

3M Science.
Applied to Life.™



Why 3M?

Because it all comes
down to trust, made
possible by 3M Science.

We're working on the science of safer roads.

For the past 75+ years, we have been a part of the ever-evolving driving experience and we understand our important role in making drivers safer. With our innovative collection of road markings and signage, we are preparing for the driving experience of the future. One that promises to be safer and more efficient.



Keeping people safe on the move for over 75 years.

As a global leader in retro reflective technology, 3M is committed to delivering innovative safety solutions designed to maximise visibility and safety on the road, in the workplace and general community.

We are committed to improve the safety of people on the move through applying science into innovative technologies, products, services and solutions.

3M Solutions extend into:

- Permanent and Temporary Traffic Signage.
- Vehicle Reflective Safety Markings.
- Pavement Line and Symbology Markings.
- Licence Plate Materials and Recognition Technologies.



Engineer Harry Heltzer, started “The Glass Beads Project” to develop a centreline material that was more visible than paint.



September 1, 1939, the first 3M reflective sign went up.

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3M researchers developed a new “flat-top” reflective sheet which later became known as Engineer Grade.

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About 3M

In your work, in your home, in your life - from smart phones to cars - 3M science is everywhere.

3M have been improving safety on our roads for over 75 years. By air, water or land. From cargo ships to scooters. We play an innovative role in more efficiently building safer, comfortable, attractive, durable and environmentally responsible modes of transportation. Whether you're catching a train or flying at 35,000 feet, you can count on 3M to move you forward.



*Together We can
Save Millions
of Lives.*

3M is committed to supporting the United Nation's Decade Of Action For Road Safety 2011 - 2020



Science is in our DNA.

We are a company of curious minds and problem solvers working together to meet the needs of our customers and the world around us. Through financial support, volunteering and educational outreach, we're inspiring communities all over the world to achieve more. And with ongoing sustainability initiatives we're committed to improving our business, our planet and every life.





Peace of mind through guaranteed performance, durability and compliance.

High-quality reflective sheeting for warning, regulatory, guidance, non-critical traffic signs and delineation devices. 3M continues to be the technology leader, meeting the visual requirements of human and machine vision in today's increasingly complex and demanding roadway environment.

3M stands behind this revolutionary technology with up to 12 years full replacement warranty for permanent signs. A longer warranty protects your sign investments, and provides the best life-cycle value.

When it comes to supplying products for the transportation safety industry, we are committed to continuously developing new innovative technologies, products and solutions to improve the safety of people on the move.

High safety performance, for the life of your most critical signs.

Best Practice Formula for Traffic Safety Signage



3M Signs help save lives. Make it count. Your community, family and friends are relying on your decisions to be the safest ones.

CLASS 400

AS/NZS Class 400 For Standard-Positioned Permanent Traffic Signs

3M High Intensity Prismatic Grade™ Series 3900 delivers light to where it is needed.

Suitable for most general signage applications.

CLASS 1100

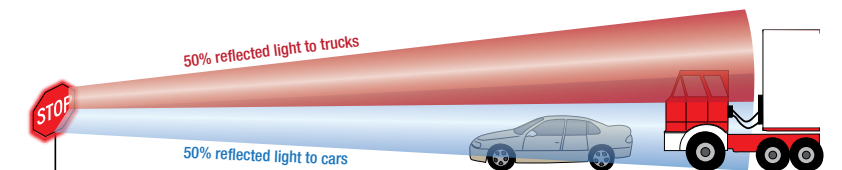
AS/NZS Class 1100 for “High-Risk” Regulatory & Disadvantaged Positioned Signs

3M Diamond Grade™ DG3 delivers an extra 30% of light, through a wider cone of light.

By upgrading to DG3, you will enjoy greater sign luminance and faster sign detection for cars, 4WDs and trucks; all types of disadvantaged sign locations.

Upgrade Your Sign Size

Increasing the size of a sign is a cost effective way that can improve faster sign detection and can provide road users more time to respond safely to hazards ahead.



Upgrade to a Class 1100 Fluorescent Yellow

A cost effective way to improve sign safety performance is to upgrade to a Class 1X Fluorescent Yellow. A 3M Diamond Grade™ DG3 sign not only delivers outstanding, wide-angle reflectivity at night, but also generates increased visibility to motorists during daytime and twilight hours.

Fluorescent colours are an effective treatment that can help bring new functionality to old signs. They can enhance luminance, visibility and road users' detection. Studies show that road users can make an increased number of eye fixations on the sign in subsequent passes through a zone containing the signage.²

TABLE IV-7, Highway Safety Improvements With The Highest Benefit-Cost Ratios 1974-1995, United States FHWA

1. Road Safety Facts. Asirt Association for safe international road travel, viewed 23 November 2016, <<https://asirt.org/Initiatives/Informing-Road-Users/Road-Safety-Facts>>

2. T Schnell, P. Ohme, Transportation Research Board (TRB) Paper #01-2584, Jan 2001

Road trauma is a big issue

ROAD TRAFFIC INJURIES PLACE AN IMMENSE BURDEN ON HOSPITALS & HEALTH SYSTEMS



5th LEADING CAUSE OF DEATH BY 2030

Unless action to curb the road toll is effective, road traffic injuries are predicted to become the fifth leading cause of death in the world by 2030.¹

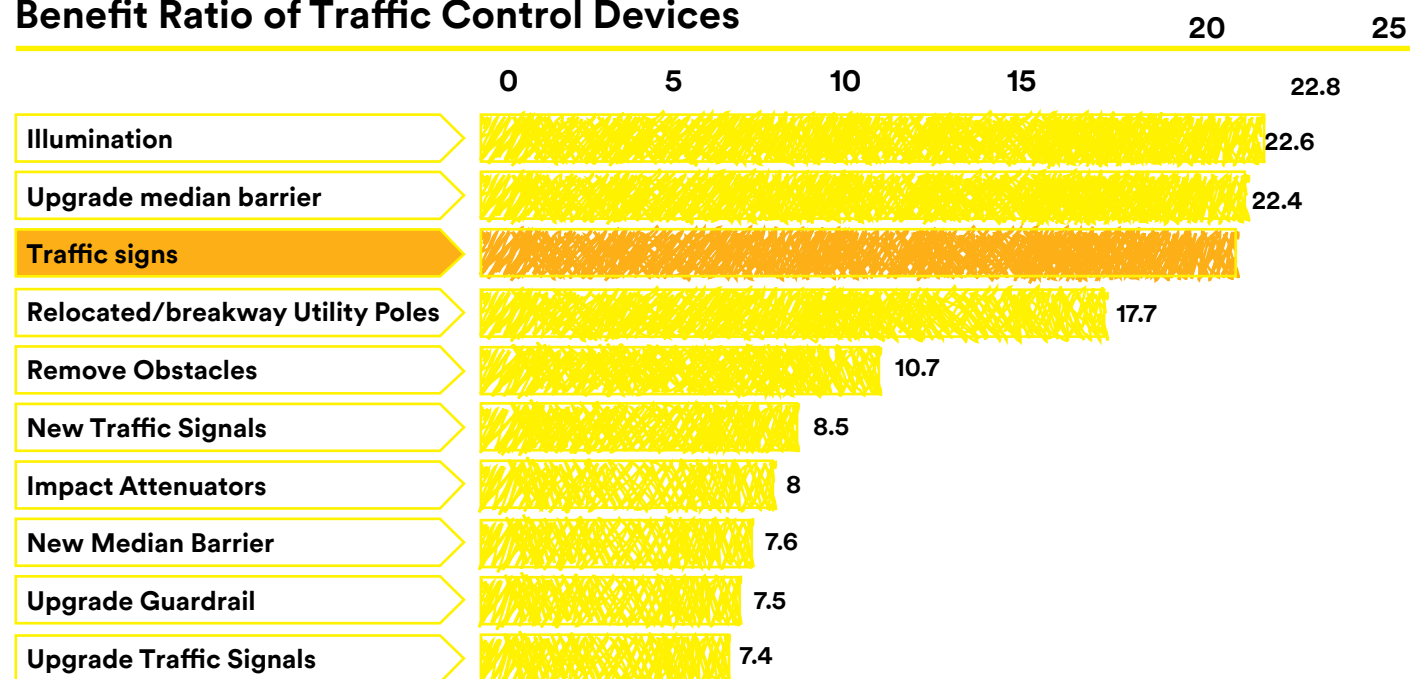
We're working on the science of safer roads to get everyone home safe.

