

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
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European Technical Assessment

ETA-16/0581
of 20 October 2016

English translation prepared by DIBt – Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

ORALITE® 6710 Engineer Prismatic Grade digitally
printed with ORALITE® 5019 UV Digital Printing Ink and
with ORALITE® 5062 Transparent Film

Product family
to which the construction product belongs

Microprismatic retro-reflective sheetings

Manufacturer

ORAFOL Europe GmbH
Orafolstraße 2
16515 Oranienburg
DEUTSCHLAND

Manufacturing plant

ORAFOL Europe GmbH
Orafolstraße 2
16515 Oranienburg
DEUTSCHLAND

This European Technical Assessment
contains

38 pages including 4 annexes which form an integral part
of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

European Assessment Document (EAD)
120001-01-0106

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Specific Part

1 Technical description of the product

The product consists of retro-reflective sheeting on the basis of microprisms, which consist of optical elements, where the retro-reflection is created by total internal reflection on prisms. The microprisms are moulded in a transparent polymer enclosed in air capsules and provided with an adhesive, which can connect the sheeting with a substrate. The sheeting has a smooth surface and a regular structure visible on the surface forming the air capsules and serving to identify the orientation.

The product is delivered as reflective sheeting, the types of which are stated in Table 1.

Trade name	Component	Colour/Code		Properties
ORALITE® 6710 Engineer Prismatic Grade	Self-adhesive retro-reflective sheeting on the basis of microprisms	White	6710-010	Sheeting thickness (without protective paper and adhesive): 0,23 mm Dimension of the roll: 1,22 m x 50 m or customized
ORALITE® 5019 UV Digital Printing Ink	Printing ink for digital printing system	Yellow	5019-020	UV-Light drying ink for Inkjet digital printing system
		Red	5019-030	
		Orange	5019-035	
		Blue	5019-050	
		Green	5019-060	
		Black	5019-070	
		Grey	5019-073	
		Grey (pattern)	5019-073 (pattern)	
		Brown	5019-080	
ORALITE® 5062 Transparent Film	Transparent protective laminate	Transparent	5062-000	Sheeting thickness: 0,075 mm Dimension of the roll: 1,22 m x 50 m or customized

Tab. 1: Types of reflective sheeting "ORALITE® 6710 Engineer Prismatic Grade" digitally printed with ORALITE® 5019 UV Digital Printing Ink" and with ORALITE® 5062 Transparent Film"

The indications of the manufacturer regarding the definition of the colours comply with the colour boxes of the CIE system (according to class CR2 of EN 12899-1) and are shown in Table 2.

Colour		Daylight chromaticity				Luminance factors
		1	2	3	4	
Yellow	x	0,494	0,470	0,513	0,545	≥ 0,27
	y	0,505	0,480	0,437	0,454	
Red	x	0,735	0,700	0,610	0,660	≥ 0,05
	y	0,265	0,250	0,340	0,340	
Orange*	x	0,610	0,535	0,506	0,570	≥ 0,17
	y	0,390	0,375	0,404	0,429	
Green	x	0,110	0,170	0,170	0,110	≥ 0,04
	y	0,415	0,415	0,500	0,500	
Blue	x	0,130	0,160	0,160	0,130	≥ 0,01
	y	0,090	0,090	0,140	0,140	
Black**	x	0,385	0,300	0,260	0,345	≤ 0,03
	y	0,355	0,270	0,310	0,395	
Grey	x	0,305	0,335	0,325	0,295	0,12 ≤ β ≤ 0,18
	y	0,315	0,345	0,355	0,325	
Brown	x	0,455	0,523	0,479	0,558	0,03 ≤ β ≤ 0,09
	y	0,397	0,429	0,373	0,394	

Tab. 2: Daylight chromaticity and luminance factors according to the indications of the manufacturer which comply with class CR2 of EN 12899-1

* Class CR1 of EN 12899-1 for Orange

** Class NR1 of EN 12899-1 for Black

2 Specification of the intended use in accordance with the applicable European Assessment Document

The construction product described here is used to manufacture signal aspects of fixed, vertical traffic signs (see also EN 12899-1:2007). The further intended applications are all other traffic signs and traffic installations, route guidance with retro-reflective elements and variable message signs.

However, the intended use excludes the manufacture of road marking elements according to EN 1436. The intended sign support material is aluminium, galvanised steel, polycarbonate or other materials. Tests within the framework of this assessment were carried out on aluminium-based samples.

The performances given in section 3 are only valid if the conditions laid down in the accompanying product data sheets and in the processing instructions given by the manufacturer have been respected throughout the production, processing, packaging, transport and storage of "ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film" (essential specifications acc. to manufacturer's instructions are given in Annex 4).

The verifications and assessment methods as well as the product information of the manufacturer on which this European Technical Assessment is based lead to the assumption of a working life of this product of at least 10 years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

English translation prepared by DIBt

3 Performance of the product and references to the methods used for its assessment

3.1 Safety and accessibility in use (BWR 4)

For the preparation of the specimens, the test pieces of the reflective sheeting were applied by the manufacturer on a plane aluminium plate with a thickness of 2,0 mm (± 0,05 mm).

Essential characteristic	Performance
Visibility of "ORALITE® 6710 Engineer Prismatic Grade" digitally printed with "ORALITE® 5019 UV Digital Printing Ink" and with "ORALITE® 5062 Transparent Film"	
Daylight chromaticity and luminance factors	See Annex 1
Night-time colour	No performance assessed
Coefficient of retro-reflection and rotational symmetry	See Annex 2
Durability of "ORALITE® 6710 Engineer Prismatic Grade" digitally printed with "ORALITE® 5019 UV Digital Printing Ink" and with "ORALITE® 5062 Transparent Film"	
Impact resistance	Passed according to EN 12899-1
Temperature resistance	No performance assessed
Visibility after artificial weathering	See Annex 3
Visibility after natural weathering	No performance assessed
Adhesion	No performance assessed

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No 120001-01-0106, the applicable European legal act is: Decision 96/579/EC.

