

Transportation Safety Division

3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking

Series 823i

March 2019

1 Description

3M™ High Intensity Metallized Flexible Prismatic Vehicle MarkingTape Series 823i is intended for use on clean, smooth, relatively non-porous, weather resistant surfaces when prepared as detailed in 3M Information Folder 1.7.

3M™ High Intensity Metallized Flexible Prismatic Vehicle MarkingTape Series 823i is an impact resistant prismatic lens reflective sheeting pre-coated with pressure sensitive adhesive and exceeds the reflectivity values of EN 12899- 1:2007 for Class RA2 materials.

2 Comply™ with Controltac™ Liner

3M Controltac™ minimizes the initial contact area of the adhesive and allows the applicator to reposition the film during application.

The Comply™ air release channels support fast and easy, bubble free installations

3 Recommended Application and Use

3M™ High Intensity Metallized Flexible Prismatic Vehicle MarkingTape Series 823i

is intended for retro-reflective vehicle markings. Typical applications include the manufacturing of safety markings according to DIN 30710.

4 Photometric

The initial minimum coefficient of Retroreflection, when measured according to CIE 54.2 using CIE standard illuminant A, conforms to Table 4 of EN 12899-1:2007 for Class RA2 materials (Table A).

Geometry of measurements		Colour				
α	β_1 ($\beta_2=0$)	White	Yellow	Red	Blue	Green
0,2°	+5°	250	170	45	20	45
	+30°	150	100	25	11	25
	+40°	110	70	15	8	12
0,33°	+5°	180	120	25	14	21
	+30°	100	70	14	8	12
	+40°	95	60	13	7	11
2°	+5°	5	3	1	0,2	0,5
	+30°	2,5	1,5	0,4	-	0,3
	+40°	1,5	1,0	0,3	-	0,2

Table A: Minimum Coefficient of Retroreflection [cd/(lx · m²)]

The above angular definitions apply for the CIE Goniometer system (co-planar geometry). The sheeting shall be mounted in 0° or 90° rotation on the goniometer (0° is the roll or down web direction).

The initial chromaticity coordinates and luminance factors conform to Class CR2 of EN 12899-1:2007 for Class RA2 materials (Table B).

Color	1		2		3		4		Luminance factor β
	x	y	x	y	x	y	x	y	
White	0,305	0,315	0,335	0,345	0,325	0,355	0,295	0,325	$\geq 0,27$
Yellow	0,494	0,505	0,470	0,480	0,513	0,437	0,545	0,454	$\geq 0,16$
Red	0,735	0,265	0,700	0,250	0,610	0,340	0,660	0,340	$\geq 0,03$
Blue	0,130	0,090	0,160	0,090	0,160	0,140	0,130	0,140	$\geq 0,01$
Green	0,110	0,415	0,170	0,415	0,170	0,500	0,110	0,500	$\geq 0,03$

Table B: Chromaticity and luminance factors

5 Advantages

- Impact resistant, metalized flexible retro-reflective sheeting
- Excellent angularity
- Similar daytime and nighttime appearance
- Suited for application over flat or curved surfaces
- Up to 3 years exterior durability

6 Color and Dimension

Series 823i-10 White

Series 823i-11 Yellow

Series 823i-12 Red

Series 823i-15 Blue

Series 823i-17 Green

Roll dimension: 1220mm 45,7m

7 General Performance Considerations

The durability of 3M™ High Intensity Metallized Flexible Prismatic Vehicle MarkingTape Series 823i depends on the following:

- Correct combination of sheeting and ink series
- Ink formulation
- Ink drying/curing methods
- Selection, preparation and temperature of the substrate
- Application methods
- Exposure conditions
- Cleaning and maintenance methods

8 Shelf Life and Storage

The combined shelf life of unprocessed sheeting Series 823i cannot exceed 1 year from the date of receipt from 3M.

- Leave the rolls of sheeting in the original shipping carton or suspend the rollshorizontally.
- Store the sheeting in a clean, dry area and away from direct sunlight.
- Graphics should be stored between 18 - 24°C.
- Ship screen printed applications lying flat or in a roll. To roll the graphic, wrap it sheeting-side-out on a minimum 150 mm diameter core. These methods help prevent the sheeting from wrinkling or popping off the liner.

9 Compatible Products

Screen Printing Applications

3M™ Process Color Series 990

10 Application

Temperature range +15°C to +30°C

- Check the proper temperature using an Infrared- Thermometer like 3M Scotchtrak™ IR-500.
- Cut sheeting around rivets and between seams, joints and overlapped panel.
- Do not stretch the sheeting during application.
- Do not overlap sheeting.
- Contact your 3M representative for detailed processing and application procedures

11 3M™ Controltac™ Series 823i Sheetings

- Pressure-activated adhesive allows you to slide the film across an approved substrate to position it.
- Apply light finger pressure to temporarily tack Series 823i sheeting to check for proper positioning. Lift and slide to reposition.
- If Series 823i sheeting sticks prematurely and no firm pressure has been applied, the film can be lifted and repositioned.
- The sheeting immediately loses all of its slideability and repositionability if firm pressure is applied with hand, squeegee or other application tool; which bonds the adhesive to the substrate
- Series 823i loses much of its slideability and positionability if it is applied to a substrate in excess of 38°C or if any part of the film is removed from the original liner and reapplied to the same or another liner.
- Attempting to lift applied sheeting typically stretches it beyond reuse. Some skilled installers may be able to successfully lift small sections to work out air bubbles, but 3M does not guarantee success.

12 3M™ Series 823i Comply™ Adhesive

- A unique micro-structured pattern in the adhesive allows trapped air to exit laterally through special air release channels for faster and easier installations with few or no bubbles.
- Any bubbles that do occur can usually be rubbed out.
- The air release channels make application easier even for less skill installers.
- Always work from the center out to the edges of the sheeting. If the channels are closed off by firm pressure and air is trapped, use an air release tool to aid in removing air bubbles. Removing the liner and attempting to reapply it or another liner damages the air release channels.

13 Temperature and Environment

Conditions that Affect Graphic Application:

Apply Series 823i Sheeting when air, film and substrate temperatures are within the range specified in the Product Bulletin. An incorrect temperature can prevent the sheeting from performing as expected

- Series 823i applied above the maximum recommended temperature may pre-adhere
- Above the maximum recommended application temperature, Series 823i Controltac™ may lose its positionability feature.
- The temperature of the substrate must be above the dew point to prevent moisture from condensing on the surface

14 Maintenance and Cleaning

For cleaning of vehicles with Series 823i safety marking, follow below cleaning conditions: Use a cleaner such as the kind used for high quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents and have a pH value between 6 and 8 (neither strongly acidic nor strongly alkaline). For high pressure wash the following conditions should be applied/set up:

- maximum pressure 80 bar
- maximum temperature 60°C
- minimum of 1 m distance of cleaning jet from sheeting surface
- cleaning wand to be held at no greater angle than 15° from perpendicular to the sheeting surface
- Use wide fan pattern

15 Warranty

Series 823i will remain effective for a period of up to three years and not show appreciable fading, cracking, blistering or peeling in normal use.

16.1 Health and Safety Information

Read all health hazard, precautionary and first aid statements found in the Material Safety Data Sheet (MSDS), and/or product label of chemicals prior to handling or use.

16.2 Disclaimer

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17 Other Product Information

Always confirm that you have the most current version of the applicable product bulletin, information folder or other product information from 3M's Website at <http://www.mmm.com/tss>.

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For Further Assistance

For help on specific questions relating to 3M™ reflective products, please contact your local 3M Application Engineer or contact:



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