

A close-up photograph of a car's front end, showcasing a highly reflective metallic blue finish. The image captures the intricate details of the headlights, grille, and hood, with bright highlights and deep shadows that emphasize the car's sleek, modern design. The background is dark, making the vibrant blue of the car stand out prominently.

ELEMENTIS

Application Leaflet

THIXATROL® 5050W

WB Metallic Effect Pigment
Orientation Agent

Make a brilliant appearance

Unique chemistry, sustainable solutions

Key Benefits

Easier paint formulation

- Easy incorporation, direct use (any stage is possible)
- Less impact on viscosity
- Easier paint formulation design

Enhanced Performance

- Excellent metallic pigment orientation
- High FI value
- No effect on inter-coat adhesion

Stability

- Maintains stability after heat storage test
- Minimal influence on post-thickening behavior
- Viscosity remains stable after thermal exposure

CHEMICAL & PHYSICAL PROPERTIES	
Composition	Modified EVA emulsion copolymer
Appearance	Cream white opaque liquid
Non-volatile Content	18 - 22%
Brookfield Viscosity	<500 cps (Brookfield LV2, 25°C 50rpm/60sec)
pH Value	4.5 ~ 6.5
Specific Gravity	Approximately 1.0
Solvent	Water

Introduction

With the high frequency of the new car launch cycles and growing demand for personalized metallic colors, automotive OEM paint manufacturers face challenges in formulation design, aesthetic enhancement, and accelerating product time to marketplace.

THIXATROL® 5050W, through innovative design, optimizes metallic pigment orientation while maintaining minimal impact on viscosity and flexible incorporation process, helping formulators effectively address these challenges.

Features

- Excellent metallic effect pigment orientation
- High FI value
- Less impact on viscosity
- Less impact on post thickening
- Easy incorporation, direct use (any stage is possible)
- Good stability after heat storage
- Easier paint formulation design
- Accelerate time to marketplace

Target Applications

- Automotive coatings
- Industrial coatings
- Plastic coatings
- Wood & furniture coatings
- Leather coatings
- Architectural coatings

Incorporation and levels of use

THIXATROL® 5050W can be easily incorporated under moderate shear without the need for pre-gelation or pre-dilution, making it suitable for direct addition to metallic pastes.

While it exhibits a slight thickening effect within the recommended pH range, synergistic thixotropic behavior can be achieved when combined with RHEOLATE® 150 or other thixotropic additives. Since THIXATROL® 5050W may slightly reduce pH, adjusting the paint base system to pH 9.0–9.5 before incorporation is recommended for optimal performance.

Typical dosage ranges from 2% to 10% of the total formulation weight, though a ladder study is advised to determine the ideal level for specific formulations. Adequate mixing during incorporation is essential to ensure maximum efficacy.

Products tested

An intensive study was conducted to benchmark THIXATROL® 5050W against competitive rheology modifiers, focusing on its unique ability to optimize metallic pigment orientation while maintaining critical formulation stability.

The evaluation covered rheological properties, application characteristics (including spray viscosity and film formation), and thermal storage stability under industry-standard conditions.

FIGURE 1: Mechanism of Metallic Orientation (Before the Water Evaporates)

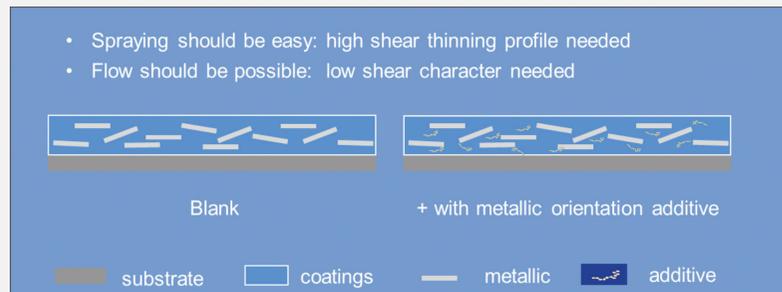


FIGURE 2: Mechanism of Metallic Orientation (After the Water Evaporates)

