This bulletin provides instructions for application of 3M™ Diamond Grade™ Reflective Sheeting, 3M™ Reflective Pipe Markings and 3M™ Luminous Film to ship bulkheads, doors and other specified areas.

Health and Safety Information
Read manufacturer’s container labels and Material Safety Data Sheets (MSDS) for health hazard data, precautionary information, suggested first aid and environmental information when handling any chemical products. For 3M product health and safety information, or in case of an emergency, call 612-733-1110, and ask for Operator 55. When using any equipment, follow manufacturer’s instructions for safe operation.

Storage
Labels may be stored for a period of up to one year. They must be stored flat in a clean area, free of excessive moisture and direct sunlight, and ambient temperatures of 100˚F (38˚C) or less.

Surface Preparation (Hard Bulkhead or Bare Pipes)
Before handling any chemical products, read container label and MSDS or see Pipe Marking Instructions.

All shipboard surfaces must be considered contaminated and MUST be cleaned and dried prior to application of labels. Follow the procedures below:

1. Wash the surface with a synthetic, free-rinsing detergent. Avoid washing the surface with soap containing creams or lotions. Dry thoroughly.
2. Saturate a clean paper towel with a general purpose cleaner and wipe the surface. With another lint-free paper towel, dry the surface before the cleaner dries.

Surface Preparation (Insulated Bulkhead or Insulated Pipes)
Before handling any chemical products, read container label and MSDS or see Pipe Marking Instructions.

If insulated bulkhead or insulated pipe is contaminated with dirt, grease or grime, one of the following cleaning procedures must be followed to ensure maximum adhesion of the label.

1. Repaint bulkhead for insulated pipe following Navy instructions or procedures.
   a. Paint must dry for 24 hours before installing labels or markings.
   b. Proceed to General Application Procedures in this bulletin.

2. Using a 3M sanding sponge, sand away the contaminates and smooth out roughness where the label or marking is to be installed. Sanded area must be at least 1/2 inch longer than the labels or markings overall length and width.
   a. With a tack rag, wipe off the dust created while sanding.
   b. Proceed to General Application Procedures in this bulletin.

Tools
Plastic Applicator, PA-1
Low Friction Sleeve, SA-1
Air Release Tool, ART
Paper Towel (lint-free)
Retractable Knife
Heat Gun
Paint Scraper
3M Medium Sanding Sponge
General Purpose Cleaner
3M Citrus Base Industrial Cleaner (for adhesive removal only)
**Registration Marks**

As an aid for aligning and registering markings on bulkheads or doorways prior to application, registration marks may be made on the top or side edges of bulkheads or doors with a lead pencil, marking pen, or small pieces of masking tape. 

*Note:* Do not use a chalk line or grease pencil.

**General Application Procedures**

Follow these recommendations to ensure proper application:

1. Make sure the shipboard surface is properly cleaned as described in the Surface Preparation section.
2. Always use a PA-1 plastic applicator with low friction sleeve as stated in the application procedures.
3. Firm pressure is necessary when using the plastic applicator.
4. Use overlapping strokes when applying labels.
5. Puncture air bubbles at one end using the air release tool; remove entrapped air by pressing toward the air bubble puncture using finger pressure.
6. **Resqueegee** all edges of labels.

**Surface Preparation for 3M™ Reflective Pipe Markings**

All surfaces must be considered contaminated and MUST be cleaned and dried according to these recommended procedures in the following order.

1. Wash the surface with a synthetic, free-rinsing detergent. Avoid washing the surface with soap containing creams or lotions. Dry thoroughly.
2. If grime or contaminant will not remove from lagged or painted pipe, new lagging or paint should be applied. This will ensure maximum adhesion.

**Installation of 3M™ Reflective Pipe Markings**

1. Clean pipes according to surface preparation instructions above.
2. Remove liner from the back of marking; position and align the marking on surface and tack down lightly to hold into position.
3. Using a PA-1 applicator with a SA-1 low friction sleeve, press the marking to the pipe using firm vertical overlapping strokes. If application bubbles exist, puncture the marking at one end of the bubble with a 3M Air Release Tool and remove entrapped air with thumb or PA-1 applicator moving toward the puncture. **Be sure all edges are adhered.**
4. Do not overlap when installing two or more pipe markings. They must be positioned edge to edge. Continue installation following steps 1-3 above.

