



**Declaration of Performance
No. 9910.001.20220208**



according to:

COMMISSION DELEGATED REGULATION (EU) No 574/2014 of 21 February 2014 amending Annex III to Regulation (EU) No 305/2011 of the European Parliament and of the Council on the model to be used for drawing up a declaration of performance on construction products

1. Unique identification code of the product-type:

- ORALITE 9910 Brilliant Grade Premium (white, yellow, red, blue, green, brown)**
- ORALITE 9910 Brilliant Grade Premium (fluorescent- yellow-green, yellow, orange)**
- ORALITE 9910 Brilliant Grade Premium + 5081-070 lettering film (black)**
- ORALITE 9910 Brilliant Grade Premium + 5018 Screen printing ink (yellow, red, blue, green, black)**
- ORALITE 9910 Brilliant Grade Premium + 5061 coloured film (all colours + white)**
- ORALITE 9910 Brilliant Grade Premium + 5019i UV digital printing ink (all colours) for use with UV Digital Traffic Sign Printer + 5061 transparent film**
- ORALITE 9910 Brilliant Grade Premium + 5019i UV digital printing ink (all colours) for use with UV Digital Traffic Sign Printer + 5090 anti-dew film**
- ORALITE 9910 Brilliant Grade Premium + 5019i UV digital printing ink (all colours) for use with UV Digital Traffic Sign Printer + 5095 anti-graffiti film**
- ORALITE 9910 Brilliant Grade Premium + 5017 Eco Solvent digital printing ink (yellow, red, blue, green, dark-green, black) for use with Digital ECO Traffic Sign Printer + 5061 transparent film**
- ORALITE 9910 Brilliant Grade Premium + 5017 Eco Solvent digital printing ink (all colours) for use with Digital ECO Traffic Sign Printer + 5090 anti-dew film**
- ORALITE 9910 Brilliant Grade Premium + 5017 Eco Solvent digital printing ink (yellow, red, blue, green, dark-green, black) for use with Digital ECO Traffic Sign Printer + 5095 anti-graffiti film**

2. Intended use/es:

Retroreflective sheeting for use in the manufacture of traffic signs and traffic control equipment

Retroreflective sign face material based on micro prismatic technology for the manufacturing of fixed vertical road traffic signs

3. Manufacturer:

Orafol Europe GmbH
Orafolstrasse 1
16515 Oranienburg

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E-Mail: info@orafol.de
Internet: www.orafol.com

4. Authorised representative – *not relevant*

5. System/s of AVCP: 1



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6 a) Harmonised standard: - *not applicable*
Notified body/ies: - *not applicable*

6 b) European Assessment Document:

Number	Date of issue
EAD 12001-01-0106	September 2016

European Technical Assessment:

Number	Date of issue
ETA-20/0037	19.02.2020
ETA-20/0038	19.02.2020
ETA-20/0163	16.03.2020
ETA-20/0302	18.08.2021
ETA 21/0269	09.04.2021
ETA 21/0270	09.04.2021
ETA 21/0686	13.08.2021
ETA 21/0712	03.11.2021

Technical Assessment Body:

Technický a skúšobný ústav stavebný, n. o.
Building Testing and Research Institute
Studená 3, 821 04 Bratislava, Slovak Republic

Notified body/ies:

Id. number: **1358**
Name: **VUD, Veľký Diel 3323, 010 08 Žilina, Slovak Republic**
Certifikate Nr.: 1358 – CPR – 174/3



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7. Declared performance/s:

Main features	Description	Performance
Daylight chromaticity and luminance factors	CR 2	Attachment 1 Table 2
Coefficient of retroreflection	RA 2	Attachment 1 Table 1a - I
Symmetry of retroreflection	< 2,5 : 1	Attachment 1
Durability		
Impact resistance	Fulfilled	Attachment 2
Resistance to weathering (artificial weathering / three years natural weathering)	CR 1	Attachment 3 Table 3 Table 4

8. Appropriate Technical Documentation and/or
Specific Technical Documentation:

Posted on Webpage:

<https://www.orafol.com>

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

i.A. Dipl.-Ing. Jürgen Ewald

Global Regulatory Affairs Manager

[name and function]

Oranienburg, 08.02.2022

i.A.

