

Application Instructions

Application of ORALITE® reflective sheeting on plastic substrates

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Page 1 of 1

These instructions have been specifically developed for the application of ORALITE® reflective sheeting of the series ORALITE® 5230/5231 Economy Grade, ORALITE® 5430/5431 Construction Grade, ORALITE® 5830/5831 High Intensity Construction Grade und ORALITE® 5930/5931 High Intensity Prismatic Construction Grade on plastic substrates such as cones or warning, construction/work zone and information signs.

1. Description of laminated substrates

In principle, the following material groups are applicable for the application of the above mentioned ORALITE® reflective sheeting:

Polyester, glass fibre reinforced plastics, polypropylene, polyethylene and polybutene
Soft and hard PVC, polycarbonate, polyacetate, acrylic polymethylacrylate, polystyrene, ABS and polyurethane.

2. Application/processing

2.1 General information

In general, it is recommended to make own tests on the respective substrates prior to application of the ORALITE® reflective sheeting. Plastic substrates must be tested and approved by the ORAFOL Europe GmbH R&D department.

2.2 Adhesives

For the lamination of plastic substrates, ORAFOL has developed specific adhesives for excellent adhesion and cold flow properties. For application on the above mentioned material groups, ORAFOL exclusively recommends the use of the following ORALITE® reflective sheeting:

ORALITE® 5230/5231	Economy Grade
ORALITE® 5430/5431	Construction Grade
ORALITE® 5830/5831	High Intensity Construction Grade
ORALITE® 5930/5931	High Intensity Prismatic Construction Grade

The adhesives used on these products reach their final adhesion after approximately 48 hours. Afterwards, the adhesive should have developed a strong bond to the substrate.

2.3 Properties of laminated substrate

The surface should have a roughness which ranges between 0.5µm and 2µm.

The substrate should have completed manufacturing at least 2 weeks before lamination.

The substrate must be free from silicone, oil, grease or other contamination. Thus, the substrate needs to be treated with a grease and silicone free solvent (e.g. isopropanol) in order to clean up any loose contamination as well as any particles and lubricating agents.

2.4 Application temperature

For the application, an ambient temperature of 18-25°C is recommended. The substrate temperature should not be below 20°C. After film application the construction should be stored for another 48 hours under same conditions.

3. Surface preparation for application

3.1 Testing the substrate for outgassing

To test the substrate for outgassing, the following pre-test is necessary:

After cleaning, an ORALITE® reflective sheet, measuring approximately 100mm x 100mm, should be applied to the substrate and should be stored for approximately 24 hours at a temperature of about 60°C. If bubbles have formed in the film, the plastic material is still outgassing.

3.2 Flame treatment

Due to the unpolar characteristic of some plastics, a flame treatment of the surface might be necessary.

The complete surface of the substrate must be evenly treated with the flame. During the flame treatment the tip of the blue flame should have a distance of 2.5cm to 5 cm to the surface in order to allow for a proper oxidation. An automated flame treatment is recommended.

3.3 Surface tension testing after flame treatment

The so called water test is recommended for testing the surface tension after the flame treatment. Purified water is dropped onto the surface of the substrate with a pipette. The quality of the flame treatment can be judged by the drop shape. The water drops show the difference between a sufficiently treated and an insufficiently treated surface.

The treated surface must have cooled down for at least 15 minutes to room temperature before further processing. It is not recommended to stack the substrates before application. The material should be applied to the flame treated surface within the same day.

4. Transport

The sheeting must be stored for at least 8 hours at room temperature after the application before it can be shipped. Finished parts may not be subjected to humidity or heat during transport.

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