

Transportation Safety Division

3M™ Validation Security Sheeting 5460 with Ensure™ “Official Use Only” Image for Use on Multi-Year License Plates

Product Bulletin 5460
August 2021

Replaces Product Bulletin 5460 Dated October 2018

1 Description

3M Validation Security Sheeting Series 5460 with Ensure “Official Use Only” Image (“**Sheeting**”) is designed and manufactured for use in the fabrication of reflective validation stickers, to be applied to multi-layer license and reciprocity plates with smooth surfaces. Sheeting is backed with a layer of pressure sensitive adhesive that is protected by a removable paper liner which may be “scallop” scored for easy removal.

The day and night color appearances of the Sheeting are similar and it will remain highly reflective when viewed at wide entrance angles. Sheeting may be press printed with transparent and opaque colors to produce various color and design combinations on finished validation stickers.

The Sheeting contains Ensure directional security marks that are an integral part of the Sheeting and make unauthorized sticker reproduction extremely difficult. These marks are spaced no further than 0.75 inches (1.91 cm) from each other so that a portion of one mark is visible on each 1 x 1.5 inch (2.54 x 3.81 cm) validation sticker. Sheeting includes an “Official Use Only” image that can be either direct printed (ED) or reverse printed (ER).

2 3M Ensure Image

When properly applied to license plates mounted vertically on vehicles, Ensure directional security marks facilitate effective visual verification of validation sticker authenticity as follows:

- 1 Marks are visible along an axis perpendicular to the face of the sticker.
- 2 Marks are not visible when viewed at angles greater than 25°, relative to an axis perpendicular to the sticker face.

Directional security marks are visible by both diffuse daylight and retroreflected light at night, and they do not alter Sheeting color or reduce Sheeting brightness below the minimum specified levels. Marks do not interfere with appearance or legibility of finished validation stickers.

Ensure directional security marks cannot be removed by chemical or physical means from Sheeting or finished validation stickers, applied or unapplied, without visibly damaging the Sheeting.

3 Performance Considerations

The Sheeting has been designed for use in the economical and effective production of reflective validation stickers for use on multi-year license and reciprocity plates. When properly color printed, clear coated, and applied, stickers are durable for the period listed in Section 5.2.

3.1 Retroreflectivity

Minimum average initial retroreflectivity values of the Sheeting are shown in Table 1.

Table 1. Minimum average initial coefficient of retroreflection (cd/lux/m²).

Observation Angle ^a	Entrance angle ^b	Minimum Coefficient of Retroreflection, White (5460)
0.2°	-4°	50
	40°	15

a. Observation Angle - The angle between the illumination axis and the observation axis.

b. Entrance Angle - The angle between the illumination axis and the retroreflector axis. The retroreflector axis is an axis perpendicular to the retroreflective surface.

All measurements shall be conducted in accordance with ASTM E810, “Standard Test Method for Coefficient of Retroreflection of Retroreflective Sheeting.” The retroreflectivity of the sticker, totally wet by rain, will not be less than 90% of the value listed in Table 1. Wet performance shall be conducted in accordance with ASTM E810.

Contact your 3M Technical Representative for wet performance measurement test set-up.

4 Application

The Sheeting is supplied with a pressure sensitive adhesive that enables easy, vandal-resistant application using finger pressure when applied to properly prepared (smooth, dry, and clean) license and reciprocity plates. The minimum application temperature for applying finished stickers to plates is -10 °F (-23 °C).

Stickers made from Sheeting can be overlaid, however, 3M recommends that no more than three stickers be overlaid per plate. To make sticker removal more difficult, plates should have depressed areas where stickers are to be located. 3M Validation Security Sheeting has been designed to be compatible with license plates made from 3M reflective sheetings. Before using Sheeting on any other surface, users should verify proper adhesion performance.

5 Fabrication

Stickers made from Sheeting can be numbered consecutively using consecutive numbering machines. Application instructions may be printed on the protective paper liner before numbering and color processing the face sides.

5.1 Printing

The Sheeting may be imaged using letterpress, offset, or thermal transfer printing methods.

Customers are responsible for determining the suitability and processing requirements of any other printing method, and for validating final print quality. Some printing options may require additional processing of Sheeting before printing to achieve durable, high-quality print.

Contact your 3M Transportation Safety Division representative for further information regarding 3M recommended printing applications.

5.1.1 Letterpress and Offset Printing

Background color fields, state seal reproductions, and state border outlines may be color processed using 3M™ Press Color Printing Inks Plastic Series 200 Letterpress or 3M™ Plastic Series 220 Offset Inks.

Note: Series 200 letterpress inks and the Series 220 offset inks are manufactured in a non-ISO certified manufacturing facility.

5.1.2 Thermal Transfer Printing

For durable, long-lasting print, 3M recommends the use of R300 and R510 thermal transfer ribbons on 3M validation sheeting.

5.2 Clear Coating

Roll Coating - Clear coat all press printed designs and serial numbers with 3M™ Clear Coat 260 for stickers with surface exposure lives of up to 2 years and 3M™ Clear Coat 265 for stickers with surface exposure lives of more than 2 years (such as 5-year “month” stickers). A minimum clear coat dry thickness of 0.0004 inches (0.4 mil) should be obtained.

Note: Carefully read all safety precautions on clear coat labels.

Drying - 3M Clear Coat 260 may be oven dried and 3M Clear Coat 265 must be oven dried. For specific information, refer to [3M Product Bulletin 260](#) and [3M Product Bulletin 265](#). To prevent blocking, clear coats must be completely dry before sheets are stacked or packaged.

6 Cutting

Stickers may be cut from stacks of Sheeting up to 100 sheets thick using a power guillotine, or die cut one sheet at a time.

7 Cleaning

Stickers made from Sheeting should be cleaned either with a soft cloth or brush, using warm water and soap, followed by a clean water rinse, or with a non-abrasive automobile cleaner or polish. Tar, oil, and road film can safely be removed using a cloth moistened with kerosene.

8 Storage

Sheeting should be stored in a cool, dry area and used within one year of date of receipt.

9 Health and Safety Information

Read all health hazard, precautionary, and first aid statements found in the Safety Data Sheets (SDS) and Article Information Sheets for important health, safety, and environmental information. To obtain SDSs and Article Information Sheets for 3M products, go to 3M.com/SDS, contact 3M by mail, or for urgent requests call 1-800-364-3577.

10 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.3M.com/roadsafety>.

11 Literature References

3M PB 260	3M™ Clear Coat 260 For use on Annual Stickers
3M PB 265	3M™ Coat Clear 265 For use on Multi-Year Stickers
PB 200 and 220	3M™ Scotchlite™ Transparent Printing Ink Series 200 and 220

ASTM Test Methods are available from ASTM International, West Conshohocken, PA.

For Information or Assistance

Call: 1-800-553-1380

In Canada Call:

1-800-3M HELPS (1-800-364-3577)

Internet:

<http://www.3M.com/roadsafety>

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