The system(s) to be applied is: 1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

6 Reference list

This European Technical Assessment is based on the following test report:

- Interims test report No. V3-031/2015 of 29 April 2016 by Federal Highway Research Institute (Bundesanstalt für Straßenwesen - BAST) on the testing of microprismatic reflective sheetings

Issued in Berlin on 20 October 2016 by Deutsches Institut für Bautechnik

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beglaubigt:
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Annex 1

Daylight chromaticity and luminance factors according to clause 2.2.1 of the EAD

Colour	Sample	x	y	β
White	1	0,309	0,326	0,49
	2	0,309	0,326	0,49
	3	0,309	0,326	0,48
Yellow	1	0,518	0,453	0,28
	2	0,518	0,453	0,28
	3	0,518	0,452	0,28
Red	1	0,644	0,332	0,09
	2	0,645	0,332	0,09
	3	0,646	0,332	0,09
Orange	1	0,584	0,393	0,17
	2	0,584	0,394	0,17
	3	0,585	0,394	0,17
Blue	1	0,150	0,127	0,04
	2	0,150	0,128	0,04
	3	0,149	0,126	0,04
Green	1	0,140	0,436	0,08
	2	0,140	0,434	0,08
	3	0,140	0,435	0,08
Black	1	0,313	0,329	0,01
	2	0,313	0,329	0,01
	3	0,313	0,329	0,01
Grey	1	0,316	0,333	0,14
	2	0,316	0,333	0,14
	3	0,316	0,333	0,13
Grey (pattern)	1	0,313	0,330	0,15
	2	0,313	0,330	0,15
	3	0,312	0,329	0,15
Brown	1	0,512	0,388	0,05
	2	0,512	0,387	0,05
	3	0,512	0,388	0,06

ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV
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Daylight chromaticity and luminance factors according to clause 2.2.1 of the EAD

Annex 1

Annex 2

Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Coefficient of retro-reflection for "White" (Part 1)

Colour				White			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			119	245	134	166	70
				43	85	48	59	30
				17,3	28	19,2	22	10,0
0,33°	5° 30° 40°	0°	0°	85	160	96	114	50
				40	75	45	53	24
				14,9	24	17,1	18,7	9,0
2°	5° 30° 40°			25	18,9	24	23	5,0
				13,6	15,5	14,3	14,5	2,5
				6,0	7,8	6,7	6,8	1,5

Coefficient of retro-reflection started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				White			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			105	224	119	149	70
				37	83	44	55	30
				21	39	25	28	10,0
0,33°	5° 30° 40°	0°	30°	65	132	75	91	50
				34	70	41	48	24
				20	36	23	26	9,0
2°	5° 30° 40°			17,5	13,4	17,8	16,2	5,0
				15,8	12,8	15,6	14,7	2,5
				6,6	6,8	7	6,8	1,5

Coefficient of retro-reflection started at $\varepsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				White			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			103	221	117	147	70
				53	119	63	78	30
				8,6	17,2	10,3	12,0	10,0
0,33°	5° 30° 40°	0°	45°	64	128	73	88	50
				50	97	59	69	24
				8,3	15,5	9,8	11,2	9,0
2°	5° 30° 40°			16,9	13,0	17,3	15,7	5,0
				11,9	7,1	10,9	10,0	2,5
				5,8	5	5,9	5,6	1,5

Coefficient of retro-reflection started at $\varepsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film

Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

English translation prepared by DIBt

Colour				White			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer	
α	β_1	Sample		Single test result of each sample					
		β_2	ϵ	1	2	3			
0,2°				5°	107	222	118	149	70
				30°	33	76	38	49	30
				40°	19,3	41	22	27	10,0
0,33°		0°	60°	5°	68	130	76	91	50
				30°	30	64	34	43	24
				40°	18,4	38	21	26	9,0
2°				5°	19,6	14,6	18,7	17,6	5,0
				30°	14,0	10,5	13,6	12,7	2,5
				40°	6,5	7,1	6,4	6,7	1,5

Coefficient of retro-reflection started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				White			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer	
α	β_1	Sample		Single test result of each sample					
		β_2	ϵ	1	2	3			
0,2°				5°	122	242	135	166	70
				30°	37	71	40	49	30
				40°	12	23	12,7	15,9	10,0
0,33°		0°	90°	5°	91	157	99	116	50
				30°	35	63	38	45	24
				40°	11,0	20	11,7	14,2	9,0
2°				5°	28	20	26	25	5,0
				30°	14,5	14,2	14,3	14,3	2,5
				40°	4,5	5,5	4,1	4,7	1,5

Coefficient of retro-reflection started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Rotational symmetry for "White" (Part 1)

Colour Sample				White		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	107	182	116
			-50	121	205	130
			-25	111	194	120
			0*	85	160	96
			25	67	134	77
			50	64	127	73
Ratio				1,89	1,61	1,78

* Rotational symmetry started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				White		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	101	181	112
			-50	76	148	86
			-25	64	130	73
			0*	68	130	76
			25	86	151	94
			50	113	191	121
Ratio				1,77	1,47	1,66

* Rotational symmetry started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				White		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	121	206	130
			-50	107	187	117
			-25	80	153	91
			0*	65	132	75
			25	65	128	74
			50	81	143	89
Ratio				1,86	1,61	1,76

* Rotational symmetry started at $\epsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				White		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	72	143	83
			-50	64	128	73
			-25	71	132	78
			0*	91	157	99
			25	116	198	125
			50	121	210	130
Ratio				1,89	1,64	1,78

* Rotational symmetry started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				White		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	114	199	124
			-50	90	167	102
			-25	69	139	79
			0*	64	128	73
			25	73	135	81
			50	97	167	105
Ratio				1,78	1,55	1,70

* Rotational symmetry started at $\epsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Coefficient of retro-reflection for "Yellow" (Part 2)

Colour				Yellow			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	145	164	118	142	50
				56	62	47	55	22
				18,5	21	13,0	17,5	7,0
0,33°	5°	0°	0°	94	105	77	92	35
				46	50	38	45	16,0
				15,3	17,5	13,4	15,4	6,0
2°	5°	30°	40°	19,3	18,1	20	19,1	3,0
				11,7	11,2	11,8	11,6	1,5
				5,4	5,6	4,1	5,0	1,0

Coefficient of retro-reflection started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Yellow			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	142	161	116	140	50
				64	71	53	63	22
				32	34	27	31	7,0
0,33°	5°	0°	30°	90	101	75	89	35
				51	55	42	49	16,0
				28	30	24	27	6,0
2°	5°	30°	40°	15,3	13,7	16,7	15,2	3,0
				11,5	10,7	11,8	11,3	1,5
				5,5	5,5	5,2	5,4	1,0

Coefficient of retro-reflection started at $\varepsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Yellow			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	142	160	117	140	50
				85	93	71	83	22
				11,7	12,7	10,1	11,5	7,0
0,33°	5°	0°	45°	91	102	76	90	35
				62	67	53	61	16,0
				9,6	10,3	8,2	9,4	6,0
2°	5°	30°	40°	14,7	13,2	16,2	14,7	3,0
				11,8	11,0	12,2	11,7	1,5
				3,1	3,0	3,1	3,1	1,0

Coefficient of retro-reflection started at $\varepsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film

Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Colour				Yellow			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
α	β_1	β_2	ε	Single test result of each sample				
Sample				1	2	3		
0,2°	5° 30° 40°	0°	60°	143	161	119	141	50
				61	66	52	60	22
				34	35	29	33	7,0
0,33°	5° 30° 40°	0°	60°	92	102	79	91	35
				50	53	42	48	16,0
				30	32	25	29	6,0
2°	5° 30° 40°	0°	60°	15,3	13,9	16,7	15,3	3,0
				9,4	8,7	10,3	9,5	1,5
				5,3	5,3	5,1	5,2	1,0

