

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 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.

Requires

20%
less elements
by weight
than previous generation
3M™ Reflective Elements



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 color 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 nighttime 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 nighttime rain with either glass or 3M elements.

Testing for the real world.

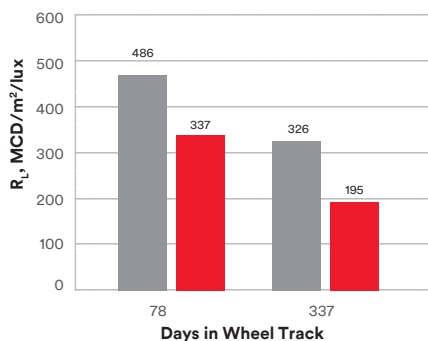
It's impossible to prepare for every scenario—but that doesn't mean we won't try. At 3M, we test our pavement markings using wet-continuous methods, measuring brightness levels in a way that simulates actual weather situations. The result is pavement markings optimized to perform when it matters most: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

¹AASHTO M247 | ²FP0 718.19

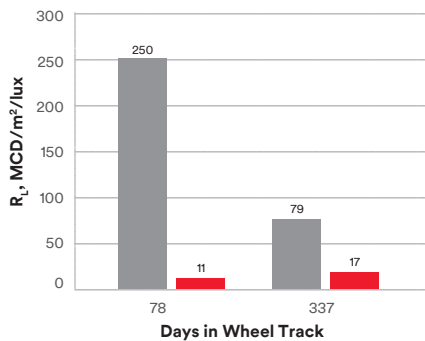
Dry Performance

Initial data taken without blowing off sample



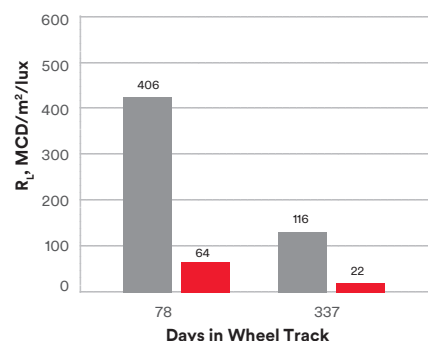
Wet Continuous Performance

as measured by ASTM E2832



Wet Recovery Performance

as measured by ASTM E2177



■ 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	about 50% wet 2.4 refractive index beads & 50% dry 1.9 refractive index beads	50, 51, 50E*, 51E*, 50M*, 51M*
70	about 80% wet 2.4 refractive index beads & 20% dry 1.9 refractive index beads	70E*, 71E*, 70M*, 71M*
90	about 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



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

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