



SILVER EFFECT PIGMENTS **REVOLUTIONIZING** AUTONOMOUS DRIVING

SyMic[®] OEM

Luxan[®] CFX

silvershine[®]

STAPA[®]
IL HYDROLAN



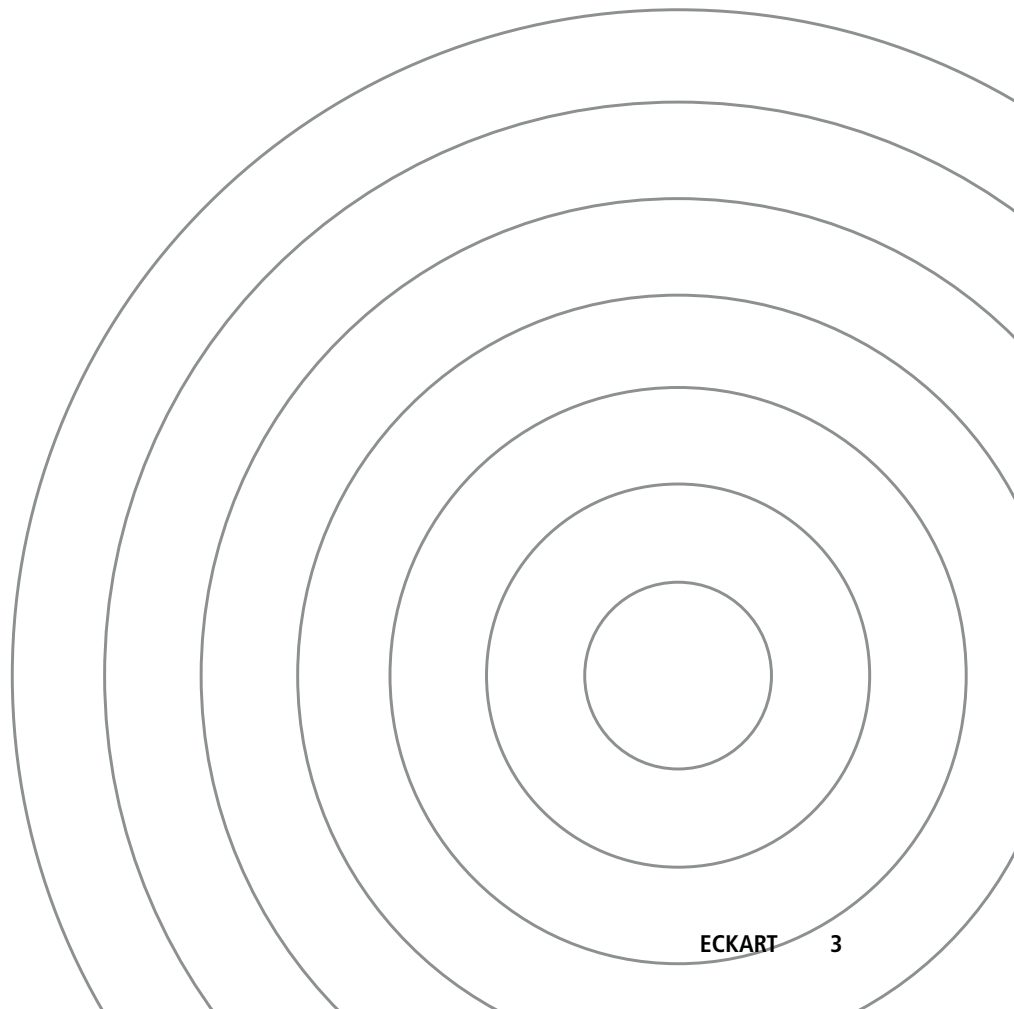
SILVER EFFECT PIGMENTS **REVOLUTIONIZING** AUTONOMOUS DRIVING

Advanced radar-transparent coatings

With novel approaches, we continue to enable full silver tones for radar-transparent coatings. Our advanced technology addresses the challenges of autonomous driving while meeting the aesthetic requirements of automotive coatings.

The unique properties of our aluminum and pearlescent pigments are due to the innovative manufacturing process and combine an impressive silver appearance with the technical challenge of formulating radar-transparent coatings for autonomous vehicles.

This allows the requirements for radar transparent coatings to be met, giving vehicle manufacturers the flexibility to select the best materials for their specific requirements.

