



# Application Instructions for 3M™ Diamond Grade™ Conspicuity Markings on Rail Cars

## Series 983

Information Folder 4.18

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### Description

3M™ Diamond Grade™ Conspicuity Markings are precoated with an aggressive pressure sensitive adhesive for application to most clean, dry, wax-free, non-corroded, weather resistant surfaces.

The adhesive is protected with a clear plastic, easy release liner. 3M conspicuity markings are intended to be applied to the sides of rail cars to enhance visibility and recognition by motorists.

3M conspicuity markings can be applied to flat surfaces (with and without rivets) and noncompound curved surfaces with a radius greater than 5 inches. For application to corrugated rail cars, apply the markings to the top of the corrugation and form it down and around the curved surface to the bottom of the marking.

Rail car markings can be applied to rusted, severely pitted, loose or chalking paint surfaces **only** if recommended surface preparation procedures are followed. These procedures are outlined on the next page. Application is not recommended on irregular shaped framework, bolts, rivets larger than 1/2 inch high, support plates or within 1/8 inch of door hinges, exterior posts, weld joints, and the end of the surface.

3M conspicuity markings are available in kiss-cut rolls.

**Important:** Carefully review the following information before proceeding with application.

### Storage

Diamond Grade conspicuity markings can be stored for a period of two years in a cool, dry area at temperatures of 65-75°F (16-24°C) and must be applied within the two year time frame. Rolls should be stored horizontally or in their shipping carton. Partially used rolls should be returned to the shipping carton or suspended horizontally from a rod or pipe through the core.

### Application Instructions

#### Tools

1. Plastic Applicator, PA-1 (blue or gold); available from 3M.
2. Low Friction Sleeve, SA-1 (used on the plastic applicator to minimize surface scratching); available from 3M.
3. Utility knife; available locally at hardware or industrial supply stores.
4. Osborne Arch Punch No. 149 or Osborne Belt Punch No. 245 of proper size; available at hardware and industrial supply distributors.



Osborne Arch Punch No. 149



Osborne Belt Punch No. 245

5. Industrial heat gun such as Dayton Industrial Heat Gun 500-750°F (260-399°C) or equivalent; available at industrial supply stores.
6. 3M™ Scotch-Brite™ Heavy Duty Cleaning Pad (green or brown); available locally at paint or industrial supply stores.
7. Lint free paper towels and recommended cleaning solvent.

## Application Temperature

For optimum adhesion and durability, conspicuity markings should be applied when air and application surface temperatures are within the following limits:

<u>Minimum</u>	<u>Maximum</u>
35°F (7°C)	100°F (38°C)

The markings may also be applied when air and application surface temperatures are beyond these limits with the following precautions:

\* Above 100°F (38°C) - care must be taken to avoid pre-adhesion.

\* Below 45°F (7°C) - the substrate surface may be mechanically heated to this temperature by using a portable heater, heat lamps, hot water or steam. If hot water or steam is used, the surface must be thoroughly **dry** before application. In addition, when outside temperatures are below the minimum application temperature, the applied markings must also be heated using an industrial heat gun and immediately re-squeegeed. The heat gun should be held 8-12 inches from the marking to avoid burning, melting, or distorting the marking.

**CAUTION:** to ensure markings are not distorted, applied heat should be regulated so that the marking surface is comfortable to the touch.

## Surface Preparation

All surfaces must be considered contaminated and must be cleaned prior to application. Spray solvent onto the surface and wipe with a clean paper towel or use a paper towel saturated with isopropyl alcohol, 3M Prep Solvent 70 or Dupont's Prep-Sol Brand Solvent Cleaner 3919S. Immediately dry surface with clean paper towel before solvent dries, paying close attention to rivets, seams and door hinge areas. The cleaning solvents can also be sprayed onto the substrate, cleaned with a paper towel and immediately dried with another clean/dry paper towel before the solvent dries.