3M Signs help save lives. Make it count.

Your community, family and friends are relying on your decisions to be the safest ones.

Signs are one of the most cost-effective treatments to reduce incidents in your community.

Benefit Ratio of Traffic Control Devices



Do your signs comply?

AS/NZS1906.1-2017 Quick Overview

3M™ Diamond Grade™ DG3 Series 4000

Attributes of product:
Provides both wide entrance and observation angle performance from long to short distances.

Best usage:
Ideal for high truck traffic, multi-lane roads or for disadvantaged signs. Or where there is high sign clutter / interference.

Class 1100

3M™ Diamond Grade™ VIP Series 3990

Attributes of product:
Provides wide angle performance at short to medium distances.

Best usage:
Left hand mounted signs on rural roads, chevrons and high-risk sections of road.

Class 900

3M™ High Intensity Prismatic Series 3930

Attributes of product:
Good general use sheeting, for single lane carriage way with predominately car use.

Best usage:
Left hand mounted signage and street name blades.

Class 400

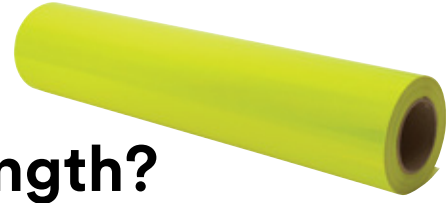
3M™ Engineer Grade Prismatic Series 7900

Attributes of product:
Low level reflective sheeting used where sign information is of low importance.

Best usage:
Parking signs and commercial applications.

Class 100

Fluorescent colours can help enhance visibility.



Is your sign on the same wavelength?

Fluorescent colours provide increased visibility during hours of daylight. Not only are fluorescent colours more visible because they are very intense, they also have a unique property that makes them stand out to the human eye compared to other colours.

When light/energy leaves the sun, it travels in a wide range of wavelengths, some of them visible to the human eye, some not. When this light/energy eventually strikes a surface, some of it is absorbed by the object and some is reflected into the human eye, which interprets this reflected electromagnetic radiation as colour.

The power of fluorescence is the ability to take some of the invisible short wave light/energy and re-radiate the energy as longer, visible light waves. In short, fluorescent colours fluoresce, or “glow in daylight”, because they turn invisible waves of energy into visible waves of light.

Fluorescence combined with high performance reflectivity

3M applies fluorescent colours to selected 3M Diamond Grade™ and High Intensity Prismatic Reflective Sheeting. The high performance reflectivity and superior angularity of 3M Diamond Grade™ Reflective sheeting, combined with the high visibility of fluorescent colours ensures maximum visibility for traffic control signs in the places and at the times they are most needed.

DG³ = Greater visibility, 24 hours a day

Day



Twilight



Night



Outstanding visibility at twilight and day time

A highly fluorescent layer generates extra light, in daylight and twilight hours.

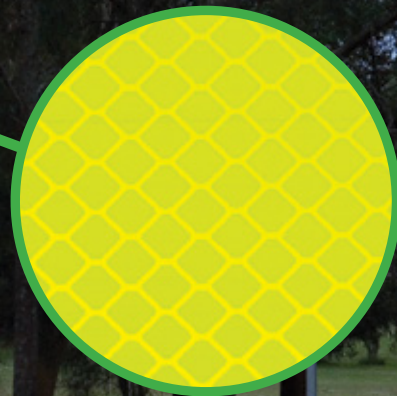


Outstanding visibility at night

DG³ prismatic structure delivers outstanding retro reflective performance at a large range of viewing angles, and distances most noticeable during twilight and night.

Suggested uses are:

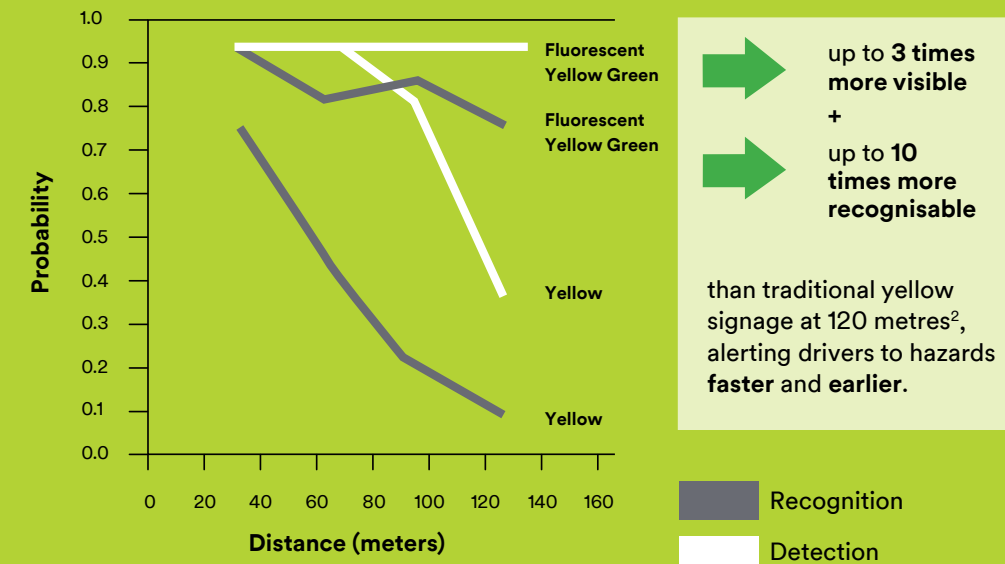
- Fluorescent yellow for warning signs
- Fluorescent yellow green for school zones and pedestrian signs
- Fluorescent orange for work zones

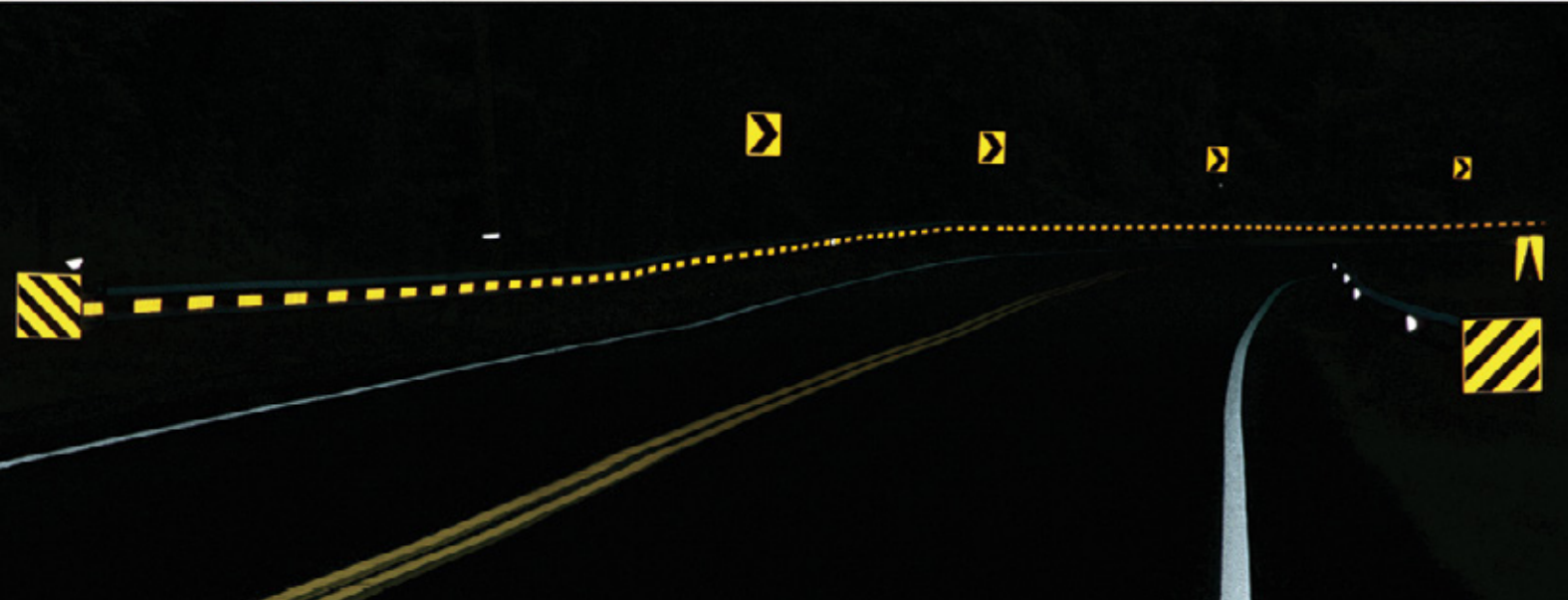


Detection & Recognition Probability of Fluorescent Yellow/Green Signs vs Standard Yellow Signs¹

Fluorescent Yellow/Green Helps Save Lives

An independent study found that *fluorescent yellow/green* coloured signage in particular can be:





Outsmart the Dark in High-Risk areas with 3M Diamond Grade™ DG3 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

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.*

How signage made from 3M™ Diamond Grade™ DG3 Reflective Sheeting can help make black spots safer.

