

# WELL EQUIPPED FOR TOUGH CONDITIONS

Effect pigments for  
automotive and other  
exterior applications



# WEATHERPROOF EFFECT PIGMENTS FOR DEMANDING APPLICATIONS

by Kuncai

Kuncai is one of the leading manufacturers of effect pigments for highly demanding coating applications. Our range of pigments for exterior applications offers superior weathering resistance. By using a multilayer-coating technology and different dedicated surface treatments, we can provide the right choice of pigments for different coating systems. Our range of pigments for exterior use is characterized by a strictly controlled particle size distribution and meets stringent process inspection requirements for accurate and stable color control, weathering resistance and adhesion.

# FEATURES OF HIGH-PERFORMANCE EFFECT PIGMENTS

**High performance effect pigments** for exterior application use various substrates such as natural mica, synthetic mica and borosilicate.

Around 20 years ago, Kuncai started to produce pearlescent pigments based on natural mica. Since then, the company has developed into one of the major manufacturers of mica-based effect pigments.

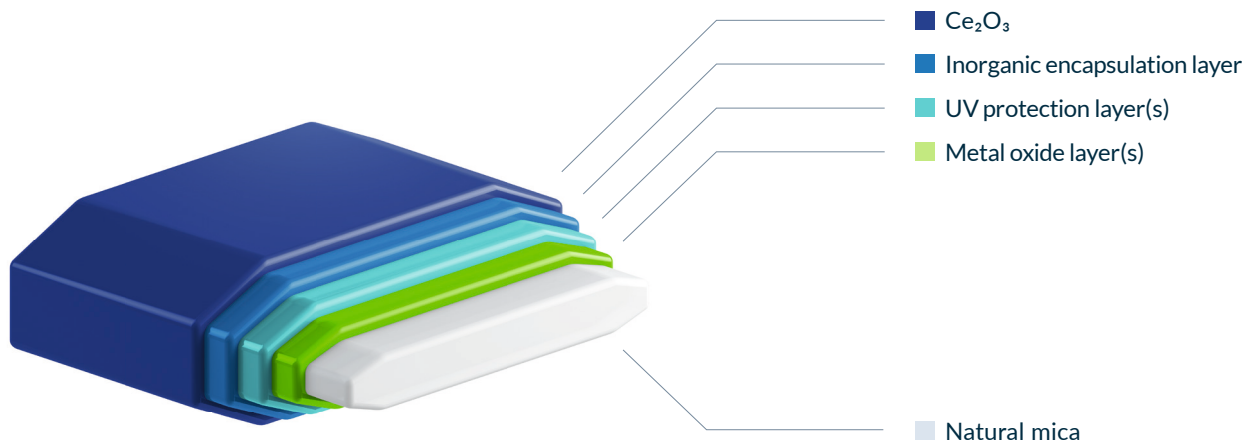
A strong R&D department, investment in a fully automated, state-of-the-art production plant, a patented production technology developed by the company and the establishment of in-house raw material production of synthetic mica clearly demonstrate Kuncai's focus on innovation and sustainability.



## SPECIAL PRODUCT FEATURES

- Fine and narrow particle size distribution
- Pure silver white, strong interference and intense metallic luster effects
- Superior weather-resistance performance
- Suitable for water- or solventborne application systems
- Eco-friendly production process

## CROSS-SECTION OF A WEATHER-RESISTANT EFFECT PIGMENT as an example KC 9103 FC



# APPLICATION AREAS FOR WEATHER PROOF EFFECT PIGMENTS

**Effect pigments enable any application system to turn the used object into something special.** Whether in automotive coatings, dispersion paints or plastic applications, floor coatings or artist paints, effect pigments have established and proven themselves time and time again. They have been used in:

- Automotive OEM Coatings
- Refinish Coatings
- Powder Coatings
- Plastic Coatings and Injection Molding
- Floor Coatings
- Leather Coatings
- Wood Coatings
- Industrial Coatings
- Bicycles, Motorcycles
- Aviation Industry
- Mechanical Engineering
- Packaging

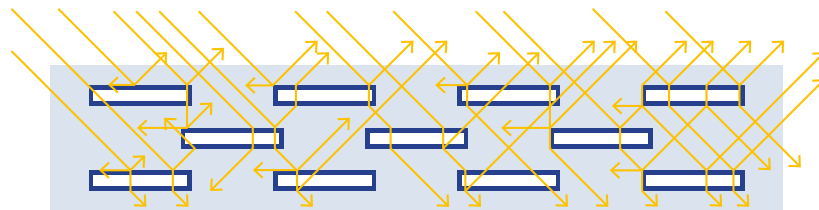
# NATURAL MICA Based Pigments

**Pearl luster pigments are produced from thin platelets of the natural mineral, mica.** The platelets are covered with a thin layer of metal oxides such as titanium dioxide and/or iron oxide. Through the interaction with light refraction, reflection and interference, this creates unique luster and color effects.

