

Transportation Safety Division

# 3M™ Vehicle Safety Markings Series 823i

Series 823i

May 2018

## 1 Description

3M™ Vehicle Safety Markings Series 823i is an impact resistant prismatic lens reflective sheeting pre-coated with pressure sensitive adhesive and currently meets or exceeds the reflectivity requirements of EN 128991:2007 for Class RA2. Series 823i is intended for use on clean, smooth, relatively non-porous, weather resistant surfaces when prepared as detailed in 3M Information Folder 4.9.

### Features

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

## 2 Color and Dimension

Product Codes by Color

Roll dimensions: 1220 mm x 45.7 m

Product Code	Color
823i-10	White
823i-11	Yellow
823i-12	Red
823i-15	Blue
823i VWM	Red/White Chevron
823i CWM	Red/White Chevron

## 3 Specifications

### Coefficient of Retroreflection

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 Class RA2 (See the Table below).

Geometry of measurements		Color				
$\alpha$	$\beta_1$	White	Yellow	Red	Blue	Fluorescent Yellow-Green
	( $\beta_2=0$ )					
0.2°	+5	250	170	45	20	170
	+30	150	100	25	11	100
	+40	110	70	15	8	70
0.33°	+5	180	120	25	14	120
	+30	100	70	14	8	70
	+40	95	60	13	7	60
2	+5	5	3	1	0.2	3
	+30	2.5	1.5	0.4	--	1.5
	+40	1.5	1.0	0.3	--	1.0

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 direction the roll is unwound)

### Chromaticity Coordinates and Luminance Factor

The initial chromaticity and luminance factor conform to Class CR2 of EN 12899-1:2007 for Class RA2 materials as given in the table below.

Color	Chromaticity Coordinates								Luminance Factor
	1		2		3		4		
	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	≥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	0.0160	0.140	0.130	0.140	≥0.01

## 4 Recommended Application and Use

Series 823i is intended for retroreflective vehicle markings. Typical applications include the manufacturing of safety markings according to DIN 30710.

Series 823i features 3M™ Comply™ with Controltac™ Liner which greatly improves ease of installation. For installation instructions please see 3M Information Folder 4.8.

## 5 Storage

- Cool, dry area out of direct sunlight.
- Temperature 65-75° F (18-24° C), humidity 30-50%.
- Store rolls horizontally, in carton or in original packaging.

## 6 Limitations

Series 823i is not intended for:

- Regulatory traffic signs.
- Graphics made for automotive Original Equipment Manufacturers (OEM); please contact 3M Automotive Division for alternatives.
- Flexible Prismatic Vehicle Markings Series 823i are not designed to perform on stainless steel substrates.

## 7 Compatible Products

For screen print applications, use [3M™ Process Color Series 990](#).

## 8 Warranty

3M™ Vehicle Safety Markings Series 823i (“Product”) is warranted (“Basic Warranty”) to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this product bulletin. If the Product is proven not to have met the Basic Warranty on its shipment date, then a buyer’s exclusive remedy, and 3M’s sole obligation, at 3M’s option, will be refund or replacement of the Product.

Product will remain visible for a period of up to three years by resisting excessive fading, cracking, blistering or peeling in normal use.

## Terms and Conditions

- Product must be processed and applied to a vertically-mounted ( $\pm 20^\circ$ ) 3M™ recommended substrate as described in this product bulletin and in accordance with all 3M procedures provided in this product bulletin and 3M Information Folders (including but not limited to IF 4.8), and applicable technical memos (which will be furnished to the manufacturer upon request).
- Any third-party imaging or altering of the Product not endorsed by 3M™ will void the 3M Warranty.
- A Product's failure to meet the 3M Warranty must be solely the result of design or manufacturing defects in the Product and not of
  - (a) outside causes including improper storage, fabrication, handling, maintenance or installation;
  - (b) use of process colors, thinners, coatings or other chemicals not recommended by 3M;
  - (c) use of application procedures not recommended by 3M;
  - (d) exposure to chemicals or solvents not recommended by 3M;
  - (e) abrasion and other physical damage;
  - (f) snow or any other burial of the marking;
  - (g) collisions, vandalism or malicious mischief;
  - (h) failure to cut markings around rivets, seams and body panels;
  - (i) or an act of God.
- 3M reserves the right to determine the method of replacement. Replacement product will carry the unexpired warranty of the Product it replaces.
- Claims made under this warranty will be honored only if 3M is presented with a traceable record of the Product's Installation Date. Claims made under this warranty will be honored only if 3M is notified of a potential failure within thirty days of discovery, reasonable information requested by 3M is provided, and 3M is permitted to verify the cause of the failure.

## Exclusive Limited Remedy

If the Product is proven not to have met the 3M™ Warranty during the Warranty Period, then the purchaser's and user's exclusive remedy, and 3M's sole obligation, at 3M's option shall be that 3M will issue a refund or provide replacement of the Product.

## 9 Literature Reference

IF 4.8 3M Vehicle Safety Markings Series 823i

IF 4.9 3M Diamond Grade™ and Flexible Prismatic Conspicuity Markings

Application Instructions For Trucks, Trailers and Specialty Vehicles

## 10.1 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.

## 10.2 Disclaimer

THE 3M WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING OR OF PERFORMANCE, CUSTOM OR USAGE OF TRADE.

## 10.3 Limitation of Liability

Except for the limited remedy stated above, and except where prohibited by law, 3M will not be liable for any loss or damage arising from the Signs or any 3M product, whether direct, indirect, special, incidental or consequential damages (including but not limited to lost profits, business or revenue in any way), regardless of the legal theory asserted including warranty, contract, negligence or strict liability.

## 11 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>.

## Important Notice to Purchaser

All statements, technical information and recommendations herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. All questions of warranty and liability relating to this product are governed by the terms of the sale subject where applicable to the prevailing law. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

## For Further Assistance

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



**3M Deutschland GmbH**  
**Transportation Safety Laboratory**  
Carl-Schurz-Straße 1  
41453 Neuss  
Tel: 02131/14 3394  
Fax: 02131/14 3694

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