



Eastman **TETRASHIELD™**
protective resin systems

**High performance
resins** for monocoats

EASTMAN

Eastman Tetrashield™ protective resin systems provide automotive original equipment manufacturers (OEMs) with a superior solution for pigmented monocoats.

Durable and flexible, Tetrashield creates coatings for cars that enhance appearance, improve weatherability, and bolster scratch resistance. In fact, in lab tests, coating formulations with Tetrashield show significant durability and aesthetic enhancements when compared to coatings using other resins.

Tetrashield resins also have excellent solubility properties and can be formulated at higher solids levels while maintaining excellent application parameters. This allows more efficient film build, faster film drying, and ultimately a more efficient flow rate and line speed.

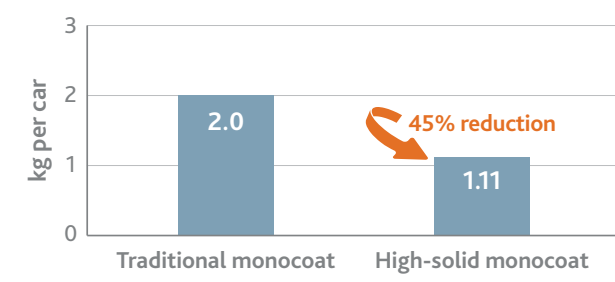
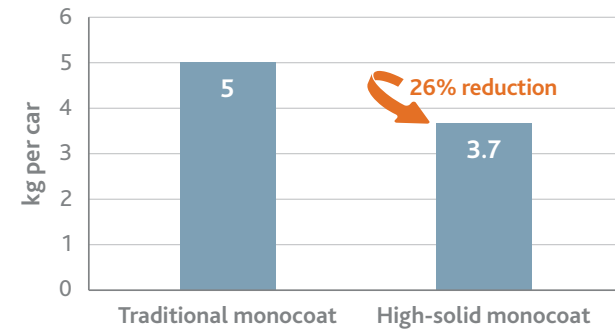


Advantages of using Tetrashield AC1001 in monocoats

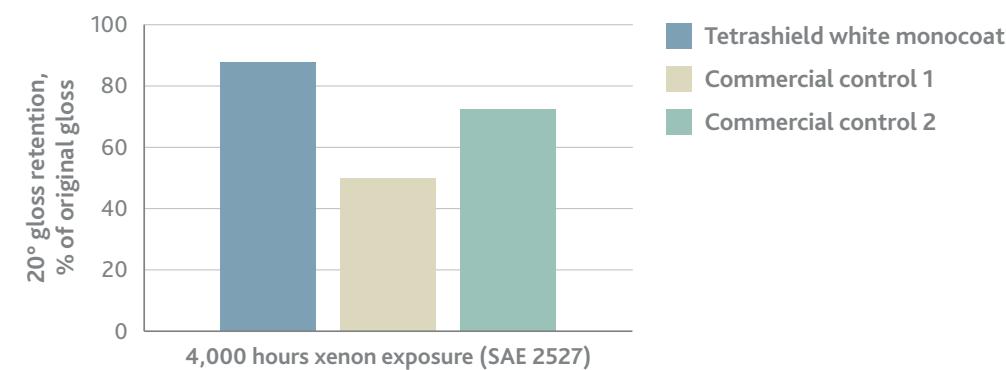
As a binder component in white monocoat formulations, Tetrashield AC1001:

- Allows higher solids at comparable application properties while lowering both coatings consumption and VOC emissions per car

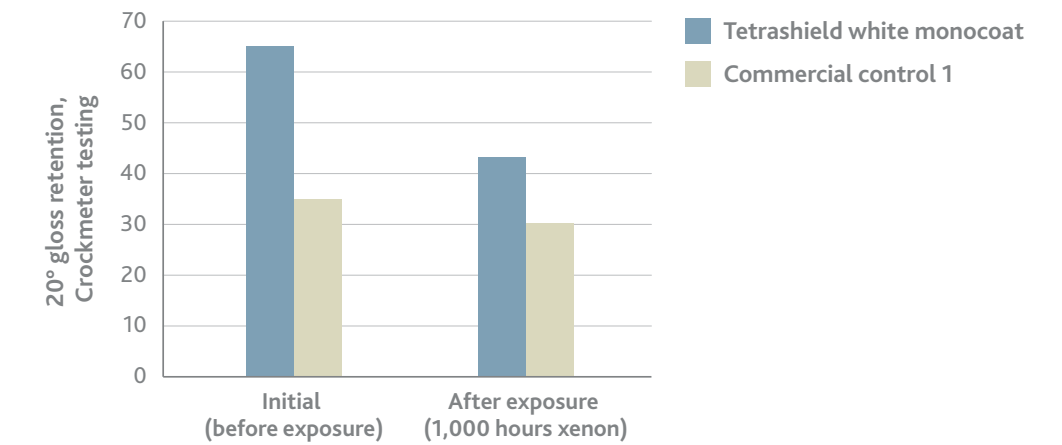
	Traditional 1K white monocoat	AC1001 1K high-solid white monocoat
Supply solid %	60%	70%
Dilution rate %	20%–30%	5%–10%
Spray viscosity	25–30 s (Din 4 Cup)	25–30 s (Din 4 Cup)
VOC in application	585 g/L	408 g/L
DFT	30–45 μm	30–45 μm
Flashing time	7–10 min	7–10 min
Baking condition	140°C for 20–30 min	140°C for 20–30 min
Coating consumption per car based on calculation	5 kg per car	3.7 kg per car
VOC emission per car based on calculation	2.0 kg per car	1.11 kg per car



