

Product Description

ORALITE® retroreflective films series 5910DP High Intensity Prismatic Grade are highly reflective, self-adhesive films for the manufacture of digitally printed traffic control, guidance, warning and information signs. "DP" reflects the series to be designated for use as UV-digital print media in combination with a protective laminate. After lamination with ORALITE® 5061 Transparent Film, the finished product is suitable for long-term vertical outdoor use and has an excellent corrosion and solvent resistance.

ORALITE® 5910DP features a retroreflective system of sealed cells of air backed microprisms, using total internal reflection. The distinct shape of the sealing pattern identifies the machine direction and the manufacturer of the sheeting shown in Figure 1. The sheeting displays a watermark with the product number and roll ID in a repeat pattern to provide identification to users & visual verification of proper use by inspectors, shown in Figure 2.

The product complies with the requirements of EN 12899-1:2007 Clause 4.2 concerning microprismatic materials and has been granted a European Technical Approval (ETA No. 18/0703, EAD 120001-01-0106) exceeding the minimum coefficient of retroreflection for performance class R2 for the colours listed in Table 3.

Retroreflectivity

ORALITE® 5910DP High Intensity Prismatic Grade exceeds the minimum performance requirements EN 12899-1:2008 (RA2, table 4) and ASTM D4956-16 (type IV sheeting, table 5). The required minimum retroreflection values, shown in tables 1 and 2, are complied with when measured in accordance with the corresponding specifications using CIE standard illuminant A, and the provisions of CIE No.54.2.

Color

ORALITE® 5910DP High Intensity Prismatic Grade sheeting is available as white (010) and fluorescent yellow-green (029) base sheeting. After printing and lamination with ORALITE® 5061, all traffic colours conform to the daytime color requirements in tables 3 & 4 when measured in accordance with the corresponding specifications, the provisions of CIE No. 15.2, & shall comply with the specifications of EN 12899-1 and ASTM D4956-16.

Figure 1 - Sealing pattern and application directions

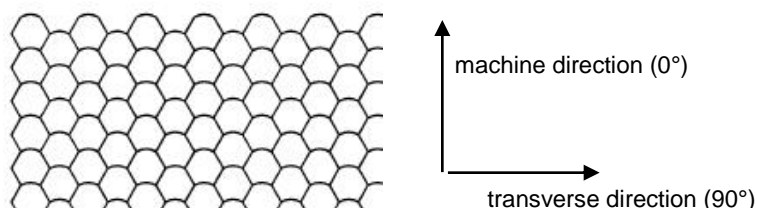


Figure 2 - Watermark



Adhesive

The adhesive consists of a solvent polyacrylate, permanent pressure sensitive adhesive specially formulated for the application to metallic surfaces such as aluminium and zinc coated steel plate. A release liner made of polypropylene film, silicone coated on one side, 0,075 mm [0,003"] thickness, protects the adhesive.

Application/Processing

ORALITE® 5910DP High Intensity Prismatic Grade was especially developed for traffic control applications. 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 other applications, the user is fully responsible for evaluating the suitability of the product, and for any risks associated with that use.

The material can be printed on the ORALITE® UV Traffic Sign Printer using UV digital inks series ORALITE® 5019. Lamination with ORALITE® 5061 Transparent Film is necessary to yield compliant colour spots and retroreflective performance as well as long-term vertical outdoor stability. Without ORALITE® 5061 as protective laminate, no warranty for performance or lifetime is given. Please refer to the UV digital print section of Practical Information # 4.3 published by ORAFOL for detailed instructions on printing and lamination or contact your ORAFOL Reflective Solutions Division representative for advice relating to the above.

Note: All ORALITE® products are manufactured within an ISO 9001:2015 controlled manufacturing environment and batch traceability is possible on the basis of the roll number.

Product Data

Retroreflectivity for new sheeting (cd/lx/m²) as per EN 12899-1 and ASTM D4956

Table 1 – Specific coefficient of retroreflection (EN 12899-1 class RA2)									
Observation angle	0.2°			0.33°			2°		
Entrance angle	5°	30°	40°	5°	30°	40°	5°	30°	40°
white*	250	150	110	180	100	95	5	2.5	1.5
fl. Yellow-green*,***	170	100	70	122	70	64	3	1.5	1
yellow**	170	100	70	122	70	64	3	1.5	1
orange**	100	60	29	65	40	20	1.5	1	#
red**	45	25	15	25	14	13	1.0	0.4	0.3
green**	45	25	12	21	12	11	0.5	0.3	0.2
blue**	20	11	8	14	8	7	0.2	#	#
brown**	12	8.5	5	8	5	3	0.2	#	#

* after lamination with Oralite 5061; ** after printing and lamination with 5061 according to ORAFOL's handling instruction; *** ORAFOL – internal specification based on DIN67520-2013-10, RA2, yellow table3.