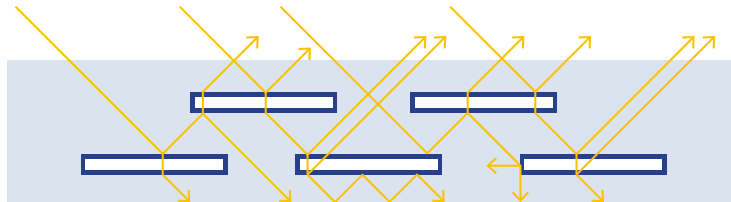
It is possible to achieve silver white and colored pearl luster effects, as well as gold and metallic luster effects. The iridescence allows for the creation of angle dependent color designs. Depending on the size of the effect pigment particles, the effect varies from silky matt to sparkling.

## EFFECT PIGMENTS FOR SHIMMER OR SPARKLE

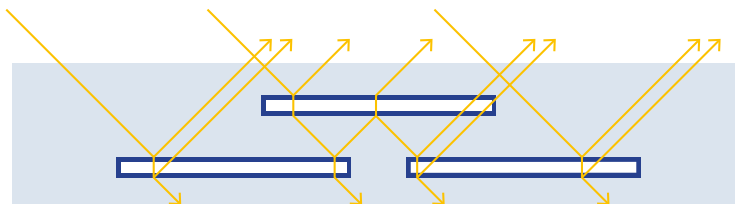
**KC 9119\***  
Smooth shimmering effect  
High hiding power  
Fine  
< 15 µm  
5 - 25 µm



**KC 9103\***  
Typical Pearlescent  
Medium hiding power  
Medium  
10 - 45 µm  
10 - 60 µm



**KC 9153\***  
Glittering effect  
Low hiding power  
Coarse  
< 100 µm



\*available in different weather-treated versions: WR/SW/FC and with Synthetic Mica as base material

**KC Pearl pigments can produce distinctive designs with individual effects** when applied on different undercoat/background colors. Moreover, by directly combining colorants with effect pigments in a single coat, this opens up a wide range of styling options.

# SYNTHETIC MICA

## Based Pigments

**Our portfolio of natural mica based Pearls** are also available as synthetic mica-based versions, the CRYSTAL product line. The transparency and properties of synthetic mica as a substrate ensure the effect pigment has limited influence on the background color and just gives it greater color intensity.

Kuncai adopted the multilayer technology of different metal oxides on synthetic mica-based products. The KYNTALINE series give an increased level of hiding power by an increased level of sparkle compared to the CRYSTAL line.

Additionally premium product ranges that meet the coatings industry's specialist requirement for small particle sizes, intense colors in all color areas, good resistance properties and interesting color effects were developed:

### **SYNTHETIC MICA – Setallic** **High Color Saturation in Reds and Earth Tones**

Based on an advanced production technology, Setallic offers a range of red and earth tones based on synthetic mica multilayer pigments. Defined coating layers of  $\text{Fe}_2\text{O}_3$  give this product range pronounced color intensity, saturation and a three-dimensional appearance in saturated strong earth tones and shades of red with good coverage.

### **SYNTHETIC MICA – XillaMaya** **The Paradox of Combining Sparkle at Fine Particle Sizes**

The XillaMaya product range appears to beat the laws of physics. Kuncai has managed to combine a strong sparkle with high color intensity and small particle size. A smart combination of different reflective oxide coatings and the selection of a specific synthetic mica as base material ensure an intense glitter effect, extraordinary color saturation and excellent hiding power. Direct light has a positive influence on the sparkle effect and the product series exhibits a 3D sparkle look under these conditions. XillaMaya is furthermore straightforward to apply as its particle size of 5 – 30  $\mu\text{m}$  makes it easy to use in nearly every application system. XillaMaya is available in: Silver white, interference color and metallic colors.



# BOROSILICATE

## Based Pigments

**The highest transparency and the most intensive multicolor sparkle** will be achieved by our Borosilicate based pigment series Dinastar and Diamond. These series have the most neutral body color (driven by the substrate) and the lowest influence on the background color and adds simultaneously lively sparkle to the final formulation in medium and coarse particle sizes.

# WEATHER RESISTANT PIGMENTS

## WR, SW AND FC

The quality requirements for exterior applications are considerably higher than for other indoor applications. For these applications, Kuncai therefore offers weather resistant versions of most of its standard pigment ranges, which also meet the high demands of modern automotive coating systems. An additional finishing layer on the pigment itself ensures outstanding weather resistance for all external applications.