Note: An application surface that has been washed, dried, and solvent wiped can still have poor adhesion in the area around rivets and seams due to liquid retention caused by capillary action.

## Cleaning Procedures for Rusted/Corroded Surfaces or Loose/Chalking Paint:

1. Remove contamination using a 3M™ Scotch-Brite™ Surface Conditioning Disc or 3M™ Scotch-Brite™ Heavy Duty Cleaning Pad 7440 to remove rust and chalking paint.
2. Areas which have been abraded down to bare metal should be painted or primed with a rust preventative fast-dry paint or primer. Check the paint for adhesion by applying masking tape, then snapping it off. If any paint is removed by tape, paint is not cured. Paint must be completely cured prior to applying the markings.

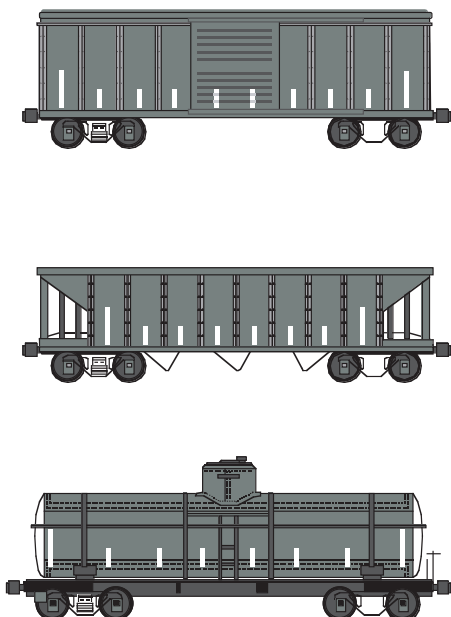
Application to rusted, severely pitted, loose or chalking painted surfaces is not recommended. For stainless steel applications, initial adhesion is improved by wiping and drying with white distilled vinegar after solvent cleaning has been completed.

## Application Procedure

1. The markings must be cut 1/8 inch away from exterior posts and large bolts or rivets. Apply markings no closer than 1/8 inch to door hinges, door hardware, ends of the rail car and weld joints to avoid wrinkling or lifting.
2. Peel off the 4 x 18 inch kiss-cut piece of marking from the roll liner, position and align the marking on the car and tack down lightly to hold in position.
3. Using a PA-1 applicator, press the marking to the surface using firm, vertical overlapping strokes. Be sure all edges are adhered.
4. Apply the remaining markings using the above procedures.
5. Apply marking over rivets using firm pressure leaving a bridge which will adhere when the marking is cut in these areas.

6. Cut markings around rivets using an Osborne cutting tool of proper size to fit over rivet. Place tool over top of rivet and marking and tap lightly using a small hammer. Squeegee the marking around the rivet with firm pressure. The cut film on the rivet head can be left on the rivet but will eventually come off. Avoid applying markings over closely spaced rivets where possible.

**Note: Markings should not be overlapped but should be butted together to make seams and joint pieces.**



## Edge Sealing

Edge sealing is not required on 3M™ Diamond Grade™ Conspicuity Markings.

## Cleaning

Markings applied to rail cars can be hand washed with sponge, cloth or soft brush using warm water and detergent. Rinse thoroughly. When using hand spray wash wands, hold the nozzle at least 12 inches from the surface and at an angle less than 45° from perpendicular to the marking to avoid damaging the marking. Acid brightening and cleaning solutions should not be allowed to soak on markings to avoid immediate damage.

## Health and Safety Information

Read all health hazard, precautionary and first aid statements found in the Material Safety Data Sheets (MSDS), and/or product label of chemical prior to handling or use. Also refer to MSDS for information about the volatile organic compounds (VOC) content of chemical products. Consult local regulatory authorities for possible restrictions on product VOC content and/or VOC emissions. For 3M products you may contact 3M Helps at 1-888-364-3577.

### FOR INFORMATION OR ASSISTANCE

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