Table 2 – Specific coefficient of retroreflection (ASTM D4956-16 type IV sheeting)						
Observation angle	0.1°		0.2°		0.5°	
Entrance angle	-4°	30°	-4°	30°	-4°	30°
white*	500	240	360	170	150	72
fl. yellow-green*	400	185	290	135	120	55
yellow**	380	175	270	135	110	54
orange**	200	94	145	68	60	28
red**	90	42	65	30	27	13
green**	70	32	50	25	21	10
blue**	42	20	30	14	13	6
brown**	25	12	18	8.5	7.5	3.5

* after lamination with Oralite 5061; ** after printing and lamination with 5061 according to ORAFOL's handling instruction

Daytime color specification limits for new sheeting:

Table 3 – Chromaticity coordinates (EN 12899-1)									
Colors	1		2		3		4		Luminance Factor β
	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	0.506	0.470	0.480	0.513	0.437	0.545	0.455	≥ 0.16
orange**	0.631	0.369	0.552	0.359	0.506	0.404	0.570	0.430	≥ 0.12
red**	0.735	0.265	0.700	0.250	0.607	0.343	0.655	0.345	≥ 0.03
green**	0.007	0.703	0.216	0.448	0.147	0.400	0.018	0.454	≥ 0.03
blue**	0.100	0.109	0.146	0.156	0.183	0.115	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 – 0.09

* after lamination with Oralite 5061; ** after printing and lamination with 5061 according to ORAFOL's handling instruction

Table 4 – Chromaticity coordinates (ASTM D4956-16)									
Colors	1		2		3		4		Luminance Factor (Y %)
	x	y	x	y	x	y	x	y	
white*	0.303	0.300	0.368	0.366	0.340	0.393	0.274	0.329	> 27
fl. yellow-green**	0.387	0.610	0.369	0.546	0.428	0.496	0.460	0.540	≥ 40
yellow**	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472	$15 \leq Y \leq 45$
orange**	0.558	0.352	0.636	0.364	0.570	0.429	0.506	0.404	$10 \leq Y \leq 30$
red**	0.648	0.351	0.735	0.265	0.629	0.281	0.565	0.346	$2.5 \leq Y \leq 15$
green**	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771	$3 \leq Y \leq 12$
blue**	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216	$1 \leq Y \leq 10$
brown**	0.430	0.340	0.610	0.390	0.550	0.450	0.430	0.390	$1 \leq Y \leq 9$

* after lamination with Oralite 5061; ** after printing and lamination with 5061 according to ORAFOL's handling instruction

Physical and Chemical Properties

Thickness* (without liner)	0.230 mm (9 mils); 0.280mm (11 mils) for fl. colors
Temperature resistance	adhered to aluminium, -56° C to +82° C (-70° F to 180° F)
Resistance to cleaning agents	adhered to aluminium, 8h in solution (0,5% household cleaning agents) at room temperature and 65° C (150° F), no variation
Adhesive power* (FINAT-TM1 after 24h, stainless steel)	15 N/25 mm (1 inch)
Shelf life***	1 year
Application temperature	> +10° C (50° F)
Service life by specialist application** after lamination with 5061, vertical outdoor exposure	10 years

* average

** standard central European climate

*** in original packaging, at 20° C and 50% relative humidity

Note: Values stated in SI units are to be regarded as standard. The values in parentheses are conversions and shall not be considered as the standard, as these values maybe approximate.

IMPORTANT NOTICE

When using ORALITE® sheeting the relevant national specifications have to be complied with. ORAFOL recommends you obtain the current requirements from your local authority and ensure product conformance with such requirements. Please contact ORAFOL for further information.

All ORALITE® products are subject to careful quality control throughout the manufacturing process and are warranted to be of merchantable quality and free from manufacturing defects. Published information concerning ORALITE® products is based upon research which the Company believes to be reliable although such information does not constitute a warranty. Because of the variety of uses of ORALITE® products and the continuing development of new applications, the purchaser should carefully consider the suitability and performance of the product for each intended use, and the purchaser shall assume all risks regarding such use. All specifications are subject to change without prior notice.

No warranty is given for purposes other than those listed in the Technical Datasheet or which are not processed according to ORAFOL's processing and handling instructions. The durability of the signs will depend on a variety of factors, including but not limited to substrate selection and preparation, compliance with recommended application guidelines, geographic area, exposure conditions and maintenance of the product and finished sign. Sign failures caused by the substrate or improper surface preparations are not the responsibility of ORAFOL. Please refer to the full warranty document available at www.orafol.com for detailed information.

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