



Liberty Marking Systems, Inc.
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Product Data Sheet

Series 223 2 mil White (Gloss) Polyester

Series 223 is a high performance polyester label film. This facestock resists tearing, abrasion and heat. The gloss white surface makes label graphics easy to read. The durable topcoating resists smudging and abrasion when printed with resin based thermal transfer ribbons. This construction is not intended for fan fold applications.

The high performance acrylic adhesive provides a permanent bond to a wide range of surfaces.

The release liner is a standard roll label liner compatible with most thermal transfer printers.

Series 223 is UL Recognized for indoor and outdoor use, with limited exposure to lubricating oil and water. For further information on printer and ribbon combinations please reference file # MH25432. . The temperature limits of the recognition are listed below. Series 223 is also CSA accepted for heavy duty and normal use (Class 7923). Contact your Liberty Marking Systems representative for further information.

Surface	Temperature Limits	Recognition
Stainless Steel	-20° F to 302° F (-29° C to 150° C)	Indoor/Outdoor
Aluminum	-40° F to 302° F (-40° C to 150° C)	Indoor/Outdoor
Galvanized Steel	-40° F to 302° F (-40° C to 150° C)	Indoor/Outdoor
Alkyd Enamel	-40° F to 302° F (-40° C to 150° C)	Indoor/Outdoor
Polyester Paint	-20° F to 302° F (-29° C to 150° C)	Indoor/Outdoor
Acrylic Paint	-40° F to 302° F (-40° C to 150° C)	Indoor/Outdoor
Porcelain	-20° F to 302° F (-29° C to 150° C)	Indoor/Outdoor
Nylon	-20° F to 212° F (-29° C to 100° C)	Indoor/Outdoor
Melamine Plastic	-20° F to 212° F (-29° C to 100° C)	Indoor/Outdoor
Polycarbonate	-20° F to 212° F (-29° C to 100° C)	Indoor/Outdoor
Phenolic Plastic	-20° F to 212° F (-29° C to 100° C)	Indoor/Outdoor
Polystyrene	-20° F to 176° F (-29° C to 80° C)	Indoor/Outdoor
ABS Plastic	-40° F to 176° F (-40° C to 80° C)	Indoor/Outdoor
Unsaturated Plastic (Thermoset Polyester)	-40° F to 176° F (-40° C to 80° C)	Indoor/Outdoor
Polypropylene	80° C No Cold Rating	Indoor Only



Product Performance and Suitability

All of the descriptive information and recommendations for the use of Liberty Marking Systems products are to be used only as a guide. The furnishing of such information and recommendations shall in no event constitute a warranty of any kind by Liberty Marking Systems. All purchasers of Liberty Marking Systems products shall independently determine the suitability of the material for the purpose for which it is purchased. No distributor, salesman, or representative of Liberty Marking Systems is authorized to give any warranty, guarantee, or to make any representation in addition or contrary to the above.

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Service Temperature Range See page 1 for exact surface	-40° F to 302° F (-40° C to 150° C)
Minimum Application Temperature	50° F (10 C)
Expected Exterior Life	Two years - slight yellowing may occur
Storage Stability	Two years stored at 70° F (21° C) and 50% RH

PHYSICAL CHARACTERISTICS

Thickness	Film	2.4 mils +/- 10%
	Adhesive	0.8-0.9 mils +/- 0.1
	Liner	3.1 mils +/- 10%

ADHESION PROPERTIES

	Average oz./in (N/m)	Expected Range oz./in (N/m)	Test Method
Glass	62 (682)	55-80 (605-880)	PSTC 1 (Modified for 72 hr dwell time)
Acrylic	57 (627)	45-70 (495-770)	
Stainless Steel	66 (726)	55-75 (550-825)	
Expected Shear (hours)	25		PSTC 7 (1 hr. dwell, 1 sq. in., 4 lb. load)
Tack (gm/sq cm)	125		ASTM D 2979-71

CHEMICAL RESISTANCE TEST RESULTS

Chemical resistance was tested using the AB-301 Colorfastness Tester with 500 g of downward force.

<u>Chemical</u>	<u>TR4070</u>	<u>TR5070</u>
5% HCl	100 cycles	100 cycles
Acetone	2 cycles	3 cycles
Break Fluid	100 cycles	100 cycles
Engine Oil	100 cycles	100 cycles
Ethyl Alcohol	57 cycles	100 cycles
Ethylene Glycol	100 cycles	100 cycles
Fast Wipes®	100 cycles	100 cycles
Formula 409®	100 cycles	100 cycles
Gasoline	13 cycles	100 cycles
Hydraulic Oil	100 cycles	100 cycles
Isopropanol	100 cycles	100 cycles
Methanol	100 cycles	100 cycles
Methyl Ethyl Ketone (MEK)	1 cycle	3 cycles
Mineral Oil	100 cycles	100 cycles
Paint Thinner	100 cycles	100 cycles
Toluene	1 cycle	7 cycles
Water	100 cycles	100 cycles
Windex®	100 cycles	100 cycles
Xylene	1 cycle	14 cycles

The values in the ribbon columns represent the number of cycles the printed label endured before the image began to degrade. The maximum number of cycles was 100.