

3M Science.
Applied to Life.™

the safe way ahead.

Diamond Grade (DG³) Reflective Sheeting
High Intensity Prismatic (HIP) Sheeting
983 Conspicuity Sheeting
Raised Pavement Marker (RPM)
Twin Moulded Shank RPM
Solar RPM
Median Marker
Rigid Retro-reflective Delineator
Aluminium-backed Flexible Prismatic Sheeting
Roll-up Sign
Stamark™ Tapes

3M

3M India Limited
Traffic Safety Systems

Concorde Block, UB City, 24 Vittal Mallya Road, Bengaluru - 560 001

• Tel: +91 80 2223 1414 • Fax: +91 80 2223 1450 • www.3m.com/in/tss

Contact 3M India Customer Contact Center Toll Free Number: 1-800-425-3030

Progress is what today's India is all about... People, trade on the move 24x7 on roads that are fast matching up to international standards. Unfortunately, that's not the case with the safety on the same roads... India's progress is beset by the highest road fatalities in the world.

This is where 3M Traffic Safety and Security Division (TSSD) aims to make a difference...

By enabling visibly safer motoring

- Founded in 1902
- Over a 100 year track record of being one of the most innovative companies worldwide.
- Headquartered at St. Paul, Minnesota, USA.
- Worldwide sales: \$ 30.8 billion.
- Operations in more than 70 countries.
- More than 55,000 products sold.
- 46 Technology Platforms.
- More than 88,000 employees.
- 671 US patents and a total of 3,300+ patents awarded (2013).
- In 2014, 3M crossed an innovation milestone when it was granted its 1,00,000th patent.
- 3M is also one of the 30 companies in the Dow & Jones Industrial Average and a component of the Standard & Poor's 500 Index.

The inventor of retro reflective sheeting and most respected and preferred solutions provider globally for traffic and vehicle management systems. Dedicated to improving traffic safety, 3M has been the leader in safety innovation for over 70 years. Our comprehensive systems and services, combined with high performance materials, are designed to improve roadway visibility, reduce long term costs and conform to the highest international standards.

3M is a member of Indian Road Congress (IRC), H1 committee (Road safety, Transport Planning and Traffic Engineering committee) & International Road Federation (IRF) – India chapter. 3M continues to educate all stake holders on the importance of new developments in road safety and the need to adopt the same in order to minimize accidents and fatalities on Indian roads.

Diamond Grade (DG³)
Reflective Sheeting

3M DG³ is currently the benchmark for reflective films across the world. Incorporating ‘full cube’ technology for phenomenal performance DG³’s optical elements are 100% efficient and reflect up to 60% of available light (the highest compared to regular prismatic films). DG³’s superior optical quality means enhanced visibility at all sight distances (including medium and short distances) and even in awkward sign positions.

‘Full Cube’ safety
in any condition



Table 6.9 (IRC: 67) Acceptable Minimum Coefficient of Retro-reflection for Type XI Prismatic Grade Sheeting A (Candelas per Lux per Square Metre)

Observation Angle	Entrance Angle	White	Yellow	Orange	Green	Red	Blue	Brown	Fluorescent Yellow-Green	Fluorescent Yellow	Fluorescent Orange
0.1°B	-4°	830	620	290	83	125	37	25	660	500	250
0.1°B	+30°	325	245	115	33	50	15	10	260	200	100
0.2°	-4°	580	435	200	58	87	26	17	460	350	175
0.2°	+30°	220	165	77	22	33	10	7	180	130	66
0.5°	-4°	420	315	150	42	63	19	13	340	250	125
0.5°	+30°	150	110	53	15	23	7	5	120	90	45
1.0°	-4°	120	90	42	12	18	5	4	96	72	36
1.0°	+30°	45	34	16	5	7	2	1	36	27	14

Retro-reflective Sheeting	DG3
ASTM D4956 Specification Compliance	Type XI
Service Life	10+ years
Retained reflectivity after service life	80%
Ra (end of service life)	464

