3M Science.
Applied to Life.™

Redefine the line.

**Introducing 3M™ Connected Roads All Weather Elements—
our most efficient optics for liquid pavement markings yet.**

**Connecting human and machine vision to
help improve road safety.**

There's a lot riding on the line: According to the
United States Department of Transportation
(USDOT), 70% of adverse-weather-related crashes
happen on wet pavement.* At 3M we are passionate
about helping you build the safest roads possible,
and we won't stop innovating until everyone gets
home safely.

3M™ Connected Roads All Weather Elements
can help you efficiently build roads that support
vehicles with machine vision systems even
in rain or other low-visibility conditions.
They're compatible with most liquid
pavement marking binders and install
with double-drop systems.

*Source: DOT/FHWA. *Ten-year
averages from 2005 to 2014 analyzed
by Booz Allen Hamilton, based on
NHTSA data.* 2005-2014.

Easily upgrade
your durable liquid
application equipment
to help support a double
drop system

Designed for detection.

3M™ Connected Roads All Weather Elements

Addressing visibility, road congestion and crashes is no easy task—especially at night or in the rain. But with the enhanced colour and improved* all-weather performance of durable, bright 3M™ Connected Roads All Weather Elements, you can— and at an acceptable cost, too.

It's all made possible by our unique 2.4 (wet) and 1.9 (dry) refractive index bead technology.

*Compared to previous generation 3M™ All Weather Elements and other commercially-available pavement marking optics.

In night-time rain conditions, wet retroreflective optics enable detection at longer distances than glass beads on yellow markings.

Based on testing jointly conducted with Continental Automotive Systems Inc. in December 2017 in Brimley, Michigan, USA. Materials tested included yellow LPM lines in conventional driving zones and night-time rain with either glass or 3M elements.


Testing for the real world.

It's impossible to prepare for every scenario—but that doesn't mean we won't try. At 3M, we test our pavement markings using wet-continuous methods, measuring brightness levels in a way that simulates actual weather situations. The result is pavement markings optimized to perform when it matters most: all the time.

	Product Selector Guide		
	Beads and Elements		
Attributes	**3M CR AWE**	**Beads (1.5/1.9 Index) Type I[1]**	**Beads (1.5 Index) Type III[2] and Larger**
Dry Retroreflectivity	✓	✓	✓
Wet Continuous Retroreflectivity	✓		
Dry/Wet Yellow Retroreflective Beads	✓		
Improved Whiteness	✓		
Designed for Machine Vision	✓		

[1]AASHTO M247 | [2]FP0 718.19

Dry Performance
Initial data taken without blowing off sample

R_L, MCD/m²/lux vs Days in Wheel Track

78: 486, 337 | 337: 326, 195
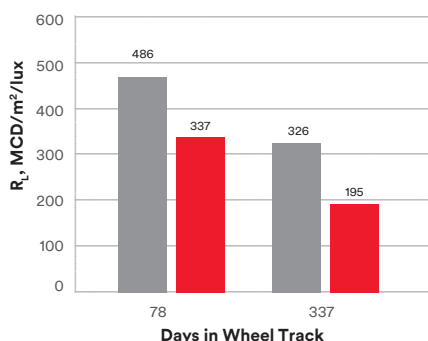
Wet Continuous Performance
as measured by ASTM E2832

R_L, MCD/m²/lux vs Days in Wheel Track

78: 250, 11 | 337: 79, 17
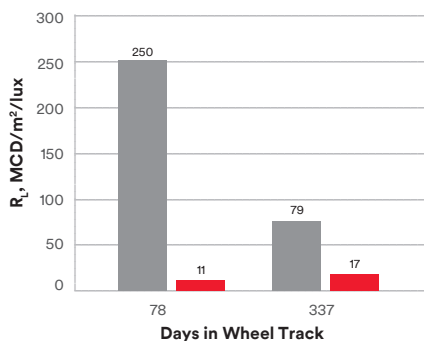
Wet Recovery Performance
as measured by ASTM E2177

R_L, MCD/m²/lux vs Days in Wheel Track

78: 406, 64 | 337: 116, 22
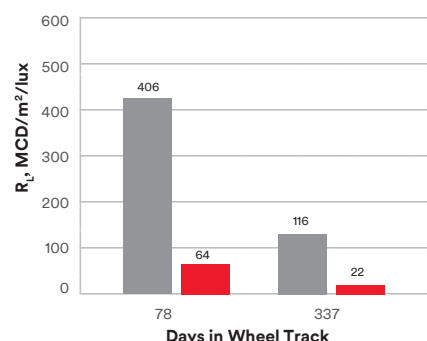
■ 3M™ Connected Roads All Weather Elements, 70M, 8 g/4 in. Inft, 18/50 1.5 Glass Beads   ■ 18/50 1.5 Glass Beads

3M™ Connected Roads All Weather Elements 70M and 1.5 Glass. New Orleans Deck, installed March 2017 in LPM. 78 and 337 days in wheel track.

Series	Uses elements with the following blend:	Products
50	~ 50% wet 2.4 refractive index beads & 50% dry 1.9 refractive index beads	50, 51, 50E*, 51E*, 50M*, 51M*
70	~ 80% wet 2.4 refractive index beads & 20% dry 1.9 refractive index beads	70E*, 71E*, 70M*, 71M*
90	~ 80% wet 2.4 refractive index beads & 20% dry 1.9 refractive index beads	90, 91

*For use with Epoxy (E) or MMA (M) binders

3M

Redefine the line with evolved pavement marking optics.
See how at 3M.ca/ConnectedRoads