



Safety Marking Film for Industrial Applications and Vehicles Series 13050

Product Bulletin 13050

Health and Safety Information

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

When using any equipment, always follow the manufacturers' instructions for safe operation

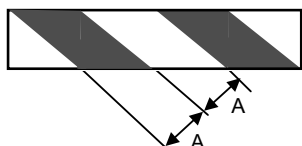
Description

3M™ Warnmarking Film for Vehicles Series 13050 is a flexible retroreflective film designed for use in production of safety markings and multi-color emblems.

Advantages

- Flexible, enclosed-lens, retroreflective film
- Excellent angularity
- Retains 90% of its retroreflectivity when totally wet
- Similar daytime and nighttime appearance
- Suited for application over surfaces with rivets, flat or curved surfaces
- Screen printable
- Unprocessed film resists fuel vapors or occasional spills

<u>Film</u>	<u>Color</u>	
13050	White	
13056	Red/white	with A = 100 mm
13057	Red/white	with A = 40 mm
13058	Black/yellow	with A = 40 mm



Property

Adhesive type

Liner

Application surfaces

Application substrates

Application temperature range for air and substrate

Description

Pressure sensitive

Lay flat (white sheeting only)

Flat, flat with rivets, moderately curved

Aluminum, automotive paint

13°C to 38°C
flat surfaces without rivets
16° to 38°C
flat or curved surfaces with rivets

Application and Uses

Film 13056 is designed for marking vehicles according to homologation TPESC 87097.

Films for industrial safety markings according to DIN4844:

- Film 13057 is intended for movable obstacles like turnpikes, cranes, gates, fork-lifters and containers.
- Film 13058 is intended for stationary obstacles like boundary posts, curbstones, ramps and narrow passes.

Limitations

Series 13050 is not intended for:

- Permanent, regulatory traffic signs
- Graphics made for automotive Original Equipment Manufacturers (OEM); please contact 3M Automotive Division for alternatives.

Compatible Products

Screen Print Applications

- 3M™ Transparent Screen Printing Ink Series 2900 (line color and halftone)
- 3M™ Process Color Series 990

General Performance Considerations

The durability of 3M™ Warnmarking Film for Vehicles Series 13050 depends on the following:

- Correct combination of film, ink and overprint clear
- Ink formulation
- Ink drying/curing methods
- Selection, preparation and temperature of the substrate
- Application methods
- Exposure conditions
- Cleaning and maintenance methods

Customers right

In Europe 3M warrants (concrete definition of the period is subject to the terms of sale) that Film Series 13050 sold by 3M to be used for emblems and markings is free of defects in material and workmanship, subject to the following provisions:

If Film Series 13050 is processed and applied to a vertical $\pm 10^\circ$ surface in accordance with all 3M application and fabrication procedures provided in 3M's product and information bulletins, technical memos (which will be furnished to the agency upon request), including the exclusive use of 3M matched component systems, process colors, clear coatings and recommended application equipment; and

If the emblem or marking deteriorates due to natural causes; such as fading, cracking, peeling, lifting or discoloration; 3M's sole responsibility and purchaser's and user's exclusive remedy shall be that 3M will provide a pro-rata replacement.

Such failure must be solely the result of design or manufacturing defects in the series 13050 film and not of outside causes such as: improper fabrication, handling, maintenance or installation; use of process colors, thinners, or coatings and sheeting not made by 3M; use of application procedures not recommended by 3M; applied to a surface at greater than $\pm 10^\circ$ from vertical; failure of substrate; exposure to chemicals, abrasion and other mechanical damage; collisions, vandalism or malicious mischief.

3M reserves the right to determine the method of replacement.

Replacement film will carry the unexpired warranty of the film it replaces.

Claims made under this warranty will be honored only if 3M is notified of a failure within a reasonable time, reasonable information requested by 3M is provided and 3M is permitted to verify the cause of the failure.

Fabrication

For detailed processing procedures, refer to Product Bulletins 2900 and 990.

To obtain maximum durability, use only approved ink and overprint clear.

Formulations and processing conditions can affect the ink durability.

It is recommended to check the proper temperature of the oven or conveyor prior to screen printing by using irreversible temperature strips.

Cutting

Caution: When using any equipment, always follow the manufacturers' instructions for safe operation.

Recommended Cutting Methods per Information Folder

- Band sawing
- Die cutting
- Hand cut
- Guillotine
- Kiss cutting

Weed the film within 24 hours of cutting it. The adhesive may flow after cutting.

Application

This Bulletin does not contain detailed application procedures. Refer to Information Folders 4.1 and 4.3 for surface preparation and application.

Temperature

Check the proper substrate temperature using an Infrared-Thermometer like 3M Scotchtrak™ IR-500.

- 13°C to 38°C
flat surfaces without rivets
- 16°C to 38°C
Flat, flat with rivets, moderately curved

Substrate

Some substrates such as under-cured polyurethane paint, fiberglass, and some paint systems may continue to outgas for some time. Two-part polyurethane paints and clear coats may stop curing when the air and surface temperatures are lower than 24°C. Be aware that outgassing causes this sheeting to bubble.

To see if the surface is cured apply a 150x150 mm piece of film to the area to be marked. Allow to set in temperatures above 24°C for 48 hours. If bubbling occurs, allow the paint on the vehicle to cure in warm temperatures (above 24°C) and repeat the test.

Maintenance and Cleaning

Use a cleaner such as the kind used for high quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline).

Chemical Resistance

- Resists mild acids, mild alkalis and salts
- Excellent water resistance
- Resists occasional fuel spills

Removal

Caution: Solvents may ignite near heat or open flame. Do not use heat sources near solvents. Failure to avoid the use of heat sources near solvents can cause flash fire.

Film Series 13050 is not a removable product. Heat helps take off the top layer, but removing the adhesive requires a solvent-based remover.

Shelf Life and Storage

- The combined shelf life as processed and unprocessed film series 13050 cannot exceed 2 years from the date of receipt from 3M. However, the film must be used within 1 year of processing even if the combined shelf life is less than 2 years.
- Leave the rolls of film in the original shipping carton or suspend the rolls horizontally.
- Store cut sheets lying flat.
- Store the film and the processed markings in a clean, dry area and away from direct sunlight.
- Markings should be stored at a temperature lower than 38°C.

Important Notice to Purchaser/ User

All statements, technical information and recommendations herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. We shall not be liable and no warranty shall apply for products not applied according to our published Information Folders.

Before using, user must determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. All questions of warranty and liability relating to this product are governed by the terms of the sale subject where applicable to the prevailing law.

3M Related Literature

Listed below is related 3M technical literature that may be of interest.

Subject	Bulletin No.
Product Bulletins	
3M™ Screen Printing Ink Series 2900	2900
3M™ Process Color Series 990	990
Information Folders	
Instructions for processing Process Color Series 990	1.15
Hand Application Instructions to Flat, Flat with Rivets and Curved Surfaces for Reflective Sheetings	4.1
Screen printing with 3M™ Transparent Screen Printing Ink Series 2900	4.14
Surface Preparation for Reflective Sheetings	4.3
Storage, Maintenance and Removal of Reflective Sheetings	4.5

For Further Assistance

For help on specific questions relating to 3M™ products, please contact your local 3M Technical Service person or contact:

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