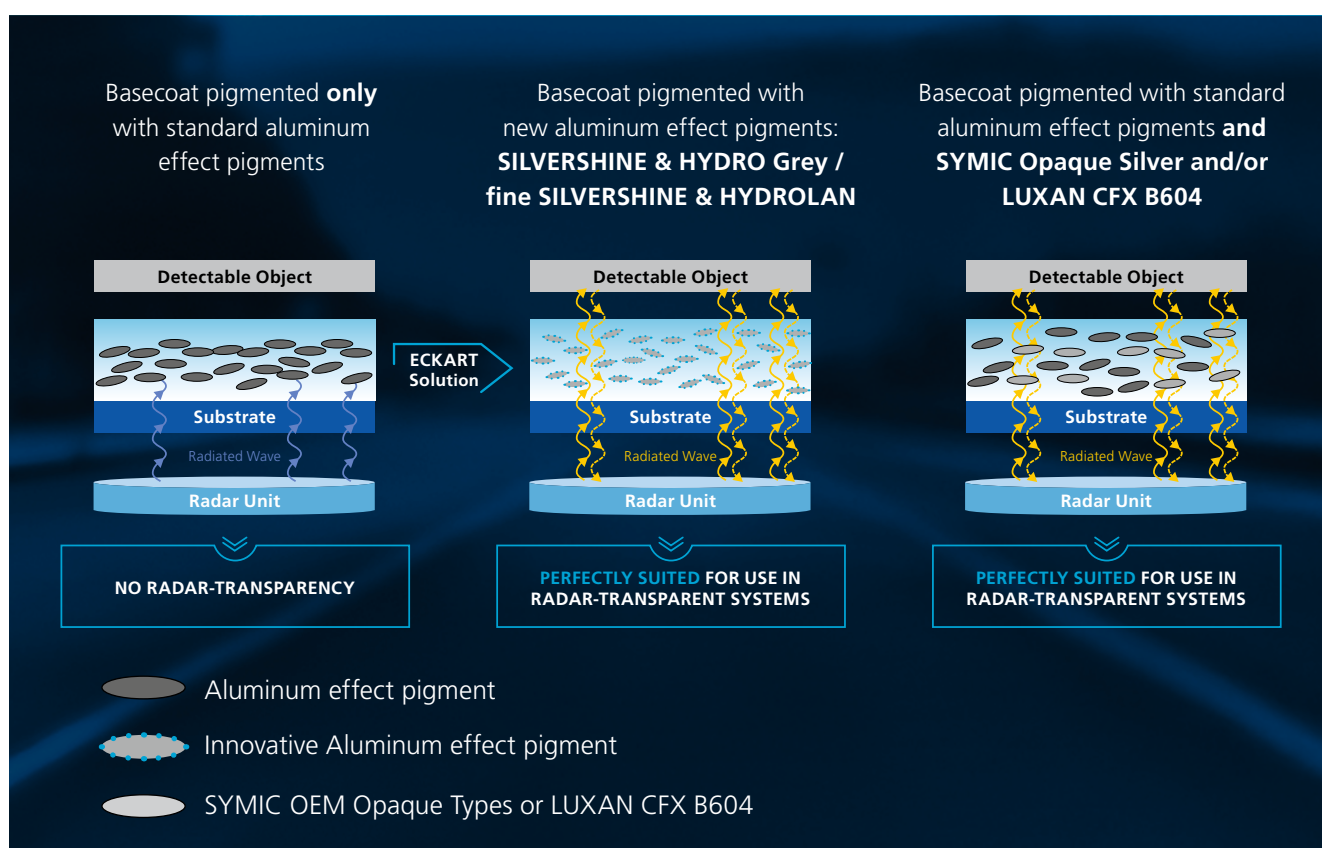


SILVER METALLIC EFFECT SOLUTIONS FOR **RADAR TRANSPARENCY**:

Focus on Aluminum and Pearlescent Pigments

ECKART offers two pioneering approaches to achieve high radar transparency coatings. First, the unique conventional SILVERSHINE Grey types and their water-based SILVERSHINE Hydro Grey versions enable radar-transparent full-tone silver shades using only aluminum pigments through a new fines technology.

A second approach focuses on the combination of aluminum effect pigments with the pearlescent pigment types SYMIC Opaque and/or LUXAN CFX B604 Midnight Silver. These pearlescent pigments act as a radar transparency spacer while providing metallic optical properties between the radar impermeable aluminum pigments. Both techniques create a perfect balance between functionality and aesthetics.



The coating must be optimized for autonomous driving, taking into account many different factors influencing radar performance.

