

**3M** Science.  
Applied to Life.™



3M Traffic Safety and Security Division

**For all roads.  
For every mile.  
One bright solution.**

**3M™ Diamond Grade™ DG<sup>3</sup>  
Reflective Sheeting Series 4000**

Miles away on back roads or just down the block, 3M Diamond Grade DG<sup>3</sup> sheeting provides dependable signing. With superior reflectivity at both short and long distances, DG<sup>3</sup> delivers the visibility drivers need.



# Improving visual cues.

For over 75 years, 3M products have provided bright solutions for challenges to roadway visibility. We continue that tradition today with clear road signs for drivers in any vehicle, wherever they might be.

Creating the right signage begins with identifying the factors that create difficult driving environments, such as:

- VOA, low cut-off headlights that reduce sign visibility by as much as 53 percent<sup>1</sup>.
- Varied vehicle sizes that create many different sign observation angles.
- An increased population of older drivers which means more motorists with slow response times and increased visual needs.<sup>2</sup>
- Comes in standard and fluorescent colors.

## Visible road signs for every vehicle.

3M Diamond Grade DG<sup>3</sup> Reflective Sheeting Series 4000 uses full-cube retroreflective technology to increase sign performance at all hours for all drivers. According to one study, over a three to six-year period, crash numbers dropped by 25 to 46 percent where brighter signs, like Series 4000, were installed.<sup>3</sup>

## Top performance when you need it.

Even in disadvantaged locations, Series 4000 provides dependable signing for every driver. In fact, it is nearly 100 percent efficient whether viewed from short or long distances.

## Bright for longer.

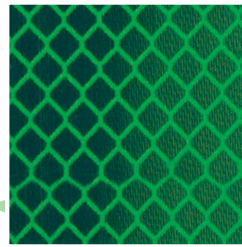
DG<sup>3</sup> provides protection longer than lower grade sheetings with its industry-leading life expectancy of 12 years. This durable option is a simple, efficient solution that keeps signs visible. It may also require less maintenance and reduce energy expenses.

**12 Year**  
Warranty

\*vs. traditional sheetings



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- ← 100% efficient full-cube technology
- ← Returns almost 2X more light\*
- ← Broad observation angles



Get durable visibility for your roads with  
**3M™ Diamond Grade™ DG<sup>3</sup> Reflective Sheeting Series 4000.**