Coefficient of retro-reflection started at $\varepsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Yellow			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
α	β_1	β_2	ε	Single test result of each sample				
Sample				1	2	3		
0,2°	5° 30° 40°	0°	90°	146	165	123	145	50
				54	56	45	52	22
				13,7	13,7	12,6	13,3	7,0
0,33°	5° 30° 40°	0°	90°	97	107	84	96	35
				44	45	37	42	16,0
				12,3	12,2	11,3	11,9	6,0
2°	5° 30° 40°	0°	90°	19,4	17,9	21	19,4	3,0
				11,6	11,0	11,7	11,4	1,5
				3,5	3,4	4,0	3,6	1,0

Coefficient of retro-reflection started at $\varepsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

English translation prepared by DIBt

Rotational symmetry for "Yellow" (Part 2)

Colour Sample				Yellow		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	103	114	88
			-50	109	122	92
			-25	104	115	86
			0*	94	105	77
			25	90	101	74
			50	91	102	77
			Ratio	1,21	1,21	1,24

* Rotational symmetry started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Yellow		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	99	110	83
			-50	92	102	76
			-25	90	101	75
			0*	92	102	79
			25	96	106	83
			50	105	116	90
			Ratio	1,17	1,15	1,20

* Rotational symmetry started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Yellow		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	109	122	92
			-50	101	113	84
			-25	93	103	76
			0*	90	101	75
			25	92	102	78
			50	95	105	82
			Ratio	1,21	1,21	1,23

* Rotational symmetry started at $\epsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Yellow		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	91	102	75
			-50	90	101	76
			-25	93	103	80
			0*	97	107	84
			25	107	119	91
			50	110	123	92
			Ratio	1,22	1,22	1,23

* Rotational symmetry started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Yellow		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	106	118	89
			-50	95	106	79
			-25	91	101	75
			0*	91	102	76
			25	94	103	80
			50	100	110	85
			Ratio	1,16	1,17	1,19

* Rotational symmetry started at $\epsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

English translation prepared by DIBt

Coefficient of retro-reflection for "Red" (Part 3)

Colour				Red			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	40	43	42	42	14,5
				14,1	15,7	14,4	14,7	6,0
				3,4	4,2	3,4	3,7	2,0
0,33°	5°	0°	0°	26	28	27	27	10,0
				11,2	12,6	11,4	11,7	4,0
				3,0	3,7	2,9	3,2	1,8
2°	5°	30°	40°	6,8	6,7	6,3	6,6	1,0
				3,7	3,5	3,5	3,6	0,5
				1,1	1,4	1,0	1,2	0,5

Coefficient of retro-reflection started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Red			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	39	43	41	41	14,5
				15,7	17,5	15,8	16,3	6,0
				7,2	8,0	7,1	7,4	2,0
0,33°	5°	0°	30°	26	28	27	27	10,0
				12,5	13,9	12,5	13,0	4,0
				6,5	7,2	6,4	6,7	1,8
2°	5°	30°	40°	5,2	5,3	5,1	5,2	1,0
				3,3	3,3	3,2	3,3	0,5
				1,5	1,7	1,5	1,6	0,5

Coefficient of retro-reflection started at $\varepsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Red			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	40	44	43	42	14,5
				22	24	24	23	6,0
				2,8	3,0	2,9	2,9	2,0
0,33°	5°	0°	45°	27	29	28	28	10,0
				16,5	17,7	17,4	17,2	4,0
				2,4	2,5	2,4	2,4	1,8
2°	5°	30°	40°	5,0	5,3	5,0	5,1	1,0
				3,8	4,0	4,0	3,9	0,5
				0,9	0,9	0,9	0,9	0,5

Coefficient of retro-reflection started at $\varepsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film

Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Colour				Red			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	60°	41	45	44	43	14,5
	30°			17,0	18,5	18,8	18,1	6,0
	40°			8,8	9,3	9,8	9,3	2,0
0,33°	5°	0°	60°	28	31	30	30	10,0
	30°			14,0	15,0	15,4	14,8	4,0
	40°			7,9	8,4	8,8	8,4	1,8
2°	5°	0°	60°	5,4	5,7	5,5	5,5	1,0
	30°			2,9	3,1	3,1	3,0	0,5
	40°			1,6	1,7	1,8	1,7	0,5

Coefficient of retro-reflection started at $\varepsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Red			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	90°	43	46	46	45	14,5
	30°			14,6	15,6	15,9	15,4	6,0
	40°			3,5	3,5	4,1	3,7	2,0
0,33°	5°	0°	90°	30	32	32	31	10,0
	30°			12,2	12,8	13,3	12,8	4,0
	40°			3,4	2,6	3,8	3,3	1,8
2°	5°	0°	90°	6,9	8,0	7,7	7,5	1,0
	30°			3,6	3,8	4,1	3,8	0,5
	40°			1,2	1,1	1,3	1,2	0,5

Coefficient of retro-reflection started at $\varepsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film

Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Rotational symmetry for "Red" (Part 3)

Colour Sample				Red		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	31	33	33
			-50	32	33	33
			-25	29	31	30
			0*	26	28	27
			25	25	28	26
			50	27	30	29
			Ratio	1,28	1,18	1,27

* Rotational symmetry started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Red		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	28	29	29
			-50	25	27	26
			-25	26	28	27
			0*	28	31	30
			25	30	32	32
			50	32	33	34
			Ratio	1,28	1,22	1,31

* Rotational symmetry started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Red		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	31	33	33
			-50	28	30	30
			-25	26	28	27
			0*	26	28	27
			25	28	30	29
			50	30	32	32
			Ratio	1,19	1,18	1,22

* Rotational symmetry started at $\epsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Red		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	25	27	26
			-50	26	29	28
			-25	29	31	31
			0*	30	32	32
			25	32	33	34
			50	32	33	34
			Ratio	1,28	1,22	1,31

* Rotational symmetry started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Red		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	30	31	32
			-50	26	28	27
			-25	25	28	26
			0*	27	29	28
			25	29	32	31
			50	30	33	33
			Ratio	1,20	1,18	1,27

* Rotational symmetry started at $\epsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

English translation prepared by DIBt

Coefficient of retro-reflection for "Orange" (Part 4)

Colour				Orange			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	83	93	95	90	25
				30	35	35	33	10,0
				9,0	10,0	11,5	10,2	2,2
0,33°	5°	0°	0°	54	61	61	59	20
				25	29	29	28	8,0
				8,7	8,6	10,2	9,2	2,2
2°	5°	30°	40°	12,3	12,0	12,0	12,1	1,2
				6,8	7,1	6,9	6,9	0,5
				2,6	2,8	3,3	2,9	#