Influencing factors of ECKART pigments:

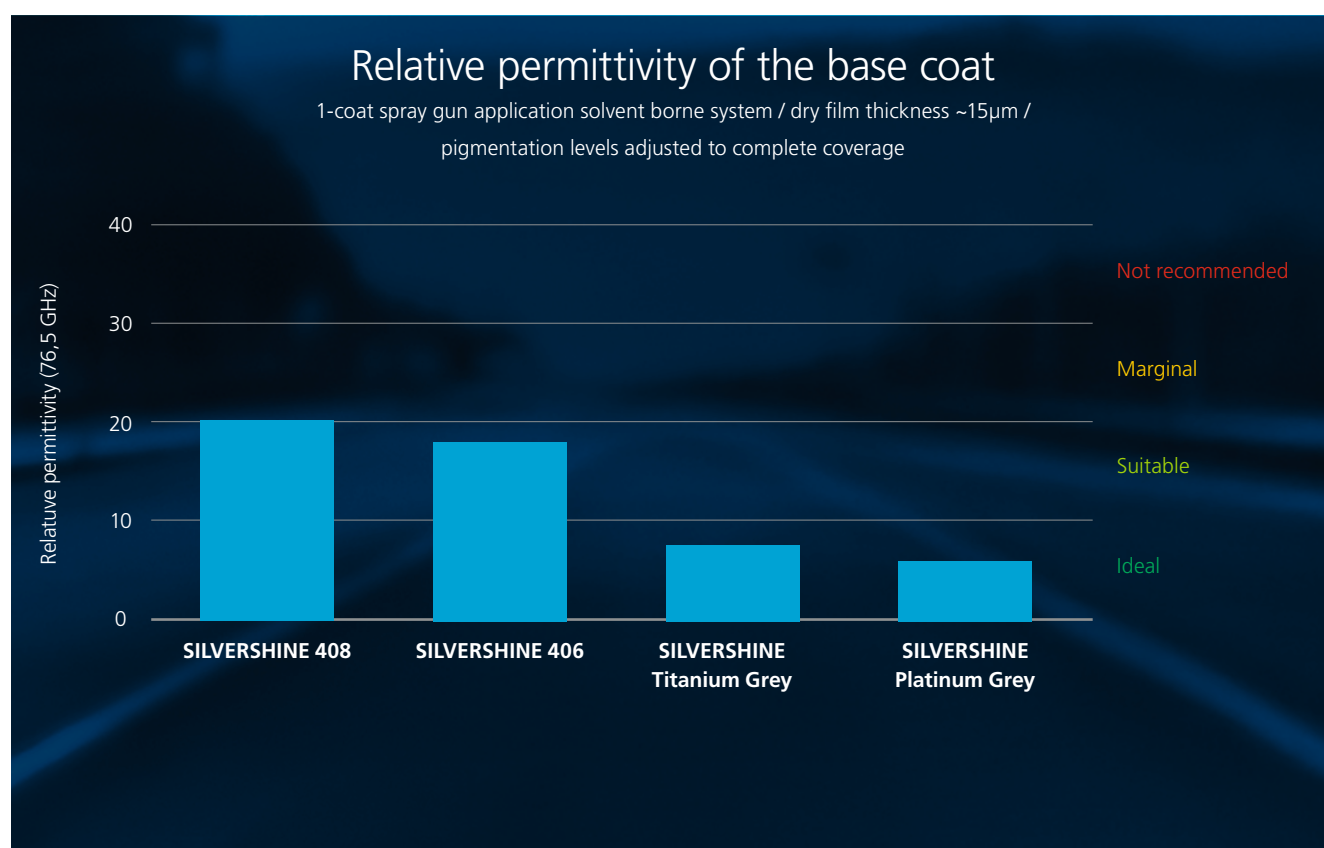
- composition • coating • shape • size

Further examples of influencing factors:

- coating system • design • way of application • formulation

REALIZING HIGH RADAR TRANSPARENCY WITH **PURE METALLIC** FULL TONES

Using the fine SILVERSHINE and HYDROLAN products, ECKART provides the capability to achieve silver metallic full tones with minimal radar damping, utilizing only aluminum pigments. The special pigments, SILVERSHINE Platinum and Titanium Grey, are well-suited for solvent-based radar-transparent coatings. In aqueous systems, their SILVERSHINE Hydro Platinum Grey and SILVERSHINE Hydro Titanium Grey versions are perfectly suitable as well. The encapsulated fine HYDROLAN products for water-based systems are even more beneficial due to their radar transparency and related relative permittivity values. Recommendations for radar-transparent formulations purely with aluminum pigments:



PERMITTIVITY SCORE – PRECISE AND CLEAR

The developed color-based Permittivity-Score offers an innovative method for evaluating and visualizing relative permittivity values by using different shades of color to illustrate the possible applications for radar-transparent coatings.

