

Technical Report

Technical Topics

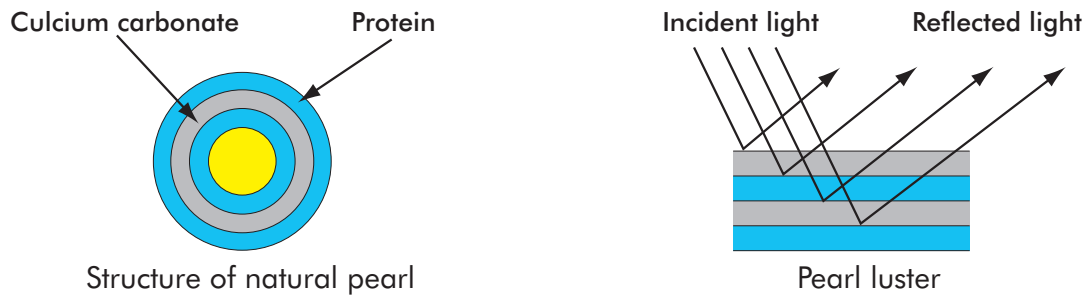
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Special Pearl Ink: STELLA Ink (High reflectance and change color by view angle)

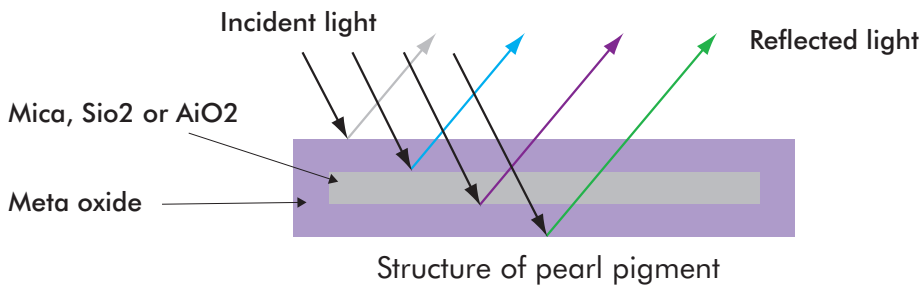
Pearl inks are used to provide elegant feeling to prints. STELLA Ink, one of special pearl inks, can provide high reflectance and change color by view angle, which cannot be realized with traditional inks. We are introducing the principle of pearl color generation and grades of the STELLA Ink.

1. Color generating principle of the pearl pigments.

Natural pearl has multiple parallel thin & transparent alternate layers of protein and calcium carbonate, which has different refractive index. Incident light getting into the multiple layers reflects regularly and repeatedly, and interferes each other to make luster of pearls.



Spotting metal oxide thin layers, such as titanium oxide and iron oxide, on flakes of mica, SiO₂ or AlO₂, makes pearl pigment, as observed in natural pearl. Transparent thin layers of metal oxides cause multiple reflection and interference, and provide pearl luster.

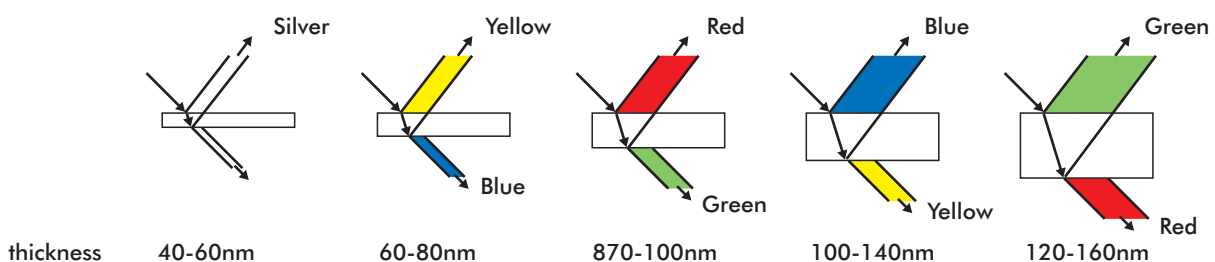


2. Interfered light of pearl.

The thickness of the metal oxide layer decides the color of the generated pearl luster. As shown in the equation written under.

$$\text{Wave length of pearlluster} = \text{Thickness of oxide layer} \times \text{refraction of the oxide}$$

According to the above equation, different thickness of the layer makes different pearl color.



This means that one can get various pearl colors, by deciding the thickness of the thickness of the oxide.

3. Special features and standard colors of "STELLA Ink"

3.1. Special features of STELLA Ink.

- 1) As the surface of the pigment is very smooth, there is very little scattering of light and gives strong reflectance.
- 2) As the size distribution of the pigment is very sharp, there is a very effective interference and strong pearl luster.
- 3) As the structure of the multi-layer is very unique, color changes by view angle.
- 4) UV inks can be used as base ink of the STELLA Ink.

3. 2. Standard colors

Name	Color
881 STELLA Silver	Silver
882 STELLA Gold	Gold
883 STELLA Purple	Purple
884 STELLA Blue	Blue
885 STELLA Green	Green
886 STELLA Turquoise green	Blue-green
887 STELLA Bronze Yellow	Bronze-yellow
888 STELLA Violet Green	Violet-green
889 STELLA Green Purple	Green-purple
890 STELLA Green Bronze	Green-bronze

STELLA Ink can be made with our various inks as base ink. Please do not hesitate to contact us. .