ORALITE® VC 104+ Rigid Grade

Description
ORALITE® VC 104+ Rigid Grade is a tough weather resistant product designed for rugged outdoor use. The material is intended for application as conspicuity marking on trucks and trailers with rigid sides.

Product Construction
ORALITE® VC 104+ Rigid Grade is composed of cube corner (microprism) retroreflective elements integrally bonded to a flexible, smooth-surfaced tough and weather resistant UV stabilised polymeric film. The prism surfaces are coated with a vacuum deposition of aluminium to provide a mirror surface to the prism facets. The resulting material is not more than 0,16 mm thick, and comes with an aggressive high-tack pressure sensitive adhesive. The product is single layer, with no need for edge sealing.

Product Approval
ORALITE® VC 104+ Rigid Grade is approved to Regulation ECE 104 Class C.

Film Logo Pattern

Colour
ORALITE® VC 104+ Rigid Grade is available in yellow, white and red. The colours conform to the requirements of Regulation ECE 104. The colour shall be located in the area defined by the chromaticity coordinates and luminance factor provided in Table 2, when measured in accordance with the provisions of CIE No.15 and illuminated with the CIE standard illuminant D_{65} at an angle of 45° to the normal (45° / 0° geometry). The measured value shall be the average of 8 readings. The test sample shall be rotated 45 degrees. The retroreflected colour (nighttime colour), when illuminated with CIE standard illuminant A at an observation angle of 20' and entrance angles of β_1 = +/- 5°, and β_2 = 0° shall be located within the area defined by the chromaticity coordinates in Table 3.

Retroreflectivity
ORALITE® VC 104+ Rigid Grade complies with the minimum reflectivity requirements of Regulation ECE 104 Class C. When illuminated with CIE standard illuminant A and measured with the provisions of CIE No. 54, the coefficient of retroreflection for ORALITE® VC 104+ Rigid Grade shall be not less than the values in Table 1.

Adhesive
The adhesive is protected by a release liner, which shall be removed by peeling, without soaking in water or other solvents.

A 25 mm strip shall provide a bond such that it shall support an 800 g weight for 5 minutes without the strip peeling for a distance of more than 50 mm when applied to a smooth aluminium surface as specified in the ASTM 4956 adhesion test.

The adhesive service temperature ranges from -40° C to +90° C (*).

(*) Data based on laboratory testing and under no load. The practical service temperature is dependent on variables including the substrates being bonded, environmental conditions, the loading and method of application.

Application Instructions
Material must be applied when the air and surface temperature is between 15° C and 38° C to assure proper adhesive bonding. Surfaces must be cleaned for all grease, oil and dirt. Use a clean towel and Isopropyl alcohol or similar to wipe the surface before application. If any air bubbles are trapped, use a pin to puncture the bubble and squeegee to push the air towards the pin hole. Please contact ORAFOL for complete application instructions.

Shelf Life

The sheeting must be used within 1 year from the shipment date. All rolls including partially used rolls should be stored in original packaging, tightly wound. Store in a clean and dry area, away from direct sunlight. Store at room temperature 20° C and at 50% relative humidity.

Warranty

ORALITE® VC 104+ Rigid Grade has a ten year warranty. Please contact ORAFOL for full details.

Table 1
Retroreflectivity

Observation Angle	Entrance Angle (β)					
	Beta 1 (β_1)	0°	0°	0°	0°	0°
20' (0,33°)	Beta 2 (β_2)	5°	20°	30°	40°	60°
White	R'	450	n/a	200	95	16
Yellow	R'	300	n/a	130	75	10
Red	R'	120	60	30	10	n/a

All values have units of cd/lux/m^2.

Table 2
Colour Specification Limits (Daytime)

Colour	Chromaticity Coordinates*								
	1		2		3		4		Y
	x	y	x	y	x	y	x	y	
White	0,300	0,270	0,385	0,355	0,345	0,395	0,260	0,310	> 0,25
Yellow	0,545	0,454	0,487	0,423	0,427	0,483	0,465	0,534	> 0,16
Red	0,690	0,310	0,595	0,315	0,569	0,341	0,655	0,345	> 0,03

*) The four pairs of chromaticity coordinates determine the acceptable chromaticity on the CIE diagram

Table 3
Colour Specification Limits (Nighttime)

Colour	Chromaticity Coordinates*							
	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0,373	0,402	0,417	0,359	0,450	0,513	0,548	0,414
Yellow	0,585	0,385	0,610	0,390	0,520	0,480	0,505	0,465
Red	0,720	0,258	0,735	0,265	0,665	0,335	0,643	0,335

*) The four pairs of chromaticity coordinates determine the acceptable chromaticity on the CIE diagram

IMPORTANT NOTE

All ORAFOL products are subject to careful quality control throughout the entire manufacturing process, and it is ensured that they are of merchantable quality and free from manufacturing defects. The information published is based on our analyses and studies and does not constitute any warranted properties or any agreement as to quality. Due to the diverse possibilities of use of ORAFOL products and the constant development of new applications, the buyer should carefully consider the suitability and performance of the product for the respective purpose; it bears all risks associated with such use. No warranty is given for purposes other than those listed in the Technical Data Sheet or for applications that are not processed in accordance with ORAFOL's processing instructions.

The durability of the end product depends upon a variety of factors, including but not limited to substrate selection and preparation, compliance with the recommended application guidelines, geographical area, exposure conditions and

maintenance of the ORAFOL material and of the end product. Product defects caused by the substrate or improper surface preparation do not lie within ORAFOL's sphere of responsibility.

When using ORAFOL products, the pertinent national regulations are to be observed. ORAFOL recommends that you obtain the current stipulations from your local authority and ensure that the product meets these requirements. Please contact ORAFOL for further information.

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