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Approved by J. S.

## Product

Permacolor® TL2000 High Gloss

## Product Description

Permacolor thermal overlaminating films are high quality, low temperature, heat activated films designed for the overlamination and encapsulation of graphic images. Permacolor protects the image from harmful ultra-violet (UV) light, moisture, dirt, oils and other potential contaminants. The use of Permacolor on one or two sides lends body to the image for easier handling and display.

*TL2000* Series is a family of clear, glossy PET films with a heat activated, polymeric adhesive on one side. The use of *TL2000* lends depth and vibrancy to underlying images. Stiffness of the laminated image will vary with the Permacolor thickness selected as well as whether or not it is used on both sides. The thicker products provide maximum protection.

## Physical Properties

Product Thickness:	3 mil (1/2), 5 mil (3/2) and 10 mil (2/8)
Surface Appearance:	High Gloss
pH:	7.0
Roll Wind:	Adhesive In
Core Size:	3" I.D.
Heat Seal Initiation Temperature	190° (88°C)
Recommended Storage:	Rolls should be stored on end or suspended.

## Shelf Life

Two years when stored at 75°F (24°C) and 50% relative humidity or less. Note: Mactac recommends that rolls be stored on end or suspended from the core.

## 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

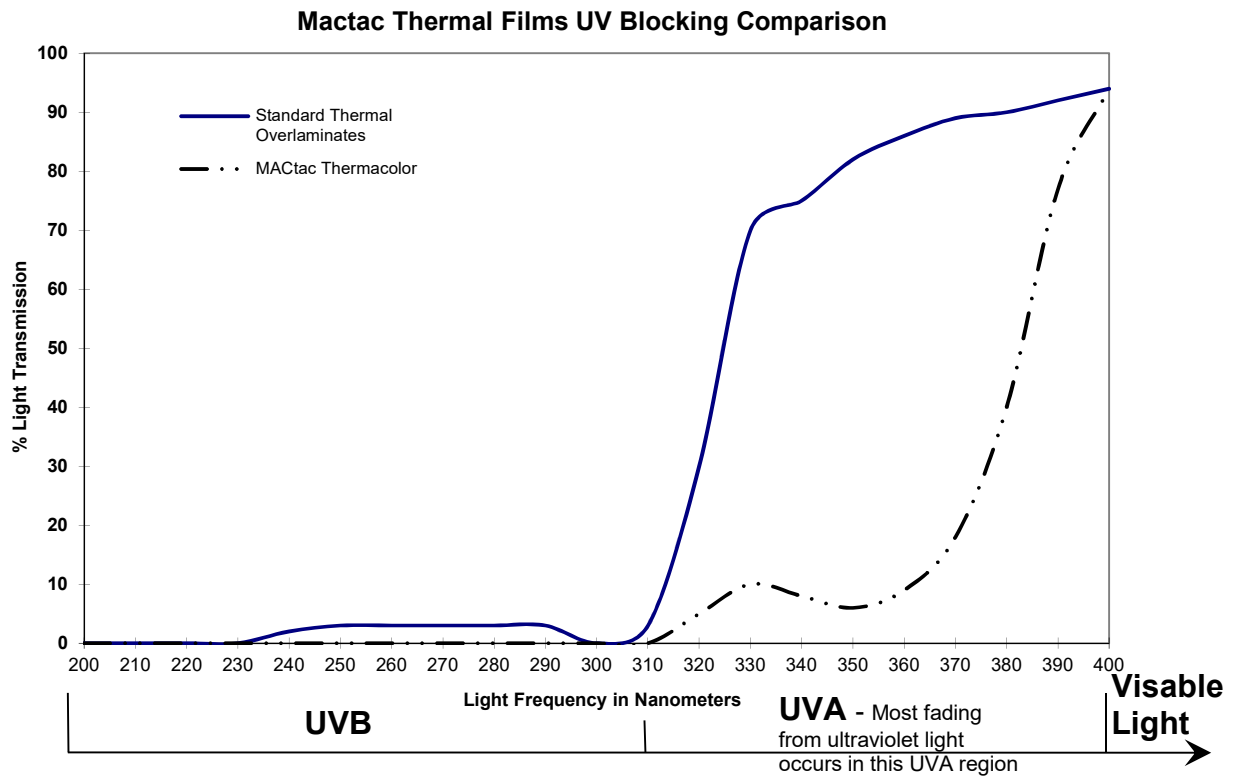
The suggested laminating temperature is approximately 220°F (104°C) for 3-mil, 240°F (115°C) for 5-mil and 260°F (127°C) for 10-mil at a throughput speed of 3 ft./minute. The temperature and/or speed may need to be adjusted depending on the specific laminating equipment, thickness of the film, and desired throughput speed.

To increase production speed, a temperature increase of 10 - 20°F (5 - 10°C) may permit operating at 10 ft. /minute.

A high temperature along with a slow running speed could cause blistering or waviness in the final laminate. Try reducing the temperature or increasing the speed to correct this problem

A low temperature and a high running speed could result in incomplete bonding, poor adhesive wet-out (sometimes referred to as "silvering"). To correct this problem, be sure adequate laminating pressure is being used, raise the temperature slightly, or slow the running speed.

**Note:** Users should determine their own specific lamination conditions in order to optimize performance and operating efficiency on their equipment.



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

**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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