During the day, and especially at night, 3M™ Diamond Grade™ DG3 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.



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 night time crashes by 25 to 46 percent.

The technology of transportation 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 is working toward the goal of stabilizing and reducing the level of road traffic fatalities around the world by 2020.

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.

3M Diamond Grade™ Cubed (DG³) Reflective Sheeting

3M Diamond Grade™ DG³ Reflective has outstanding reflectivity at every viewing angle, at every viewing distance and in all weather conditions. It satisfies or surpasses the most demanding performance specifications. By using 3M Diamond Grade™ Reflective Sheeting you'll be giving drivers the best chance of reading and understanding your road signs. They'll see them sooner and they'll see them for longer, giving drivers those vital extra moments to make their decisions and to drive more safely.

Best usage:

Ideal for high truck traffic, multi-lane roads or for disadvantaged signs. Or where there is high sign clutter / interference.

Product Features and Benefits:

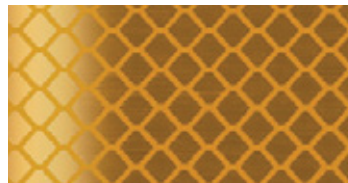
- Innovative full cube corner technology giving outstanding performance at every angle and every viewing distance.
- Optimal performance in the most challenging environments, where and when drivers need it most.
- Exceptional performance in short, medium and long viewing distances.

Product	Standards Approval	Warranty	Colours				
			White	Yellow	Fluoro Yellow	Fluoro Yellow Green	Fluoro Orange
3M Diamond Grade™	AS/NZS 1906.1 Class 1100	10 - 12 years*	4090	4091	4081	4083	4084

*For full details of the 3M Extended Warranty for Permanent signs, speak to your local 3M representative or visit www.3Mreflective.com.au or www.3Mreflective.co.nz



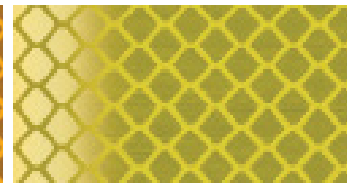
White - 4090



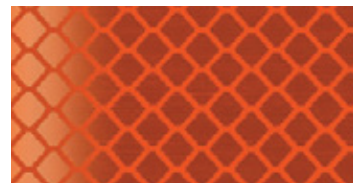
Yellow - 4091



Fluorescent Yellow - 4081



Fluorescent Yellow Green - 4083



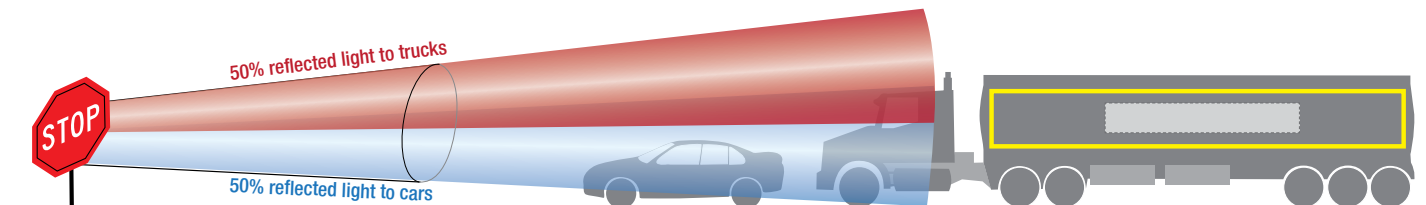
Fluorescent Orange - 4084



Visibility from every angle, for every driver.

Traditionally, truck drivers have been disadvantaged because the majority of reflected light from road signage is directed towards the car driver's eye level, leaving minimal reflectivity spared for truck drivers (who sit higher above the road). This is a major safety concern considering trucks require significantly more notice and braking distance than cars.

3M Diamond Grade™ DG3 Sheeting is constructed from prismatic optical lenses that are theoretically 100% light efficient, capable of reflecting almost double the amount of light compared to traditional cube corner prismatics. This unique feature has enabled DG3 Sheeting to deliver a wider distribution of light to cars and trucks, from greater distances and angles, ensuring all vehicles are alerted to critical signs faster and earlier.



NEW 3M™ Diamond Grade™ VIP Reflective

Summary:

- Works best in short distances/high angle. This distance is critical as it is the activation distance, at which point the driver needs to be able to read the sign and take action.
- Wide observation angle prismatic sheeting that provides excellent reflective performance at short distances.
- Gives bright and clear instructions to drivers in complex road networks, such as rural environments where the benefit of warning distance might not be possible - such as road bends or multiple hazards in succession.

Best usage:

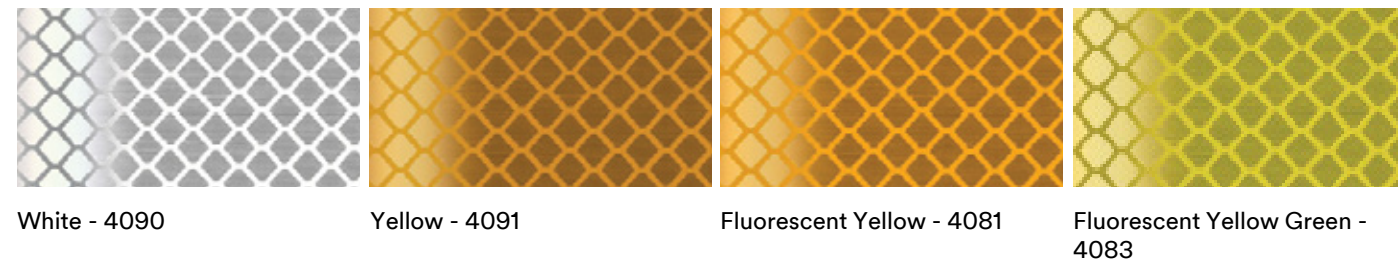
- Signs that feature around a bend and require excellent short distance retro reflective performance such as directional, hazard signs and chevrons.
- Rural environment to provide maximum warning around unexpected road terrain such as descent on the road, road climb, dip, crest, side road junction and gravel road.
- Need additional warning to class 1 performance.

Best usage:

Signs that feature around a bend and require excellent short distance retro reflective performance such as directional, hazard signs and chevrons.

Product	Standards Approval	Warranty	Colours			
			White	Yellow	Fluoro Yellow	Fluoro Yellow Green
3M VIP	AS/NZ 1906.1 Class 900	10 Years*	3990	3991	3981	3983

*For full details of the 3M Extended Warranty for Permanent signs, speak to your local 3M representative or visit www.3Mreflective.com.au or www.3Mreflective.co.nz



3M High Intensity Prismatic Reflective Sheeting

Summary:

- 3M High intensity prismatic sheeting has a good all round performance and provides a cost effective way of communicating to road users.

Best usage:

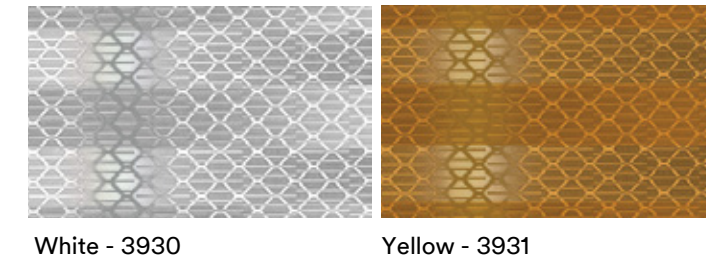
- Excellent for general traffic control signs in non-disadvantaged positions.

Best usage:

General traffic control signs in non-disadvantaged positions and street name blades.

Product	Standards Approval	Warranty	Colours	
			White	Yellow
3M High Intensity Prismatic	AS/NZS 1906.1 Class 400	10 years*	3930	3931

*For full details of the 3M Extended Warranty for Permanent signs, speak to your local 3M representative or visit www.3Mreflective.com.au or www.3Mreflective.co.nz





3M Advanced Engineer Grade Prismatic Reflective Sheeting.