Coefficient of retro-reflection started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

Colour				Orange			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	81	91	92	88	25
				32	38	39	36	10,0
				16,1	18,7	18,7	17,8	2,2
0,33°	5°	0°	30°	51	57	58	55	20
				26	30	31	29	8,0
				14,5	16,8	16,7	16,0	2,2
2°	5°	30°	40°	9,8	9,3	9,2	9,4	1,2
				7,1	6,9	6,8	6,9	0,5
				3,1	3,3	3,3	3,2	#

Coefficient of retro-reflection started at $\varepsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

Colour				Orange			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	82	91	93	89	25
				48	53	55	52	10,0
				6,7	7,4	7,7	7,3	2,2
0,33°	5°	0°	45°	53	59	59	57	20
				37	40	41	39	8,0
				5,7	6,2	6,4	6,1	2,2
2°	5°	30°	40°	9,9	9,1	8,9	9,3	1,2
				7,7	7,2	7,0	7,3	0,5
				2,2	2,1	2,1	2,1	#

Coefficient of retro-reflection started at $\varepsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

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Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Colour				Orange			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
α	β_1	β_2	ε	Single test result of each sample				
Sample				1	2	3		
0,2°	5°	0°	60°	84	92	94	90	25
				37	39	41	39	10,0
				21	22	23	22	2,2
0,33°	5°	0°	60°	56	61	61	59	20
				31	32	33	32	8,0
				18,8	19,5	20	19,4	2,2
2°	5°	0°	60°	11,7	10,7	10,2	10,9	1,2
				6,7	6,3	6,0	6,3	0,5
				3,5	3,5	3,4	3,5	#

Coefficient of retro-reflection started at $\varepsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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

Colour				Orange			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
α	β_1	β_2	ε	Single test result of each sample				
Sample				1	2	3		
0,2°	5°	0°	90°	88	97	98	94	25
				33	34	34	34	10,0
				9,8	9,4	8,4	9,2	2,2
0,33°	5°	0°	90°	62	66	66	65	20
				28	28	28	28	8,0
				8,9	8,6	7,5	8,3	2,2
2°	5°	0°	90°	15,5	14,0	13,4	14,3	1,2
				8,3	7,9	7,8	8,0	0,5
				3,1	2,8	2,3	2,7	#

Coefficient of retro-reflection started at $\varepsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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

Rotational symmetry for "Orange" (Part 4)

Colour Sample				Orange		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	65	71	71
			-50	67	74	74
			-25	61	69	69
			0*	54	61	61
			25	51	58	58
			50	54	59	60
Ratio				1,31	1,28	1,28

* Rotational symmetry started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Orange		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	58	65	66
			-50	52	59	59
			-25	52	58	58
			0*	56	61	61
			25	61	65	66
			50	66	72	73
Ratio				1,27	1,24	1,26

* Rotational symmetry started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Orange		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	67	73	74
			-50	59	67	68
			-25	52	59	60
			0*	51	57	58
			25	55	60	60
			50	60	64	64
Ratio				1,31	1,28	1,28

* Rotational symmetry started at $\epsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Orange		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	51	58	58
			-50	52	58	59
			-25	57	61	62
			0*	62	66	66
			25	67	73	74
			50	66	73	74
Ratio				1,31	1,26	1,28

* Rotational symmetry started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Orange		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	63	70	71
			-50	55	62	62
			-25	51	58	58
			0*	53	59	59
			25	58	62	63
			50	63	68	69
Ratio				1,24	1,21	1,22

* Rotational symmetry started at $\epsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Coefficient of retro-reflection for "Blue" (Part 5)

Colour				Blue			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	0°	12,4	13,7	16,5	14,2	4,0
				5,5	5,8	6,9	6,1	1,7
				1,9	2,0	2,3	2,1	0,5
0,33°	5°	0°	0°	8,0	8,7	10,4	9,0	2,0
				4,2	4,5	5,3	4,7	1,0
				1,7	1,7	1,9	1,8	#
2°	5°	0°	0°	2,9	2,8	2,9	2,9	#
				1,8	1,8	1,8	1,8	#
				0,6	0,6	0,7	0,6	#

Coefficient of retro-reflection started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

Colour				Blue			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	30°	12,4	13,5	16,3	14,1	4,0
				6,0	6,6	7,7	6,8	1,7
				2,9	3,0	3,6	3,2	0,5
0,33°	5°	0°	30°	7,8	8,3	10,0	8,7	2,0
				4,6	5,0	5,8	5,1	1,0
				2,5	2,6	3,1	2,7	#
2°	5°	0°	30°	2,4	2,3	2,2	2,3	#
				1,7	1,7	1,7	1,7	#
				0,6	0,6	0,6	0,6	#

Coefficient of retro-reflection started at $\varepsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

Colour				Blue			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	45°	12,7	13,8	16,5	14,3	4,0
				7,9	8,4	9,8	8,7	1,7
				1,2	1,2	1,4	1,3	0,5
0,33°	5°	0°	45°	8,3	8,9	10,4	9,2	2,0
				5,6	5,9	6,8	6,1	1,0
				0,9	1,0	1,4	1,1	#
2°	5°	0°	45°	2,4	2,3	2,2	2,3	#
				1,6	1,6	1,5	1,6	#
				0,4	0,4	0,4	0,4	#

Coefficient of retro-reflection started at $\varepsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

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Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

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Colour				Blue			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
α	β_1	β_2	ε	Single test result of each sample				
			Sample	1	2	3		
0,2°	5° 30° 40°		60°	13,1	14,2	16,9	14,7	4,0
				6,0	6,5	7,3	6,6	1,7
				3,1	3,4	3,6	3,4	0,5
0,33°	5° 30° 40°	0°	60°	9,0	9,6	10,9	9,8	2,0
				4,8	5,0	5,6	5,1	1,0
				2,8	2,9	3,2	3,0	#
2°	5° 30° 40°		60°	2,4	2,4	2,2	2,3	#
				1,6	1,6	1,5	1,6	#
				0,6	0,6	0,6	0,6	#

Coefficient of retro-reflection started at $\varepsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

Colour				Blue			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
α	β_1	β_2	ε	Single test result of each sample				
			Sample	1	2	3		
0,2°	5° 30° 40°		90°	13,6	15,0	17,6	15,4	4,0
				5,2	5,6	6,3	5,7	1,7
				1,7	1,7	2,0	1,8	0,5
0,33°	5° 30° 40°	0°	90°	9,7	10,5	11,7	10,6	2,0
				4,2	4,5	5,0	4,6	1,0
				1,6	1,6	1,7	1,6	#
2°	5° 30° 40°		90°	2,8	2,9	2,6	2,8	#
				1,7	1,9	1,7	1,8	#
				0,6	0,6	0,6	0,6	#

Coefficient of retro-reflection started at $\varepsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

