

Declaration of Performance/ Leistungserklärung 3M High Intensity Prismatic 3930DS

Construction Product Code / Bezeichnung des Bauproduktes

Microprismatic Retroreflective Sheeting

1. 3M High Intensity Prismatic Digital Sheeting 3930DS + 3M Piezo Inkjet Ink + 3M Protective Overlay Film 1170
2. 3M High Intensity Prismatic Digital Sheeting 3930DS + 3M Piezo Inkjet Ink + 3M Protective Overlay Film 1170 + 3M Premium Protective Overlay Film 1160

Intended Use / Verwendungszweck

The construction product is used to manufacture sign faces for permanent traffic signs. The intended use includes, for example:

- Retro-reflective signs, retro-reflective and transilluminated signs (see also EN 12899-1)
- Variable message signs (see also EN 12966-1)

Das Bauprodukt wird für die Herstellung von Signalbildern von ortsfesten, vertikalen Verkehrszeichen verwendet. Der Verwendungszweck schließt z.B. ein:

- Retroreflektierende Verkehrszeichen, retroreflektierende und innenbeleuchtete Verkehrszeichen (siehe EN 12899-1)
- Wechselverkehrszeichen (siehe EN 12966-1)

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, Fleyer Str. 204, D-58097 Hagen performs the continuous surveillance, assessment and evaluation of the factory production control under system 1 and issued the certificate of constancy of performance 0913-CPR-2017/03.

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StrAus-Zert, notifizierte Stelle Nr. 0913, Fleyer Str. 204, D-58097 Hagen führt die laufende Überwachung, Beurteilung und Anerkennung der werkseigenen Produktionskontrolle nach System 1 durch und hat das Zertifikat der Leistungsbeständigkeit 0913-CPR-2017/03 ausgestellt.

UBAtc, Rue du Lombard 42, B-1000 Brussels, performed the initial type testing and initial inspection of the factory and the FPC under system 1 and issued ETA 17/0491 on the basis of EAD 120001-01-0106.

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UBAtc, Rue du Lombard 42, B-1000 Brussels, führte die Erstprüfung und Erstinspektion des Werks und der werkseigenen Produktionskontrolle nach System 1 durch und hat ETA 17/0491 auf der Basis von EAD 120001-01-0106 ausgestellt.

Declared Performance / erklärte Leistung (ETA 17/0491 Version 2)

Safety in Use / Nutzungssicherheit

Essential Characteristics / Wesentliche Merkmale	Performance / Leistung	Technical Specification / Technische Spezifikation
Visibility Characteristics		
Daylight Chromaticity and Luminance Factor	Table 1.2 (see Amendment)	EAD 120001-01-0106 (sept 2016) ETA 17/0491 Version 2
Coefficient of Retro-reflection	Table A.1 (see Amendment)	
Rotational Symmetry	Ratio > 1:2.5	
Durability		
Impact Resistance	No apparent cracking or delamination	EAD 120001-01-0106 (sept 2016) ETA 17/0491 Version 2
Visibility after accelerated artificial weathering		
Daylight Chromaticity and Luminance Factor	Table 1.3 (see Amendment)	
Coefficient of Retro-reflection	Values > 80% of Table A.1 (see Amendment)	

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, September 2019



ppa. Dr. Chris Howitt
Technical Director
3M EMEA Area

**Amendment to the Declaration of Performance
'3M High Intensity Prismatic 3930DS'**

This declaration covers the product 'Microprismatic retroreflective sheeting'. Sign plates or complete assemblies of fixed vertical road traffic signs according to EN 12899-1:2007 can be manufactured with the following products and product combinations, according to ETA 17/0491 and respective Evaluation Reports.

