Reflective Sheeting Guidelines for Application to Reboundable Traffic Control Devices

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Description

This information folder provides application guidelines for 3M flexible prismatic retroreflective sheeting materials designed for reboundable traffic control devices. Compliance with these guidelines is required for warranty eligibility for certain materials. Read 3M's product bulletins for detailed warranty information.

Application Guidelines

Minimum Application Temperature

The minimum temperature for applying 3M reflective sheeting to a polyethylene device is 60°F (16°C).

Device and Sheeting Temperature

The plastic device and reflective sheeting should be placed in the manufacturing environment and allowed to reach application room temperature for at least four hours prior to application.

Cleaning Substrate

The device surface must be clean and free of dust, dirt, or other foreign objects. Cleaning with a mixture of 70% isopropyl alcohol and 30% water is recommended.

Flame Treating

The entire surface where sheeting will be applied on all polyethylene devices must be uniformity flame treated.

Flame treating changes the surface molecular structure of polyethylene and some other plastics by using an oxidizing flame to produce a polar surface state that allows for good adhesive bonding in preparation for labeling, printing, or decorating.

The plastic to be treated should be clean and free of dirt and oil prior to treatment. For most effective flame treating, the tip of the outer blue envelope of flame should just touch the surface of the material being treated.

Most processors use burners designed to provide a continuous "ribbon of flame," either straight or curved, depending upon the shape of the objects to be treated. This does not preclude the use of a series of small burners to accomplish the same result.

In order to obtain the correct "atmosphere" at the tip of the flame, there should be a slight excess of oxygen. This is accomplished by slightly exceeding the recommended air to gas ratio. In the case of natural gas, the usual recommended air-to-gas ratio is 10:1 gas on a volumetric basis. By setting an air-to-gas ratio of 11:1 to12:1, the treating flame is assured of a hot oxidizing tip. In the case of propane gas, the recommended ratio is 24:1, so settings of 25:1 to 26:1 should be sufficient for flame treating.

Flame treating can be a very short process. In many cases, exposures to the flame of one second are adequate if all other factors are correct. Flame treating operations that overexpose the plastic may deform or soften the material, causing problems.

Allow the flame treated device to cool to room temperature for at least 15 minutes before applying reflective sheeting. Re-stacking devices prior to applying sheeting is NOT recommended. Sheeting must be applied to the flame treated device on the same day.

Squeegeeing

All sheetings are supplied with a pressure sensitive adhesive (PSA). The PSA is activated by applying pressure to the sheeting surface. Immediately after applying sheeting, the sheeting must be squeegeed to the substrate using a 3M™ Hand Applicator PA-1 squeegee with a felt sleeve. The sheeting must be squeegeed firmly with adequate pressure to remove entrapped air.

Carpet Strip Pressure

When applying sheeting to a polyethylene device using a 3M Cone Wrapping machine, the mandrel nip pressure against the table carpet strip must be calibrated per 3M's recommendations. Contact 3M Technical Service for carpet/table adjustments for correct nip pressure. Inadequate pressure will cause adhesion failures.

Health and Safety

Chemicals

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety, and environmental information.

Follow this link to obtain SDS sheets for 3M products.

Follow this link to obtain information about substances of very high concern (SVHC) for EU products.

Tools and Equipment Usage

When using any equipment, always follow the manufacturer's instructions for safe operation.

Warranty Information

Technical Information

Technical information, guidance, and other statements provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license to any intellectual property rights is granted or implied with respect to this technical information.

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