Rotational symmetry for "Blue" (Part 5)

Colour Sample				Blue		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	10,0	10,9	12,2
			-50	10,2	11,4	13,1
			-25	9,3	10,3	12,1
			0*	8,0	8,7	10,4
			25	7,7	8,3	10,0
			50	8,6	9,1	10,6
			Ratio	1,32	1,37	1,31

* Rotational symmetry started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Blue		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	8,8	9,6	11,3
			-50	7,8	8,3	10,1
			-25	8,0	8,5	10,1
			0*	9,0	9,6	10,9
			25	9,7	10,4	11,6
			50	10,1	11,1	12,1
			Ratio	1,29	1,34	1,20

* Rotational symmetry started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Blue		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	10,2	11,3	13
			-50	9,1	9,9	11,7
			-25	7,9	8,5	10,2
			0*	7,8	8,3	10,0
			25	8,8	9,3	10,8
			50	9,6	10,2	11,5
			Ratio	1,31	1,36	1,30

* Rotational symmetry started at $\epsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Blue		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	7,7	8,3	10,0
			-50	8,1	8,6	10,2
			-25	9,2	9,8	11,1
			0*	9,7	10,5	11,7
			25	10,2	11,2	12,8
			50	10,0	11,2	13,2
			Ratio	1,32	1,35	1,32

* Rotational symmetry started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Blue		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	9,7	10,6	12,4
			-50	8,2	8,9	10,7
			-25	7,7	8,2	10,0
			0*	8,3	8,9	10,4
			25	9,4	10,0	11,3
			50	9,8	10,6	11,9
			Ratio	1,27	1,29	1,24

* Rotational symmetry started at $\epsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

English translation prepared by DIBt

Coefficient of retro-reflection for "Green" (Part 6)

Colour				Green			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			31	32	31	31	9,0
				12,0	12,7	12,4	12,4	3,5
				4,8	4,2	3,8	4,3	1,5
0,33°	5° 30° 40°	0°	0°	19,0	19,5	19,3	19,3	7,0
				9,3	9,7	9,6	9,5	3,0
				4,1	3,3	3,1	3,5	1,2
2°	5° 30° 40°			5,2	5,1	5,0	5,1	0,5
				3,0	3,4	3,2	3,2	0,3
				1,2	1,2	1,2	1,2	0,2

Coefficient of retro-reflection started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Green			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			30	31	31	31	9,0
				14,0	14,3	14,2	14,2	3,5
				6,6	6,6	6,5	6,6	1,5
0,33°	5° 30° 40°	0°	30°	18,5	18,8	18,7	18,7	7,0
				10,5	10,7	10,7	10,6	3,0
				5,7	5,7	5,6	5,7	1,2
2°	5° 30° 40°			4,3	4,3	4,1	4,2	0,5
				3,1	3,4	3,2	3,2	0,3
				1,2	1,3	1,2	1,2	0,2

Coefficient of retro-reflection started at $\varepsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Green			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			31	32	31	31	9,0
				18,7	19,0	18,4	18,7	3,5
				2,6	2,6	2,6	2,6	1,5
0,33°	5° 30° 40°	0°	45°	19,2	19,6	19,4	19,4	7,0
				12,8	12,9	12,7	12,8	3,0
				2,0	2,4	2,0	2,1	1,2
2°	5° 30° 40°			4,3	4,3	4,3	4,3	0,5
				3,2	3,2	3,0	3,1	0,3
				0,8	0,7	0,7	0,7	0,2

Coefficient of retro-reflection started at $\varepsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film

Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Colour				Green			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°	0°	60°	31	32	32	32	9,0
				14,8	14,6	14,1	14,5	3,5
				7,6	7,8	7,4	7,6	1,5
0,33°	5° 30° 40°	0°	60°	20	21	21	21	7,0
				11,5	11,4	11,0	11,3	3,0
				6,6	6,7	6,4	6,6	1,2
2°	5° 30° 40°	0°	60°	4,5	4,6	4,7	4,6	0,5
				3,1	3,1	2,8	3,0	0,3
				1,3	1,3	1,2	1,3	0,2

Coefficient of retro-reflection started at $\varepsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Green			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°	0°	90°	33	34	33	33	9,0
				12,8	12,7	12,1	12,5	3,5
				3,1	3,7	3,3	3,4	1,5
0,33°	5° 30° 40°	0°	90°	22	22	22	22	7,0
				10,2	10,1	9,7	10,0	3,0
				2,8	3,3	3,2	3,1	1,2
2°	5° 30° 40°	0°	90°	5,5	5,6	5,8	5,6	0,5
				3,6	3,7	3,5	3,6	0,3
				1,0	1,3	1,2	1,2	0,2

Coefficient of retro-reflection started at $\varepsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film

Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Rotational symmetry for "Green" (Part 6)

Colour Sample				Green		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	23	23	24
			-50	25	25	26
			-25	22	23	23
			0*	19	19,5	19,3
			25	18,4	18,6	18,6
			50	19,6	19,8	20
			Ratio	1,36	1,34	1,40

* Rotational symmetry started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Green		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	21	24	21
			-50	18,4	18,9	18,4
			-25	18,7	19,1	18,8
			0*	20	21	21
			25	22	22	22
			50	23	24	24
			Ratio	1,25	1,27	1,30

* Rotational symmetry started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Green		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	25	26	26
			-50	22	22	22
			-25	18,7	19,1	18,8
			0*	18,5	18,8	18,7
			25	20	20	20
			50	21	21	22
			Ratio	1,35	1,38	1,39

* Rotational symmetry started at $\epsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Green		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	18,3	18,8	18,4
			-50	18,9	19,4	19,1
			-25	21	21	21
			0*	22	22	22
			25	24	25	25
			50	24	26	25
			Ratio	1,31	1,38	1,36

* Rotational symmetry started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Green		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	23	24	24
			-50	19,4	20	19,6
			-25	18,3	18,7	18,3
			0*	19,2	19,6	19,4
			25	21	21	21
			50	22	22	23
			Ratio	1,26	1,28	1,31

* Rotational symmetry started at $\epsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

English translation prepared by DIBt

Coefficient of retro-reflection for "Grey" (Part 7)

Colour		Grey			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer		
Sample		Single test result of each sample						
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	113	92	100	102	42
				37	30	32	33	18
				10,5	9,2	9,0	9,6	6,0
0,33°	5°	0°	0°	71	60	64	65	30
				31	26	28	28	14,4
				8,8	8,3	7,9	8,3	5,4
2°	5°	30°	40°	10,9	12,7	12,0	11,9	3,0
				7,8	8,5	8,5	8,3	1,5
				2,9	3,3	2,9	3,0	0,9