3M™ Advanced Engineer Grade Prismatic Sheeting 7900 Series uses innovative Micro-seal technology helping enable uniform, workable, and durable prismatic sheeting for non-critical signage applications. With its consistent appearance makes 3M Engineer Grade sheeting brilliantly visible 24/7.

3M Advanced Engineer Grade combines prismatic performance and durability with the easy-handling characteristics of beaded reflective sheeting, making it an ideal choice for a variety of applications such as regulated and safety signage.

Best usage:
Parking signs and commercial applications.

Regulated Signage:

For regulated signage applications 3M Advanced Engineer Grade is available with a discreet identification mark as an assurance of authenticity that your material comes from 3M, a trusted brand known for quality and traffic safety leadership.

Non Regulated Signage:

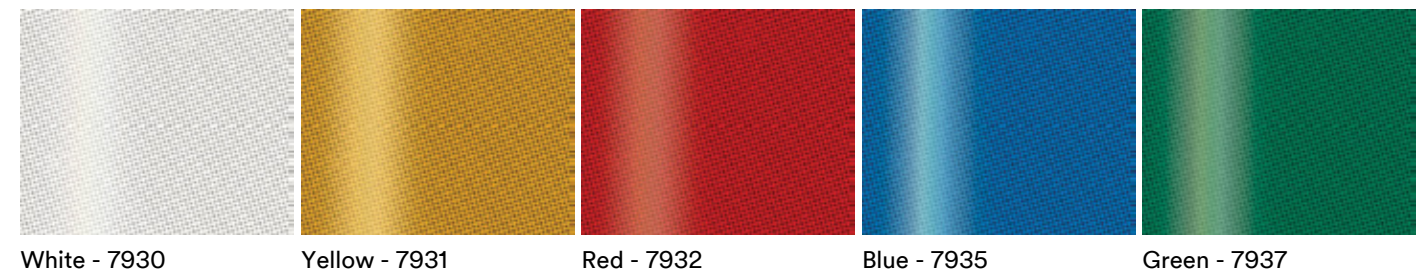
Where aesthetics are also required 3M Advanced Engineer Grade is now available with no identification markings in white and yellow.



Product Features and Benefits:

- High quality, durable material designed for traffic, safety and commercial applications.
- Available in bright white and standard traffic colours.
- Suitable for Sign Making by traditional methods and latest digital technology.

Product	Standards Approval	Warranty	Colours				
			White	Yellow	Red	Blue	Green
Engineer Grade Prismatic	AS/NZS 1906.1 Class 100	7 years*	7930	7931	7932	7935	7937





**Guaranteed 3M performance.
Guaranteed 3M durability.
Guaranteed 3M compliance.**

3M Extended Warranty Statement for Permanent Signage



3M Australia and New Zealand warrants that should a qualified sign fail during the warranted period, 3M shall meet the total cost of replacing the sign.*

3M Safety, 3M Peace of Mind.

3M Diamond Warranty Programme Certified Manufacturers

3M Diamond Warranty Programme Certified Manufacturers are authorised to provide the benefits of the 3M Extended Warranty for Permanent Signage. These Certified Manufacturers undergo robust audits and are subject to rigorous 3M manufacturing guidelines.

Each year, they are issued with a Certificate of Accreditation, validating their authority to provide the benefits of this Extended Warranty to their customers for that year. A copy of this Certificate should be requested from your manufacturer annually to ensure all signs manufactured within that year are covered. For a current list of 3M Diamond Warranty Programme Certified Manufacturers, call 3M on 136 136 or your local 3M Representative.

Are your signs covered?

1. Ensure that your sign manufacturer provides you with a current copy of the Certificate of Accreditation each year to ensure all signs manufactured within that year are covered.
2. Ensure your signs have a stamp or label on the rear of the sign. Details must include: a) manufacturer's name; b) date of manufacture; and c) class of material used.
3. Ensure that your signs are stored and handled in accordance with 3M's Guide to the Storage & Handling of Signs.

*For full details of the 3M Extended Warranty for Permanent signs, speak to your local 3M representative or visit www.3Mreflective.com.au or www.3Mreflective.co.nz



Insist on 3M from your signage provider today.

3M High Intensity Prismatic Road Work Sheeting

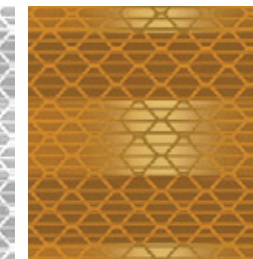
Product Features and Benefits:

- Outstanding performance and visibility to alert drivers of upcoming road work zones.
- 3800 series contains 3M easy identification markings to provide peace of mind it is a genuine 3M product.
- Suitable for Sign Making by traditional methods and latest digital technology.
- Withstands tough weather conditions.

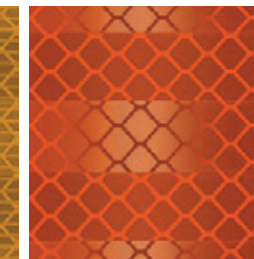
Product	Standards Approval	Colours		
		White	Yellow	Fluoro Orange
3M High Intensity Prismatic	AS/NZS 1906.1	3830	3831	3824



White - 3830



Yellow - 3831



Fluorescent Orange - 3824

**ROADWORK
AHEAD**

Improving Road Work Safety.

Just because a traffic sign is temporary does not mean that brightness and quality don't matter. The visibility of work zone traffic signs is critical in helping drivers safely navigate through unfamiliar and potentially hazardous road work zones.



Best practice: 3M Road Work Solutions

Creating a zone of safety



3M high visibility signage

WHAT THEY DO

Alert drivers to upcoming roadwork zones faster and earlier.



3M high visibility vehicle markings

WHAT THEY DO

Alert drivers and road workers to all moving and stationary vehicles around roadwork zones to prevent collisions.



3M high visibility cones, bollards and barriers

WHAT THEY DO

Highlight temporary lanes to help drivers navigate safely through the zone and protect road workers.

3M Reflective Sheeting, Tapes and Fabrics offer you a complete range of high quality reflective products, for every application: 3M Roadwork solutions extend into:



3M high visibility removable road marking tape

WHAT THEY DO

Highlight temporary lanes to help drivers navigate safely through work zones and protect road workers from collisions.



3M high visibility workwear

WHAT THEY DO

Increase visibility of road workers to motorists, alerting them to their presence earlier.

Digital Sign Making



Design. Print. Done.

Digital printing of traffic signs is the latest technology, boasting significant environmental benefits and cost savings in manufacturing traffic signs. This technology is widely accepted and is included in the 3M Diamond Warranty Programme*.

For many years traffic signs have been made by methods such as screen printing and multi coloured layering. While these traditional manufacturing methods are still commonly used effectively today,

3M is proud to offer an innovative third option: manufacturing signs through digital printing solutions. 3M approved digital sign production systems combine printers, inks and sheeting materials which guarantee high quality durable signs with excellent colour retention.

Digital production workflow begins with image manipulation - using commercially available sign pre-press software to compose printing runs. Once the printer is set up and running, the remainder of the printing process is automatic and requires minimal operator involvement.

Benefits of digital printing

- Opportunity to produce fully warranted signs, with a wider range of colourful reflective graphics and images.
- UV inks can eliminate VOC emissions associated with traditional solvent ink printing.
- Produce customised signs on demand.

3M™ Digital Diamond
Certified Manufacturer



*3M offers full sign replacement warranty for permanent digitally printed signs, made by 3M Digital Diamond Certified Manufacturers**

Overlamine Films

3M Overlamine Films are specially designed transparent films that can be laid over the top of a sign face to provide extra resistance to natural conditions like dew, environmental contaminants and nuisance problems such as graffiti. There is no appreciable loss in performance of the reflective sheeting underneath, but huge potential gains in protecting your investment.

3M 1150 Protective Overlay Film

3M Protective Overlay Film series 1150 is ideal for protecting sign faces against damage and deterioration due to natural and man made causes.

Product Features and Benefits:

- Signs can be cleaned to significantly restore performance and appearance, saving time and improving the lifecycle of the sign.
- Provides a protective overlay barrier to staining of many types of graffiti.
- Designed as a high performance protective transparent overlay for use on signs made from 3M sheetings, films, and images.
- Protects surface from environmental contaminants and UV degradation.

