

Formulation guidelines for formulating pearlescent pigments in powder products like eye shadow, face powder, blusher, etc.

Effect versus particle size

Different coloring effects can be achieved with the right choice of effect pigments depending on their particle size. Small particles (< 25 µm) create silky and satin effects and will opacify the mass. They enhance the hiding power of formulations and provide good coverage as well. Larger sized particles (20-150 µm/20-250 µm) create high luster effects, either sparkling or dazzling, combined with very high brilliance and transparency.

Table 1: Effect versus particle size

Particle Size	Effect	Silver and subtle shimmer effects	Gold to redbrown effects
1 – 15 µm 5 – 25 µm	Silk effects	PRESTIGE® Soft Silver PRESTIGE® Silk Silver PRESTIGE® Silk Interference Pigments	PRESTIGE® Soft Bronze PRESTIGE® Soft Copper PRESTIGE® Soft Fire-Red PRESTIGE® Soft Beige
10 – 50 µm	Strong pearl effect	PRESTIGE® Silver PRESTIGE® Interference Pigments	PRESTIGE® Bronze PRESTIGE® Copper PRESTIGE® Lemon Gold PRESTIGE® Summer Gold PRESTIGE® Autumn Gold
15 – 70 µm	Bright effects	PRESTIGE® Bright Silver PRESTIGE® Bright Interference	PRESTIGE® Bright Bronze PRESTIGE® Bright Copper PRESTIGE® Bright Fire-Red PRESTIGE® Bright Lemon Gold PRESTIGE® Bright Summer Gold PRESTIGE® Bright Autumn Gold
20 – 150 µm	Sparkling effects	PRESTIGE® Sparkling Silver PRESTIGE® Sparkling Interference	PRESTIGE® Sparkling Lemon Gold PRESTIGE® Sparkling Pure Gold
20 – 250 µm	Dazzling effects	PRESTIGE® Dazzling Silver	PRESTIGE® Dazzling Red Gold

Adding color to powder products

All recommended effect pigments show excellent compatibility with other colorants and specialty fillers used in cosmetics, including all other pigments and dyes for use in powders. Next to standard colorants, also coloured pearlescent pigments can be used to provide color to powder formulas. In contrast to iron oxides, they will not only color the product but also provide a subtle shine.

Table 2: Prestige® Coloured Pigments

Particle Size	Product	Color tone
10 – 50 µm	PRESTIGE® Ruby	Red
10 – 50 µm	PRESTIGE® Sapphire	Blue
10 – 50 µm	PRESTIGE® Emerald	Green
10 – 50 µm	PRESTIGE® Amethyst	Lilac

Procedure

A few basic rules need to be considered in formulations containing effect pigments. Effect pigments are easy to disperse in any powder system and show excellent compatibility with other cosmetic raw materials.

General rules

- **Avoid grinding and milling of effect pigments:** If the mechanical stress to the pigments is too high, the pigment particles might break or the metal oxide layer might be removed from the mica platelets, resulting in loss of lustre or change in shade. The effect pigments always disperse very well without any grinding due to their large particle size and the virtual absence of agglomeration. They can be added to the powder system while stirring after milling of the organic/inorganic pigments and before the binder is added.
- **Consider color mixing rules:** Absorption pigments mix subtractively, because the visible color is the non-absorbed portion of light. A mixture of yellow and blue is green – a mixture of all colors is black. Interference pigments mix additively, because the visible color is the reflected portion of light. A mixture of complementary colors like yellow and blue is white – a mixture of all colors is white.

Table 2: Recommended pigmentation in powders

<i>Desired effect</i>	<i>Finished Product</i>	<i>Recommended concentration</i>	<i>Remarks</i>
Skin coloring	Pressed eye shadow	30 – 70 %	Pigment concentration depends on the binder system used
	Loose eye powder	Up to 100 %	Little or no binder necessary
Highlighting, sparkling effects	Blusher (loose or pressed)	1 – 5 %	-
	Face powder (loose or pressed)	1 – 5 %	-
	Body powder	1 – 5 %	-

Regulatory limitations

No major limitations for pearlescent pigments in cosmetic products, besides particle size limitation < 150µm for eye products in US (according to 21CFR73.1496).

For further questions, please ask your ECKART contact:

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