[date and place of issue]

[signature]



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Attachment 1

Table 1a: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3B Germany and UK

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue	Brown	Orange	Grey
0,33°	+ 5°	300	195	60	30	19	10,6	150	150
	+ 20°	240	155	48	24	16	8,9	120	120
	+ 30°	165	110	33	17	11	6,2	83	82,5
	+ 40°	30	20	6,0	3,0	2,0	1,1	15	15
1°	+ 5°	35	23	7,0	3,5	2,5	1,4	18	17,5
	+ 20°	30	20	6,0	3,0	2,0	1,1	15	15
	+ 30°	20	13	4,0	2,0	1,5	0,84	10	10
	+ 40°	3,5	2,0	1,0	0,5	0,5	#	2,0	1,75
1,5°	+ 5°	15	10	3,0	1,5	1,0	#	7,5	7,5
	+ 20°	13	8,0	2,5	1,0	0,5	#	6,5	6,5
	+ 30°	9,0	6,0	2,0	0,5	0,5	#	4,5	4,5
	+ 40°	1,5	1,0	0,5	#	#	#	1,0	0,75

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

¹⁾ Values less than 0,5 are not evaluated

Table 1b: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3A Germany

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue	Brown	Orange	Grey
0,33°	+ 5°	850	550	170	85	55		425	
	+ 20°	600	390	120	60	40		300	
	+ 30°	425	275	85	40	28		210	
	+ 40°	275	175	55	25	18		135	
1°	+ 5°	625	400	125	60	40		310	
	+ 20°	450	290	90	45	30		225	
	+ 30°	325	210	65	30	20		160	
	+ 40°	200	130	40	20	13		100	
1,5°	+ 5°	425	275	85	40	28		210	
	+ 20°	300	195	60	30	20		150	
	+ 30°	225	145	45	20	15		110	
	+ 40°	150	95	30	15	10		75	

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Table 1c: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3C UK

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Dark-green	Blue	Brown	Grey
0,2°	+ 5°	580	435	87	58	42	26	17	
	+ 30°	220	165	33	22	16	10	7	
0,33°	+ 5°	300	250	75	35	29	17	10	
	+ 30°	140	128	30	18	11	7	5	
0,5°	+ 5°	420	315	63	42	21	19	13	
	+ 30°	150	110	23	15	7,5	5	5	
1,0°	+ 5°	120	90	18	12	6	5	4	
	+ 30°	45	34	7	5	2	2	1	

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Table 1d: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3A Belgium

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue			
0,2°	+ 5°	430	350	110	45	25			
	+ 15°	350	270	90	35	20			
	+ 30°	235	190	60	24	11			
	+ 40°	55	40	12	7	3			
0,33°	+ 5°	300	250	75	35	17			
	+ 15°	250	200	65	25	15			
	+ 30°	150	130	35	18	7			
	+ 40°	30	25	7	4	2			
1,5°	+ 5°	80	65	20	10	5			
	+ 15°	60	45	16	7	3,5			
	+ 30°	50	40	13	5	2,5			
	+ 40°	15	13	4	2	1			

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Table 1e: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3B Belgium

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue	Orange		
0,1°	+ 5°	850	550	170	85	55	425		
	+ 20°	600	390	120	60	40	300		
	+ 30°	425	275	85	40	28	210		
	+ 40°	200	140	40	20	10	100		
0,2°	+ 5°	625	400	125	60	40	310		
	+ 20°	450	290	90	45	30	225		
	+ 30°	325	210	65	30	20	160		
	+ 40°	160	112	32	16	8	80		
0,33°	+ 5°	425	275	85	40	28	210		
	+ 20°	300	195	60	30	20	150		
	+ 30°	225	145	45	20	15	110		
	+ 40°	110	77	22	11	5,5	55		