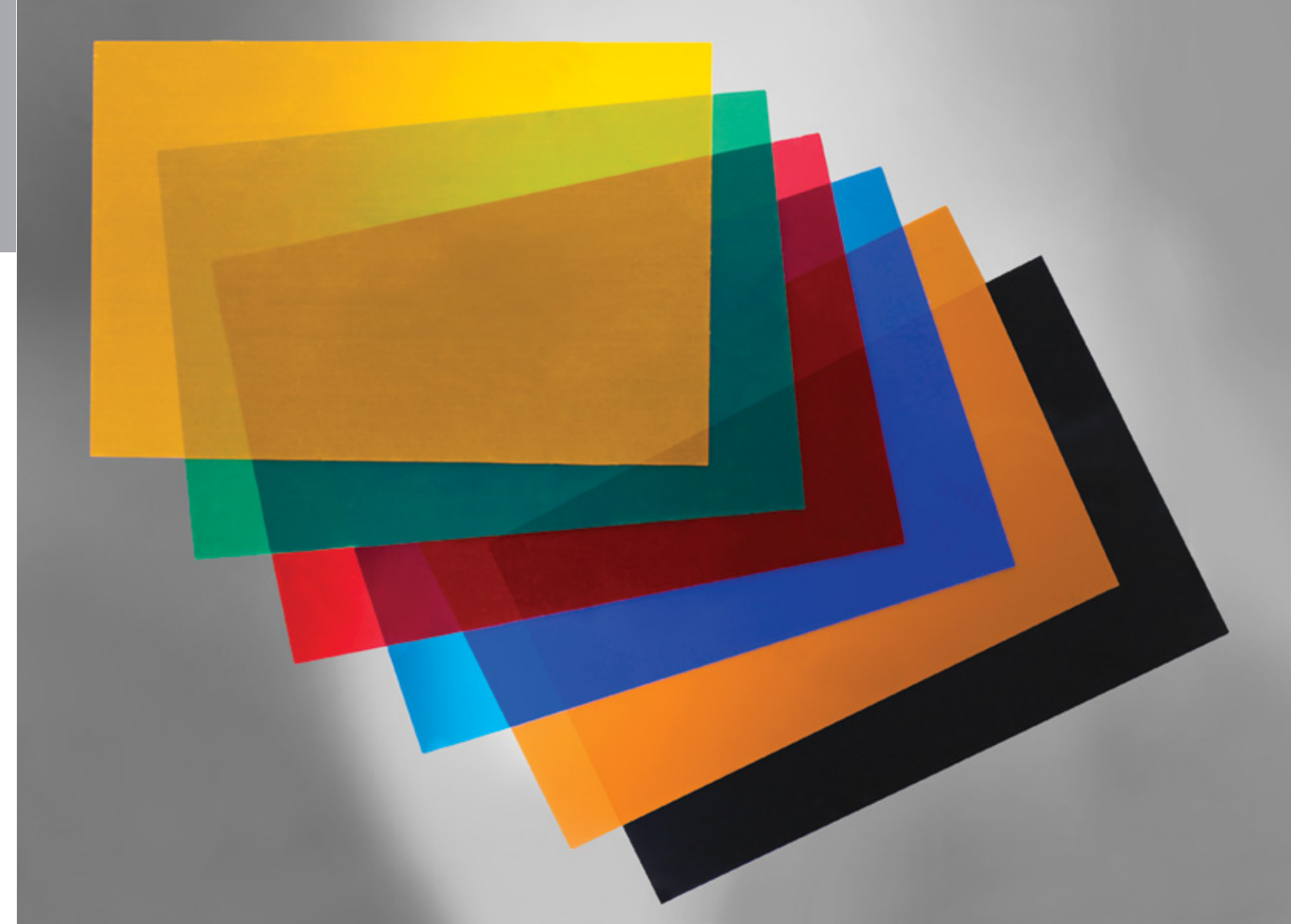
3M 1170 ElectroCut Cuttable Film (ECF)

3M ElectroCut™ Series 1170 film is designed to provide optimal cutting and weeding. It can be used to create coloured backgrounds, panels, text or symbols on traffic signs and is UV resistant.

Product Features and Benefits:

- Transparent, acrylic, coloured film used for application over 3M Reflective Sheeting to produce durable sign backgrounds, copy, and logos.
- Protects surface from environmental contaminants and UV degradation.

Product	Colours							
	Clear	Yellow	Red	Blue	Green	Std Green	Black	Brown
3M ElectroCut™ Cuttable Film (ECF)	1170	1171	1172	1175	1177	1176	1178	1179



3M 1180 Dew Resistant Film

The effects of dew droplets can be hugely detrimental to the reflective performance of road signs, with droplets potentially causing 'black-outs' on important parts of the sign. When dew forms the clear high surface energy film causes the condensing droplets to spread out and run from the sign face.

Product Features and Benefits:

- Restores retro reflective performance in high dew conditions.
- Protects surface from environmental contaminants.



Lighting up
a safe path
of travel.



Roadside Delineation Solutions

Delineator Markings

3M delineator markings are designed to provide the highest prismatic reflectivity alerting drivers to the direction of the road and obstructions earlier. Delineators are a cost effective road safety improvement that enhances driver safety where there is a need to call attention to changing road conditions, such as an abrupt roadway narrowing or curvature, or to provide additional guidance through a road work zone.

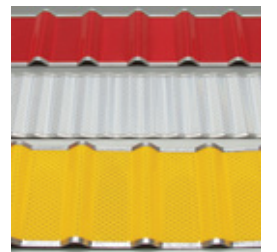
Traffic Cones

Reflectorised cones are the first choice in temporary traffic control for short-term road work zones, repair calls and emergency response. Traffic cones help to protect workers and motorists alike and they are easy to install and pick up after work is completed. 3M 3340 Flexible Series is the ideal choice for traffic cone sleeves as it provides wide angle reflective performance to maximise visibility.



Linear Delineation Panels

Linear Delineation Panels combine high performance 3M Diamond Grade™ Reflective Sheeting with a unique crimped design for optimal visibility, flexibility and angularity. Panels are available in fluorescent yellow colour that provide increased visibility from dawn to dusk, as well as at night.



Product	Colours			
	White	White	Yellow	Red
3M Delineation	983-10	3340	983-71	983-72



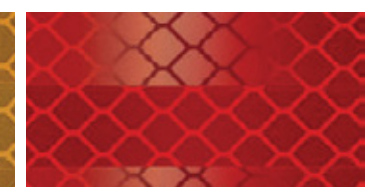
White - 983-10



White - 3340



Yellow - 983-71



Red - 983-72



3M Diamond Grade™ Reflective Marking Tapes

The Facts!

The risk of an accident between a truck and a car is 30 times greater when a truck does not have high visibility vehicle markings¹.

A truck with outline reflective markings is recognised earlier than an unmarked truck because they help to define the total size of the truck to other road users.

This gives other drivers more time to manoeuvre safely in traffic².

The average financial loss per truck incident costs fleet owners over \$118,000³ – in vehicle damage and repair costs alone.

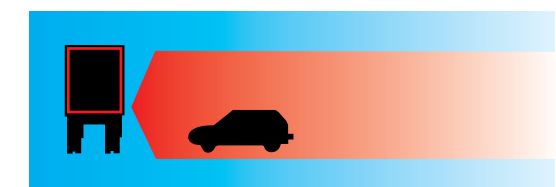
Best Practice

Full-contour and partial contour vehicle markings are recommended in Australia under the ATA Industry Technical Advisory Procedure for Heavy Vehicle Visibility. To be compliant to Australian Design Rule 13/00, 2005 guidance. (Appendix A – UNECE R48/03) the tapes must have performance, colours and dimensions compliant with UN/ECE104. Contour markings should cover at least 80% of the total length and width of the vehicle / trailer and should be as close as possible to the edges. Full contour markings are the preferred layout. Vehicle reflective Markings are also recommended in New Zealand by NZTA under “Land Transport Rule: Vehicle Lighting”. Contact 3M or your local authority for full information.

Potential results with improved truck visibility¹



41%
Rear outline visibility markings can reduce rear end collisions by up to 41%



37%
Side outline visibility markings can reduce side collisions by up to 37%

Improving Fleet Safety.

3M's Diamond Grade™ Reflective Tapes deliver outstanding vehicle visibility and improve safety by reducing the chance of an accident up to 30 TIMES¹. Accident reductions saves lives.

¹ Prof. Dr. -Ing. H.-J.Schmidt-Clausen, Laboratory of Lighting Technology, Darmstadt University of Technology: Contour Marking of Vehicles, Final Report FO 76/00.

