



# Engineer Grade Reflective Sheeting

## Series 3290I

Product Bulletin 3290I

August 2013

Replaces PB 3290I dated April 2009

### Health and Safety Information

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

### Description

3M™ Engineer Grade Reflective Sheeting Series 3290I is a glass-bead retroreflective sheeting, backed with a pressure sensitive adhesive designed for the production of durable traffic control signs, work zone devices and delineators, that are exposed vertically in service.

Applied to properly prepared sign substrates, Series 3290I provides long term reflectivity and durability.

Series 3290I can either be supplied with a standard adhesive for high energy surfaces (e.g. aluminum) or with a high tack adhesive for medium energy surfaces (e.g. coated aluminum and paints).

Sheeting	Color
3290I	White
3271I	Yellow
3272I	Red
3275I	Blue
3277I	Green
3279I	Brown

### Properties

The initial minimum coefficient of retroreflection conforms to Table 3 of EN 12899-1:2007 for class RA1 materials (Table A).

Geometry of measurements		Color					
$\alpha$	$\beta_1$ ( $\beta_2=0$ )	White	Yellow	Red	Green	Blue	Brown
12°	+ 5°	70	50	14,5	9	4	1
	+30°	30	22	6	3,5	1,7	0,3
	+40°	10	7	2	1,5	0,5	-
20°	+ 5°	50	35	10	7	2	0,6
	+30°	24	16	4	3	1	0,2
	+40°	9	6	1,8	1,2	-	-
2°	+ 5°	5	3	1	0,5	-	-
	+30°	2,5	1,5	0,5	0,3	-	-
	+40°	1,5	1,0	0,5	0,2	-	-

\*- indicates "Value greater than zero but not significant or applicable"

Table A: Minimum Coefficient of Retroreflection [cd/(lx · m<sup>2</sup>)]

The initial chromaticity coordinates and luminance factors conform to table 2 of EN 12899-1:2007 for Class CR2 (Table B).

Color	1		2		3		4		Luminance factor
	x	y	x	y	x	y	x	y	$\beta$
White	0,305	0,315	0,335	0,345	0,325	0,355	0,295	0,325	$\geq 0,35$
Yellow	0,494	0,505	0,470	0,480	0,493	0,457	0,522	0,477	$\geq 0,27$
Red	0,735	0,265	0,700	0,250	0,610	0,340	0,660	0,340	$\geq 0,05$
Blue	0,130	0,086	0,160	0,086	0,160	0,120	0,130	0,120	$\geq 0,01$
Green	0,110	0,415	0,150	0,415	0,150	0,455	0,110	0,455	$\geq 0,04$
Brown	0,455	0,397	0,523	0,429	0,479	0,373	0,558	0,394	$0,03 \leq \beta \leq 0,09$

Table B: Chromaticity and luminance factors



3M™ Engineer Grade Reflective Sheeting Series 3290I is approved for the manufacturing of permanent vertical traffic signs according EN 12899-1:2007.

All provisions concerning the attestation of conformity and the performances described in Annex ZA of the standard EN 12899-1:2007 were applied and the product fulfills all the prescribed requirements (see the EC-declaration of conformity at the end of this document for more details).

### Printed Colors

For printed color areas on white sheeting, when processed according to 3M™ recommendations, the coefficients of retroreflection shall not be less than 70% of the value for the corresponding color in table A. The chromaticity coordinates and luminance factors shall conform to table B.

This complies with the respective requirements in EN 12899-1:2007.

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## Application

Engineer Grade Reflective Sheeting Series 3290I should be conditioned prior to application to provide a minimum sheeting temperature of 18°C throughout the roll or sheeting stack.

Series 3290I sheeting should be applied with mechanical squeeze roll applicators to properly prepared substrates. If the application is done by hand, use firm pressure with a rubber roller or equivalent to obtain maximum initial adhesion. Use multiple, heavy overlapping strokes. Re-roll all edges. For further information refer to Information Folder 1.4, 1.5 and 1.6.

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## Compatible Products

### Screen Print Applications

- 3M™ Process Colors 700
- 3M™ Process Colors 990

### Copy Part Applications

- 3M™ Scotchcal™ Film 3650-12 (Black)
- 3M™ Scotchcal™ Film 100-12
- 3M™ ElectroCut™ Film Series 1170
- 3M™ TFEC 260 D

### All Applications

- Selected 3M application tapes

**Important:** Screen-printed sign faces must be sufficiently ventilated during the filling of the rack or immediately run through a conveyor. If the print is not ventilated properly, the solvents will soften the sheeting, making it difficult to laminate. Refer to Product Bulletin 700 and 990 and Information Folder 1.8 for more details.

