

Making a difference with vehicle visibility: ensuring nighttime road safety in Indonesia.



Road traffic injuries are currently the eighth leading cause of death across all age groups worldwide.¹ According to the World Health Organization, they are also the leading cause of death for children and young adults aged five to 29 years.

In Indonesia alone, 31,282 road accident fatalities were reported in 2016, with a 12 percent fatality rate per 100,000 population. This is higher than neighbouring countries such as Singapore (2.8 percent) and Australia (5.6 percent). Based on current data trends, annual traffic fatalities will reach 40,000 in 2020 and 65,000 in 2035.² The Indonesian police have thus set a target to reduce these numbers by half in 2020 and 80 percent in 2035.

Enhancing vehicle visibility through retroreflective conspicuity tapes

A contributing factor to road traffic collisions is the poor visibility of heavy vehicles, especially in dark conditions. As vivid, contrasting colours can enable drivers to identify and locate a hazard amidst the visual roadway clutter, using retroreflective tape is key in enhancing vehicle conspicuity.³

This visibility is now becoming more important, as the highway networks in Indonesia are rapidly growing, and visibility is one key factor in saving lives on high speed road networks such as highway.

In fact, the U.S. National Highway Traffic Safety Administration (NHTSA) estimates that approximately 2,660 lives have been saved from 1960 to 2012 because of retroreflective conspicuity tape on heavy trucks and trailers.⁴

Although retroreflective tape is applied on trucks and trailers, it also benefits occupants of passenger vehicles. During darkness, the tape can reduce side and rear collisions into heavy trailers by 41 percent.⁵

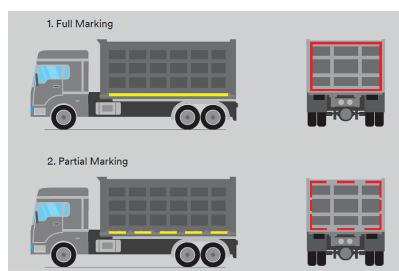
When all heavy trailers have retroreflective tape, an estimated 191 to 350 lives can be saved every year, according to the NHTSA. Retroreflective tape can also prevent approximately 3,100 to 5,000 injuries and roughly 7,800 crashes annually (relative to a hypothetical fleet of trailers without the tape).

Compliance with regulations and guidelines

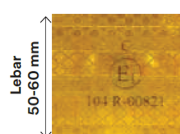
The U.S. National Highway Traffic Safety Administration (NHTSA) requires retroreflective conspicuity tape to be fixed on the sides and rear of trailers that are over two meters wide or weigh over 4,535 kg. Many countries are now implementing similar measures.

In Indonesia, the government has made it mandatory to apply retroreflective tapes on heavy goods vehicles, trailers, and semi-trailers. The new Regulation by the Land Transport Directorate General No. KP.3996/ AJ.502 /DRJD/2019, requires box contour markings on the rear of the vehicle and line markings on both sides of the vehicle. Any vehicle violating the regulation will be regarded as non-roadworthy.

According to the Land Transport Directorate General Decree, conspicuity tapes specification on these vehicles must fulfill UNECE R104 standards, such as having a tape width of between 50 and 60 mm, the “E-mark” logo, and the minimum retro reflectivity value as per mandated by UNECE R104.



Recommended application for box contour markings and line markings.



C → Kategori/Kelas Material.

(E₁) → Tanda European Test Institute.

104R - XXXXXXX → Nomor persetujuan/approval untuk perusahaan pembuat alat pemantul cahaya.

The UNECE R104 standard can be authenticated by the E-mark logo and the approval number for the vehicle marking standard.

Sudut Pengamatan α [°]	Minimum Koefisien Retro Reflektif (Candela /Lux/m ²) pada Sudut Datang Cahaya, β [°]					
$\alpha = 0.33$ (20°)	β_1	0	0	0	0	0
	β_1	5	20	30	40	60
Warna						
Kuning		300	--	130	75	10
Putih		450	--	200	95	16
Merah		120	60	30	10	--

Retro reflectivity minimum value as per UNECE R104 standard.

Safeguard lives – and your bottom line

As numerous studies and field tests suggest, retroreflective tape on vehicles can prevent roadway accidents, injuries and fatalities. By using retroreflective tape for your vehicles, you are doing your part to safeguard the lives of your employees and civilians. These accident prevention measures also mean that you are reducing your legal and financial liability.

If you operate a business that primarily involves vehicles or trailers, you know how important it is to keep those vehicles on the road. Any accidents can lead to unnecessary downtime, which translates to reduced efficiency and lost revenue.

Vehicle retroreflective tapes are a cost-effective solution to help protect the lives around you, your assets, and your bottom line.



Retroreflective tapes increase the visibility of school buses on the road.

Using quality vehicle retroreflective tape

The 3M™ range of highly retroreflective microprismatic tapes is designed to enhance the visibility of the sides and rears of vehicles. These tapes deliver bright, vivid retro reflectivity at wide angles – almost 90 degrees from perpendicular – to ensure that your vehicles remain highly visible during daytime, night-time and poor weather conditions. Our tapes also exceed NHTSA and UNECE R104 requirements and are DOT-approved, ensuring compliance with industry standards.



Use the table below to compare the different product specifications.

Features	3M™ Diamond Grade™ Conspicuity Markings Series 983	3M™ Diamond Grade™ Conspicuity Markings Series 943
Typical Use	For application on rigid-sided vehicles	For application on rigid-sided vehicles
Suitable application surfaces and substrates	Aluminium, stainless steel, automotive paint	Aluminium, stainless steel, automotive paint
Maximum Warranty	5 Years	5 Years
Standard Colour Range	White, yellow & red	White, yellow & red
Adhesive	Clear, pressure sensitive	Clear, pressure sensitive
Product Construction	Prismatic construction	Prismatic construction
Roll Size	2" X 50 meters	2" X 50 meters
ECE-104 and AIS-090 Compliant	Yes (104 R – 00821)	Yes (104R – 003994)
Application temperature range of air and substrate	Min 10° C	10°C to 38°C

Interested in knowing more about retroreflective tape applications and regulations?

3M offers local technical and regulatory support, helping you to comply with national regulations and guidelines. Contact us for product specifications and recommendations, where to buy information, and more.

CONTACT OUR EXPERTS

To learn more about road safety and 3M product ranges visit:
www.3m.co.id/3M/en_ID/road-safety-id/

For more information on Conspicuity markings, application guidelines, and where to buy 3M retroreflective tape, visit:
www.3m.co.id/3M/en_ID/road-safety-id/support/