- State-of-the-art "full-cube" technology
- 100% efficient optical elements
- Delivers optimal performance where and when drivers need it most
- Better for today's changing driving environment

Colours available

- 4090 - White • 4091 - Yellow • 4092 - Red • 4095 - Blue • 4097 - Green
- 4081 - Fluorescent Yellow • 4083 - Fluorescent Yellow Green • 4084 - Fluorescent Orange

High Intensity
Prismatic (HIP)

HIP from 3M is engineered to offer versatile application possibilities - from traffic signages; to work zone markers and delineators. Backed by reliable 3M pressure sensitive adhesive for a strong bond, HIP delivers vivid daytime visibility and enhanced night time visibility.

Durable, versatile
reflective safety sheeting



Table 6.6 (IRC: 67) Acceptable Minimum Coefficient of Retro-Reflection for Type IV High Intensity Micro-prismatic Grade Sheeting A (Candelas Per Lux Per Square Metre)											
Observation Angle	Entrance Angle	White	Yellow	Orange	Green	Red	Blue	Brown	Fluorescent Yellow-Green	Fluorescent Yellow	Fluorescent Orange
0.1°B	-4°	500	380	200	70	90	42	25	400	300	150
0.1°B	+30°	240	175	94	32	42	20	12	185	140	70
0.2°	-4°	360	270	145	50	65	30	18	290	220	105
0.2°	+30°	170	135	68	25	30	14	8.5	135	100	50
0.5°	-4°	150	110	60	21	27	13	7.5	120	90	45
0.5°	+30°	72	54	28	10	13	6	3.5	55	40	22

Retro-reflective Sheeting	HIP
ASTM D4956 Specification Compliance	Type IV
Service Life	7 years
Retained reflectivity after service life	80% (as per IRC)

- Meets & exceeds MoRT&H and ASTM D4956 Type IV specifications
- Better durability
- Vivid daytime colors
- Improved reflective performance
- 7 year warranty

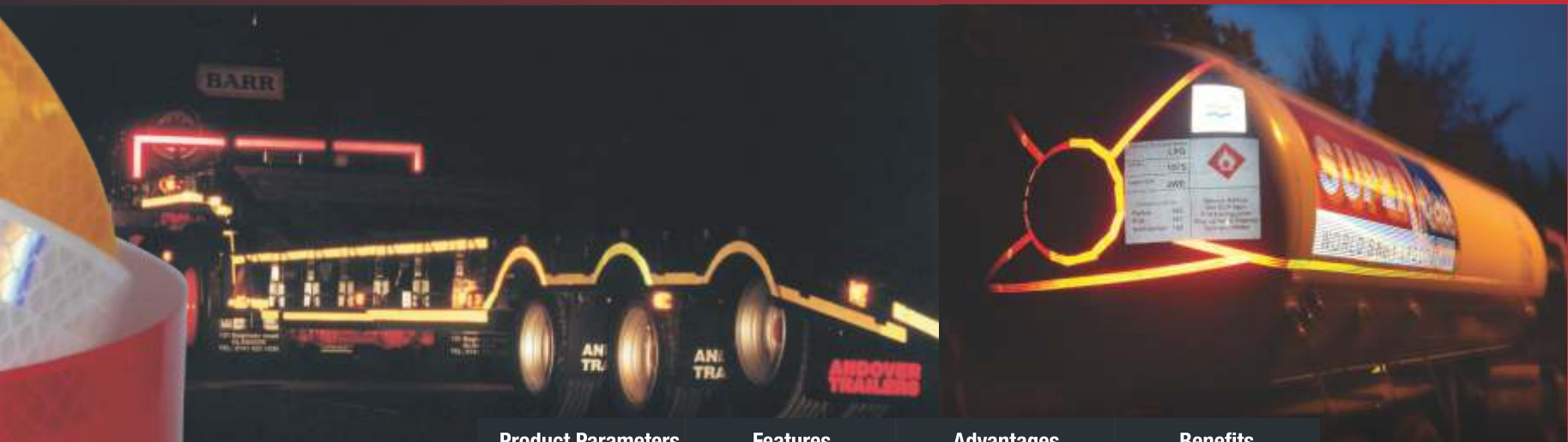
Colours available

• 3930 - White • 3931 - Yellow • 3932 - Red • 3934 - Orange • 3935 - Blue • 3937 - Green

983 Conspicuity Sheeting

983 Conspicuity Sheeting with polycarbonate microprisms give night time vehicle visibility a whole new brightness. And 983's tough engineering is designed for extreme road conditions - resisting cracking and peeling. Superior optics provide reflectivity even at almost 90° angles.

