

## Product Description

ORALITE® retroreflective films series 5810 High Intensity Grade are highly reflective, weatherproof, self-adhesive films with excellent corrosion and solvent resistance. The smooth surface is composed of an acrylic film and allows a very good printability. The retroreflective system of the ORALITE® reflective films series 5810 High Intensity Grade consists of encapsulated catadioptric glass beads (corresponds to class RA 2, design B, formerly Type II). ORALITE® reflective films series 5810 High Intensity Grade contain an identification water mark.

The reflective data and colors at daylight comply with the international specifications of this class such as EN 12899-1 (European Regulation), DIN 67520 and DIN 6171 (Germany), BS 873: Part 6 (Great Britain), NFP 98-520 (France), SN 640878 (Switzerland), ASTM D 4956 (US), JIS Z 9117 (Japan).

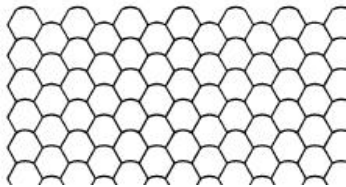
## Retroreflectivity

ORALITE® 5810 High Intensity Grade exceeds the minimum performance requirements of DIN 67520:2008-11 (RA2) and ASTM D 4956 (type III). 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. The performance is not dependent on the orientation (epsilon angle) of the sheeting.

## Colour

ORALITE® 5810 High Intensity Grade sheeting is available in white (010), yellow (020), orange (035), red (030), green (060), blue (050) and brown (080). The sheeting conforms to the daytime colour requirements in tables 3 and 4 when measured in accordance with the corresponding specifications, the provisions of CIE No. 15.2, and shall comply with the specifications of DIN 6171-1:2011-11 and ASTM D 4956-11a.

## Figure 1 - Sealing pattern



## Adhesive

The adhesive consists of a solvent polyacrylate, permanent pressure sensitive adhesive specially formulated for the application onto metallic surfaces such as aluminium and zinc coated steel plate. The adhesive is protected by a release liner made of polypropylene film, silicone coated on one side, 0.075 mm thickness.

## Application/Processing

ORALITE® 5810 High Intensity 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.

ORALITE® 5810 in white colour can be screen or UV-digitally printed or laminated with overlay films. The printed or laminated sheeting will continue to meet the retroreflective values of the respective colour provided that ORAFOL's application guidelines are followed. The overlay films recommended are: ORALITE® 5061 Transparent film, ORALITE® 5090 Anti Dew film and ORALITE® 5095 Anti Graffiti film. The screen printing inks recommended are ORALITE® 5018 or ORALITE® 5010 Screen Printing Ink. A transparent coating is not necessary.

The material can also be printed on the ORALITE® UV Traffic Sign Printer with the specially developed UV digital inks ORALITE® 5019. For long term vertical outdoor use, the printed material should be used in combination with ORALITE® 5061 Transparent film.

Please refer to the Practical Information #4.1 published by Orafol for full instructions or contact your ORAFOL Reflective Solutions Division representative for advice relating to the above.

### Product Data

Retroreflectivity for new sheeting (cd/lx/m<sup>2</sup>) as per DIN 67520:2008-11 and ASTM D 4956:

Observation angle	0.2°			0.33°			2°		
	5°	30°	40°	5°	30°	40°	5°	30°	40°
<b>white (010)</b>	250	150	110	180	100	95	5	2.5	1.5
<b>yellow (020)</b>	170	100	70	122	70	64	3	1.5	1
<b>orange (035)</b>	100	60	29	62	40	22	1.5	0.8	0.7
<b>red (030)</b>	45	25	15	25	14	13	1.0	0.4	0.3
<b>green (060)</b>	45	25	12	21	12	11	0.5	0.3	0.2
<b>blue (050)</b>	20	11	8	14	8	7	0.2	#	#
<b>brown (080)</b>	12	8.5	5	8	5	3	0.2	#	#

Observation angle	0.2°		0.5°	
	-4°	30°	-4°	30°
<b>white (010)</b>	250	150	95	65
<b>yellow (020)</b>	170	100	62	45
<b>orange (035)</b>	100	60	30	25
<b>red (030)</b>	45	25	15	10
<b>green (060)</b>	45	25	15	10
<b>blue (050)</b>	20	11	7.5	5.0
<b>brown (080)</b>	12	8.5	5.0	3.5

Daytime colour specification limits for new sheeting:

Table 3 – Chromaticity coordinates (DIN 6171-1: 2011-11)									
Colors	1		2		3		4		Luminance Factor $\beta$
	x	y	x	y	x	y	x	y	
white (010)	0.305	0.315	0.335	0.345	0.325	0.355	0.295	0.325	> 0.27
yellow (020)	0.494	0.506	0.470	0.480	0.513	0.437	0.545	0.455	> 0.16
red (030)	0.735	0.265	0.700	0.250	0.607	0.343	0.655	0.345	$\geq 0.03$
green (060)	0.007	0.703	0.216	0.448	0.147	0.400	0.018	0.454	$\geq 0.03$
blue (050)	0.100	0.109	0.146	0.156	0.183	0.115	0.137	0.038	$\geq 0.01$
brown (080)	0.455	0.397	0.523	0.429	0.479	0.373	0.558	0.394	0.03 – 0.09

Table 4 – Chromaticity coordinates (ASTM D4956)									
Colors	1		2		3		4		Luminance Factor (Y %)
	x	y	x	y	x	y	x	y	
white (010)	0.303	0.300	0.368	0.366	0.340	0.393	0.274	0.329	> 27
yellow (020)	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472	$15 \leq Y \leq 45$
orange (035)	0.558	0.352	0.636	0.364	0.570	0.429	0.506	0.404	$10 \leq Y \leq 30$
red (030)	0.648	0.351	0.735	0.265	0.629	0.281	0.565	0.346	$2.5 \leq Y \leq 15$
green (060)	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771	$3 \leq Y \leq 12$
blue (050)	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216	$1 \leq Y \leq 10$
brown (080)	0.430	0.340	0.610	0.390	0.550	0.450	0.430	0.390	$1 \leq Y \leq 9$

### Physical and Chemical Properties

<b>Thickness*</b> (without protective paper and adhesive)	0.210mm
<b>Temperature resistance</b>	adhered to aluminium, -56°C to +82°C (-70°F to 180°F)
<b>Resistance to cleaning agents</b>	adhered to aluminium, 8h in solution (0.5% household agents) at room temperature and 65°C (150°F), no variation
<b>Adhesive power*</b> (FINAT-TMI after 24h, stainless steel)	15 N/25mm (1 inch) (film tear)
<b>Shelf life**</b>	2 years
<b>Application temperature</b>	> +10°C (50°F)
<b>Service life by specialist application***</b> under vertical outdoor exposure	10 years (not printed)

\* average, 180° Peel @ 300mm (12") /min \*\* in original packaging, at 20°C and 50% relative humidity

\*\*\* standard central European climate



All ORALITE® products are manufactured within an ISO 9001:2008 controlled manufacturing environment and batch traceability is possible on the basis of the roll number.

## **IMPORTANT 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 Warranty document published by ORAFOL for detailed information.

When using ORALITE® 6900 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 Reflexite® and 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 Reflexite® and 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 Reflexite and 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.

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