

Commercial Branding and Transportation Division

3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking

Product Bulletin 823i









March 2025

Product description 3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking Series 823i is a highly retroreflective, flexible sheeting designed to perform on various and limited motor-vehicles applications. 3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking 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 Marking Series 823i is an impact resistant prismatic lens reflective sheeting precoated with pressure sensitive adhesive and exceeds the reflectivity values of EN 12899-1:2007 for Class RA2 materials.

Color range and performance 3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking Series 823i meets most of the special requirements for Emergency Service Vehicles such as police, ambulances, border control vehicles and many more.

Available versions

Product	Width [cm]	Length [m]	Color	Comment
823i-10	122	45,7		
823i-11	122	45,7		
823i-12	122	45,7		
823i-15	122	45,7		
823i-17	122	45,7		
823i-VWM LW	122	45,7		Vertical rotation
823i-VWM RW	122	45,7		Vertical rotation
823i-VWM Chevron	122	45,7		
823i-VWM FR TPESC	141 [mm]	9 / 45,7		2 rolls (LW + RW) set

Product properties For specific information, please reach out to your local 3M representative. Data presented below is an approximation based on 3Ms internal test data.

Application temperature	+15°C to +30°C (substrate and air)
Adhesive	3M™ Controltac™ Comply™, pressure sensitive
Adhesive protective liner	siliconized paper
Total thickness	0,15 mm (without liner)
Suitable substrate shape	flat, slightly corrugated
Application angle	vertical (±20°)
Expected service life	limited and vertical, up to 5 years

Performance properties

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		Color				
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

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 conformity of production clauses in ECE Reg. 70 Rev. 1, Annex 13, Clause 1.2 shall apply.

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
	x	y	x	y	x	y	x	y	β_{min}
White	0,305	0,315	0,335	0,345	0,325	0,355	0,295	0,325	0,27
Yellow	0,494	0,505	0,470	0,480	0,513	0,437	0,545	0,454	0,16
Red	0,735	0,265	0,700	0,250	0,610	0,340	0,660	0,340	0,03
Blue	0,130	0,090	0,160	0,090	0,160	0,140	0,130	0,140	0,01
Green	0,110	0,415	0,170	0,415	0,170	0,500	0,110	0,500	$\geq 0,03$

Storage

Shelf life

3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking Series 823i should be processed and applied within 1 year since date of receipt from 3M and in full compliance to storage conditions.

Storage conditions

Room temperature, dry, no direct sunlight exposure
 Temperature range of 18°C – 24°C
 Relative humidity 40% - 60%
 Rolls should be stored in factory boxes or in vertical position with use of provided plastic caps. Sheets should be stored horizontally, flat and without weighting them down, max stack height of 100 mm.
 Ship screen printed applications laying 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 sheeting from wrinkling or popping off the liner.

Note! Specified shelf life and storage conditions are subjected to many factors affecting both. Therefore, these cannot be understood as direct warranty statements.

Application tools

- 3M™ PA-1G Gold Squeegee with optional 3M™ SA-1 low friction sleeve or similar 3M™ Hand roller series 2745 or similar
- Typical utility cutting knife
- Selected 3M™ Knifeless™ Tape
- Grease-free cleaning agent (e.g. Isopropanol Alcohol)
- Pencil/marker and tape measure
- Heat gun with temperature control

Application conditions

All substrates must be wiped with cleaning agent, degreased and cleaned. All existing sheeting must be removed. Sheeting should be applied immediately after cleaning onto the dry substrate.

For substrate preparation please consider using a cleaning agent suitable for high quality painted surfaces. The agent must not contain any abrasive additives or strong solvents and have a natural pH value between 6 and 8 (neither strongly acidic nor alkaline).

- Please verify substrate temperature with an infrared thermometer
- Temperature range +15°C to 30°C, application in temperatures out of this range will result in increased stiffness or stickiness of the film
- Cut sheets around rivets, bolts, seams, hinges or substrate gaps
- Do not overlap sheets of film, apply in edge-to-edge fashion

For instructions in greater detail, please contact your local 3M representative.

3M™ Controltac™

- 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 initially and no firm pressure has been applied, the film can be lifted and repositioned.
- The sheeting immediately loses all 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 most of its slideability and positionability if it is applied to a substrate more than 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.

3M™ Comply™

- 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 skilled 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.

Conditions that Affect Graphic Application 3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking Series 823i should be applied 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

- 3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking Series 823i applied in higher than the max. recommended temperature may preadhere
- above the maximum recommended application temperature, 3M™ 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

Important note Do not twist or stretch the film during the application. During applying please follow 0° or 90° orientation (0° is the roll or down web direction). Application with different orientation will affect sheeting retroreflective performance and visual appearance during the night.

Compatible products Screen printing application
- 3M™ Process Color Series 990 inks

Cleaning and care First cleaning should be performed with the use of clear water only (i.e., pouring water from a hose) to wash off coarse dirt.

Cleaning Proper cleaning of sheeting is done with a mixture of lukewarm water and typical household available cleaning liquid (in recommended mixture proportions) or soap. Cleaning should be performed using a clean, non-abrasive sponge, soft brush or cloth. After cleaning, please rinse the sheeting with clean water again.

Important note Do not use any agents that have an abrasive effect (nylon brush). Do not use paint thinners or any strong solvents and only cleaners with a pH value between 6 and 8 (neither strongly acidic nor strongly alkaline).

High pressure washer recommended settings

- Maximum pressure of 80 bar
- Maximum water temperature 60°C
- Keep at least 1m distance between jet and substrate
- Cleaning wand to be held at no greater angle than 15° from perpendicular to the sheeting surface
- Use a moderate spray to wide fan pattern jet nozzle

Limited warranty 3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking Series 823i will be delivered free of any defects with compliance to this Product Bulletin statements and, once applied vertically ($\pm 20^\circ$) to correct and correctly prepared substrate, remain effective for a period of up to 3 years and not show appreciable fading, cracking, blistering or peeling in normal use.

Important note 3M™ High Intensity Metallized Flexible Prismatic Vehicle Marking Series 823i durability is dependent on the following:

- Type, condition and temperature of substrate
- Application method, type and substrate adherence
- Service type and its weather conditions
- Overall vehicle care and cleaning methods

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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.

Responsible for this product information:

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