Visibility that makes vehicles stand out



Product Parameters	Features	Advantages	Benefits
Brightness	For White, around 750 cd/m ² at 1/3° OA & 5° EA (reqd. = 450 cd/m ²)	Very high brightness for head-on viewing &	Superior safety and better aesthetics aesthetics of markings
Edge Sealing	Edge sealed from both sides	Edge sealing protects from dust, dirt & spray cleaning	Higher durability & satisfaction
Construction	Non-Metallic High Intensity Prismatic	Non-Metallic sheeting protects vehicle from corrosion	No undue damage to vehicle body & no extra cost implication
Warranty Support	3M local technical & warranty support	Higher security against any issues, reliability and product assurance	Peace of mind for the customer

Meets & exceeds AIS 090 standards and is approved by ARAI

Colours available
● 983-10 – White ● 983-71 – Yellow ● 983-72 – Red ● 983-326 – Red White

Raised Pavement Marker (RPM)

3M RPM is a unique, easy-to-apply road safety device specifically engineered for low light Indian road conditions. Constructed of engineered thermoplastic, RPM can withstand the heaviest of moving loads and still retain their safety edge. RPM's ultrasonically welded lens makes it impervious to wet weather conditions. While it can be easily fixed with shanks or epoxy enabling faster execution over long road stretches. Its signature 'rumble' effect provides tactile and audible warning when lanes are cut; while its all round visibility marks out road geometry clearly.

See and feel the road ahead



Features	Advantages	Benefits
Unique Design	Good retroreflective performance for wide range of observation angles	Optimum for various kinds of roads like straight/curve, etc.
Tough thermoplastic body	High impact resistance and high compressive load	Longer road presence, lower lifecycle cost
Microprimatic lenses	Higher conspicuity and night time visibility	Improved safety, reduced shy distance
No exposed edges	Less prone to vandalism	Longer product life
Robust Installation	Reduced chances of product pilferage	Longer road presence
Excellent weatherability	Sustained product performance over longer period of time	Reduced lifecycle cost and less chances of product failure

Colours available
• Red • White • Yellow • Red White

Twin Moulded Shank RPMs

The Series 290C/290CE IN RPM's feature a revolutionary Moulded Twin Shank design that prevents displacement/disorientation post-installation. With class leading retro-reflective properties, unbeatable all-weather durability, proven performance and the all-new moulded twin shanks, 3M™ Moulded Twin Shank RPM's give you safety that stays in place and performs even in the most demanding traffic conditions.

Feel safety with the best grip



Features	Advantages	Benefits
Unique Design	Good retroreflective performance for wide range of observation angles	Optimum for various kinds of roads like straight/curve, etc.
Tough thermoplastic body	High impact resistance and high compressive load	Longer road presence, lower lifecycle cost
Microprismatic lenses	Higher conspicuity and night time visibility	Improved safety, reduced shy distance
No exposed edges	Less prone to vandalism	Longer product life
Robust Installation	Reduced chances of product pilferage	Longer road presence
Shanks to provide extra anchorage	Can bear extra shear	Higher durability
No metal parts used for anchoring, anchor is molded as part of body	No extra effort or material required while installation on ground	No hazard caused to traffic, easy installation
Excellent weatherability	Sustained product performance over longer period of time	Reduced lifecycle cost and less chances of product failure

Colours available
● Red ● White ● Yellow ● Red White

Solar
RPMs

3M™ Solar RPM is designed for superior performance and increased run time. It comes with unique 360° smooth illumination and 3M™ Retro-Reflective lens. The uniquely designed honeycomb patterned base and twin molded shanks provide better anchorage for longer road presence. 3M™ Solar RPM exceeds the compression load requirements of 13.635 tons making it suitable for the rugged Indian road conditions.