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Table 1f: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3C Belgium

Geometry		Colour		
α	β_1 ($\beta_2 = 0$)	Fluorescent Orange	Fluorescent Yellow	Fluorescent Yellow-green
0,2°	+ 5°	200	350	375
	+ 15°	175	270	-
	+ 30°	120	190	200
	+ 40°	80	40	36
0,33°	+ 5°	150	250	270
	+ 15°	130	200	-
	+ 30°	90	130	140
	+ 40°	60	25	24
1,0°	+ 5°	7,5	65	70
	+ 15°	5	45	-
	+ 30°	2,5	40	43
	+ 40°	2,5	13	9

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Table 1g: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3B Greece

Geometry		Colour						
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue		
0,2°	+ 5°	400	300	80	45	20		
	+ 30°	150	105	30	24	11		
	+ 40°	45	35	9	7	3		
0,33°	+ 5°	300	250	75	33	15		
	+ 30°	130	90	30	18	7		
	+ 40°	30	25	7	4	1,4		
1,0°	+ 5°	70	55	13	8	3,5		
	+ 30°	45	35	10	4,5	2		
	+ 40°	13	10	4,5	1,8	#		

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Table 1h: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3A Greece

Geometry		Colour						
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue		Orange
0,1°	+ 5°	900	720	250	90	45		450
	+ 30°	495	405	135	45	22		315
	+ 40°	340	270	85	27	13		180
0,2°	+ 5°	720	600	195	75	40		360
	+ 30°	360	310	90	30	18		225
	+ 40°	200	155	45	15	7		70
0,5°	+ 5°	180	140	40	18	9		110
	+ 30°	90	75	23	9	4		50
	+ 40°	70	55	16	5	2,5		40

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Table 1i: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3ZA Spain

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue		Orange	
0,1°	+ 5°	850	550	170	85	55			
	+ 15°	600	390	120	60	40			
	+ 30°	425	275	85	40	28			
0,2°	+ 5°	625	400	125	60	40			
	+ 15°	450	290	90	45	30			
	+ 30°	325	210	65	30	20			
0,33°	+ 5°	425	275	85	40	28			
	+ 15°	300	195	60	30	20			
	+ 30°	225	145	45	20	15			

Table 1j: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3ZB Spain

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue		Orange	
0,1°	+ 5°	850	550	170	85	55			
	+ 15°	600	390	120	60	40			
	+ 30°	425	275	85	40	28			
0,2°	+ 5°	625	400	125	60	40			
	+ 15°	450	290	90	45	30			
	+ 30°	325	210	65	30	20			
0,33°	+ 5°	425	275	85	40	28			
	+ 15°	300	195	60	30	20			
	+ 30°	225	145	45	20	15			



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Table 1k: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3ZC Spain

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue		Orange	
1,0°	+ 5°	35	25	7	3,5	2,5			
	+ 15°	30	20	6	3	2			
	+ 30°	18	13	4	2	1,5			
	+ 40°	10	7	2	1	0,5			
1,5°	+ 5°	15	10	3	1,5	1			
	+ 15°	13	9	2,5	1	0,5			
	+ 30°	10	7	2	1	0,5			
	+ 40°	5	3	1	0,5	#			

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Table 1k: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs in new condition: Class RA 3 Romania