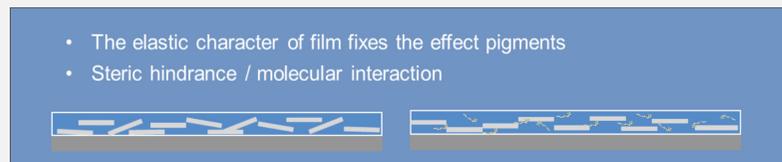
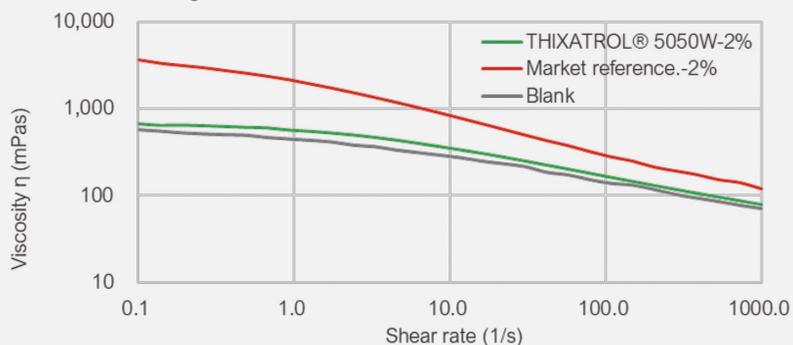


FIGURE 3: Rheological Flow Curves



Why choose THIXATROL® 5050W?

Efficiency and Performance

THIXATROL® 5050W allows automotive paint manufacturers and formulators develop high-performance waterborne metallic paints faster and more consistently. By eliminating post-thickening and pigment settling issues, it delivers superior metallic effects without compromising coating rheology.

Mechanism of Metallic Orientation in Waterborne Paint

FIGURE 1 illustrates poor orientation when solvent and water have not evaporated.

FIGURE 2 shows that steric hindrance and viscoelasticity during drying are key to orientation. THIXATROL® 5050W provides steric hindrance, significantly improving pigment alignment.

Application Performance Test Results Less Impact on Viscosity

THIXATROL® 5050W has a limited effect on viscosity even at increased dosage.

As illustrated in FIGURE 3, within the acrylic/amino baking paint system, THIXATROL® 5050W demonstrates negligible impact on the overall rheological profile, particularly under high shear conditions. The flow curve indicates that the high shear viscosity—critical for spray application and film leveling—remains largely unaffected, ensuring consistent atomization and smooth appearance.

FIGURE 4: Anti-Settling Performance After Heat Storage

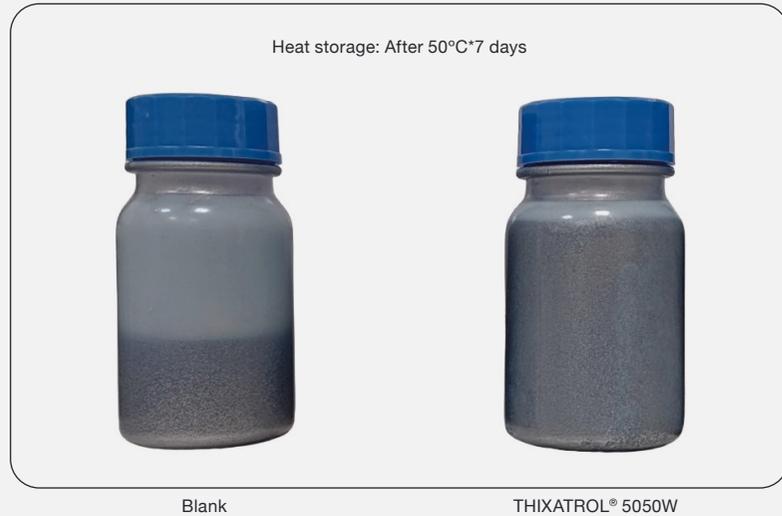
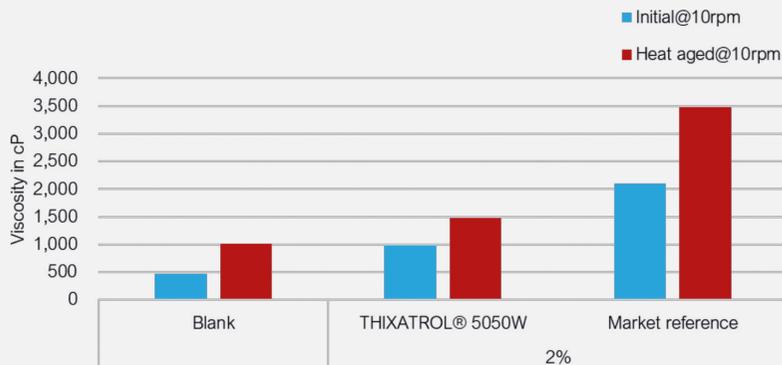