Safety
powered by the sun



Feature	Advantage	Benefit
Highly engineered thermoplastic body	Increased compressive load strength (20 tons+)	Improves product life and prevents it from breaking
Uses only 2 LEDs	Lower consumption of battery power during conditions of no sunlight and improves the life of the battery	Ensures product performs for longer time
Light Guide Technology lowers battery consumption	Provides 360° illumination and lower power consumption	Uniform visibility from different directions
Twin shanks	Prevents disorientation and chipping off and reduces replacement cost Helps in alignment and marking during installation	Improved road presence
Sleep Current < 20 microamperes	Prevents energy loss from battery	Ensures longer performance time
3M retro-reflective lens	Back-up conspicuity in passive mode as normal RPM	Solar RPM will continue to work
Circular shape	Visible from all directions	Improves aesthetics and visibility
Unique honeycomb pattern base by retaining more epoxy adhesive	Provides stronger adhesion to the road	Improves road presence
Uniform light distribution along the RPM edges	Makes the RPM smoother to look at	Prevents distraction of motorists

Colours available
• Yellow with Yellow Reflectors • White with White Reflectors • White with Red Reflectors



Median Marker

Median markers from 3M are an Indian innovation to enhance median visibility under extremely harsh and low light conditions. Made of tough thermoplastic and incorporating fluorescent yellow prismatic sheeting; 3M Median Markers throw new light on medians, preventing freak accidents. They can withstand climatic extremes, are UV resistant and the design thwarts vandals.

Median visibility that stands out

Features	Advantages	Benefits
Unique Design	Good retroreflective performance for wide range of observation angles	Optimum for use on medians of all heights
Tough thermoplastic body	High impact resistance and high compressive load	Longer road presence, lower lifecycle cost
Type XI retro reflective sheeting	Higher conspicuity and night time visibility	Improved safety, reduced shy distance
Fluorescent retro reflective sheeting	Improved conspicuity at dawn/dusk and during adverse weather	Improved safety in adverse driving conditions
No exposed edges	Less prone to vandalism	Longer product life
Robust Installation	Reduced chances of product pilferage	Longer road presence
Excellent weatherability	Sustained product performance over longer period of time	Reduced lifecycle cost and less chances of product failure

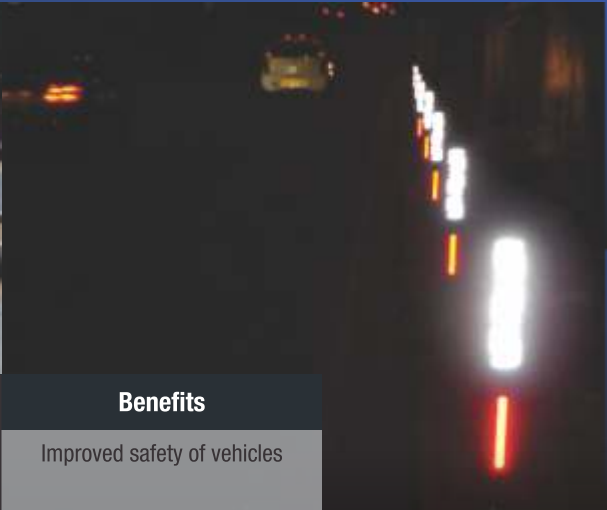
Variants available

- Both sides reflective
- Single side reflective

Rigid Retro-reflective
Delineator

Elegant design and superior performance make 3M™ RRD the ‘fix-and-forget’ product. Engineered to deliver years of all-weather visibility, this two-part product is constructed of high performance engineered plastic and employs the highest standard Grade XI sheeting. Safety, durability and elegance all in one stand out product - so you get unmatched visibility and reliable performance.