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## General Performance Considerations

The performance and durability of 3M™ Engineer Grade Reflective Sheeting Series 3290I will depend upon a number of factors including (but not limited to):

- Selection, preparation and temperature of the substrate
- Application procedures
- Geographic area
- Exposure and atmospheric conditions (e.g. snow, frost)
- Correct combination of sheeting, ink and overlay film
- Ink formulation
- Ink drying/curing methods
- Cleaning and maintenance methods

## Warranty

In Europe 3M warrants for a period up to 7 years from date of application (concrete definition of the period is subject to the terms of sale) that 3M™ Engineer Grade Reflective Sheeting Series 3290I sold by 3M to be used for traffic control signs and delineators is free of defects in material and workmanship, subject to the following provisions:

If Sheeting Series 3290I is processed and applied to a vertical  $\pm 10^\circ$  surface in accordance with all 3M application and fabrication procedures provided in 3M's product and information folders, technical memos (which will be furnished to the agency upon request), including the exclusive use of 3M matched component systems, process colors, overlay films and recommended application equipment.

## 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 authorized personnel of seller and manufacturer.

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## Literature Reference

Instructions for Squeeze Roll Applicator	IF 1.4
Hand Application Instructions	IF 1.5
Instructions for Hand Squeeze Roll Applicator	IF 1.6
Sign Base Materials	IF 1.7
Instructions for using 3M Process Colors	IF 1.8
Cutting, Matching, Premasking and Prespacing Instructions	IF 1.10
Storage and Packaging	IF 1.11

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# Declaration of Performance/ Leistungserklärung 3M Engineer Grade 3290 I

## *Construction Product Code / Bezeichnung des Bauproduktes*

Retroreflective Sign Face Material / Retroreflektierendes Signalbildmaterial

3M Engineer Grade Reflective Sheeting Series 3290 I

White 3290 I

Yellow 3271 I

Red 3272 I

Blue 3275 I

Green 3277 I

Brown 3279 I

## *Intended Use / Verwendungszweck*

Retroreflective Sheeting, using glass bead technology, for use on fixed vertical road traffic signs

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Retroreflektierendes Signalbildmaterial mit Glasperlentechnologie für vertikale retroreflektierende Verkehrszeichen

## *Manufacturer / Hersteller*



3M Deutschland GmbH

Carl-Schurz-Str.1

D – 41453 Neuss

## *Assessment and Verification of Constancy of Performance / Bewertung und Überprüfung der Leistungsbeständigkeit*

### **System 1**

StrAus-Zert, notified body 0913, Steinhausstr. 79, D-58099 Hagen performed the initial type testing and initial inspection of the factory and the FPC, the continuous surveillance, assessment and evaluation of the factory production control under system 1 and issued the certificate of conformity 0913-CPD-2007 / 004.

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StrAus-Zert, notifizierte Stelle Nr. 0913, Steinhausstr. 79, D-58099 Hagen hat die Erstprüfung der relevanten Eigenschaften des Produkts, die Erstinspektion des Werkes und der werkseigenen Produktionskontrolle und die laufende Überwachung, Beurteilung und Anerkennung der werkseigenen Produktionskontrolle nach dem System 1 vorgenommen und die Konformitätsbescheinigung 0913-CPD-2007 / 004 ausgestellt.

*Declared Performance / erklärte Leistung*

Safety in Use / Nutzungssicherheit

Essential Characteristics / Wesentliche Merkmale	Performance / Leistung	Technical Specification / Technische Spezifikation
<b>Visibility Characteristics</b>		
Daylight Chromaticity and Luminance Factor	Pass, Class CR2	EN 12899-1:2007
Coefficient of Retroreflection	Class RA1	
<b>Durability</b>		
Resistance to weathering	Pass	EN 12899-1:2007
Impact Resistance	Pass	

The performance of the construction product identified above is in conformity with the declared performance. This declaration of performance is issued under the sole responsibility of the manufacturer /

Die Leistung des oben genannten Bauproduktes entspricht der erklärten Leistung. Verantwortlich für die Erstellung dieser Leistungserklärung ist allein der Hersteller.

Neuss, June 2013



John Jackson  
3M Technical Director