

### Description

ORALITE® retroreflective films series 5910 High Intensity Prismatic Grade are highly reflective, weatherproof, self-adhesive films with excellent corrosion and solvent resistance. The product was specifically developed for the manufacture of traffic control, guidance, warning and information signs, which are intended for long term vertical outdoor use.

ORALITE® 5910 sheeting is composed of a UV stabilized acrylic front film. Its retroreflective system consists 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 & durability in years 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. 12/0478) exceeding the minimum coefficient of retroreflection for performance class R2 for the colours listed in Table 3.

### Retroreflectivity

ORALITE® 5910 High Intensity Prismatic Grade exceeds the minimum performance requirements of CUAP class R2, DIN 67520:2008-11 (RA2; design C) and ASTM D4956-11a (Type IV sheeting). 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® 5910 High Intensity Prismatic 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 color 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 and application directions

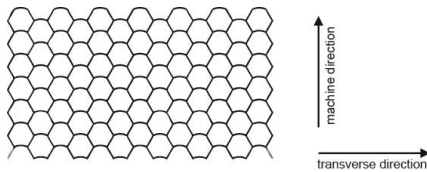


Figure 2- Watermark

### 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, 3-mil thickness.

### Application/Processing

ORALITE® 5910 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.

ORALITE® 5910 in white color 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 color 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 ink recommended is ORALITE® 5018. 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 #4.3 published by ORAFOL for full instructions or contact your ORAFOL Reflective Solutions Division representative for advice relating to the above.



ORAFOL Americas – GA  
1100 Oracal Parkway  
Black Creek, GA 31308  
Phone: 888.672.2251

ORAFOL Americas – CT  
120 Darling Drive  
Avon, CT 06001  
Phone: 800.654.7570

ORAFOL Canada  
2831 Bristol Circle  
Oakville, Ontario L6H 6X5  
Phone: 888.727.3374

techsupport-americas@orafol.com - www.orafolamericas.com

**Note:**

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.

**Product Data**

Retroreflectivity for new sheeting (cd/lx/m<sup>2</sup>) as per CUAP Table 7 Class R2, DIN 67520:2008-11 and ASTM D4956-11a

| <b>Table 1- Specific coefficient of retroreflection (CUAP class R2, DIN 67520:2008-11 RA2)</b> |      |     |     |       |     |     |     |     |     |
|--|------|-----|-----|-------|-----|-----|-----|-----|-----|
| Observation Angle  | 0.2° |     |     | 0.33° |     |     | 2°  |     |     |
| Entrance Angle   | 5°   | 30° | 40° | 5°    | 30° | 40° | 5°  | 30° | 40° |
| White 010  | 250  | 150 | 110 | 180   | 100 | 95  | 5   | 2.5 | 1.5 |
| Yellow 020   | 170  | 100 | 70  | 122   | 70  | 64  | 3   | 1.5 | 1   |
| Red 030  | 45   | 25  | 15  | 25    | 14  | 13  | 1.0 | 0.4 | 0.3 |
| Green 060  | 45   | 25  | 12  | 21    | 12  | 11  | 0.5 | 0.3 | 0.2 |
| Blue 050   | 20   | 11  | 8   | 14    | 8   | 7   | 0.2 | #   | #   |
| Brown 080  | 12   | 8.5 | 5   | 8     | 5   | 3   | 0.2 | #   | #   |

| <b>Table 2 – Specific coefficient of retroreflection (ASTM D4956-11a Type IV Sheeting)</b> |      |     |      |     |      |     |
|--|------|-----|------|-----|------|-----|
| Observation Angle  | 0.1° |     | 0.2° |     | 0.5° |     |
| Entrance Angle   | -4°  | 30° | -4°  | 30° | -4°  | 30° |
| White  | 500  | 240 | 360  | 170 | 150  | 72  |
| 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 |



ORAFOL Americas – GA  
1100 Oracal Parkway  
Black Creek, GA 31308  
Phone: 888.672.2251

ORAFOL Americas – CT  
120 Darling Drive  
Avon, CT 06001  
Phone: 800.654.7570  
techsupport-americas@orafol.com - www.orafolamericas.com

ORAFOL Canada  
2831 Bristol Circle  
Oakville, Ontario L6H 6X5  
Phone: 888.727.3374

Daytime color specification limits for new sheeting

**Table 3- Chromaticity coordinates (DIN 6171-1: 2011-11)**

| Colors     | 1     |       | 2     |       | 3     |       | 4     |       | Luminance<br>Factor<br>$\beta$ |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------------------|
|            | 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 | $\geq 0.27$                    |
| Yellow 020 | 0.494 | 0.506 | 0.470 | 0.480 | 0.513 | 0.437 | 0.545 | 0.455 | $\geq 0.16$                    |
| 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<br>Factor<br>$\beta$ |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------------------|
|            | 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 | $\geq 27$                      |
| 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)      | 9-mil  |
| <b>Temperature resistance**</b>                                | Adhered to aluminum, -68°F to +180°F   |
| <b>Resistance to cleaning agents</b>                           | Adhered to aluminum, 8h in solution (0.5% household cleaning agents) at room temperature and 149°F, no variation |
| <b>Adhesive power*</b> (FINAT-TM 1 after 24h, stainless steel) | 3.42 lb/in (film tear)   |
| <b>Shelf life**</b>  | 2 years  |
| <b>Application temperature</b>                                 | >50°F  |



ORAFOL Americas – GA  
1100 Oracal Parkway  
Black Creek, GA 31308  
Phone: 888.672.2251

ORAFOL Americas – CT  
120 Darling Drive  
Avon, CT 06001  
Phone: 800.654.7570  
techsupport-americas@orafol.com - www.orafolamericas.com

ORAFOL Canada  
2831 Bristol Circle  
Oakville, Ontario L6H 6X5  
Phone: 888.727.3374

# ORALITE® 5910

## High Intensity Prismatic Grade

Technical  
Datasheet  
06/15  
Page 4 of 4

**Service life by specialist application** 10 years (not printed)  
Under vertical outdoor exposure (standard central  
European climate)

\* average \*\* in original packaging, at 68° F and 50% relative humidity

### Note:

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

When using ORALITE® sheeting, please comply with relevant national specifications. ORAFOL recommends obtaining 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.

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 allowed to dry for at least three weeks and to completely cure respectively. The compatibility of selected lacquers and paints should be tested by the user, prior to application of the material. The self-adhesive reflective material can only be used for dry application. The low tensile strength of the material can make the removability of the reflective film more difficult. Please review applicable application information published by ORAFOL.

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.orafolamericas.com](http://www.orafolamericas.com) for detailed information.

WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

ORALITE® is a trademark of ORAFOL Europe GmbH.



ORAFOL Americas – GA  
1100 Oracal Parkway  
Black Creek, GA 31308  
Phone: 888.672.2251

ORAFOL Americas – CT  
120 Darling Drive  
Avon, CT 06001  
Phone: 800.654.7570  
techsupport-americas@orafol.com - [www.orafolamericas.com](http://www.orafolamericas.com)

ORAFOL Canada  
2831 Bristol Circle  
Oakville, Ontario L6H 6X5  
Phone: 888.727.3374