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Approved by A. S.

Permacolor® PermaGard™ Shield - Antimicrobial film – PGS228 Removable

Product Description

The **PermaGard Shield overlaminating film PGS228** is a high-performance pressure sensitive adhesive overlaminating film engineered to inhibit growth of microbes and protect against abrasion, moisture and fading.

PermaGard Shield consists of a 3.2 mil Matte clear vinyl film coated on one side with a clear pressure sensitive **removable adhesive** and 78# **Clay Coated Liner**.

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) Zinc 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, matte 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

Durability

Shield has been tested and is durable for 180 washes using Window Cleaner, Disinfected and Bleach Disinfectant. Tested against the CDC cleaning guidelines and effectively reduced contaminants. The durability of the film is 2 year outdoors. While all Permacolor over laminating films have UV resistance built in to help extend the life of your image, the durability of the image is mainly dependent upon the quality of the inks (see technical data sheets given by the ink manufacturers) and pressure sensitive media being used.

Physical Properties

Property	Typical Values	Test Method
Thickness, inches		
Film	0.0032	
Adhesive	0.0010	
Liner	0.0012	
Peel Adhesion lb./in. (N/25mm)		FTM-1 (PSTC – 1)
Stainless Steel		
- 30 min	1.3	
- 24 hr.	2.3	
High Density Polyethylene		
- 30 min	0.6	
- 24 hr.	0.7	
Quick Tack, lb./in² (N/25mm)		FTM 9 (MACtac CTM-25)
Stainless Steel	0.6	
High Density Polyethylene	0.4	
Dimensional Stability, (%)		FTM 14 (Mactac CTM-21) (Method D) 48 hours @ 158°F (70°C) Bonded to aluminum
MD	-0.10	
CD	-0.48	
Surface Burning Characteristics Meets ANSI, NFPA, and IFC	Class A	ASTM E84-01 or ANSI/NFPA 255 or IFC 8-1
Flame Spread	TBD	
Smoke Density	TBD	
Shear, Hours to fail		PSTC - 7
Stainless Steel – 2.2 lbs. @ 72°F (22°C)	TBD	
Temperature Range		
Application:	40° to 104°F (5° to 40°C)	
End Use:	-20° to 140°F (-30° to 60°C)	
Adhesive pH	Neutral	TAPPI-529
Bacteria		
Staphylococcus Aureus (S Aureus)	99.9% reduction (Excellent)	ISO 22196
Klebsiella Pneumoniae (K Pneumoniae)	99.9% reduction (Excellent)	ISO 22196
Escherichia coli (E. Coli)	99.9% reduction (Excellent)	ISO 22196
MRSA	99.9% reduction (Excellent)	ISO 22196
Salmonella	99.9% reduction (Excellent)	ISO 22196
VRE	99.9% reduction (Excellent)	ISO 22196
Listeria	99.9% reduction (Excellent)	ISO 22196
Pseudomonas	99.9% reduction (Excellent)	ISO 22196

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.

Chemical Resistance

This laminate is resistant for short periods of time immersed in water and for short contact with detergents, alcohol and some aliphatic solvents. This product is not recommended for contact with ketones, esters, aromatic solvents and chlorinated hydrocarbons.

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

- Where exposure to moisture, chemicals, solvents or high-pressure wash is anticipated, Mactac recommends sealing the edges with varnish, silicone or other sealant to prevent penetration by these liquids.
- Overlaminates should not be applied onto dusty or dirty prints.
- Mactac's pressure sensitive mounting films are intended for "Cold Roll Lamination" (40°F - 104°F).
- Whenever possible, always test first to ensure end-use capability.
- *Values given are typical and are not necessarily for use in specification.*

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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