen printing**: Limit the screen ink to two or three colors. While the liner is an excellent liner, it is designed for plotter cutting. Sometimes too much heat may result in the liner 'waving' a little which can cause registration issues when additional colors are used. Mactac recommends Nazdar 3500 series UV cured screen inks.
- 2) If printing **UV inkjet**; make sure the vacuum (if flatbed) is strong enough to hold the liner down tight. Typically it is, but vacuums are notoriously weak, especially as they age.
- 3) If printing with **solvent inks**; limit the inks to a total of 270% saturation. Use a generic ICC profile for either 2 mil cast or 3.5 mil calendared vinyl films as a starting point.
- 4) **Thermal transfer** printing: all MACmark **gloss** films are thermal transfer printable. We strongly recommend the use of a web cleaner prior to printing due to the potential presence of paper dust from the white kraft paper liner.

## Shelf Life

Two years when stored between at 60- 80°F (15 - 25°C) and 50% relative humidity or less.

## Chemical Resistance

A sample is prepared by adhering the film to a metal substrate 24 hours prior to immersion in the chemical solution or solvent. After a fixed period of time, the sample is removed, dried and examined for adhesion.

Chemical	Time Immersed	Observation
Water	24 hours	Excellent
5% Detergent	24 hours	Excellent
10% Hydrochloric Acid	24 hours	Excellent
10% Sulfuric Acid	24 hours	Excellent
10% Phosphoric acid	24 hours	Good/Excellent
10% Sodium Hydroxide	24 hours	Excellent
10% Ammonium Hydroxide	24 hours	Excellent
Ethylene Glycol	24 hours	Excellent
Methanol	1 hour	Good
SAE 10W30 Oil	24 hours	Excellent

## Gasoline Resistance

A sample is prepared in the same manner as for the Chemical Resistance Test and is sprayed several times with gasoline followed by drying at each stage.

Test Fuel	Observation
Low Octane	Good
High Octane	Good

## 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.

## Application Tips

Application of MACal 9800Pro and Pro SL is made easier if **Mactac** pre-spacing tape is used. Where exposure to chemical and solvent spills is likely to occur, edge sealing of decals with a varnish or clear coat will prevent edge lift. Correct varnishing of decals gives greater protection and longer end-use life against any prolonged effect of weathering, abrasion and other erosive effects such as frequent cleaning.

- *Values given are typical and are not necessarily for use in specification.*

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