Version #2 (421)
Approved by A. S.

Product

Permacolor® PermaGard™ Shield - Antimicrobial film – PGS6400 Permanent

Product Description

The **PermaGard Shield overlaminating film PGS6400** is a high-performance pressure sensitive adhesive overlaminating film engineered to inhibit growth of microbes and protect against abrasion, moisture and fading.

PermaGard Shield PGS6400 consists of a 3.75-mil clear polypropylene film with a textured gloss finish that helps to eliminate glare and provides a very unique and pleasing viewing surface with a permanent adhesive system. This product is recommended as a **short term** (up to one year), **low traffic area** overlaminate for **indoor floor graphic applications**. A 1.2 mil clear PET release liner protects the adhesive.

The film can be applied to surfaces to inhibit growth of microbes, which can cause odors and stains. **Shield** continuously kills microbial contaminants and resists microbe growth on the surface of the film providing the film with built-in protection without releasing toxic substances into the environment. *

Shield has an antimicrobial agent (biocide) Silver zeolite that suppresses the growth of bacteria and fungus on the laminate surface. The permanent adhesive's UV inhibitors help prevent color fade caused by ultraviolet (UV) light exposure. The easily removed **Clear PET liner** protects the adhesive. **Shield** provides a uniform, gloss surface that protects the image from abrasion, moisture, and other potentially damaging effects.

* No public health claims are meant or implied by Mactac. This product does not protect user from disease causing bacteria, viruses, germs or other disease-causing organisms

Physical Properties

Property	Typical Values	Test Method
Thickness, inches		ASTM-D645
Film plus adhesive	0.0047	
Liner	0.0012	
Peel Adhesion lbs./in		PSTC - 1
180° on Glass		
- 15 min	1.5	
- 24 hrs.	2.0	

Stainless Steel - 30 min - 24 hr. High Density Polyethylene - 30 min - 24 hr.	2.3 2.2 0.6 0.5	
Quick Tack, lb./in² (N/25mm) Stainless Steel High Density Polyethylene	 2.7 1.1	FTM 9 (MACtac CTM-25)
Shear, Hours to fail Stainless Steel – 2.2 lbs. @ 72°F (22°C)	TBD	PSTC - 7
Temperature Range Application: End Use:	 50°F to 100°F (10°C to 38°C) -40° to 180°F (-30° to 82°C)	
Surface Burning Characteristics **(Meets ANSI, NFPA, and IFC as class A)** Flame Spread Smoke Density	 10 70	ASTM E84-01 or ANSI/NFPA 255 or IFC 8-1
Adhesive pH	Neutral	TAPPI-529
Bacteria Staphylococcus Aureus (S Aureus) Klebsiella Pneumoniae (K Pneumoniae) Escherichia coli (E. Coli) MRSA Salmonella VRE Listeria Pseudomonas	 99.9% reduction (Excellent) 99.9% reduction (Excellent) 99.9% reduction (Excellent) 99.9% reduction (Excellent) 99.9% reduction (Excellent) 99.9% reduction (Excellent) 99.9% reduction (Excellent) 99.9% reduction (Excellent)	 ISO 22196 ISO 22196 ISO 22196 ISO 22196 ISO 22196 ISO 22196 ISO 22196 ISO 22196
CDC Cleaning Guidelines Escherichia coli (E. Coli) MRSA	 99.9% reduction 99.9% reduction	 ISO22196:2011 ISO22196:2011
Direct Food Contact	FDA conditions of Use C	21 CFR 177.1520 Subsection (c)

Direct Food Contact

The ingredients used to manufacture the film portion of the **PGS6400** product comply with one or more of the FDA regulations for materials that come into contact with food except for articles used for packing or holding food during cooking. Specifically, the polyolefin content complies with FDA regulation 21 CFR 177.1520(c) and can be used with all food types under conditions of use C –Has described in Table 2 of 21 CFR 176.170(c)

Durability

The indoor durability for this product is 1 month in floor graphic applications and 1 year for all other interior vertical applications.

Shelf Life

Two years when stored between 60°F - 77°F (15°C - 25°C) and at 50% relative humidity or less.

Chemical Resistance

Distilled Water (24 hr.)	No effect
Detergent (24hr)	No Effect
10% HCL (10min)	No effect
10% Ammonium Hydroxide (10min)	No effect
Gasoline (1 hr.)	No effect

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

Mactac studies and field surveys with numerous customers using Permacolor® laminates in rolled-up graphic applications, leads to the following recommendations for rolling and shipping laminated images:

1. **Prior to rolling graphics:**
    a) A 2 - 4 hour wet-out period is strongly recommended for the adhesive system to build to ultimate adhesion. This will significantly improve your success with rolled-up graphics.
    b) This product can be used over UV inkjet and screen printed images. However, extra wet-out time is required to reduce silvering and build bond prior to rolling.

2. **For single-side laminated images:**
    a) Roll laminated side in for shipping and storage.
    b) An inside roll diameter of 3 - 5 inches, minimum, is recommended for graphics with *less than 10 mil total graphic thickness* (includes imaged media and Permacolor overlaminates).
    c) For images with a *total thickness of 10 mils or greater* an inside roll diameter of 10 - 12 inches, minimum, is recommended.

3. **For images laminated on both front and back sides:**
    a) Roll images with the thicker laminate to the inside for shipping and storage. For example: if your image has 5 or 10 mil polycarbonate or vinyl on the front and 15 mil Polycarbonate on the back (for additional stiffness), roll the graphic with the 15 mil PermaFlex® side in.

b) All double laminated images should be rolled with an inside roll diameter of 10 - 12 inches minimum. Remember that a larger inside diameter is better.

We recognize that different laminator's methods may produce different results. The recommendations above represent our experience as having the "greatest" success in the field; individual experience should not be discounted.

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