² LBI Unfallforschung Austria: Viewing Behaviour Survey / 2001.

³ Owen P.Driscoll – Major Accident Investigation Report 2013 – National Centre for Truck Accident Research.

What material is recommended?

3M offer a complete range of ECE104-complaint reflective tapes for marking rigid and curtain sided heavy vehicles. These products provide outstanding reflectivity and durability, are easy to apply, and backed by 3M's technical and customer service.



Features	3M™ Diamond Grade™ Vehicle Marking Film Series 983	3M™ Diamond Grade™ Vehicle Marking Film Series 997
Typical Use	For application on rigid surfaces	For application on curtain-sides
Suitable Application Surfaces and Substrates	Aluminum, Stainless Steel, Automotive Paint	3M approved coated curtains, not older than 6 months
Durability	7 Years	3 Years
Standard Colour Range	White, Red, Yellow, Fluorescent Yellow	White, Red, Yellow
Adhesive Tape	Clear, Pressure Sensitive	Clear, Pressure Sensitive
ECE104 Compliant	Yes	Yes
Product Construction	Highly reflective prismatic construction	Highly reflective prismatic construction
Roll Size	50mm x 15m, 100mm x 15m, 50mm x 45.7m, 100mm x 45.7m, 55mm x 50mm	51mm x 50m
E-Mark	Selected Range (104 R – 00821)	Selected range (104 R 001507)
Adhesive Tape	Quickly and easily applied	Quickly and easily applied

3M™ Conspicuity Markings Traffic Safety & Security Series 983 & 997 - (Class 1A (C1A))



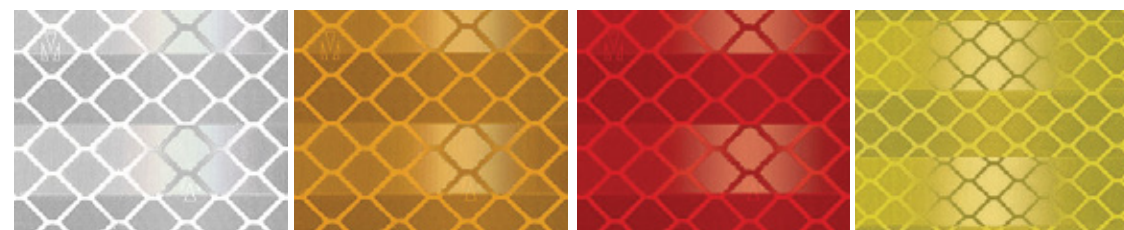
White - 983-10

Fluorescent Yellow - 983-21

Red-White - 983-32

Yellow - 983-71

Red - 983-72



White - 997-10

Yellow - 997-71

Red - 997-72

Fluorescent Yellow Green - 983-23

What 3M Diamond Grade Reflective Markings deliver for vehicles

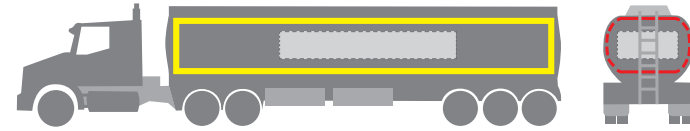
- Meet recommendations set out in:
 - Australian Design Rule 13/00, 2005 (appendix A UNECE R48/03)
 - ATA Industry Technical Council Advisory Procedure for Heavy Vehicles Visibility
 - New Zealand design rule recommend by NZTA under “Land Transport Rule: Vehicle Lighting”
- Less vehicle downtime and repair costs
- Protect your company against potential legal action related to third person safety
- Improve corporate image through following best practice safety guidelines.



Reflective Tape Application Guide

Recommended Layout - Full Contour

Reflective tape is applied as close as possible to the edge of the vehicle to form a continuous line, depicting the outline of the vehicle. This provides maximum visibility to other road users and is best practice.



Partial Contour

A single strip of retroreflective tape is applied along each side and the rear of the body or trailer, with 'L' shape sections 0.5m long in each corner.

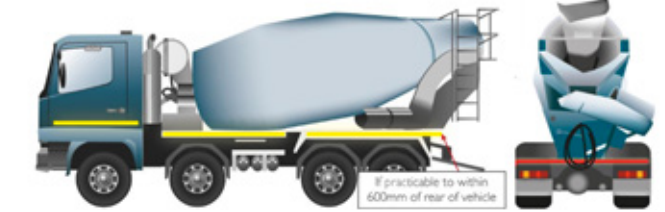


Colour guide for heavy vehicles	
Location on Vehicle	Colour(s) Permitted
Front	White
Sides	Yellow, White or Fluorescent Yellow
Rear	Red or Yellow

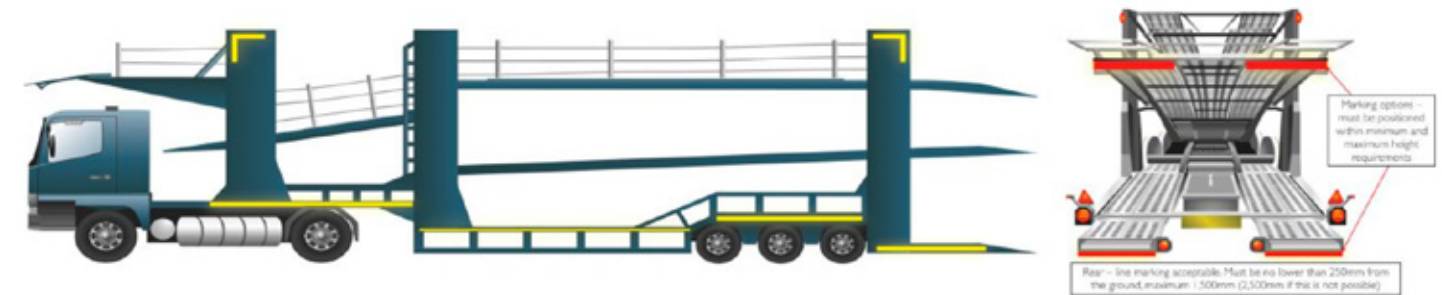
Tanker



Concrete Mixer



Car Carrier



Skip Loader



Rubbish Truck



Rigid with tray



3M Diamond Grade™ Reflective Handy Rolls

3M offers all popular Diamond Grade™ Reflective in 15 metre length rolls. This range is designed for marking of smaller vehicles and other hazards, to provide enhanced visibility.



White
983-10



White Flexible
997-10



Fluro Yellow/Green
983-23



Yellow
983-71



Yellow Flexible
997-71



Red
983-72



Red Flexible
997-72

Mini Rolls.



Max Safety.