3M Traffic Safety and Security Division

# Outsmart the Dark With 3M™ Diamond Grade™ DG<sup>3</sup> Reflective Sheeting

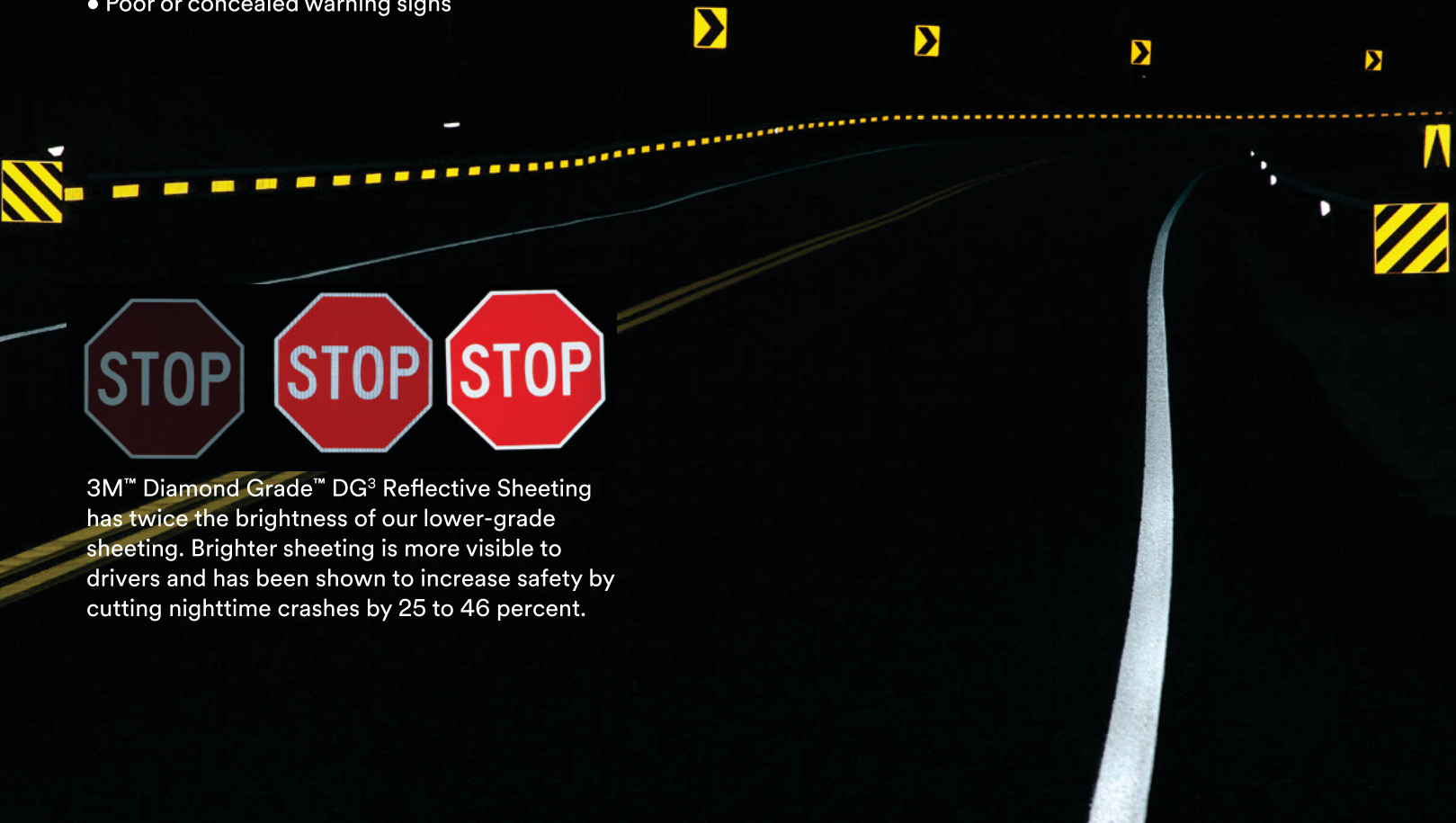
## Using science to turn black spots into bright spots.

Black spots are places where the number of crashes is higher than average. Often the reason for black spots is the physical configuration of the road or intersection, such as:

- Sharp corners in a straight road, concealing oncoming traffic
- Hills or winding roads that limit visibility ahead
- Hidden junctions and intersections
- Poor or concealed warning signs



3M™ Diamond Grade™ DG<sup>3</sup> 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.





## How signage made from 3M™ Diamond Grade™ DG<sup>3</sup> Reflective Sheeting can help make black spots safer.

During the day, and especially at night, 3M™ Diamond Grade™ DG<sup>3</sup> Reflective Sheeting can make a difference by making signage brighter and more visible. Innovative full-cube prismatic technology enables reflective sheeting with the highest optical efficiency. Full-cube sheeting returns more light to drivers across a range of vehicle types and sign geometries. Brighter signs improve safety by giving drivers more time to react.

3M fluorescent technology, coupled with highly retroreflective sheeting, provides increased safety in difficult driving situations, such as work zones, as well as low-light conditions, such as dawn and dusk.

## The technology of traffic safety.

We believe crashes can be prevented. For over 75 years, we've been applying our science to push the boundaries of traffic safety. We're proud to design the systems, services and high-performance materials that will help create a safer future for drivers everywhere.



By creating reflective signage that works to reduce the number of black spots, 3M hopes to eliminate serious roadway crashes. Our prismatic sheeting solution contributes to a global traffic safety initiative established by the World Health Organization (WHO) and the United Nations Road Safety Collaboration: Decade of Action for Road Safety 2011–2020. This initiative — in addition to a similar drive launched by transportation leaders in the United States: Toward Zero Deaths — is working toward the goal of stabilizing and reducing the level of road traffic fatalities around the world by 2020.

