

Description

ORALITE® AR1000 is a retroreflective sheeting designed for use on flexible delineator posts, barrier-mounted delineators and guardrail delineators.

Product Construction

ORALITE® AR1000 consists of a smooth surface, high gloss, abrasion and weather resistant uv-stabilized microprismatic retroreflective layer

Reflectivity

ORALITE® AR1000 complies with the requirements in ASTM D4956 for Type V sheeting and meets the minimum coefficient of retroreflection shown in Table 1, when tested in accordance with ASTM E810, "Standard Test Method for Coefficient of Retroreflection of Retroreflective Sheeting Utilizing the coplanar Geometry".

Daytime Color

ORALITE® AR1000 conforms to the daytime color requirements in Table 2 when tested in accordance with ASTM D4956 using a HunterLab ColorFlex. ORALITE® AR1000 is available in white, yellow, green, red, and blue.

Nighttime Color

ORALITE® AR1000 conforms to the nighttime color requirements in Table 3 when tested in accordance with ASTM D4956 and ASTM E811. The sheeting shall be measured using CIE illuminant A. an observation angle of 0.33° and an entrance angle of +5°.

Adhesive

The adhesive is protected by a release liner which shall be removed by peeling, without soaking in water or other solvents. The adhesive produces such a bond that a 1" (50 mm) strip shall support a 1 3/4 pound (0.79 kg) weight for 5 minutes without the strip peeling for a distance of more than 2" (50 mm) when applied to a smooth aluminum surface as specified in the ASTM D4956, section 7.5 adhesion test.

Impact Resistance

Ambient Temperature: After conditioning a sample for 24 hours at 73° ± 3°F (23° ± 2°C) and 50% relative humidity, subject the sheeting to an impact of a 4 lb (1.82 kg) weight with a 5/8" (16 mm) rounded tip dropped from a 100 in-lb (11.3 N-m) setting on a Gardner variable impact tester, IG-1120, as per ASTM D4956, section S2.2.1. The sheeting shall show no cracking or delamination outside the actual area of impact.

Flexibility

ORALITE® AR1000 meets the flexibility requirements of ASTM D4956, section 6.7 and S2.2.2. The sheeting is sufficiently flexible to show no cracking when bent in one second time around a 1/8" (3.2 mm) diameter mandrel.

Weatherability

ORALITE® AR1000 meets the requirements of ASTM D4956, Section 6.4. The material is weather resistant and shows no appreciable cracking, scaling, pitting, blistering, edge lifting, or curling, or more than 1/32" (0.8 mm) shrinkage or expansion. Retroreflectivity measurements are conducted after outdoor weathering with an observation angle of 0.20° and entrance angles of -4° and +30°. The minimum coefficient of retroreflection (R_A) after weathering is 80% of the values specified in Table 1. When tested in a xenon-arc weatherometer in accordance with ASTM D4956, section S3. ORALITE® AR1000 will meet or exceed the weathering requirements.

Solvent Resistance

ORALITE® AR1000 will not dissolve, blister, or pucker when wiped with a soft cloth wet with kerosene, mineral spirits, turpentine, VM&P Naphtha, 5% HCL NaOH, or methanol.

Specular Gloss

ORALITE® AR1000 shall have a specular gloss of not less than 40 when tested in accordance with ASTM D523 at an angle of 85°.

Shrinkage

A 9" x 9" (229 mm x 229 mm) specimen of the sheeting with liner is conditioned a minimum of one hour at 73° ± 3°F (23° ± 2°C) and 50% relative humidity. The liner is then removed and the specimen is placed on a flat surface with the adhesive side up. Ten minutes after the liner is removed and again after 24 hours, the specimen is measured to determine the amount of dimensional change. The specimen will not shrink in any dimension more than 1/32" (0.8 mm) in 10 minutes and 1/8" (3.2 mm) in 24 hours.

Application Instructions

The sheeting should be applied to a smooth, clean, dry surface at temperatures ranging from 50°F (10°C) to 100°F (38°C).



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Abrasion Resistance

To duplicate the abrasive environment to which roadside delineators will be subjected in their normal application under the most severe conditions, perform the following procedure and evaluation.

1. Mask off an area to be tested 2" x 2" (50 mm x 50 mm).
2. Read and record the coefficient of retroreflection of the test sample with an observation angle of 0.20° and an entrance angle of -4°
3. Clamp or hold the sample inside the chamber of a venturi type, bench top sandblaster (Buffalo Dental Manufacturing Company, or equivalent) at a distance of 6" ± 3/8" (150 ± 10 mm) from the venturi tip so that the retroreflective face of the sample is perpendicular to the axis of the particle cone and the 2" X 2" (50 mm x 50 mm) test area is centered within the particle cone.
4. Sandblast the unit with medium grit silica sand for 20 seconds with the air pressure at 65 ± 5 psi (448 ± 35 kPa) continuous.
5. Remove the test unit from the chamber, clean off any abrasive medium, examine the surface for damage or color loss, and reread the retroreflectivity as in Section 2.
6. The test unit shall retain a minimum of 80% of the appropriate value from Table 2. The sample shall show no apparent damage or discoloration.

Table 1, Minimum Coefficient of Retroreflection (R_A)*

Observation Angle	Entrance Angle	White	Yellow	Orange	Green	Red	Blue
0.20°	-4°	700	470	280	120	120	56
0.20°	30°	400	270	160	72	72	32
0.50°	-4°	160	110	64	28	28	13
0.50°	30°	75	51	30	13	13	6.0

*all values have units of cd/ft² (cd/lx/m²)

Table 2, Color Specification Limits (Daytime)†

Color	Chromaticity Coordinates†								Luminance Factor (Y%)	
	1		2		3		4		Min.	Max.
	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	15	----
Yellow	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472	12	30
Orange	0.558	0.352	0.636	0.364	0.570	0.429	0.506	0.404	7.0	25
Green	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771	2.5	11
Red	0.648	0.351	0.735	0.265	0.629	0.281	0.565	0.346	2.5	11
Blue	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216	1.0	10

†The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System measured with Standard Illuminant D65.

Table 3, Color Specification Limits (Nighttime)‡

Color	Chromaticity Coordinates*							
	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0.475	0.452	0.360	0.415	0.392	0.370	0.515	0.409
Yellow	0.513	0.487	0.500	0.470	0.545	0.425	0.572	0.425
Orange	0.595	0.405	0.565	0.405	0.613	0.355	0.643	0.355
Green	0.007	0.570	0.200	0.500	0.322	0.590	0.193	0.782
Red	0.650	0.348	0.620	0.348	0.712	0.255	0.735	0.265
Blue	0.033	0.370	0.180	0.370	0.230	0.240	0.091	0.133

‡ The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System measured with Standard Illuminant A.

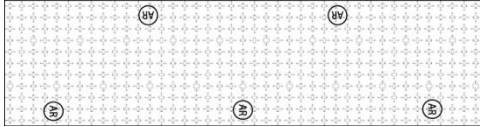


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Film Logo Pattern



IMPORTANT NOTICE

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.

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

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