

Traffic Safety and Security Division

# 3M™ High Intensity Flexible Prismatic Reflective Sheeting

Series 3410

March 2018

## 1 Description

3M™ High Intensity Flexible Prismatic Reflective Sheeting Series 3410 is designed for vehicle safety markings according to DIN 30710.

### Advantages

- Impact resistant, flexible, prismatic, retro-reflective sheeting
- Available pre-printed with a red/white chevron type pattern under 45° angularity
- Excellent angularity
- Similar daytime and nighttime appearance
- Suited for application over flat or curved surfaces
- Up to 3 years exterior durability
- Up to 3 years removability with heat
- Available in standard widths, 141mm and 282mm.  
Additional roll widths are available on request.

### Sheeting and Color

Series 3410 is available unprinted white and pre-printed red/white chevron according to DIN 30710.

### Application and Uses

3M™ High Intensity Flexible Prismatic Series 3410 pre-printed or screen printed according to DIN 30710 is intended for vehicle safety markings for vehicles with special rights according to §35 (6) StVO.

### Extend of supply

- Unprinted: 1220mm × 45,7m
- Package 3410 AP: 2 short rolls each 9m, RW and LW, with standard width: 141mm or 282mm
- Rolls 3410RW/3410LW: 141mm or 282mm × 45,7m

Note: RW: Right pointing; LW: Left pointing

<u>Property</u>	<u>Description</u>
Adhesive type	Removable, pressure sensitive
Application surfaces	Flat and moderately curved
Application substrates	Automotive paint
Application temperature range for air and substrate	16°C to 30°C

## 2 Limitations

Series 3410 is not intended for

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

Compatible Products

*Screen Print Applications*

- 3M™ Process Color Series 990

*All Applications*

- Selected 3M application tapes

## 3 General Performance Characteristics

The durability of 3M™ High Intensity Flexible Prismatic Series 3410 depends on the following:

- Correct combination of sheeting, 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

Warranted durability

3M Company warrants that 3M™ High Intensity Flexible Prismatic Reflective Sheeting Series 3410 to be used for vehicle safety markings will remain effective for its intended use as described in the following table:

Ink Series printed on sheeting 3410	Overprint Clear or Overlamine	Vehicle Markings
Pre-printed sheeting	---	36 months
990	---	36 months

**Customers right**

In Europe 3M warrants for a period up to 36 months from date of application (concrete definition of the period is subject to the terms of sale) that Sheeting Series 3410 sold by 3M to be used for vehicle markings is free of defects in material and workmanship, subject to the following provisions:

If Sheeting Series 3410 is processed and applied to a vertical ±10° 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 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 replacement of the 3M materials per the following:

Total Warranty Period	Full Replacement	Pro-Rata Replacement Period	Monthly Reduction In Allowance
36 months	24 months	25 <sup>th</sup> -36 <sup>th</sup> month	1/12

Such failure must be solely the result of design or manufacturing defects in the Series 3410 sheeting 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 ±10° 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 sheeting will carry the unexpired warranty of the sheeting 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.

**4 Fabrication**

For detailed processing procedures, contact your 3M representative.

## Screen Printing

To obtain maximum durability, use only approved ink. Formulations and processing conditions can affect the ink durability. Refer to Product Bulletin 990 and Information Folder 1.8 for details.

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

## 5 Application

- Check the proper temperature using an Infrared-Thermometer like 3M Scotchtrak™ IR-500.
- Cut sheeting around rivets and between seams, joints and overlapped panel.
- Do not stretch the sheeting during application.
- Do not overlap sheeting.
- Contact your 3M representative for detailed processing and application procedures

### 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 sheeting 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.

## 6 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 6 and 8 (neither strongly acidic nor strongly alkaline).

For high pressure wash the following conditions should be applied/set up:

- maximum pressure 80 bar
- maximum temperature 60°C
- minimum of 1 m distance of cleaning jet from sheeting surface
- cleaning wand to be held at no greater angle than 15° from perpendicular to the sheeting surface
- wide fan pattern

The cut cells of Series 3410 sheeting may collect dirt which does not affect the performance of the sheeting. Attempts to remove this dirt with high-pressure washing could affect edge adhesion.

## 7 Removal

Sheeting 3410 is removable within the stated warranty period from vertical flat and curved surfaces on typical automotive paint. Temperatures above 15°C for substrate and air are recommended for removal.

The ease and rate of removal depends on a number of factors.

- the type and condition of the substrate
- the marking age and exposure conditions
- maintenance of the sheeting
- the 3M recommended removal method, including pull off angle, is used.
  1. Heat one corner of the markings with an industrial heat gun until hot to touch.
  2. Lift edge of sheeting. Slowly pull marking at an angle of 30° to surface.
  3. If pulling too fast or at wrong angle, adhesive residue may remain on the surface.
  4. Adhesive residue can be removed with a suitable solvent. Determine suitability of the solvents by testing in an inconspicuous area.

## 8 Shelf Life and Storage

- The combined shelf life as processed and unprocessed sheeting of Series 3410 cannot exceed 1 year from the date of receipt from 3M.
- Leave the rolls of sheeting in the original shipping carton or suspend the rolls horizontally.
- Store the sheeting in a clean, dry area and away from direct sunlight.
- Graphics should be stored between 18 - 24 C.
- Ship screen printed applications lying flat or in a roll. To roll the graphic, wrap it with the sheeting-side-out on a minimum 150 mm diameter core. These methods help prevent the sheeting from wrinkling or popping off the liner.

## 9 Product Data

Retroreflection

Pre-printed 3410 fulfills DIN 67520 Class RA2 (former DIN 67520 Part 2 for Type 2 sheetings).

Color

Pre-printed 3410 fulfills DIN 6171.

## 10.1 Health and Safety Information

Read all health hazard, precautionary and first aid statements found in the Material Safety Data Sheet (MSDS), and/or product label of chemicals prior to handling or use.

## 10.2 Disclaimer

THE 3M WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING OR OF PERFORMANCE, CUSTOM OR USAGE OF TRADE.

## 10.3 Limitation of Liability

Except for the limited remedy stated above, and except where prohibited by law, 3M will not be liable for any loss or damage arising from the Signs or any 3M product, whether direct, indirect, special, incidental or consequential damages (including but not limited to lost profits, business or revenue in any way), regardless of the legal theory asserted including warranty, contract, negligence or strict liability.

## 11 Other Product Information

Always confirm that you have the most current version of the applicable product bulletin, information folder or other product information from 3M's Website at <http://www.mmm.com/tss>.

## 12 Literature Reference

PB 990	3M™ Process Color Series 990
IF 1.8	Instructions for processing Process Color Series 990
IF 1.7	Surface Preparation for 3MTM Reflective Sheetings
IF 1.11	Maintenance of 3M Reflective Sheetings

## Important Notice to Purchaser

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. Before using, user shall 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. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

## For Further Assistance

For help on specific questions relating to 3M™ reflective products, please contact your local 3M Application Engineer or contact:



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