**3M** representative

**Sitotehnika**

Jugoslovenska 2, 11250 Beograd  
Tel: +381 11 6581274, 6581275  
www.sitotehnika.rs  
office@sitotehnika.rs

**ST Graf**

Aerodromska 17, 71000 Sarajevo, tel: +387 33 719095, 66 002600, e-mail: sasastgraf@gmail.com  
Pilanska bb, 78000 Banja Luka, tel: +387 51 305280, 66 002400, e-mail: stgrafbl@gmail.com  
Lagja Kalabria pn, 10000 Priština, tel: +383 38 602080, 45 600641, e-mail: info@stgraf-ks.com  
Gorno Lisiče 210, 1000 Skopje, tel: +389 2 3245777, 78 279756, e-mail: office@stgraf.mk



## Curved roads at night. A dangerous combination.

According to a 2009 study by the National Highway Traffic Safety Administration, curved roads are more likely to be the scene of fatal run-off-road (ROR) crashes compared with straight roadways. Among the crashes that occurred on curved roads, 90.2% were ROR crashes, while among those that occurred on straight roadways, 62.1% were ROR crashes. In addition, ROR crashes are more likely to occur at night compared with the daytime. Among the crashes that occurred during nighttime, 74.2% were ROR crashes; while among those that occurred during the daytime, 66.5% were ROR crashes.

## More-visible signs result in lower accident rates.

Studies have found that where more-visible signs are installed, crash numbers have fallen 25 to 46% in 3 to 6 years.

*Ripley, D. A., Howard R. Green Company, ITE AB04H313, Quantifying the Safety Benefits of Traffic Control Devices — Benefit-Cost Analysis of Traffic Sign Upgrades, 2005 Mid-Continent Transportation Research Symposium Proceedings*

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## Needs less external lighting.

By returning the maximum amount of light to drivers, 3M™ Diamond Grade™ DG<sup>3</sup> Reflective Sheeting's innovative prismatic technology makes signs brighter and more visible — even at greater distances and various angles — reducing the need for external lighting on the signage. This is beneficial in both urban and rural environments.

## Long-lasting material requires less maintenance cost.

Besides being brighter, 3M Diamond Grade DG<sup>3</sup> sheeting is one of the most durable signage materials, with an industry-leading expected life of 12 years. DG<sup>3</sup> sheeting is better, safer and lasts longer than other 3M retroreflective sheeting, leading to lower costs and maintenance over time.



Reduction of the need for external illumination leads to a reduced cost: "With the highest brightness and retroreflectivity ratings in the industry, Diamond Grade DG<sup>3</sup> can safely lower installed road lighting costs by up to \$150,000 per km, and annual lighting maintenance by up to \$15,000 per km."

— *The Handbook of Road Safety Measures*, 2nd Edition. Rune Elvik, 2009.

## 3M™ Diamond Grade™ DG<sup>3</sup> sheeting can save far more than just money.

3M Diamond Grade DG<sup>3</sup> Reflective Sheeting has the proven performance that transportation agencies can count on. As one of the highest performing and most reflective sheetings in the industry, Diamond Grade sheeting can help save lives by decreasing crashes and may help lower related costs, such as medical, insurance expenses and emergency response costs. Overall, the small investment to upgrade to Diamond Grade sheeting goes a long way with the increased safety benefits.



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Jugoslovenska 2, 11250 Beograd  
Tel: +381 11 6581274, 6581275  
www.sitotehnika.rs  
office@sitotehnika.rs



Aerodromska 17, 71000 Sarajevo, tel: +387 33 719095, 66 002600, e-mail: sasastgraf@gmail.com  
Pilanska bb, 78000 Banja Luka, tel: +387 51 305280, 66 002400, e-mail: stgrafbl@gmail.com  
Lagja Kalabria pn, 10000 Priština, tel: +383 38 602080, 45 600641, e-mail: info@stgraf-ks.com  
Gorno Lisiče 210, 1000 Skopje, tel: +389 2 3245777, 78 279756, e-mail: office@stgraf.mk

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