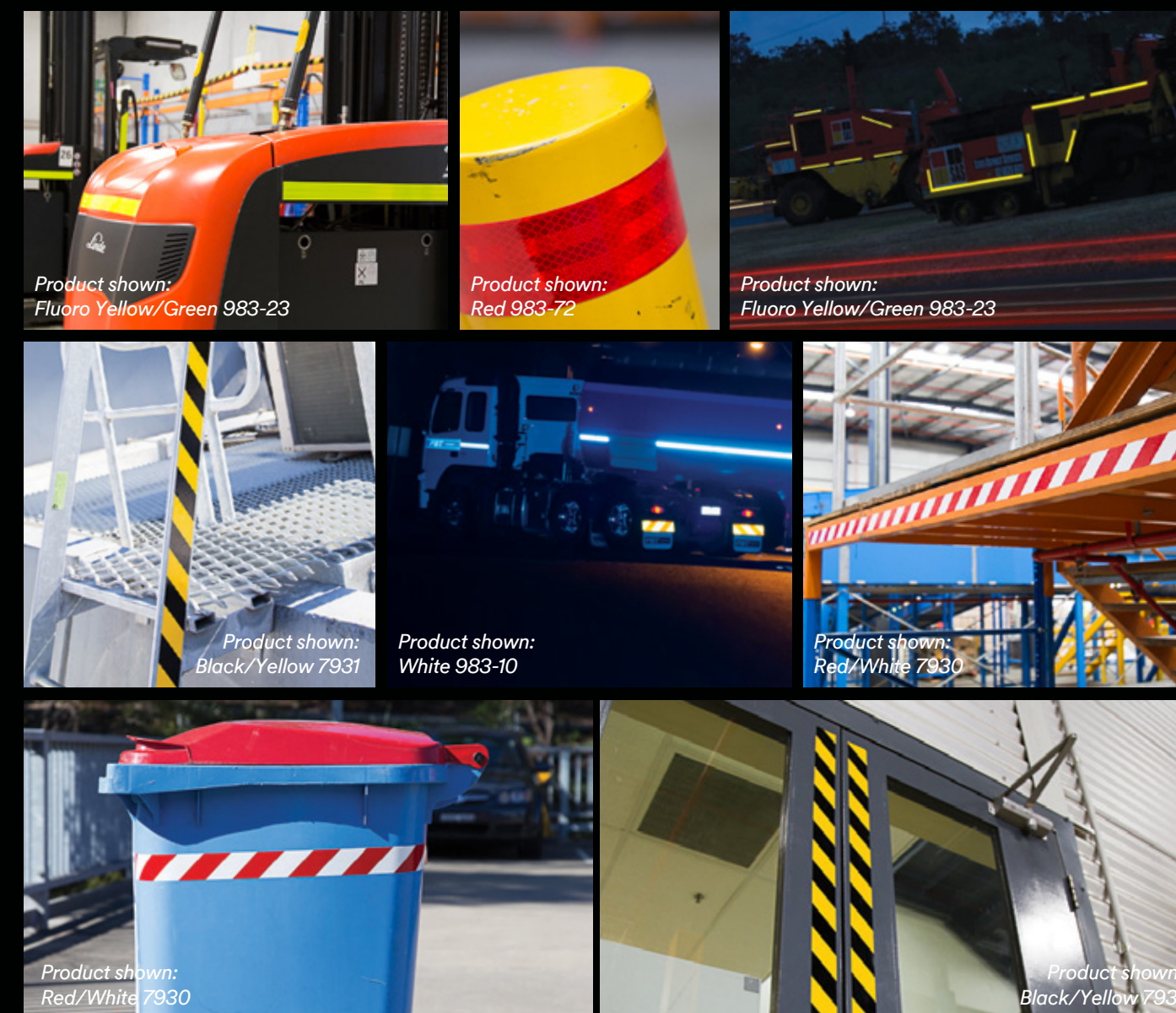
3M™ Reflective rolls are brilliantly visible 24/7, providing safety through improved visibility.

3M's latest 3-metre reflective tapes are highly visible and durable in all weather conditions. Easy to apply, they suit a wide variety of DIY applications. A simple and effective solution to highlight potential hazards and obstacles around the workplace or home.

- Durable, with excellent weather resistance.
- Pressure sensitive adhesive and easy to apply.
- 3M Diamond Grade Tape has outstanding reflectivity at every viewing angle and viewing distance.
- 3M Reflective Tape Hazard Stripe is made from high quality, durable material with Advanced Engineer Grade Prismatic reflective technology.

Applications: Hazardous areas, Obstacles, Barriers and posts, Gates, Ledges, Low hanging objects/structures, Stairways, Ladders, Bins, Workplace machinery.

Application Examples



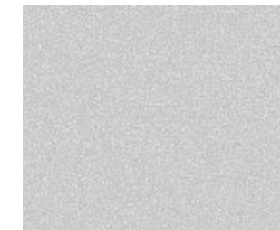
3M Commercial Graphics

3M Scotchlite™ Reflective Graphic Film Series 680

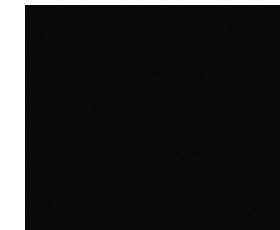
3M Scotchlite™ Removable Reflective Graphic Film with Comply™ Adhesive Series 680CR

Product Features and Benefits:

- 24-hour visibility for more effective advertising.
- Excellent day and night performance.
- Good, uniform reflectivity improves road safety.
- Available in 11 colours.
- Screen and Inkjet printable.



White - 680-10, 680CR-10
PANTONE® 420 C



Black - 680-85, 680CR-85
PANTONE® 426 C



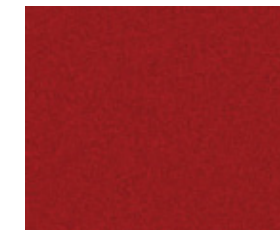
Orange - 680-14, 680CR-14
PANTONE® 021 C



Green - 680-77, 680CR-77



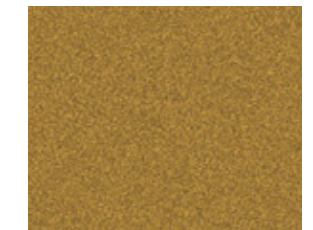
Lemon Yellow -
680-81, 680CR-81
PANTONE® 612 C



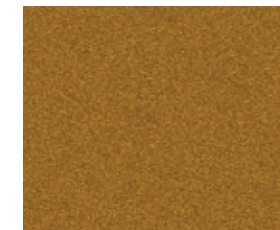
Ruby Red - 680-82,
680CR-82



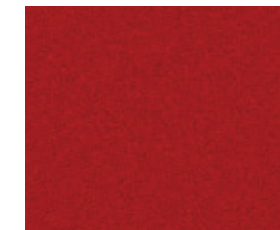
Light Blue - 680-76,
680CR-76
PANTONE® 300 C



Gold - 680-64,
680CR-64



Yellow - 680-71,
680CR-71



Red - 680-72, 680CR-72



Blue - 680-75, 680CR-75

Round-the-clock attention.

3M Scotchlite™ 680 series is a highly durable, flexible material that is ideal for production of attractive multi-coloured markings, displays, signs and truck markings. These reflective graphics ensure that your message is seen and noticed day and night, giving your advertising round-the-clock attention.





Safer Emergency Response.

We don't know when, where or what the next emergency will be, but we do know it will occur. Personnel who are on the front line of response, cleanup and relief need maximum visibility to keep them safe while keeping us safe.



3M provides safety solutions that are a vital component of emergency response. We supply a wide variety of products such as respirators, high visibility material, communications equipment, hearing protection, head, eye and face protection, sorbents and identity management solutions.

To help protect emergency personnel, it is essential that their clothing and vehicles remain highly visible in all types of weather, 24 hours a day.

High visibility markings on emergency vehicles save lives. Whether at the scene of an emergency, or manoeuvring through the traffic to get there, it's essential that emergency vehicles are quickly recognised and readily identified.

3M offers a comprehensive range of reflective products to improve visibility of fire, ambulance, police and other emergency trucks, vans and cars.



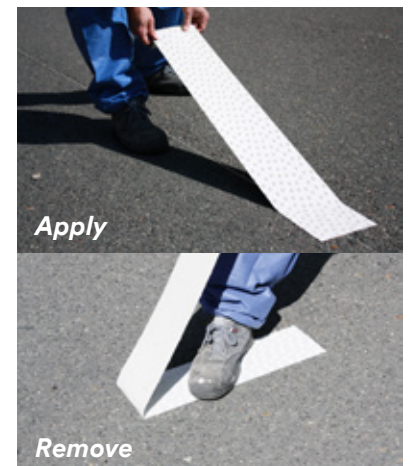


3M Stamark™ Removable Pavement Marking Tapes

Stamark™ makes traffic lane adjustment fast and simple. It is engineered for easy application and removal to reduce the amount of time drivers and workers are exposed to road works hazards. Newly marked roads can be opened to traffic immediately following application. To make removal simple, Stamark is structured with a reinforcing net. It can be removed from asphalt and concrete surfaces intact or in large pieces at temperatures above freezing without leaving scarring or 'ghost' markings, which can dangerously mislead motorists.

Product Features and Benefits:

- Quick and easy to apply for temporary applications.
- Highly reflective and skid resistant in wet and dry conditions.
- Will not damage or scar road surface when removed.
- Available in black to temporarily cover existing markings.
- Quick and easy to remove for temporary applications.
- Roadway may be opened to traffic immediately.
- Approved for use on Australian and New Zealand roads.



The future of Line Marking.

3M Stamark™ wet & dry reflective performance will increase road visibility and safety in all weather conditions. With outstanding line brightness it will extend performance life. Easy and quick to apply, it will reduce road closure times. Highly durable, meaning longer life cycle and no maintenance requirements.

Product	Colours		
	White	Yellow	Black
3M Stamark™ 710 Removable Series	710	711	715



White - 710



Yellow - 711



Black - 715

3M Stamark™ Pre-Cut Symbols and Legends

3M makes it fast and easy to improve intersection guidance. Pre-cut symbols and legends made from 3M Stamark™ Pavement Marking Tape are designed to meet your budgets and objectives. 3M can cut a wide variety of designs to meet your custom specifications, size requirements and contrast marking needs. Plus, you get the durability and safety that comes with 3M's industry-leading retro reflective and adhesive technologies.