LUXAN CFX B604
Midnight Silver



SILVERSHINE HYDRO
Platinum Grey



SILVERSHINE HYDRO
Titanium Grey



SILVERSHINE 410



	Suitability	Permittivity Value	Description
A	Ideal	< 10	Ideal for radar formulation; minimal electromagnetic wave impact
B	Suitable	10 - 20	Well-suited for radar formulation; slight electromagnetic wave impact, radar-suitable
C	Marginal	20 - 30	Suitability must be evaluated. Noticeable impact on electromagnetic waves
D	Not recommended	> 30	Not recommended for radar formulations. Significant impact on electromagnetic waves

Product Recommendations for radar-transparent formulations purely with aluminum:

FOR SOLVENT BORNE SYSTEMS:

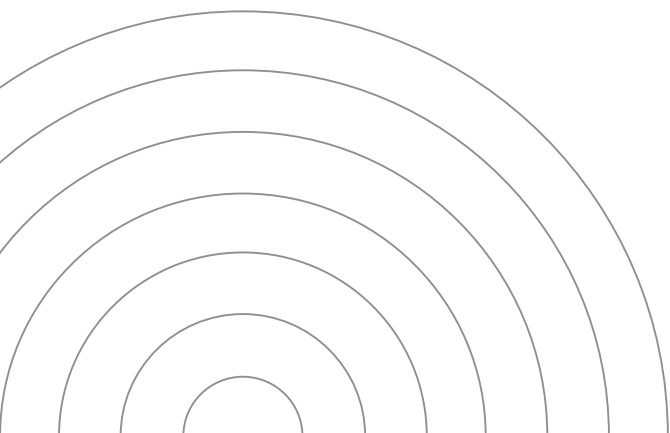
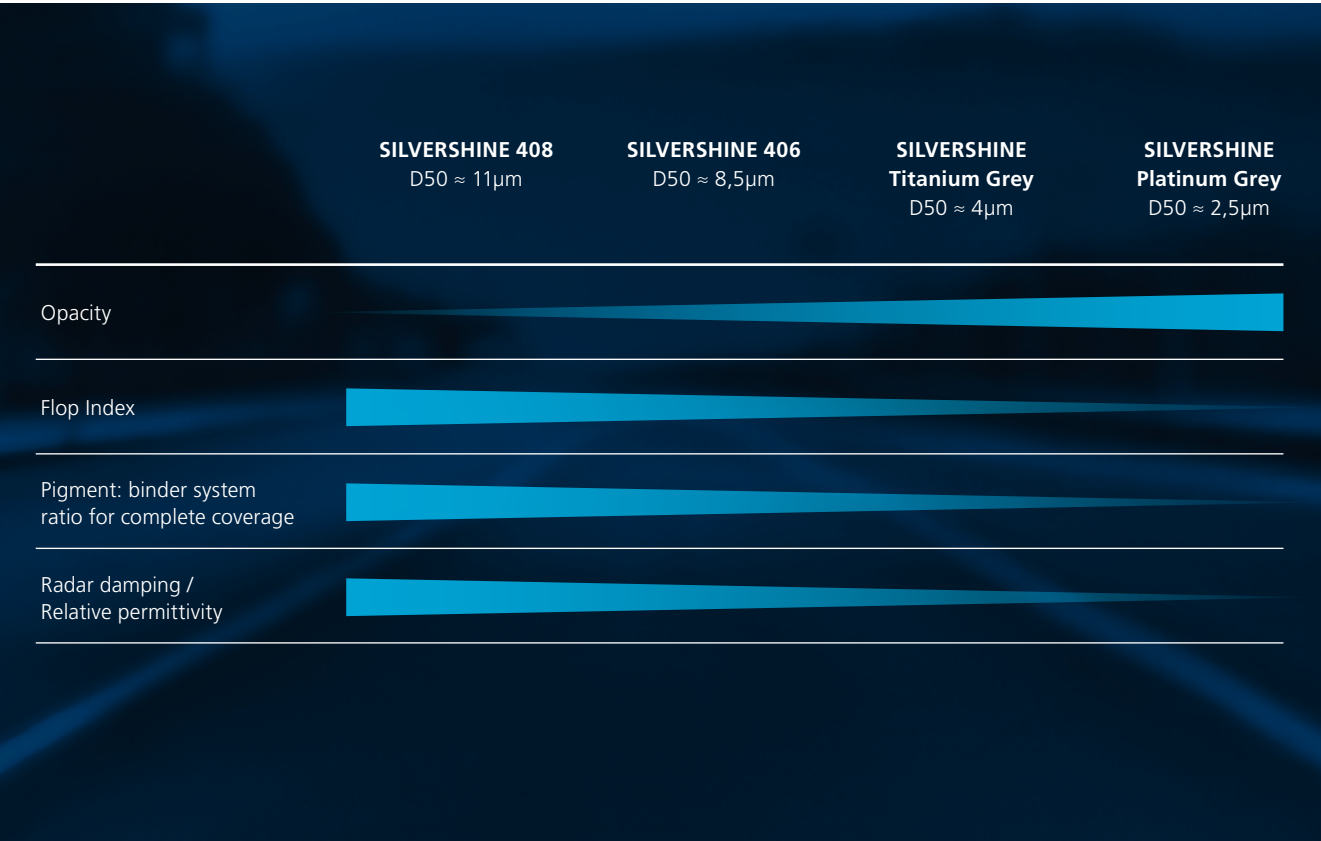
- SILVERSHINE 408
- SILVERSHINE 406
- SILVERSHINE Platinum Grey
- SILVERSHINE Titanium Grey

