

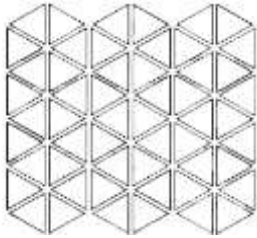
Description

ORALITE® VC 612 Flexibright™ is a tough weather resistant product designed for rugged outdoor use for livery applications on emergency services vehicles. The material is die cuttable and plotter cuttable, and easy to apply onto smooth painted or unpainted vehicle surfaces. The material does not need edge sealing, and is designed to be especially applicator user friendly and flexible, with potentially single piece removability and the possibility to template to far fewer pieces than other prismatic livery films.

Product Construction

ORALITE® VC 612 Flexibright™ 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 0.35-0.45 mm thick, and comes with an aggressive high-tack pressure sensitive adhesive. The product is single layer, with no need for edge sealing.

Film Logo Pattern



Retroreflectivity

Typical values for the coefficient of retroreflection (R') for ORALITE® VC 612 Flexibright™ are shown in Table 1 when illuminated with CIE standard illuminant A and measured with the provisions of CIE no. 54. The values are an average of rotation angles 0° and 90°.

Colour

ORALITE® VC 612 Flexibright™ is available in white, yellow, red, blue, green, fluorescent lime, fluorescent yellow, fluorescent orange and fluorescent red-orange. 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.15.2 (illuminant D₆₅).

Impact Resistance

ORALITE® VC 612 Flexibright™ sheeting shall show no signs of cracking or delamination outside the actual area of impact when it is subjected to an impact of 1,13 N·m generated by a 0,91 kg weight with a 16 mm rounded tip, as per ASTM D4956.

Adhesive

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

Shrinkage

A 230 mm square specimen of the sheeting with liner shall be conditioned a minimum of 1 hour at 22° C and 50% RH. The liner is then removed and the specimen is placed on a flat surface with the adhesive side up. 10 minutes after the liner is removed and again after 24 hours, then specimen is measured to determine the amount of dimensional change. The specimen must not shrink in any dimension more than 0,8 mm in 10 minutes and 3,1 mm in 24 hours.

Flexibility

The sheeting is conditioned for 24 hours at 22° C and 50% RH. The release liner is removed and the sheeting must be sufficiently flexible to show no cracking when bent in one second's time around a 3,1 mm diameter mandrel with the adhesive contacting the mandrel.

Application Instructions

Material must be applied when the air and surface temperature is between 10° C and 28° C to assure proper adhesive bonding. Surfaces must be cleaned for grease, oil and dirt. Use a clean towel and Isopropyl alcohol to wipe the surface before application.

Please contact ORAFOL for complete application instructions.

Solvent Resistance

ORALITE® VC 612 Flexibright™ material meets the solvent resistance requirements of LS-300C solvent resistance, section 3.6.7, when tested as specified in Table VI, test method 4.6.6.

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 20° C and 50% relative humidity.

Table 1 – Retroreflectivity

Obs. Angle (α)	Entr. Angle (β1, β2=0)	White	Yellow	Green	Red	Blue	Fl. lime	Fl. yellow	Fl. orange	Fl. red-orange
0,20°	5°	750	525	130	130	55	420	295	200	135
	30°	375	260	65	65	25	200	145	100	55
	45°	120	85	20	20	8	70	45	30	15
0,33°	5°	375	260	65	65	25	200	145	100	80
	30°	185	130	32	32	13	100	75	50	40
	45°	60	40	10	10	4	35	25	20	10
0,50°	5°	110	80	20	20	8	65	45	45	25
	30°	60	45	10	10	4	33	23	20	20
	45°	20	14	4	4	1.3	10	7	8	5
1,00°	5°	28	20	5	5	2	15	11	8	5
	30°	14	10	2	2	1	8	5	4	3
	45°	4	3	-	-	-	2	2	2	1

All values have units of cd/lux/m².

Table 2 - Colour Specification Limits (Daytime)

Colour	Chromaticity Coordinates*									
	1		2		3		4		Y%	
	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
Green	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771	3.0	9.0
Red	0.648	0.351	0.735	0.265	0.629	0.281	0.565	0.346	2.5	12.0
Blue	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216	1.0	10.0
Fluorescent lime	0.387	0.610	0.369	0.546	0.428	0.496	0.460	0.540	60.0	----
Fluorescent yellow	0.460	0.540	0.428	0.496	0.395	0.515	0.415	0.560	40.0	----
Fluorescent orange	0.583	0.416	0.535	0.400	0.595	0.351	0.645	0.355	20.0	25.0
Fluorescent red-orange	0.550	0.390	0.600	0.300	0.650	0.380	0.720	0.280	10.0	----

*) The four pairs of chromaticity coordinates determine the acceptable chromaticity when measured with standard illuminant D65

Physical and Chemical Properties

Thickness¹ (without protective paper)	0.300 mm (non-fluorescent colours) 0.400 – 0.450 mm (fluorescent colours)
Temperature resistance	adhered to aluminium, -40° C to +82° C (-40° F to 180° F)
Resistance to cleaning agents	adhered to aluminium, 8h in solution (0.5% household cleaning agents) at room temperature and 65° C (150° F): no variation
Adhesive power¹ (FINAT-TM1 after 24h, stainless steel)	>15 N/25 mm (1 inch)
Shelf life²	1 year
Application temperature	> +15° C
Service life by specialist application³ under vertical outdoor exposure	Up to 7 years

¹ average ² in original packaging, at 20°C and 50% relative humidity ³ standard central European climate,
Please refer to the document Practical Information ORALITE® VC 412RA Ecoflex / VC 612 / VC 612RA Flexibright / VC 612 Fleet Marking Grade for all regions

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.

ORALITE® is a registered trademark of ORAFOL Europe GmbH.