Durable safety
that stands out



Features	Advantages	Benefits
Larger area of 3M DG3 retro reflective sheeting	Increased conspicuity	Improved safety of vehicles
Dual colored white-red retro reflective sheeting	Catches drivers attention from distance	Longer time for driver to manouvre - improved safety
Elliptical cross section	Good entrance angle performance	Improved visibility at curves and sharp corners
2 Part construction	Concealed edges	Longer product life; less chances of vandalism
Powder coated metal body	Good corrosion resistance	Longer product life
Polycarbonate outer sleeve	Weatherable and impact resistant sleeve	Improved aesthetics, longer product life
1 year performance warranty	Highly durable delineator	Longer road presence, better long term wear

Colour available
• White-Red Combination, Dual-sided

Aluminium-backed
Flexible Prismatic

3M™ DG Aluminium-backed Flexible Prismatic (AFP) is a new generation flexible sheeting that is designed for harsh conditions. With its excellent all-round visibility, AFP ensures optimum visibility of critical road elements. Highly conformable, AFP can be easily applied on rough concrete surfaces to trees. With its tough edge-sealing, AFP thwarts theft and vandalism and is weather-resistant.

Enhances visibility
of critical road elements



Features	Advantages	Benefits
Non-metallic prismatic lens retro reflective sheeting	Flexibility and impact resistance	Product use on curved surfaces
Multi layer construction	Dead folding	Usability on rough surfaces such as tree trunks, concrete etc.
Aggressive adhesive and surface primer combination	Good adhesion to undulated surfaces	Increased resistance to pilferage
Edge sealing resin kit	Concealed edges	Longer product life; less chances of vandalism
Pre-screen printed arrows/ slant lines	Standardised as per IRC	Reduces converting time

Variants available
● Slant ●Arrow ●Plain

Roll-up
Sign

When maintenance work or temporary hazardous situations demand dependable, highly visible warning, trust the new Roll-up sign from 3M TSSD. These are portable, easy-to-deploy warning signs that come in the highly conspicuous fluorescent orange for instant visibility. The stands come with a rugged base and sturdy construction to withstand heavy winds, vehicle hits and are deployable at a short notice on most terrains.

Portable, instant
visibility



Features	Advantages	Benefits
Fluorescent Orange Type 6 Retro-reflective sheeting	Increased conspicuity	Improved safety of vehicles
3 Part assembly- sign fascia, metal stand and rubber base	Dismantable, storage in constricted space, changeable sign fascia	Easy to carry even in smaller cars, multiple signs supported by single base and stand
Adjustable height	Flexibility of sign positioning	Usage for various applications
Spring loaded stand	Absorbs energy	Prevents toppling due to heavy winds or vehicle impact
Powder coated MS base	Good corrosion resistance	Longer product life
Ergonomically designed base	Weight distribution over larger area, handles for carrying	Improved stability, easy to carry

Variants available
• 3ft x 3ft • 4ft x 4ft

Stamark™ Tapes

Stamark™ preformed pavement marking tapes are the readymade answer to today's high wear traffic conditions. Their high index microcrystalline ceramic beads provide better retroreflectivity, while the urethane topcoat increases durability. Stamark™ tapes can be instantly applied without any heat or melting.

Durable pavement marking



- Preformed tape construction
- Durable raised pattern
- High index microcrystalline ceramic beads
- Urethane topcoat
- Pressure-sensitive adhesive
- Pre-cut symbols and letters

Variants available

- A 390 - white
- A 391 - yellow
- 4" and 6" widths

Roadway Maintenance Services

When next generation road safety projects require properly specified material, quality and guaranteed installations, with timely execution - trust 3M Roadway Maintenance Services as partner on the road to progress. With our worldwide exposure to reputed projects, on-time delivery schedule, exhaustive product line-up and unbeatable warranty, 3M RMS is the ideal choice for end-to-end solutions - from survey to design and execution.