FOR WATER BORNE SYSTEMS:

- STAPA® IL HYDROLAN S 408
- SILVERSHINE Hydro Platinum Grey
- SILVERSHINE Hydro Titanium Grey

GUIDE FOR TECHNICAL AND OPTICAL PROPERTIES OF SILVERSHINE PRODUCTS

The SILVERSHINE series excel with their exceptional opacity and metallic brilliance, enabling formulations with high radar transparency.



BRIGHT AND BRILLIANT EFFECT – SYMIC OEM OPAQUE SILVER

Greatest flexibility for radar-transparent formulations
with metallic character

The SYMIC OEM Opaque Silver series with its bright appearance and metallic brilliance opens up extensive design scope for the formulation of radar-transparent metallic effects.

Optical appearance depending on fineness



**SYMIC A 604 /
SYMIC OEM**
Superfine Opaque Silver
D50 ≈ 9µm



**SYMIC B 604 /
SYMIC OEM**
Fine Opaque Silver
D50 ≈ 14µm



**SYMIC C 604 /
SYMIC OEM**
Medium Opaque Silver
D50 ≈ 22µm

Opacity

Lightness (near gloss)

Flop Index

Sparkling

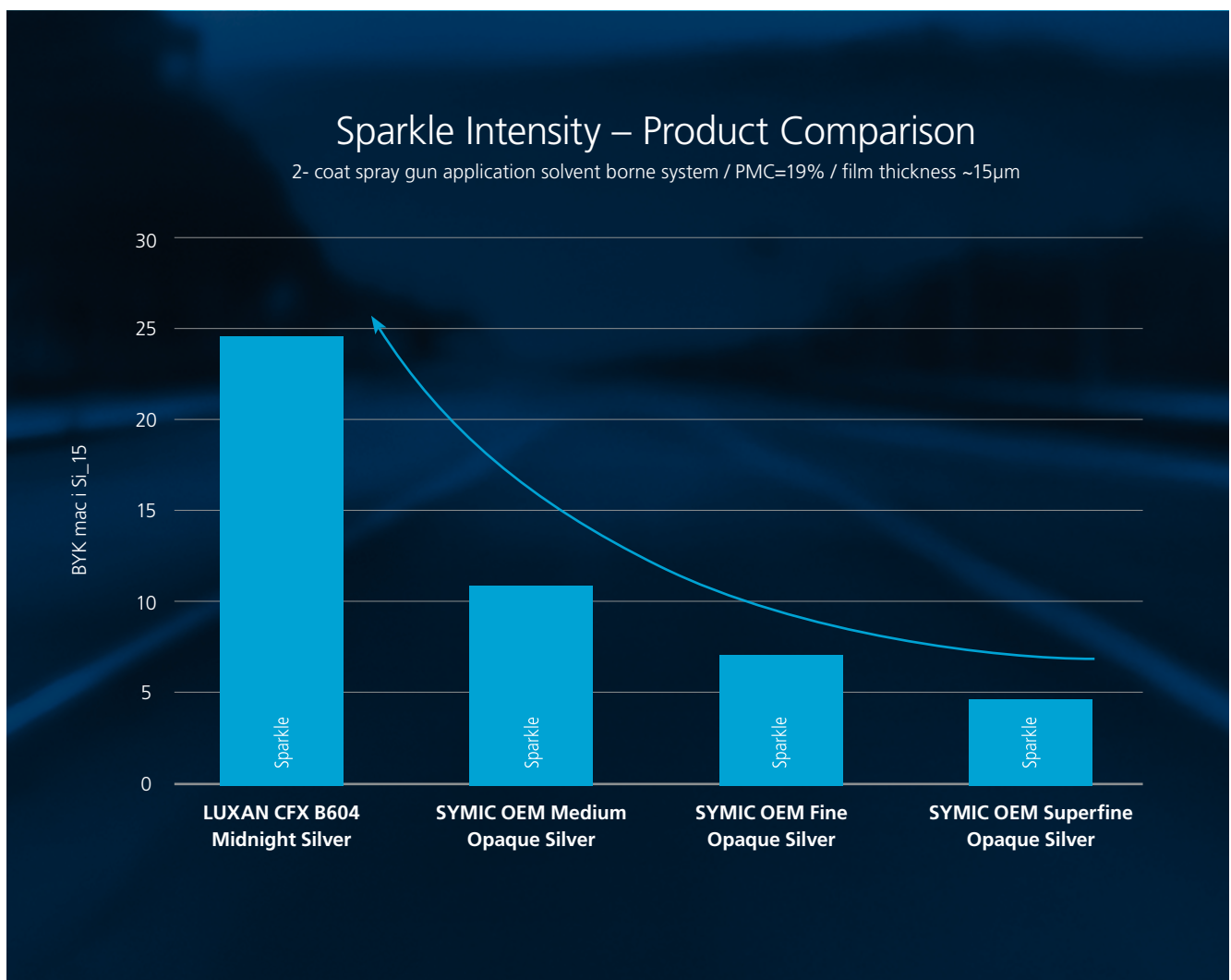
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Graininess

MYSTIC SPARKLE AND 3D APPEARANCE— LUXAN CFX B604 MIDNIGHT SILVER

The sparkle booster for autonomous driving

LUXAN CFX B604 Midnight Silver captivates with its mystical silver effect that transitions into a deep, dark-down flop. The interaction of a light source with the ultra-deep sparkle brings the individual shape of your application to life, revealing a mysterious 3D appearance.



The advantages of SYMIC OEM Opaque Silver & LUXAN CFX B604 Midnight Silver at a glance:

- Excellent coverage and strong dark-down flop for pearlescent effect pigments
- High radar transparency with metallic optical properties
- No EMI shielding
- Excellent chemical and weather stability



Technical Data

	Substrate	Particle Size Distribution D50	Density DIN 66137	Bulk Density EN ISO 60	Article Number
SYMIC OEM					
Superfine Opaque Silver	Artificial Mica	3µm - 15µm	3,1	0,2	027375
Fine Opaque Silver	Artificial Mica	7µm - 25µm	3,1	0,2	020505
Medium Opaque Silver	Artificial Mica	12µm - 38µm	3,1	0,3	035638
LUXAN CFX					
B604 Midnight Silver	Borosilicate Glass	5µm - 45µm	2,8	0,5	027163

Delivery Form: Powder

Packaging Sizes: 100g (sampling size), 1kg, 5kg, 25kg



Technical Data

	Particle Size Distribution D50	Non volatile content	Solvent	Article Number
SILVERSHINE				
Silvershine 406	8,5 µm	60	Mineral spirit, solvent naphta	026925
Silvershine 408	10 µm	60	Mineral spirit, solvent naphta	023722
Silvershine 410	10 µm	70	Mineral spirit, solvent naphta	027301
Silvershine Titanium Grey	4 µm	30	Iso propanol / methoxy propanol/ additives	027434
Silvershine Platinum Grey	2,5 µm	30	Iso propanol / methoxy propanol/ additives	027433
Silvershine Hydro Titanium Grey	4 µm	20	Iso propanol / methoxy propanol/ additives	028451
Silvershine Hydro Platinum Grey	2,5 µm	20	Iso propanol / methoxy propanol/ additives	028529
STAPA® IL HYDROLAN				
STAPA® IL Hydrolan S 408	11 µm	45	Iso propanol	024520

WE ARE READY FOR THE FUTURE. **ARE YOU?**

For more information about our products,
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