Coefficient of retro-reflection started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour		Grey			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer		
Sample		Single test result of each sample						
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	104	85	92	94	42
				37	29	32	33	18
				16,9	14,1	14,8	15,3	6,0
0,33°	5°	0°	30°	61	50	54	55	30
				30	24	26	27	14,4
				15,2	12,9	13,5	13,9	5,4
2°	5°	30°	40°	7,9	9,3	8,8	8,7	3,0
				7,2	8,4	7,9	7,8	1,5
				3,3	3,6	3,4	3,4	0,9

Coefficient of retro-reflection started at $\varepsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour		Grey			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer		
Sample		Single test result of each sample						
α	β_1	β_2	ε	1	2	3		
0,2°	5°	30°	40°	104	83	91	93	42
				54	43	47	48	18
				7,4	5,9	6,5	6,6	6,0
0,33°	5°	0°	45°	61	50	54	55	30
				42	35	37	38	14,4
				6,5	5,3	5,7	5,8	5,4
2°	5°	30°	40°	6,9	7,8	7,4	7,4	3,0
				5,1	6,0	5,6	5,6	1,5
				2,3	2,6	2,6	2,5	0,9

Coefficient of retro-reflection started at $\varepsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film

Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Colour				Grey			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			105	85	93	94	42
				38	29	33	33	18
				20	15,9	17,5	17,8	6,0
0,33°	5° 30° 40°	0°	60°	63	52	55	57	30
				31	25	27	28	14,4
				18,2	14,6	15,9	16,2	5,4
2°	5° 30° 40°			8,5	9,8	9,2	9,2	3,0
				6,0	6,9	7,0	6,6	1,5
				3,5	3,6	3,6	3,6	0,9

Coefficient of retro-reflection started at $\varepsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Grey			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			116	95	102	104	42
				34	29	31	31	18
				10,6	8,8	9,8	9,7	6,0
0,33°	5° 30° 40°	0°	90°	76	64	67	69	30
				30	26	28	28	14,4
				9,7	8,0	8,9	8,9	5,4
2°	5° 30° 40°			12,0	14,0	13,1	13,0	3,0
				7,7	8,7	8,8	8,4	1,5
				3,2	3,0	3,5	3,2	0,9

Coefficient of retro-reflection started at $\varepsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film

Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Rotational symmetry for "Grey" (Part 7)

Colour Sample				Grey		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	87	74	78
			-50	99	84	89
			-25	90	76	81
			0*	71	60	64
			25	61	50	55
			50	61	50	54
Ratio				1,62	1,68	1,65

* Rotational symmetry started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Grey		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	84	70	75
			-50	67	55	59
			-25	61	50	54
			0*	63	52	55
			25	72	61	64
			50	92	78	82
Ratio				1,51	1,56	1,52

* Rotational symmetry started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Grey		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	99	84	89
			-50	87	73	78
			-25	69	57	62
			0*	61	50	54
			25	62	51	54
			50	69	58	61
Ratio				1,62	1,68	1,65

* Rotational symmetry started at $\epsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Grey		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	64	53	57
			-50	61	50	53
			-25	64	53	56
			0*	76	64	67
			25	96	81	85
			50	100	85	91
Ratio				1,64	1,70	1,72

* Rotational symmetry started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Grey		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	94	80	84
			-50	76	62	68
			-25	63	51	56
			0*	61	50	54
			25	65	54	57
			50	79	67	71
Ratio				1,54	1,60	1,56

* Rotational symmetry started at $\epsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

English translation prepared by DIBt

Coefficient of retro-reflection for "Grey (pattern)" (Part 8)

Colour		Grey (pattern)				Average of the three samples tested	Minimum values acc. to the specification of the manufacturer	
Sample		Single test result of each sample						
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			111	124	148	128	42
				37	40	56	44	18
				12,3	11,1	15,6	13,0	6,0
0,33°	5° 30° 40°	0°	0°	73	79	95	82	30
				33	35	48	39	14,4
				10,8	9,6	14,7	11,7	5,4
2°	5° 30° 40°			11,9	11,5	11,5	11,6	3,0
				8,2	7,9	8,0	8,0	1,5
				3,7	2,6	3,5	3,3	0,9

Coefficient of retro-reflection started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour		Grey (pattern)				Average of the three samples tested	Minimum values acc. to the specification of the manufacturer	
Sample		Single test result of each sample						
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			102	116	159	126	42
				37	39	82	53	18
				18,0	18,3	55	30	6,0
0,33°	5° 30° 40°	0°	30°	61	68	115	81	30
				32	33	65	43	14,4
				16,5	16,6	48	27	5,4
2°	5° 30° 40°			8,8	8,5	9,3	8,9	3,0
				7,4	7,3	11,5	8,7	1,5
				3,6	3,5	8,8	5,3	0,9

Coefficient of retro-reflection started at $\varepsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour		Grey (pattern)				Average of the three samples tested	Minimum values acc. to the specification of the manufacturer	
Sample		Single test result of each sample						
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°			101	115	160	125	42
				55	62	98	72	18
				8,0	8,7	68	28	6,0
0,33°	5° 30° 40°	0°	45°	60	68	117	82	30
				45	50	82	59	14,4
				7,2	7,7	62	26	5,4
2°	5° 30° 40°			7,9	7,7	6,9	7,5	3,0
				5,0	4,8	5,7	5,2	1,5
				2,7	2,5	7,0	4,1	0,9

Coefficient of retro-reflection started at $\varepsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Colour				Grey (pattern)			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°	0°	60°	103	117	156	125	42
				37	45	88	57	18
				20	24	63	36	6,0
0,33°	5° 30° 40°	0°	60°	62	71	111	81	30
				31	38	69	46	14,4
				18,4	22	54	32	5,4
2°	5° 30° 40°	0°	60°	9,0	8,9	7,9	8,6	3,0
				6,2	5,8	10,1	7,4	1,5
				3,7	4,0	6,2	4,6	0,9

Coefficient of retro-reflection started at $\varepsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Grey (pattern)			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5° 30° 40°	0°	90°	113	128	142	128	42
				35	40	45	40	18
				10,4	13,5	12,9	12,3	6,0
0,33°	5° 30° 40°	0°	90°	76	84	87	82	30
				31	36	38	35	14,4
				9,5	12,4	11,1	11,0	5,4
2°	5° 30° 40°	0°	90°	12,5	12,0	10,0	11,5	3,0
				8,6	8,6	8,2	8,5	1,5
				2,7	4,0	3,0	3,2	0,9

Coefficient of retro-reflection started at $\varepsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Rotational symmetry for "Grey (pattern)" (Part 8)

Colour Sample				Grey (pattern)		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	86	96	78
			-50	96	105	76
			-25	89	97	83
			0*	73	79	95
			25	62	68	112
			50	61	69	116
			Ratio	1,57	1,54	1,53

* Rotational symmetry started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Grey (pattern)		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	84	90	87
			-50	68	73	102
			-25	61	67	116
			0*	62	71	111
			25	73	81	90
			50	91	100	77
			Ratio	1,49	1,49	1,51