FIGURE 5: Viscosity Development After Heat Storage



Strong Anti-Settling Properties

THIXATROL® 5050W demonstrates good anti-settling performance in waterborne metallic paint.

In **FIGURE 4**: THIXATROL® 5050W delivers excellent anti-settling performance, maintaining pigment suspension effectively after a 7-day storage test at 50°C.

Minimal Impact on Post-Thickening

Additionally, in **FIGURE 5**, it exhibits significantly lower post-thickening behavior compared to the market reference, ensuring better viscosity stability and ease of re-dispersion, which are critical for maintaining consistent application properties and shelf-life performance.

FIGURE 6: Metallic Orientation Improvement

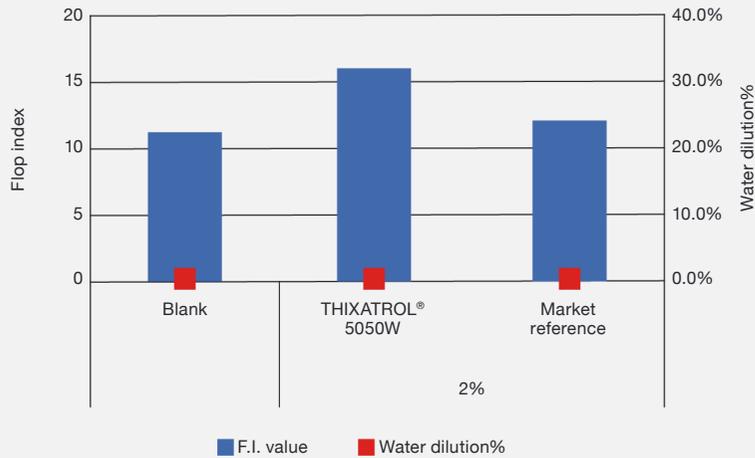
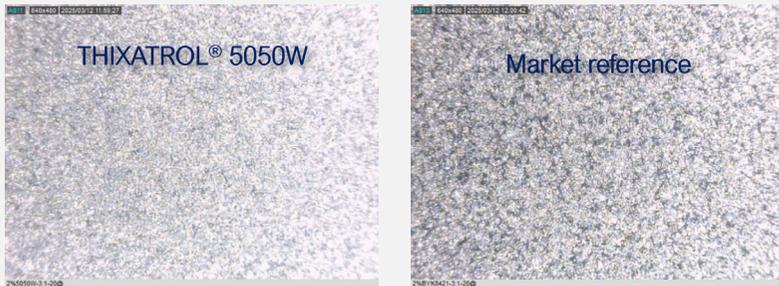


FIGURE 7: Opacity of metallic coatings



Enhanced Metallic Orientation

In **FIGURE 6**, THIXATROL® 5050W significantly enhances metallic pigment orientation, as evidenced by a high Flop Index (FI) value, indicating superior alignment and visual brilliance. Additionally, it exerts minimal influence on the dilution ratio, thereby allowing for higher solids content in the final formulation. This contributes to improved film build and application efficiency without compromising flow or leveling characteristics.

In **FIGURE 7**, THIXATROL® 5050W demonstrates superior opacity compared to market reference, contributing to enhanced hiding power. Additionally, it promotes a more uniform and consistent surface appearance, which is critical for achieving high-quality visual aesthetics in metallic coatings.



Conclusion

THIXATROL® 5050W, a new generation of metallic effect pigment orientating agent from ELEMENTIS, helps automotive coatings manufacturers and formulators to develop high-performance waterborne metallic coating faster and more consistently.

Unlike traditional metallic pigment orienting agents, THIXATROL® 5050W ensures excellent metallic effects and coating appearance while effectively controlling post-thickening and pigment settling problems without significantly affecting the rheological behaviour of the coating, making formulation adjustment easier and more flexible.