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue	Fluo Yellow- Green		
0,1°	+ 5°	850	550	170	85	55	700		
	+ 20°	600	390	120	60	40	480		
	+ 30°	425	275	85	40	28	340		
0,2°	+ 5°	625	400	125	60	40	500		
	+ 20°	450	290	90	45	30	360		
	+ 30°	325	210	65	30	20	260		
0,33°	+ 5°	425	275	85	40	28	340		
	+ 20°	300	195	60	30	20	240		
	+ 30°	225	145	45	20	15	180		
0,5°	+ 5°	320	224	64	32	16	256		
	+ 20°	240	168	48	24	12	192		
	+ 30°	160	112	32	16	8	128		
	+ 40°	180	56	16	8	4	64		
1,0°	+ 5°	120	84	24	12	6	96		
	+ 20°	90	63	18	9	4,5	72		
	+ 30°	60	42	12	6	3	48		
	+ 40°	30	21	6	3	1,5	24		
1,5°	+ 5°	32	22	6,5	3	1,5	32		
	+ 20°	24	16,5	5	2,5	1	24		
	+ 30°	16	11	3	1,5	#	16		
	+ 40°	8	5,5	1,5	1	#	8		

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Table 2: Daylight chromaticity coordinates and luminance factors for traffic signs in new condition: Class CR 2; according to TLP VZ 2007/0661/D

Colour	Chromaticity Coordinates								Luminance Factor β
	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
Green	0,110	0,415	0,170	0,415	0,170	0,500	0,110	0,500	> 0,03
Blue	0,130	0,090	0,160	0,090	0,160	0,140	0,130	0,140	> 0,01
Brown	0,455	0,397	0,523	0,429	0,479	0,373	0,558	0,394	$0,03 \leq \beta \leq 0,09$
Orange	0,610	0,390	0,535	0,375	0,506	0,404	0,570	0,429	> 0,14
Grey	0,305	0,315	0,335	0,345	0,325	0,355	0,295	0,325	$0,11 \leq \beta \leq 0,18$

Attachment 2

Symmetry of retroreflection

The ratio of the maximum and minimum specific reflection values when rotating by ε with discrete steps, considering a preferred direction, is not greater than 2.5: 1.

Attachment 3

Impact resistance: The requirement for impact resistance depends on DIN EN 12899-1. Outside a circle with a radius of 6 mm from the center of the impact circle, no cracks or delamination from any substrate.



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Attachment 4

Table 3: Specific Coefficient of Retroreflection R_A (Unit: $\text{cd} \cdot \text{m}^{-2} \cdot \text{lx}^{-1}$) for traffic signs after weathering: Class RA2 according to TLP VZ 2007/0661/D

Geometry		Colour							
α	β_1 ($\beta_2 = 0$)	White	Yellow	Red	Green	Blue	Brown	Orange	Grey
0,33°	+ 5°	240	156	48	24	15,2	8,5	120	120
0,33°	+ 30°	132	88	26,4	13,6	8,8	4,9	66,4	66

Table 4: Daylight chromaticity coordinates and luminance factors for traffic signs after weathering: Class CR 1 according to DIN EN 12899-1 and according to TLP VZ 2007/0661/D

Colour	Chromaticity Coordinates								Luminance Factor β
	1		2		3		4		
	x	y	x	y	x	y	x	y	
White	0,355	0,355	0,305	0,305	0,285	0,325	0,335	0,375	> 0,27
Yellow	0,545	0,454	0,487	0,423	0,427	0,483	0,465	0,534	> 0,16
Red	0,735	0,265	0,674	0,236	0,569	0,341	0,655	0,345	> 0,03
Green	0,007	0,703	0,248	0,409	0,177	0,362	0,026	0,399	> 0,03
Blue	0,078	0,171	0,150	0,220	0,210	0,160	0,137	0,038	> 0,01
Brown	0,455	0,397	0,523	0,429	0,479	0,373	0,558	0,394	$0,03 \leq \beta \leq 0,09$
Orange	0,610	0,390	0,535	0,375	0,506	0,404	0,570	0,429	> 0,14
Grey	0,350	0,360	0,300	0,310	0,285	0,325	0,335	0,375	$0,11 \leq \beta \leq 0,18$