* Rotational symmetry started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Grey (pattern)		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	96	105	77
			-50	86	94	85
			-25	70	75	99
			0*	61	68	115
			25	61	70	114
			50	69	78	94
			Ratio	1,57	1,54	1,49

* Rotational symmetry started at $\epsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Grey (pattern)		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	66	71	105
			-50	60	67	117
			-25	64	72	107
			0*	76	84	87
			25	95	102	76
			50	99	106	77
			Ratio	1,65	1,58	1,54

* Rotational symmetry started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Grey (pattern)		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	92	100	81
			-50	77	83	92
			-25	64	69	109
			0*	60	68	117
			25	65	73	102
			50	80	88	83
			Ratio	1,53	1,47	1,44

* Rotational symmetry started at $\epsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

English translation prepared by DIBt

Coefficient of retro-reflection for "Brown" (Part 9)

Colour				Brown			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	0°	39	37	39	38	1,0
	30°			14,4	13,5	14,1	14,0	0,3
	40°			4,1	4,5	4,2	4,3	#
0,33°	5°	0°	0°	26	24	26	25	0,6
	30°			11,7	10,9	11,4	11,3	0,2
	40°			3,6	3,8	3,7	3,7	#
2°	5°	0°	0°	6,3	6,3	6,3	6,3	#
	30°			3,3	3,3	3,2	3,3	#
	40°			1,2	1,3	1,3	1,3	#

Coefficient of retro-reflection started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

Colour				Brown			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	30°	39	37	39	38	1,0
	30°			16,3	15,3	16	15,9	0,3
	40°			7,7	7,2	7,4	7,4	#
0,33°	5°	0°	30°	25	24	25	25	0,6
	30°			13	12,1	12,7	12,6	0,2
	40°			6,9	6,5	6,6	6,7	#
2°	5°	0°	30°	5,2	5,3	5,1	5,2	#
	30°			3,4	3,5	3,3	3,4	#
	40°			1,5	1,5	1,4	1,5	#

Coefficient of retro-reflection started at $\varepsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

Colour				Brown			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	45°	39	38	39	39	1,0
	30°			22	21	22	22	0,3
	40°			2,9	2,9	2,9	2,9	#
0,33°	5°	0°	45°	26	25	26	26	0,6
	30°			16,4	15,9	16,2	16,2	0,2
	40°			2,9	2,6	2,4	2,6	#
2°	5°	0°	45°	5,2	5,3	5	5,2	#
	30°			3,9	3,9	3,8	3,9	#
	40°			0,9	0,9	0,8	0,9	#

Coefficient of retro-reflection started at $\varepsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]
Indicates "Value greater than zero but not significant or applicable"

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Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Colour				Brown			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
α	β_1	Sample		Single test result of each sample				
		β_2	ε	1	2	3		
0,2°	5°	0°	60°	39	38	39	39	1,0
				16,3	16,2	16,4	16,3	0,3
				8,4	8,5	8,5	8,5	#
0,33°	5°	0°	60°	27	26	27	27	0,6
				13,2	13,3	13,4	13,3	0,2
				7,6	7,7	7,7	7,7	#
2°	5°	0°	60°	5,5	5,9	5,4	5,6	#
				3,0	3,2	2,9	3,0	#
				1,5	1,5	1,5	1,5	#

Coefficient of retro-reflection started at $\varepsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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

Colour				Brown			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
α	β_1	Sample		Single test result of each sample				
		β_2	ε	1	2	3		
0,2°	5°	0°	90°	41	39	41	40	1,0
				13,8	14,0	13,8	13,9	0,3
				3,2	3,2	3,2	3,2	#
0,33°	5°	0°	90°	28	28	28	28	0,6
				11,3	11,6	11,4	11,4	0,2
				2,9	2,9	2,9	2,9	#
2°	5°	0°	90°	6,9	7,4	6,9	7,1	#
				3,5	4,0	3,7	3,7	#
				1,0	1,0	1,0	1,0	#

Coefficient of retro-reflection started at $\varepsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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

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Coefficient of retro-reflection and rotational symmetry according to clause 2.2.3 of the EAD

Annex 2

Rotational symmetry for "Brown" (Part 9)

Colour Sample				Brown		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	29	28	29
			-50	30	29	30
			-25	28	27	28
			0*	26	24	26
			25	25	24	25
			50	26	25	26
			Ratio	1,20	1,21	1,20

* Rotational symmetry started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Brown		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	27	26	27
			-50	25	24	25
			-25	25	24	25
			0*	27	26	27
			25	28	27	28
			50	30	29	30
			Ratio	1,20	1,21	1,20

* Rotational symmetry started at $\epsilon=60^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Brown		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	30	29	30
			-50	28	26	28
			-25	25	24	25
			0*	25	24	25
			25	26	26	26
			50	27	27	27
			Ratio	1,20	1,21	1,20

* Rotational symmetry started at $\epsilon=30^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Brown		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	25	24	25
			-50	26	25	26
			-25	27	26	27
			0*	28	28	28
			25	30	29	30
			50	30	29	30
			Ratio	1,20	1,21	1,20

* Rotational symmetry started at $\epsilon=90^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour Sample				Brown		
α	β_1	β_2	ϵ	1	2	3
0,33	5	0	-75	29	28	29
			-50	26	25	26
			-25	25	24	25
			0*	26	25	26
			25	27	27	27
			50	28	28	28
			Ratio	1,16	1,17	1,16

* Rotational symmetry started at $\epsilon=45^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Annex 3

Visibility after accelerated artificial weathering according to clause 2.2.6.1 of the EAD:

Acc. to ISO 4892-2:1994 samples have been artificially weathered 2000 hours by using a non-insulated black panel thermometer.

Sample size: 5,5 x 11 cm.