End-to-end solutions that stand the road test

Few prestigious RMS Projects executed by 3M

Hoskote-Mulbagal, NH4 road project for Lanco Infrastructure
Neelamangala-Kunigal, NH48 road project for Lanco Infrastructure
Zeerakpur Parwanoo road project for Jaypee Infratech Limited
Haloi-Shamalji road project for Larsen & Toubro Limited
Rajkot-Vadinar road project for Larsen & Toubro Limited
Ahmedabad-Malliya road project for Larsen & Toubro Limited
Yamuna Expressway Noida-Agra road project for Jaypee Infratech Limited
Hyderabad-Vijaywada road project for GMR Infrastructure Limited
City Signing for Delhi for PWD, Delhi
Checkposts for MP Border, IL&FS Limited
Signages for Pune-Solapur stretch for Tata Reality Infrastructure Limited
Roadway Furniture for projects pan-India for Transstroy (India) Ltd.,
Signages for Krishnagiri-Walajahpet Road Project for Larsen & Toubro Construction
Roadway Furniture for various projects for SOMA, Sadbhav, RAMKY



Consultation,
GPS Enabled Site Surveys

Design & Specifications



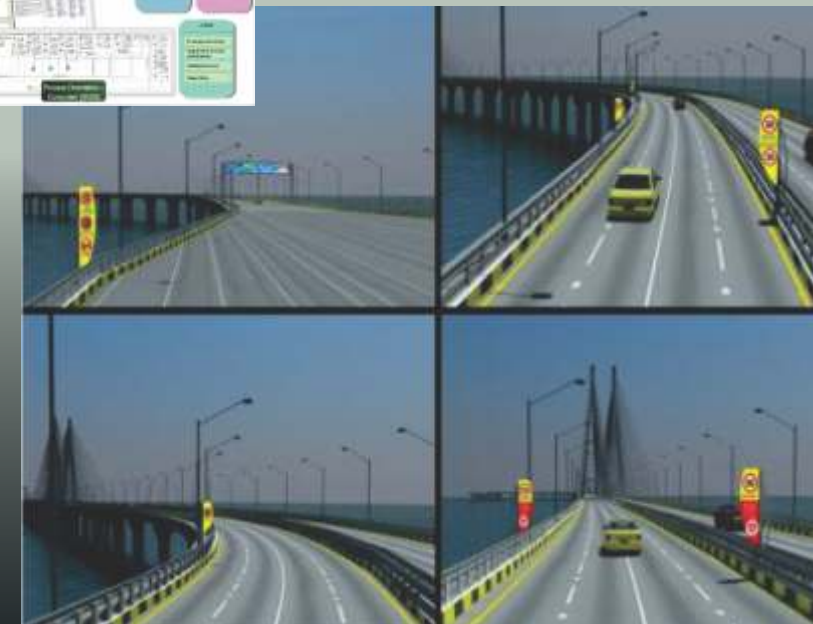
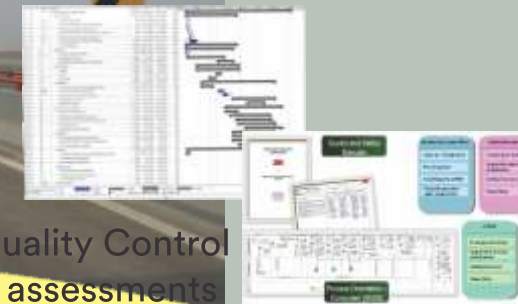
Manufacturing



Project Planning
& Execution



Quality Control
& assessments



3M TSSD Accessories

3M Electrocut Film



- 1171 - Yellow
- 1172 - Red
- 1174 - Orange
- 1175 - Blue
- 1177 - Green
- 1178 - Black
- 1179 - Brown

Resin & Hardner Kit



Process colour



- 882I - Red
- 883I - Blue
- 885I - Black



3M TSSD Prestigious Projects

Commonwealth Youth Games, Pune



Noida Development Authority



Border Checkpost/Toll Gate Projects



Bangalore Traffic Police



Banagalore Development Authority



RIDCOR Toll Plaza



Chennai Corporation



MMRDA



Cautionary



Informatory



Mandatory



IRC
Signs

National Highways



State Highways



Cities



Airports



Railways



Tourism



Automotive OEM



Key Segments
we cater to