Components	Trade name	Colours/code
Micro-prismatic retro-reflective sheeting	3M™ High Intensity Prismatic Digital Sheeting 3930DS	White 3930DS
Process Colour for digital printing	3M™ Piezo Inkjet Ink Series 8800UV or 8900 UV	Yellow Red Blue Green Orange Brown Grey Dark Green
Overlay Film	3M™ Protective Overlay Film	Clear 1170
Overlay Film	3M™ Dew Resistant Overlay Film	1180 I
Overlay Film	3M™ Premium Protective Overlay Film	1160

Colours	Chromaticity Coordinates				Luminance Factor β	
	1	2	3	4		
White	x	0.305	0.335	0.325	0.295	≥ 0.40
Tolerance Sphere	y	0.315	0.345	0.355	0.325	
Yellow	x	0.494	0.470	0.513	0.545	≥ 0.24
Tolerance Sphere	y	0.505	0.480	0.437	0.454	
Red	x	0.735	0.700	0.610	0.660	≥ 0.03
Tolerance Sphere	y	0.265	0.250	0.340	0.340	
Blue	x	0.130	0.160	0.160	0.130	≥ 0.01
Tolerance Sphere	y	0.090	0.090	0.140	0.140	
Green	x	0.110	0.170	0.170	0.110	≥ 0.03
Tolerance Sphere	y	0.415	0.415	0.500	0.500	
Orange	x	0.631	0.560	0.506	0.570	≥ 0.14
Tolerance Sphere	y	0.369	0.360	0.404	0.429	
Brown	x	0.455	0.523	0.479	0.558	0.03-0.09
Tolerance Sphere	y	0.397	0.429	0.373	0.394	
Grey	x	0.305	0.335	0.325	0.295	0.11-0.18
Tolerance Sphere	y	0.315	0.345	0.355	0.325	
Dark Green	x	0.313	0.313	0.248	0.127	0.01-0.07
Tolerance Sphere	y	0.682	0.453	0.409	0.557	

Table 1.2: Manufacturer's specification for initial daylight chromaticity and luminance factor

Colours	Chromaticity Coordinates				Luminance Factor β	
	1	2	3	4		
White	x	0.355	0.305	0.285	0.335	≥ 0.40
Tolerance Sphere	y	0.355	0.305	0.325	0.375	
Yellow	x	0.545	0.487	0.427	0.465	≥ 0.24
Tolerance Sphere	y	0.454	0.423	0.483	0.534	
Red	x	0.735	0.674	0.569	0.655	≥ 0.03
Tolerance Sphere	y	0.265	0.236	0.341	0.345	
Blue	x	0.078	0.150	0.210	0.137	≥ 0.01
Tolerance Sphere	y	0.171	0.220	0.160	0.038	
Green	x	0.007	0.248	0.177	0.026	≥ 0.03
Tolerance Sphere	y	0.703	0.409	0.362	0.399	
Orange	x	0.631	0.560	0.506	0.570	≥ 0.14
Tolerance Sphere	y	0.369	0.360	0.404	0.429	
Brown	x	0.455	0.523	0.479	0.558	0.03-0.09
Tolerance Sphere	y	0.397	0.429	0.373	0.394	
Grey	x	0.350	0.300	0.285	0.335	0.11-0.18
Tolerance Sphere	y	0.360	0.310	0.325	0.375	
Dark Green	x	0.313	0.313	0.248	0.127	0.01-0.07
Tolerance Sphere	y	0.682	0.453	0.409	0.557	

Table 1.3: Manufacturer's specification for daylight chromaticity and luminance factor 'in-use'

Geometry of measurement		Colour								
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Dark Green	Blue	Brown	Orange	Grey
12'	+5°	250	170	45	45	20	20	12	100	125
	+30°	150	100	25	25	15	11	8.5	60	75
	+40°	110	70	15	12	6	8	5.0	29	55
20'	+5°	180	120	25	21	14	14	8	65	90
	+30°	100	70	14	12	11	8	5	40	50
	+40°	95	60	13	11	5	7	3	20	47
2°	+5°	5	3	1	0.5	0.5	0.2	0.2	1.5	2.5
	+30°	2.5	1.5	0.4	0.3	0.3	#	#	1	1.2
	+40°	1.5	1.0	0.3	0.2	0.2	#	#	#	0.7

Indicates "Value greater than zero but not significant or applicable"

NOTE Coloured areas of signs created by digital or screen printing or using overlay film will need to meet 70% of the values in the table.

Table A.1
Manufacturer's Specification for the Minimum Initial Coefficient of Retro-reflection R_A value
(Values are identical to EN 12899-1:2007 Class RA2)