A different kind of bright: Fluorescent

Science of fluorescence

Fluorescence command the attention of drivers – day and night – and is particularly effective in low-light conditions like dawn, dusk and inclement weather.

Fluorescent sheeting makes efficient use of light by converting invisible light to visible light.

Night **Day**

3M™ Diamond Grade™ DG³ Reflective Sheeting with 3M fluorescent technology

Standard

How signage made from 3M™ Diamond Grade™ DG³ Reflective Sheeting can help improve safety

3M™ Diamond Grade™ DG³ Reflective Sheeting can make a difference by making signage brighter and more visible in all lighting conditions. Innovative full-cube prismatic technology returns more light to drivers at greater distances.

3M™ Diamond Grade™ DG³ Reflective Sheeting has twice the brightness of our lower-grade sheeting. Brighter sheeting is more visible to drivers and has been shown to increase safety by cutting nighttime crashes by 25 to 46 percent.[4]
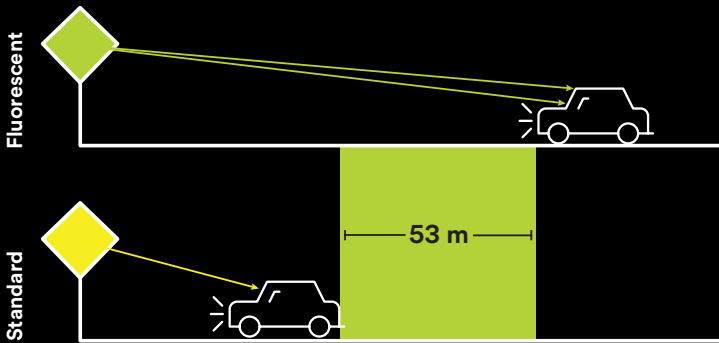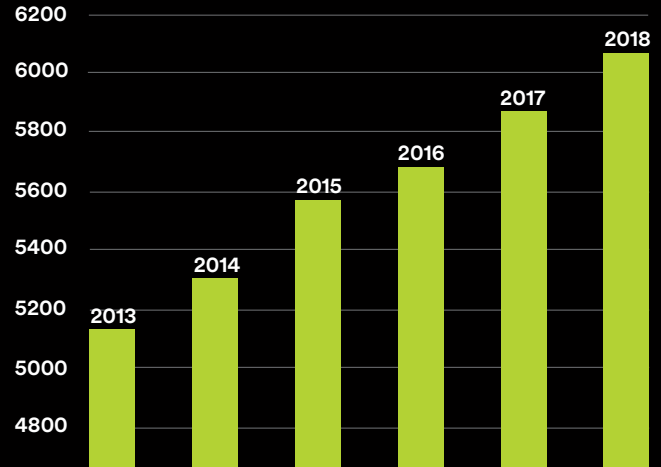
25-46%

crash reduction over a three-to six-year period, where brighter signs, like 3M™ Diamond Grade™ DG³ Reflective Sheeting, were installed[4]

A different kind of bright: fluorescent

Aging drivers

With an aging population on the road it's important to ensure road infrastructure is designed for high visibility during the day and at night.[1]

Driving Population Estimate (65-89 years)[8]

Year	Estimate
2013	~5150
2014	~5320
2015	~5580
2016	~5680
2017	~5860
2018	~6060

Fluorescent

Standard

53 m

- **Drivers detect fluorescent signs an average of 53 m sooner than their non-fluorescent counterparts during the day.**

- **This significant difference was even larger within the 55-75 age group.[2]**

Hidden hazards

There are places where the number of crashes are higher than average. Common hidden hazards are

- Sharp corners
- Hills
- Winding roads
- Hidden intersections
- Poor or concealed warning signs

Backplates with retroreflective borders

up to

15%

reductions in total crashes[5]

Enhanced delineation and friction for horizontal curves

up to

10%

reductions in injury and fatal crashes[6]

Advanced warnings of stop controlled intersections

up to

25%

reduction in nighttime crashes[7]

Fluorescent yellow sheeting appears most effective where the roadway geometry or obstructions hide the hazard for which the sign is providing the only warning.[3]

Preparing for a revolution

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Our roadways are the site of a revolution. Long-dreamed-of self-driving vehicles are becoming a reality. Already, most newer cars use machine vision to support advanced driver assistance systems like lane keeping and lane departure warning. But for this driving revolution to continue to evolve, our infrastructure must evolve as well. Roadway and vehicle materials are being designed for human eyes as well as for the cameras, radar and lasers of Connected and Automated Vehicles (CAVs) so they can interpret the surrounding environment and quickly respond.

Smarter vehicles rely on smarter infrastructure.

Advanced Road Markings

Durable, high-contrast pavement markings like 3M™ Connected Roads Contrast Tape Series 380ADAS help to deliver more consistent detection by human and machine vision than non-contrast products.

Brighter, Smarter Signs

Bright, retroreflective traffic signs help provide better readability, which results in more accurate navigation and faster decision-making for drivers.

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2. Jenssen, G.D., J. Moen, B. Brekke, A. Augdal, and K. Sjohaug, *Visual Performance of Fluorescent Retroreflective Traffic Control Devices, Part 1: Human Factors Visibility Study*, Report No. STF22 A96606, Sintef Transport Engineering, Trondheim, Norway, 1996
3. Eccles & Hummer, *Safety Effects of Fluorescent Yellow Warning Signs at Hazardous Sites in Daylight*, (2000)
4. Ripley, D., Howard R. Green Company, ITE AB04H313
5. CMF Clearinghouse, CMF ID 1410.
6. South Carolina DOT
7. CMF Clearinghouse, CMF IDs 2438 and 2439
8. Stats Canada CANSIM Table 052, Projection scenario M5: medium growth 2009/1010 to 2010/2011 trends