



Traffic Safety and Security Division

# 3M™ Diamond Grade Conspicuity Marking

## Series 983 for Large Vehicles (ECE 104)

March 2018

### 1 Description

3M™ Diamond Grade™ Conspicuity Marking Series 983 for Large Vehicles are highly retroreflective microprismatic markings that meet and exceed the requirements of ECE 104, designed to enhance the visibility of the sides and rear of trucks and the front, sides and rear of trailers. The reflective marking consists of prismatic lenses that are formed in a transparent, synthetic resin, sealed and backed with a pressure sensitive adhesive and clear polymeric liner. Diamond Grade Conspicuity Markings are highly durable providing up to ten years of field performance. 3M's Series 983 markings have excellent angularity which provides enhanced visibility for drivers. Combined daytime brightness and retroreflection provide 24-hour enhanced visibility and detection.

### 2 Easy to Apply

- Aggressive pressure sensitive adhesive
- Easy to remove liner
- Available in rolls, packaged pieces, or kiss-cut pieces on a roll. Please refer to the 3M Traffic Safety and Security Division Pricing Catalog for the standard product offering.

### 3 Durable

- Pre-sealed edges
- Non-metallic construction
- 10-year warranty (see terms and conditions below)

Product Code	Color
983-10	White
983-71	Yellow
983-72	Red
983-21	Fluorescent Yellow

## 4 Application and Uses

Application and use of Conspicuity Marking Series 983 on Large Vehicles is described in ECE regulation No. 48. "Conspicuity marking" means a device intended to increase the conspicuity of a vehicle, when viewed from the side or rear (or in the case of trailers, additionally from the front).

## 5 ECE Regulation

Series 983 is approved as Retro-Reflective Markings for Vehicles of Category M, N and O according to ECE regulation No. 104 Class C with E1 type approval No. 00821.

## 6 Typical Physical Characteristics

The table below provides the typical physical characteristics of Series 983. The information in the table below should be considered typical only and should not be used for specification purposes.

Property	Description
Adhesive color and type	Clear, pressure sensitive
Liner	Translucent polymeric
Application surfaces	Metal or painted metal flat without rivets
Heat resistance	Maintains 80% of original coefficient of retroreflection at ( $\alpha=0.33$ , $\beta=5$ ) after 24 hr. exposure to 65° C air
Recommended minimum application temperature (ambient and substrate)	+10°C
Performance range	-30° C to +65° C

## 7 Maintenance

### Cleaning

Routine washing is recommended for maximum performance. The following cleaning methods are recommended.

- Wash with sponge, cloth or soft brush using water and detergent.
- Automatic truck/car wash or standard high-pressure hand spray:
  - Maximum pressure: 80 bar.
  - Maximum water/wash solution temperature: 60° C.
  - Minimum 60 cm distance of cleaning jet(s) from markings.
  - Water/wash solution flow rate maximum 7 l/min.
  - Cleaning wand or jets to be at no greater angle than 45 degrees from perpendicular to the marking surface.
  - Use 40 degree nozzle creating wide fan pattern.
- When using metal brighteners, follow manufacturer's recommendations for dilution. Thoroughly rinse from markings after soaking vehicle.

## Storage

- Cool, dry area out of direct sunlight.
- Temperature 18°C - 24° C, humidity 30-50%.
- Store rolls horizontally, in carton or in original packaging.

## Shelf Life

- Apply Series 983 for Large Vehicles within one year of receipt of material.

# 8 General Performance Considerations

Series 983 for Large Vehicles will provide maximum durability when:

- All 3M™ recommended procedures are followed.
- Marking is applied to vertical surfaces (within  $\pm 10^\circ$  from vertical).

Durability will depend on customer use. Failure to follow the 3M-required techniques may reduce durability. Below are some examples and conditions that may lead to reduced durability:

- Failure to cut markings around rivets, seams and body panels.
- Improper use of high pressure cleaning.
- Contact with non-recommended chemicals or solvents.
- Improper application or surface preparation.
- Horizontal exposure is not recommended.
- Open cells along the edge of the marking may collect dirt but will not reduce the performance of the marking.
- Damage due to external conditions may show loss of adhesion and reflectivity in the immediate area.

# 9 Warranty

## 3M Basic Product Warranty

3M™ Diamond Grade™ Conspicuity Marking Series 983 for Large Vehicles (“Product”) is warranted (“Basic Warranty”) to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this product bulletin. If the Product is proven not to have met the Basic Warranty on its shipment date, then a buyer’s exclusive remedy, and 3M’s sole obligation, at 3M’s option, will be a refund or replacement of the Product.

## Additional Warranty

3M™ warrants (“3M Warranty”) that a Product sold by 3M to be used for conspicuity markings on Large Vehicles in Europe will remain visible by resisting excessive fading, cracking, peeling, lifting or discoloration for a period of ten (10) years from the date of original installation (“Installation Date”).

### Terms and Conditions

Product must be processed and applied to a vertically-mounted ( $\pm 10^\circ$ ) 3M recommended substrate as described in this product bulletin and in accordance with all 3M application and fabrication procedures provided in 3M’s product and information folders (including but not limited to IF 4.9), general performance considerations given in this product bulletin, and applicable technical memos (which will be furnished to the manufacturer upon request). Any third-party imaging or altering of the Product not endorsed by 3M will void the 3M Warranty. A Product’s failure to meet the 3M Warranty must be solely the result of design or manufacturing defects in the Product and not of (a) outside causes including improper storage, fabrication, handling, maintenance or installation; (b) use of process colors, thinners, coatings or other chemicals not recommended by 3M; (c) use of application procedures not recommended by 3M; (d) exposure to chemicals or solvents not recommended by 3M; (e) abrasion and other physical damage; (f) snow or any other burial of the marking; (g) collisions, vandalism or malicious mischief; (h) or an act of God. 3M reserves the right to determine the method of replacement.

Replacement product will carry the unexpired warranty of the Product it replaces. Claims made under this warranty will be honored only if 3M is presented with a traceable record of the Product’s Installation Date. Claims made under this warranty will be honored only if 3M is notified of a potential failure within thirty days of discovery, reasonable information requested by 3M is provided, and 3M is permitted to verify the cause of the failure.

### Exclusive Limited Remedy

If the Product is proven not to have met the 3M™ Warranty during the Warranty Period, then the purchaser’s and user’s exclusive remedy, and 3M’s sole obligation, at 3M’s option shall be that 3M will provide replacement of the Product or refund the purchaser’s original cost.

## 6.1 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.

## 6.2 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.

## 6.3 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.

## 7 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>.

## 8 Literature References

IF 4.9                      Application Instructions for Diamond Grade Conspicuity Markings Series 983

### 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:



**3M Deutschland GmbH**  
**Transportation Safety Laboratory**  
Carl-Schurz-Straße 1  
41453 Neuss  
Tel: 02131/14 3394  
Fax: 02131/14 3694

**All rights reserved**  
Product Bulletin 983 / 03.2018  
© 3M 2018. All rights reserved.