Daylight chromaticity and luminance factors after accelerated artificial weathering

Colour	Sample	x	y	β
White	1	0,310	0,329	0,48
	2	0,310	0,329	0,48
	3	0,310	0,329	0,47
Yellow	1	0,505	0,461	0,30
	2	0,504	0,461	0,30
	3	0,505	0,461	0,30
Red	1	0,645	0,332	0,08
	2	0,645	0,332	0,08
	3	0,645	0,332	0,08
Orange	1	0,574	0,402	0,18
	2	0,573	0,402	0,18
	3	0,573	0,402	0,18
Blue	1	0,147	0,134	0,04
	2	0,147	0,135	0,04
	3	0,147	0,135	0,04
Green	1	0,138	0,419	0,08
	2	0,137	0,420	0,08
	3	0,137	0,421	0,08
Black	1	0,312	0,328	0,01
	2	0,312	0,328	0,01
	3	0,313	0,329	0,01
Grey	1	0,315	0,332	0,14
	2	0,315	0,333	0,15
	3	0,315	0,332	0,14
Grey (pattern)	1	0,311	0,329	0,15
	2	0,311	0,329	0,16
	3	0,311	0,329	0,15
Brown	1	0,504	0,390	0,06
	2	0,504	0,390	0,06
	3	0,504	0,390	0,06

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Visibility after accelerated artificial weathering according to clause 2.2.6.1 of the EAD

Annex 3

Coefficients of retro-reflection after accelerated artificial weathering

Colour				White			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ϵ	1	2	3		
0,2°	5°	0°	0°	261	327	250	279	56
	30°			76	107	76	86	24
0,33°	5°	0°	0°	141	177	134	151	40
	30°			62	85	61	69	19,2

Coefficient of retro-reflection after accelerated artificial weathering started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Yellow			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ϵ	1	2	3		
0,2°	5°	0°	0°	178	148	169	165	40
	30°			68	57	65	63	17,6
0,33°	5°	0°	0°	108	90	102	100	28
	30°			53	45	50	49	12,8

Coefficient of retro-reflection after accelerated artificial weathering started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Red			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ϵ	1	2	3		
0,2°	5°	0°	0°	56	49	63	56	11,6
	30°			19,7	16,8	22	19,5	4,8
0,33°	5°	0°	0°	35	31	39	35	8,0
	30°			15,5	13,2	17,0	15,2	3,2

Coefficient of retro-reflection after accelerated artificial weathering started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Orange			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ϵ	1	2	3		
0,2°	5°	0°	0°	137	126	148	137	20
	30°			47	42	52	47	8,0
0,33°	5°	0°	0°	80	74	85	80	16
	30°			37	33	40	37	6,4

Coefficient of retro-reflection after accelerated artificial weathering started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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Visibility after accelerated artificial weathering according to clause 2.2.6.1 of the EAD

Annex 3

Colour				Blue			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	0°	18,6	19,8	21	19,8	3,2
	30°			7,1	7,8	8,1		
0,33°	5°	0°	0°	10,3	11,2	11,6	11,0	1,6
	30°			5,2	5,8	6,0		

Coefficient of retro-reflection after accelerated artificial weathering started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Green			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	0°	42	40	47	43	7,2
	30°			15,6	15,6	17,9		
0,33°	5°	0°	0°	24	23	27	25	5,6
	30°			11,6	11,6	13,3		

Coefficient of retro-reflection after accelerated artificial weathering started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Grey			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	0°	138	136	156	143	34
	30°			39	40	46		
0,33°	5°	0°	0°	72	72	83	76	24
	30°			29	30	35		

Coefficient of retro-reflection after accelerated artificial weathering started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Colour				Grey (pattern)			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ε	1	2	3		
0,2°	5°	0°	0°	130	165	142	146	34
	30°			38	50	43		
0,33°	5°	0°	0°	69	85	75	76	38
	30°			29	38	33		

Coefficient of retro-reflection after accelerated artificial weathering started at $\varepsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

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Visibility after accelerated artificial weathering according to clause 2.2.6.1 of the EAD

Annex 3

Colour				Brown			Average of the three samples tested	Minimum values acc. to the specification of the manufacturer
Sample				Single test result of each sample				
α	β_1	β_2	ϵ	1	2	3		
0,2°	5°	0°	0°	48	54	48	50	0,8
	30°			15,9	18,6	16,8	17,1	0,2
0,33°	5°	0°	0°	28	31	28	29	0,5
	30°			11,8	14,0	12,7	12,8	0,2

Coefficient of retro-reflection after accelerated artificial weathering started at $\epsilon=0^\circ$ [$\text{cd m}^{-2} \text{lx}^{-1}$]

Annex 4

Essential specifications concerning manufacturing, packaging, transport and storage according to manufacturer's instruction:

Application

The envisaged substrates are aluminium, galvanized steel, polycarbonate or other.

Surfaces to which the material will be applied must be thoroughly cleaned from dust, grease or any contamination, which could affect the adhesion of the material. Freshly lacquered or painted surfaces should be completely cured. The compatibility of selected lacquers and paints should be tested by the user, prior to application of the material.

For the application of the retro-reflective film and its additional components described in Chapter 1 detailed information have been published by the manufacturer. In the following only some most important aspects of the application are given:

Cutting, die cutting, plotting

The product can be cut by means of a commercial stack cutter. The holding-down clamp should be set to very low pressure and, as an additional measure, the film be protected from compression. It is recommended limiting the stacking height 40 sheets to 50 sheets.

Commercial cutting plotters with tangential blades, preferably of the flatbed type, should be used as plotter systems.

Adhesive bonding and laminating

The self-adhesive retro-reflective material can only be used for dry application.

Bonding should not be carried out at air and material temperatures of less than 15 °C. The optimum bonding temperature is about 21 °C. The films should be stored for a period of at least 48 hours in the premises designated for their processing.

In order to achieve good adhesion of the films, the substratum must be dry and free of dust, oil, fats, silicon or other contamination. If the substratum needs to be treated with a solvent, the next processing step cannot be carried out until the solvent is completely evaporated. When bonding films to metallic substrata, slight grinding of the surfaces is advantageous.

When several film webs need to be bonded side by side, they should always overlap. Depending on the format, the overlap should be 3 mm to 5 mm. Please make sure that a right side of the film web is always bonded to a left side, thus ensuring the uniform orientation of the film's honeycomb structure.

Packaging, transport and storage

The product should be stored in a cool and dry place (temperature range from 20 °C to 24 °C; relative air humidity of 40 % to 60 %) that is protected from direct sunlight.

Rolled material should be handled and stored in the original carton. The rolls have standard spacers that prevent contact between the roll surface and the carton and thus the formation of pressure marks and surface damage. Please make sure that partly processed rolls, too, are never stored or handled without spacer.

When making the rolls available for processing, it is advisable to use a horizontal suspension system (such as a paternoster system or a rack). Even if the rolls are stored in a vertical, freestanding position, a negative influence on the film's characteristics is generally not expected. Here again, it is crucial to place the roll on the spacer so as to avoid breakage of the edges. In practice it was shown, however, that this type of storage complicates the handling of the films.

Blank or printed film sheets are supplied in cartons that have been designed especially for the sheet dimensions, 50 sheets per carton. If the sheets are stored outside the carton, please make sure to put individual sheets on a flat and stable support so that they do not adjoin or overlap at the edges. Sheets may be stacked. In order to limit the weight load, not more than 40 sheets to 50 sheets should be stacked.

<p>ORALITE® 6710 Engineer Prismatic Grade digitally printed with ORALITE® 5019 UV Digital Printing Ink and with ORALITE® 5062 Transparent Film</p>	<p>Annex 4</p>
<p>Essential specifications concerning manufacturing, packaging, transport and storage according to manufacturer's instruction</p>	