Product availability

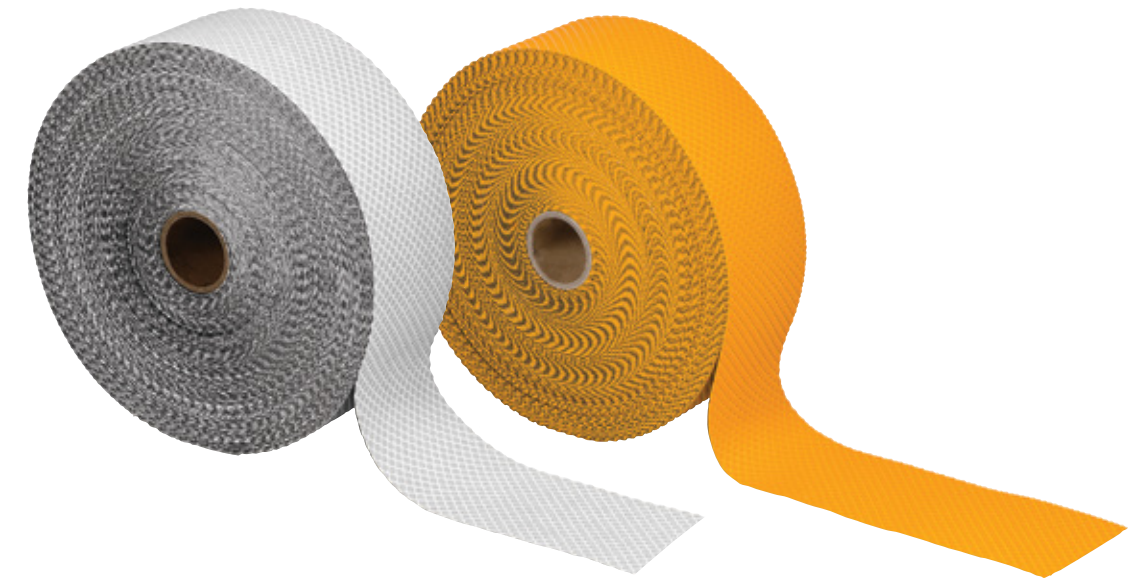
Depending on the application 3M symbols are available in both permanent and removable Stamark™ line marking tape. Symbols are available in all common symbols and legends.

Fast and easy to apply

Stamark™ Symbols & Legends adhere to properly prepared pavement surfaces and is as easy as peel, apply and tamp. Stamark™ Symbols & Legends can also be inlaid into hot asphalt for an optimum life cycle.



3M Stamark™ Permanent

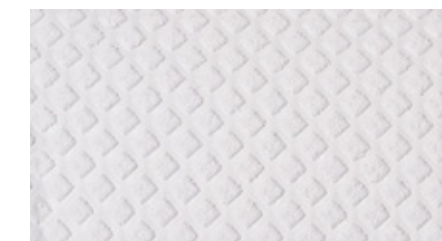


Whether you need to mark a few road lines or delineate a stretch of motorway, 3M has permanent line marking tapes that will stay the course and remain bright and clear. Our tapes have been proven internationally as a bright, long-lasting alternative to thermoplastic or traditional painted line markings.

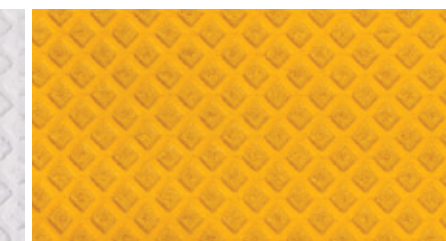
Product Features and Benefits:

- Highly reflective in wet and dry conditions.
- Quick and easy to apply.
- Roadway may be opened to traffic immediately.

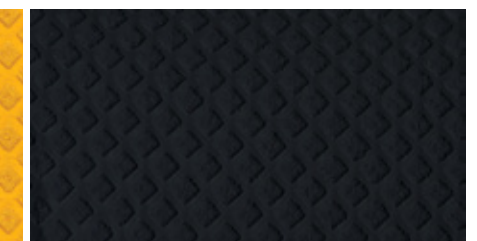
Product	Colours		
	White	Yellow	Black
3M Stamark™ 380IES Permanent	380IES	381IES	385IES



White - 380IES



Yellow - 381IES



Black - 385IES



Smarter, Safer Mine Sites.

In constantly changing sites, visitors, contractors and workers need to see vehicles and signs quickly. Monochrome environments and night time operations make visibility a critical challenge.

3M reflective technologies provide more visible and vivid markings that help you see anything from vehicles and static hazards to traffic control and safety signage.

Today, 3M is recognised around the world for our scientific and engineering innovations, but over a century ago, we began as a mining company. It is this first hand knowledge that gives us a unique point of view in the industry.

From enhancing site safety and productivity to helping protect workers and their environment, 3M has been solving the challenges facing the mining and metallurgy industry from day one. We're continually combining our global resources, local expertise and extensive application development capabilities to not only meet but exceed the needs of our customers.



Personal Safety

Protection for the safety of your workforce.

- Hearing and Communication Solutions
- Respiratory Protection
- Head, Eye and Face Protection
- Fall Protection
- Workwear Visibility
- Noise Detection

Site Safety

Technologies to keep your site running smoothly.

- Vehicle and Roadway Visibility Solutions
- Anti-Slip Flooring Solutions
- Protective Window Films
- Trip and Fall Prevention
- Fire Protection



Electrical

Protection, connection and repair solutions.

- Electrical Tapes
- Wire Connectors
- Cable Ties
- Motor Lead Boots
- Cold Shrink Terminations and Splices
- Resin

Maintenance and Repair Operations

Comprehensive restorative solutions.

- Steel Cutting Tools for Metallurgy
- Grinding Solutions
- Adhesives and Tapes
- Corrosion Protection
- Conveyor Belt Repair
- Welding Solutions
- Spill Response



**Visible.
Dependable.
Safe.**

Take safety to a new level, for less.

Using 3M Reflective Technologies is a proven cost effective methodology that can deliver substantial improvements in mine site safety.

Let high visibility be the standard with 3M Diamond Grade™ Markings. These durable markings provide excellent vehicle visibility, in all conditions. The aggressive, pressure sensitive adhesive makes these markings easy to apply. For added visibility during daylight hours, fluorescent yellow and yellow/green options are available. Fluorescent technology makes these markings more visible in daylight, dawn and dusk.



3M Reflective Vehicles, Signs, Intersections and delineation solutions

At nearly twice the efficiency of lower grade sheeting, 3M™ Diamond Grade™ DG³ is ideal for all types of retro reflective signage. Unlike most other sheeting, the full-cube technology used in DG³ sheeting is capable of retro reflecting nearly 100 percent of light. DG³ sheeting not only returns more of the light it receives, but also disperses it in a wider spread, allowing drivers sitting farther from their headlights to still see the signs in dark and dusty conditions.

While optimising night time performance, we did not forget daytime challenges. For more conspicuous signs during the day, DG³ is also available in bright, fluorescent colours. During daylight hours, studies show that fluorescent sheeting attracts driver attention, easily stands out from the monochrome scenery of working sites and works effectively for safe, sound communication with drivers.



Advancing the industry.

3M is dedicated to improving the way people live and work. Through combining science and expertise, we are constantly developing game-changing solutions that move industries forward. Our observations and advancements inspire the thinking we put toward every project we take on.

With cutting-edge innovations from over 46 different technologies, manufacturing operations in over 70 countries and exceptional on-the ground customer support, 3M has the know-how and resources to improve the safety of people on the move.



For more information please contact your 3M Traffic Safety expert today or visit our website.

Australia

www.3Mreflective.com.au

NSW / NT / ACT

Graham Watson
M 0413 024 727
E glwatson@mmm.com

VIC / SA / TAS

Justin O'Donnell
M 0457 569 241
E jmodonnell@mmm.com

QLD

Gavin Duigan
M 0409 260 278
E gduigan@mmm.com

WA

Ken Foster
M 0419 755 435
E kfoster1@mmm.com

New Zealand

www.3Mreflective.co.nz

Peter Carson
M 027 471 2281
E pcarson@mmm.com



3M Transportation Safety Division

3M Australia Pty Ltd
Building A, 1 Rivett Road,
North Ryde NSW 2113
Freecall: 136 136

3M New Zealand Limited
94 Apollo Drive, Rosedale
Auckland 0632
Freecall: (09) 477 4040