Our weather resistant effect pigments series fulfill the standard testing procedure DIN EN ISO 6270-2 for humidity resistance and SAE J 2527 for accelerated weathering.

For weatherproof pigments used in outdoor applications, Kuncai pigments also come with particular specifications, such as narrower distribution and overall smaller particle size and a tighter color tolerance. We have developed the right pigment weather treatment for different exterior application areas:





## WR – FOR POWDER AND PLASTIC COATING AND OTHER APPLICATION SYSTEMS

### Cr<sub>2</sub>O<sub>3</sub> Coating



#### PRODUCT FEATURES

- Final coating of the effect pigment with chromium hydroxide to achieve desired weather resistance
- High humidity resistance
- Excellent high temperature resistance (up to 250°C)



#### APPLICATION PROPERTIES

- Suitable for waterborne and solventborne systems
- Easily dispersible
- Suitable for exterior coatings due to excellent weather resistance properties
- Suitable for interior applications due to outstanding humidity resistance and UV resistance properties
- Not recommended for use in OEM and refinish coatings due to Cr restrictions

## SW – FOR SOLVENT- AND WATERBORNE SYSTEMS

### Cr<sub>2</sub>O<sub>3</sub>-free Coating



#### PRODUCT FEATURES

- Final coating of the effect pigment with cerium hydroxide to achieve desired weather resistance
- Coating with coupling agent to improve compatibility
- Excellent UV yellowing resistance
- Very good high-temperature resistance (up to 200°C)
- Very good humidity resistance



#### APPLICATION PROPERTIES

- Meets the automotive industry regulations
- Suitable for waterborne and solventborne systems
- Easily dispersible
- Highly recommended for use in OEM and refinish coating

## FC - FOR COIL, HIGH-TEMPERATURE COATINGS

### High performance for all applications



#### PRODUCT FEATURES

- Specially designed dense inorganic encapsulation of the effect pigment particle to protect the titanium hydroxide layer and improve UV stability
- Chromium hydroxide coated to improve weather resistance
- Outstanding UV resistance
- Outstanding weather resistance
- Excellent high-temperature resistance (up to 250°C)



#### APPLICATION PROPERTIES

- Suitable for both waterborne and solventborne coatings
- Easily dispersible
- Ideal for high-temperature exterior fluorocarbon coatings
- Not recommended for use in OEM and refinish coatings due to Cr restrictions

**Kuncai recommends the use of weather resistant pigments also for interior applications** when there are higher requirements for the performance of a product such as protection against humidity or UV light. Typical examples for this type of application are furniture or bathroom or kitchen interiors which are exposed to moisture or water.

# CHARACTERISTICS

## Overview

Characteristics / Pigment base	Natural Mica	Synthetic Mica	Borosilicate
Particle size range	<ul style="list-style-type: none"> <li>• Fine</li> <li>• medium</li> <li>• coarse</li> </ul>	<ul style="list-style-type: none"> <li>• Fine</li> <li>• medium</li> <li>• coarse</li> </ul>	<ul style="list-style-type: none"> <li>• Medium</li> <li>• coarse</li> </ul>
Hiding power*	High	Medium	Low
Effect characteristics	Typical Pearlescent effects	Purer and more vivid colors	Strong multicolor sparkle with distinct base effect color
Effect possibilities	<ul style="list-style-type: none"> <li>• Silverwhite</li> <li>• Interference</li> <li>• Metallic effects</li> </ul>	<ul style="list-style-type: none"> <li>• Silverwhite</li> <li>• Interference</li> <li>• Metallic effects</li> </ul>	<ul style="list-style-type: none"> <li>• Silverwhite</li> <li>• Interference</li> </ul>
Transparency of pigment**	Low	Medium	High
Product Series	KC Pearls***	<ul style="list-style-type: none"> <li>• Crystal*** and Kyntaline</li> <li>• Setallic***</li> <li>• XillaMaya***</li> </ul>	<ul style="list-style-type: none"> <li>• Dinastar</li> <li>• Diamond</li> </ul>

\* related to same particle size

\*\* in relation between the different product substrates

\*\*\*available in exterior grades (WR, SW and FC)



Information on technical applications is provided to the best of our knowledge within the scope of the possibilities open to us but is without obligation. Current laws and regulations must be observed at all times. This also applies in respect of any protected rights of third parties.

Our suggestions do not relieve our customers of the need to test our products at their own responsibility to establish whether they are suitable for the intended purpose.

Quotations from our literature are only permitted after prior written authorization and only if the source is cited.

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