**Application Instructions for 3M™ Diamond Grade™ Escape Trunk Markings**

1. See Surface Preparation Instructions above for reflective pipe markings.
2. Position marking 1/4" above deck plate. Secure to bulkhead with a horizontal piece of masking tape (tape hinge) attached through the marking 6" to 12".
3. Position and align the marking to the bulkhead and extend vertically to obstruction (ie. deck joint, weld joint). Realign marking vertically if needed. Secure marking to bulkhead with tape hinge 6" to 12" below obstruction.
4. Starting at the top, slowly remove the liner from the back of marking by pulling down on the liner. Place into position and remove tape hinge. Do not allow marking to become misaligned. Removing liner from sheeting before aligning and tape hinging will result in preadhesion and misalignment.
5. Using a PA-1 applicator squeegee with a SA-1 low friction sleeve, press the marking to the bulkhead using firm horizontal overlapping strokes. **Do not use finger or hand pressure to adhere marking in place of squeegee.** Continue until entire marking is installed. Resqueegee to ensure all edges adhere.
6. When approaching a weld joint, deck plate or other obstruction stop application 1/8" to 1/4" before reaching obstruction.
7. Continue installation on the opposite side of obstruction following steps 1-6.
I. Fabricating Bull’s Eye Labels

Before handling any chemical products, read container label and MSDS.

Note: It is important to first position the characters on the Bull’s Eye prior to removal of liner and final application.

1. Tack the label to a clean work surface at four corners. Saturate a clean lint-free paper towel with 3M Prep Solvent-70 and wipe the surface. With another clean lint-free paper towel, dry the surface before the cleaner evaporates.

2. Place the template over the Bull’s Eye.

3. Align template to all four corners and secure using masking tape.

4. Lay out desired characters for placement on the template, using the 1/2 inch score marks as a guide for character spacing. Allow one score mark between characters.

5. Use a fingernail to remove the liner from the characters. Peel away the liner to expose all of the adhesive.

6. Carefully place the characters along the lower edge of the template window and tack in place using slight finger pressure until the Bull’s Eye is complete.

7. Remove the masking tape from the corners of the template, then remove the template from the Bull’s Eye.

8. Using the PA-1 applicator with a SA-1 low-friction sleeve, adhere all characters with firm, overlapping strokes. Make sure all edges are completely adhered.

9. Apply Bull’s Eye to the bulkhead per section III.

Once the layout is determined, begin the final application of characters:

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II. Applying Bull's Eyes and Labels to Shipboard Surfaces
See Surface Preparation (page 1) prior to application.

1. Remove the liner from the label using the following method:
   Before application, lay label face down on a clean flat surface. Remove the liner by flicking the edge of the label front with the ball of the thumb or a fingernail. (A small bend at a corner or edge will allow the liner to separate from the marking.) Pull the liner in a continuous motion at a 180˚ angle. Always remove the liner from the label rather than the label from the liner.

2. Align the label with the registration marks on shipboard surface and press one edge to surface using finger pressure.

3. Hold the remaining label away from surface to avoid preadhesion. With plastic applicator PA-1 and low friction sleeve, apply the label using firm overlapping strokes.

4. When the label is completely adhered to surface, resqueegee all edges.

III. Applying Luminous Tape
Note: Be sure all edges are adhered. Apply tape no closer than 1/8 inch to door hinges, door hardware, weld joints and rivets to avoid wrinkling or lifting.

1. Remove the liner from the back of the tape; position and align the tape on the surface and tack down lightly to hold in position.

2. Using a PA-1 applicator with a SA-1 low-friction sleeve, press the tape to the surface using firm vertical overlapping strokes. If application bubbles exist, puncture the film at one end of the bubble with a 3M Air Release Tool and remove entrapped air with the thumb or a PA-1 squeegee moving toward the puncture. Be sure all edges are adhered.

Removal of Luminous Labels and Tape

1. Heat one corner of the label with a heat gun until hot to the touch.

2. Lift edge of sheeting using a razor or sharp putty knife and pull sheeting back slowly at a low angle.

3. Continue to apply heat to the label while slowly pulling label along substrate at low angle (30˚ to 45˚ from substrate).

4. If adhesive remains after removing label, use 3M Citrus Base Industrial Cleaner. Spray Citrus Base Industrial Cleaner onto the adhesive and let spray penetrate for 1-2 minutes. Remove adhesive by scraping with PA-1 squeegee. Do not reuse a PA-1 squeegee that has been used to remove labels due to squeegee contamination.
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