NOTE:

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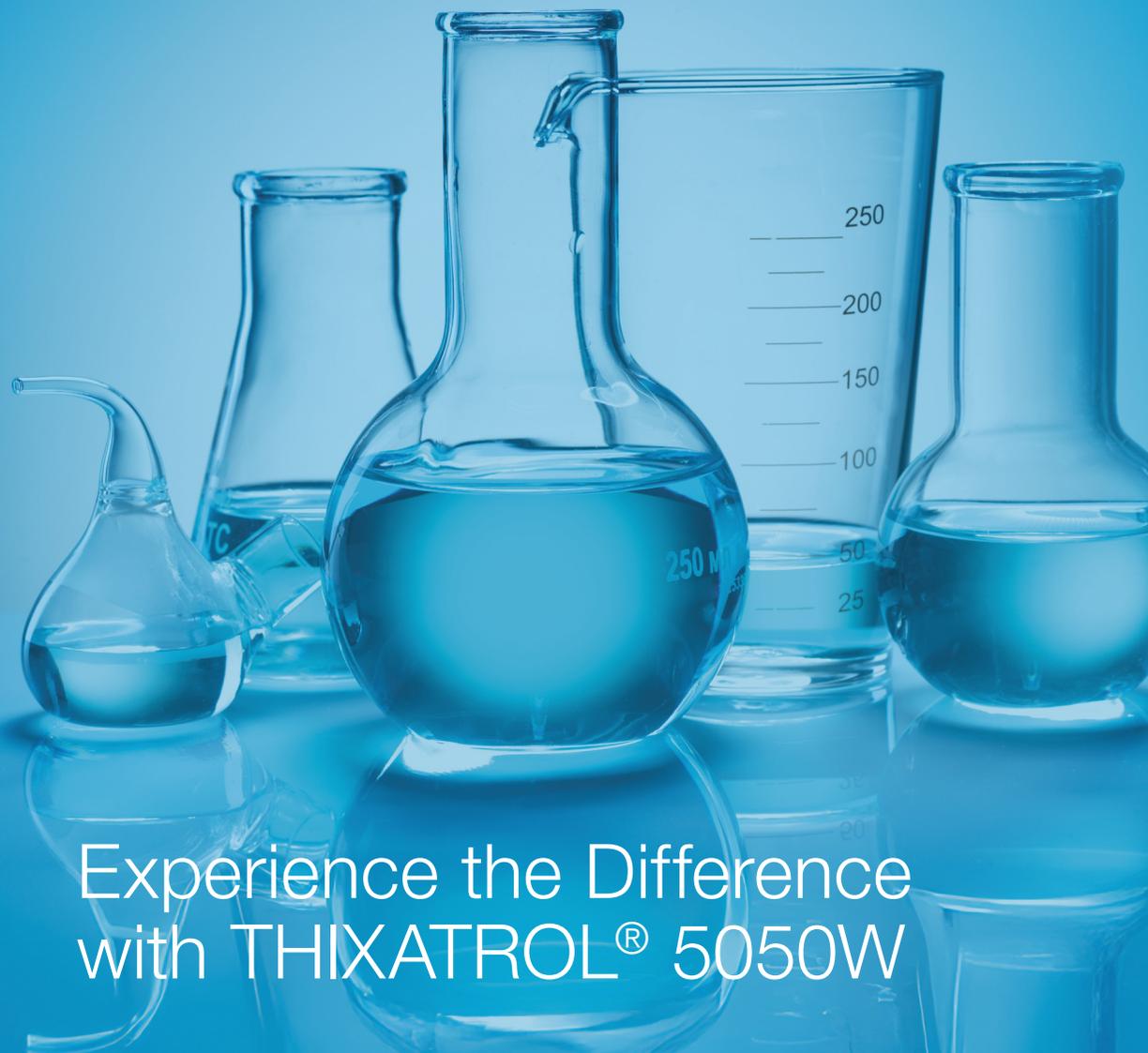
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ABOUT US:

ELEMENTIS is a global specialty chemicals company that provides innovative solutions to enhance the performance of our customers' products. Our commitment to sustainability and excellence drives us to deliver high-quality products like THIXATROL® 5050W.



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