ORALITE® R99
Rail Conspicuity Sheeting

Description
ORALITE® R99 Rail Conspicuity Sheeting is a tough weather-and solvent-resistant product designed for rugged outdoor use on the sides and rear of rail cars and locomotives. It is easy to apply to smooth surfaces or to surfaces where tape must be cut around rivets and other design features. ORALITE® R99 Rail Conspicuity Material comes with the visible FRA-224 certification mark, and meets the requirements of FRA-224.

Product Construction
ORALITE® R99 Rail Conspicuity Sheeting is composed of cube corner (microprism) retroreflective elements integrally bonded to a flexible, smooth-surfaced, tough and weather-resistant UV-stabilized polymeric film. The prism surfaces are coated with a vacuum deposition of aluminum to provide a mirror surface to the prism facets. The resulting tape is not more than 0.008 inches thick and comes with an aggressive high-tack pressure-sensitive adhesive.

Reflectivity
ORALITE® R99 Rail Conspicuity Sheeting shall meet or exceed the minimum coefficient of retroreflection shown in Table 1. ORALITE® Conspicuity Material shall be measured in accordance with ASTM E810 and rotation angles of 0° and 90°.

Color
ORALITE® R99 Rail Conspicuity Sheeting is available in yellow and white. The colors conform to the requirements in Table 2 when tested in accordance with ASTM standards E1347 and E1349. The measured values are the average of eight readings. The test sample is rotated 45° about its own axis after each reading.

Adhesive
The adhesive is especially formulated to adhere to a variety of surfaces including fiberglass, aluminum, steel and painted metal. 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” wide strip shall support a 1-3/4 pound weight for 5 minutes without the strip peeling for a distance of more than 2” when applied to a smooth aluminum panel as specified in the ASTM D4956 adhesion test.

Impact Resistance
Following application to a smooth-surfaced aluminum rectangle 0.040” by 3” by 6”, the specimen is conditioned for 24 hours at 72° F and 50% relative humidity. The sheeting shall show no cracking or delamination outside the actual area of impact when the face of the panel is subjected to an impact of a 4.0 pound weight with 5/8” rounded tip dropped from a 100 in/lb setting on a Gardner variable impact tester, IG-1120.

Flexibility
The sheeting is conditioned for 24 hours at 72° F and 50% relative humidity. The release liner is removed and the sheeting is sufficiently flexible to show no cracking when bent in one seconds time around a 1/8” diameter mandrel with the adhesive contacting the mandrel.

Solvent Resistance
ORALITE® R99 Rail Conspicuity Sheeting meets the requirements of LS-300C solvent resistance, section 3.6.7, when tested as specified in Table VI, test method 4.4.6.

Application Instructions
The recommended application temperature to achieve best results is 65°F or above. The adhesive on ORALITE® R99 Rail Conspicuity Sheeting has been formulated to bond at temperatures as low as 0°F. When bonding at low temperatures the surface should be free from ice, frost, condensation as well as any contaminants. For additional information please refer to the ORALITE® R99 Rail Conspicuity Sheeting Application Instructions.

Warranty
ORALITE® R99 has a 10-year warranty. Please contact ORAFOL Americas for details.

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

reflective-americas@orafol.com
www.ORAFOL.com

Table 1, Coefficient of Retroreflection* (R_A)

Observation Angle	Entrance Angle	White	Yellow
0.20°	-4°	600	400
	30°	350	220
0.50°	-4°	160	100
	30°	75	45

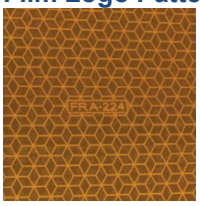
*Candelas/Lux/Square Meter

Table 2, Color Specification Limits (Daytime)

Color	Chromaticity Coordinates*								Luminance Factor (Y%)	
	1		2		3		4			
	x	y	x	y	x	y	x	y	Min.	Max.
White	0.303	0.300	0.368	0.366	0.340	0.393	0.274	0.329	27.0	----
Yellow	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472	15.0	45.0

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

Film Logo Pattern



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.

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.

WARNING – This product may expose you to chemicals which are known in the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to – www.P65Warnings.ca.gov

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