- Provides exceptional weathering performance over commercial white monocoat options



- Helps achieve outstanding long-term appearance with improved scratch and mar resistance



Tetrashield AC1001 improves the performance and long-term durability of automotive coatings while reducing environmental impact and optimizing the coating process.

Eastman has a long history of developing innovative polymers to solve the toughest problems, and our latest innovation—Tetrashield protective resin systems—continues this legacy. The technical service team at Eastman provides industry-leading service and starting-point formulations to ensure formulators and OEMs get the best performance from Tetrashield protective resins.

An automaker's reputation lasts only as long as their coating does. In a world where the environment is tough on automotive coatings—and consumers are tough critics—protect what's important with Eastman Tetrashield™ protective resin systems.

For more information on Tetrashield, visit www.eastman.com/Tetrashield.



Tetrashield protective resin chemistry

Tetrashield offers superior polyester resin performance by incorporating a unique monomer technology. The monomer structure(s) addresses historical shortcomings of polyesters by shielding the polyester linkages, offering:

- Distinctive resin solubility properties
- Compatibility with common formulation ingredients
- Improved hydrolysis resistance
- Hardness/rigidity properties, enabling more durable and flexible coatings

Formulation and performance features

Tetrashield resins offer formulators a route to achieve enhanced coating properties with reduced environmental impact while providing automotive OEMs and tier suppliers an optimized coating process to improve productivity. Using Tetrashield protective resins as a binder component enables:

- Reduced VOC to achieve emission targets
- Extended durability due to increased hydrolytic stability
- Improved chemical and stain resistance
- Improved mar/scratch resistance and toughness due to higher T_g
- Enhanced long-term weathering performance
- Enhanced productivity due to higher solids at low viscosity
- Superior overall performance at higher solids compared to other commercial systems

Chemistry	Appearance	Weathering	Solids levels	Scratch/mar	Chemical
Tetrashield	++	++	++	++	++
Polyester polyol resin	+	—	++	+	—
Thermosetting acrylic	+	+	—	+	+

— Technology is deficient for that performance characteristic.

+ Technology is satisfactory for that performance characteristic.

++ Technology is improved over existing technologies for that performance characteristic.

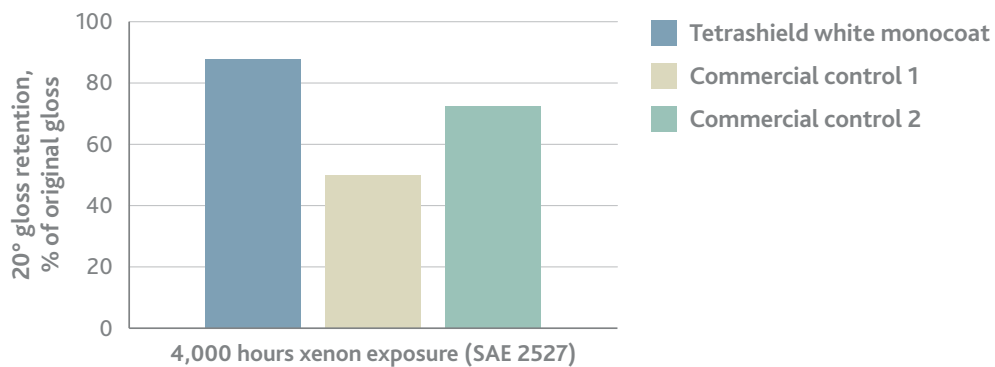
Advantages of using Tetrashield AC1001 in monocoats

As a binder component in white monocoat formulations, Tetrashield AC1001:

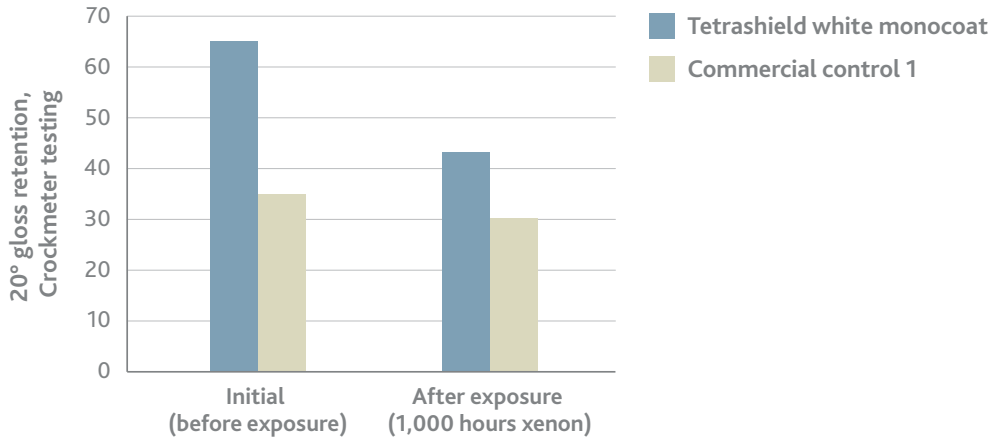
- Allows higher solids at comparable application properties while lowering both coatings consumption and VOC emissions per car

	Traditional 1K white monocoat	AC1001 1K high-solid white monocoat						
Supply solid %	60%	70%						
Dilution rate %	20%–30%	5%–10%						
Spray viscosity	25–30 s (Din 4 Cup)	25–30 s (Din 4 Cup)						
VOC in application	585 g/L	408 g/L						
DFT	30–45 µm	30–45 µm						
Flashing time	7–10 min	7–10 min						
Baking condition	140°C for 20–30 min	140°C for 20–30 min						
Coating consumption per car based on calculation	<table border="1"> <caption>Coating consumption per car</caption> <thead> <tr> <th>Monocoat Type</th> <th>kg per car</th> </tr> </thead> <tbody> <tr> <td>Traditional monocoat</td> <td>5</td> </tr> <tr> <td>High-solid monocoat</td> <td>3.7</td> </tr> </tbody> </table>		Monocoat Type	kg per car	Traditional monocoat	5	High-solid monocoat	3.7
Monocoat Type	kg per car							
Traditional monocoat	5							
High-solid monocoat	3.7							
VOC emission per car based on calculation	<table border="1"> <caption>VOC emission per car</caption> <thead> <tr> <th>Monocoat Type</th> <th>kg per car</th> </tr> </thead> <tbody> <tr> <td>Traditional monocoat</td> <td>2.0</td> </tr> <tr> <td>High-solid monocoat</td> <td>1.11</td> </tr> </tbody> </table>		Monocoat Type	kg per car	Traditional monocoat	2.0	High-solid monocoat	1.11
Monocoat Type	kg per car							
Traditional monocoat	2.0							
High-solid monocoat	1.11							

- Provides exceptional weathering performance over commercial white monocoat options



- Helps achieve outstanding long-term appearance with improved scratch and mar resistance



Tetrashield AC1001 improves the performance and long-term durability of automotive coatings while reducing environmental impact and optimizing the coating process.

Eastman has a long history of developing innovative polymers to solve the toughest problems, and our latest innovation—Tetrashield protective resin systems—continues this legacy. The technical service team at Eastman provides industry-leading service and starting-point formulations to ensure formulators and OEMs get the best performance from Tetrashield protective resins.

An automaker's reputation lasts only as long as their coating does. In a world where the environment is tough on automotive coatings—and consumers are tough critics—protect what's important with Eastman Tetrashield™ protective resin systems.

For more information on Tetrashield, visit www.eastman.com/Tetrashield.





Eastman Corporate Headquarters

P.O. Box 431
Kingsport, TN 37662-5280 U.S.A.

U.S.A. and Canada, 800-EASTMAN (800-327-8626)
Other Locations, +(1) 423-229-2000

www.eastman.com/locations

Although the information and recommendations set forth herein are presented in good faith, Eastman Chemical Company ("Eastman") and its subsidiaries make no representations or warranties as to the completeness or accuracy thereof. You must make your own determination of its suitability and completeness for your own use, for the protection of the environment, and for the health and safety of your employees and purchasers of your products. Nothing contained herein is to be construed as a recommendation to use any product, process, equipment, or formulation in conflict with any patent, and we make no representations or warranties, express or implied, that the use thereof will not infringe any patent. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND NOTHING HEREIN WAIVES ANY OF THE SELLER'S CONDITIONS OF SALE.

Safety Data Sheets providing safety precautions that should be observed when handling and storing our products are available online or by request. You should obtain and review available material safety information before handling our products. If any materials mentioned are not our products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed.

© 2018 Eastman. Eastman brands referenced herein are trademarks of Eastman or one of its subsidiaries or are being used under license. The ® symbol denotes registered trademark status in the U.S.; marks may also be registered internationally. Non-Eastman brands referenced herein are trademarks of their respective owners.