

## Product Description

ORALITE® retroreflective films series 5921M RA Prismatic Fleet Marking Grade (*RapidAir*®) are highly flexible, weather-proof, self-adhesive films with excellent corrosion and solvent resistance. The ORALITE® 5921M RA series was specifically developed for the use as safety marking on vehicles and is intended for mid-term vertical outdoor use. It is removable by heat from lacquered surfaces. The material is designed for vehicle markings according to ECE 104, and it is available in kits as well as in rolls. In addition, the material may be used for the manufacturing of warning plates according to ECE 70.

Its retroreflective system consists of microprisms provided with a mirror surface and is achieving excellent retroreflective values due to its distinct design. The product is single layer, meaning that no edge sealing is required. The retroreflective film features a distinct pattern as shown in illustration 1, identifying the manufacturer and the machine direction. For application directions, please follow the prevailing national requirements. The product is compliant to EU VO 2015/208.

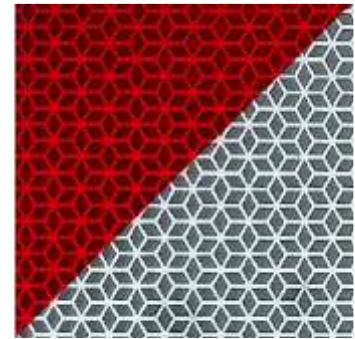
## Retroreflectivity

ORALITE® 5921M RA exceeds the minimum performance requirements according to ECE 104 Class F, ECE 70 Class 5, DIN 30710, DIN 67520 and DIN 11030. The required minimum retroreflective values are complied with when measured in accordance with the corresponding specifications using CIE standard illuminant A and the provisions of CIE No. 54.2.

## Colour

ORALITE® 5921M RA Prismatic Fleet Marking Grade is available on rolls in white (010) and red in chevron pattern. The product conforms to the daytime colour requirements in Table 2 when measured in accordance with the corresponding specifications of CIE no. 15.2 and complies with the requirements of Regulations ECE 104, ECE 70 and DIN 6171.

Illustration 1



## Adhesive and Liner

The adhesive has been specifically designed to allow for excellent initial repositionability by dry application method. In combination with the *RapidAir*® liner (RA), an application without air inclusion, especially in large scale applications, is quick and easy.

## Product Data

Table 1: Minimum Reflective Values according to ECE 70

| Observation Angle $\alpha$  | Entrance Angle |     |     |     |     |
|---|----------------|-----|-----|-----|-----|
|   | $\beta_1$      | 0°  | 0°  | 0°  | 0°  |
| 20°   | $\beta_2$      | 5°  | 30° | 40° | 60° |
| Specific coefficient of retroreflection<br>$R'$ in cd / lx pro m <sup>2</sup> | White (010)    | 450 | 200 | 90  | 16  |
|   | Red (030)      | 120 | 30  | 10  | 2   |

Table 2: Minimum Reflective Values according to ECE 104

| Observation Angle $\alpha$   | Entrance Angle |     |     |     |     |     |
|--|----------------|-----|-----|-----|-----|-----|
|  | $\beta_1$      | 0°  | 0°  | 0°  | 0°  | 0°  |
| 20°  | $\beta_2$      | 5°  | 20° | 30° | 40° | 60° |
| Specific coefficient of retroreflection<br>$R^i$ in cd / lx pro m <sup>2</sup> | White (010)    | 450 | --  | 200 | 95  | 16  |
|  | Red (030)      | 120 | 60  | 30  | 10  | --  |

Table 3: Minimum Reflective Values according to DIN 11030 and DIN 30710 (DIN 67520 Part 1 and Part 2, state as manufactured)

| Observation angle | Specific coefficient of retroreflection $R^i$ in cd / lx pro m <sup>2</sup> |     |     |       |     |     |    |     |     |
|-------------------|---|-----|-----|-------|-----|-----|----|-----|-----|
|                   | 0,2°  |     |     | 0,33° |     |     | 2° |     |     |
|                   | 5°  | 30° | 40° | 5°    | 30° | 40° | 5° | 30° | 40° |
| White (010)       | 250   | 150 | 110 | 180   | 100 | 95  | 5  | 2.5 | 1.5 |
| Red (030)         | 45  | 25  | 15  | 25    | 14  | 13  | 1  | 0.4 | 0.3 |

Table 4: Daylight colours according to ECE 104 und ECE 70

|             | Colour coordinates |       |       |       |       |       |       |       | Luminance factor $\beta$ |
|-------------|--------------------|-------|-------|-------|-------|-------|-------|-------|--------------------------|
|             | 1                  |       | 2     |       | 3     |       | 4     |       |                          |
|             | x                  | y     | x     | y     | x     | y     | x     | y     |                          |
| White (010) | 0.300              | 0.270 | 0.385 | 0.355 | 0.345 | 0.395 | 0.260 | 0.310 | $\geq 0.25$              |
| Red (030)   | 0.690              | 0.310 | 0.595 | 0.315 | 0.560 | 0.350 | 0.650 | 0.350 | $\geq 0.03$              |

Table 5: Daylight colours according to DIN 6171, new condition

|             | Colour coordinates |       |       |       |       |       |       |       | Luminance factor $\beta$ |
|-------------|--------------------|-------|-------|-------|-------|-------|-------|-------|--------------------------|
|             | 1                  |       | 2     |       | 3     |       | 4     |       |                          |
|             | 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 | $\geq 0.27$              |
| Red (030)   | 0.735              | 0.265 | 0.700 | 0.250 | 0.610 | 0.340 | 0.660 | 0.340 | $\geq 0.03$              |

## Physical and chemical properties

|  |  |
|--|--|
| <b>Thickness</b> <sup>(1)</sup> (without protective paper)             | 0.34 mm  |
| <b>Temperature resistance</b> <sup>(3)</sup>                           | Adhered to aluminium, -40° C to +82° C               |
| <b>Seawater resistance</b> (DIN 50021)                                 | Adhered to aluminium: after 100 h/23° C no variation |
| <b>Adhesive power</b> <sup>(1)</sup> (FINAT-TM 1 after 24h, stainless) | >15 N/25 mm (≈ 1 inch)                               |
| <b>Shelf life</b> <sup>(2)</sup>                                       | 1 year   |
| <b>Application temperature</b>   | > +15° C   |
| <b>Service life</b> <sup>(3)</sup><br>under vertical outdoor exposure  | 5 years (unprinted)                                  |

<sup>(1)</sup> average      <sup>(2)</sup> in original packaging, at 20° C and 50% relative humidity      <sup>(3)</sup> standard central European climate

## IMPORTANT NOTE

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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.

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