Sales Brochure

FP PIGMENTS

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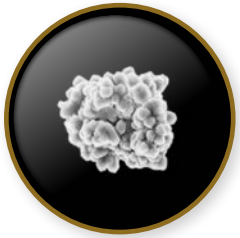

FP-365
FP-365X

TiO_2-Free Opacity Pigment

FP PIGMENTS

PRODUCTS FOR PAPER & BOARD

DRY PIGMENT: **FP-365** SLURRY: **FP-365X**

Our FP-365 is an engineered TiO_2-free opacifying pigment which was designed for demanding paper and board applications. The difference to standard precipitated calcium carbonate lays in the pigment's unique spherical form and porous structure which enable its exceptional light scattering properties. As its particle size is relatively large, FP-365 can better maintain critical strength properties in filling applications. If your goal is to reduce your TiO_2 consumption or improve the current product, this pigment gives you the opacifying power and brilliant brightness you are looking for.

PRODUCT

This pigment's unique structure was designed for high efficiency in fibre-based applications. FP-365 is an easily dispersible white powder, whereas the FP-365X is the commercial slurry based on the same pigment. In neutral to alkaline processes, FP-365 is used either in wet end, surface treatment or coating applications.

FEATURES

This speciality pigment is composed of rhombohedrical crystals which agglomerate to form a spherical particle. With its ultra-high purity, spherical form and highly porous structure, our precipitated pigment gives you improved opacity, higher brightness and better printability.

APPLICATIONS

- Thinprint paper
- Recycled paper
- Recycled board
- Thermal paper
- Coated Testliner
- Wetlaid Nonwoven

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Thermal paper

The performance of traditional thermal paper is based on physical and chemical properties of its functional coatings. An insulating pre-coating is needed to control the effects of applied thermal energy. This is typically achieved by using calcined clay in the precoating. Yet, it is abrasive and requires relatively low solids in the coating colour. Our FP-365 comes with higher brightness and the needed physical properties, enabling a partial replacement of calcined clay. Due to its higher solid content, coating formulations containing FP-365 require less drying energy.

Thinprint paper

Thinprint paper is traditionally used in dictionaries, religious books and pharmaceutical packaging inserts. What these end products have in common: Lots of printed text packaged into the minimum of space. In these paper grades, the required opacity is often achieved at the expense of brightness, giving the paper a shade that is less than pure white. With FP-365, you can have both properties in one paper grade and combine high opacity with high brightness. As you only need a few gsm of solids for a full opacifying effect, the most common application method for this product is surface sizing.

Coated Testliner

A typical White Top Testliner consists of two plies; the greyish recycled content is "hidden" under a white ply made of more expensive, high-quality fibres. The same optical appearance, combined with improved printability and better cost structure, can be achieved with an opacifying coating. High-quality pigments guarantee constant optical properties, independent of the ever-changing quality of the recycled stock. When you need to maximise the hiding power of your coating, our FP-365 gives you the brightness and printability you are looking for.

Wetlaid synthetics

Impregnated and coated wetlaid nonwovens can be found in a multitude of applications where the end products are, either partially or totally, based on synthetic fibres. For instance, permanently secure documents, base substrates for sandpaper and wallpaper, and backlit outdoor advertising paper are products which combine synthetic fibres with the need for high opacity. FP-365 can significantly reduce the amount of TiO_2 used in these applications, creating a potential for savings in raw material costs.

Higher opacity and brightness

Target: *Improve optical properties through coating*

Base paper: *50 gsm, bleached virgin fibre*

Amount of coating: *5 gsm + 5 gsm (top + bottom)*

The target was to improve the optical properties of a thin 50 gsm base paper through coating. The base paper was made of bleached virgin fibre and the tested coating pigments were clay, FP-365 and different mixes thereof.

The coating colours were prepared so that an increasing amount of clay was replaced by our opacity pigment.

The achieved opacity and brightness values were compared to the uncoated base paper, which represents the 0%-level in the chart (on the right). By using **Optical Gain** as a measure of achieved improvement, we take into account the changes in both the **opacity** and **brightness** of the final product. In other words, the Optical Gain is the combined net effect of positive and negative changes taking place within opacity and brightness of the product. For instance, the clay in the coating enhances opacity, but it also lowers the brightness level. Based on that, the shown Optical Gain for the pure clay coating (~4%) is the sum of increased opacity and decreased brightness.

As can be seen in the chart, increasing the amount of FP-365 in the coating, we can considerably increase both the opacity and the brightness in the final coated product.

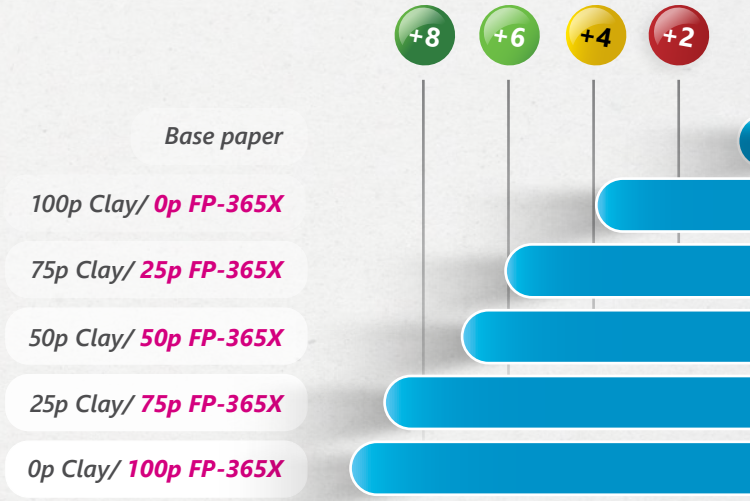

Chart 1: Optical Gain (%) with different pigment mixes

Data from wet end tests

Target:

Test suitability of different slurries as opacifying filler

Paper:

45 gsm, bleached virgin fibre

Ash content (450 °C)

8% at all data points

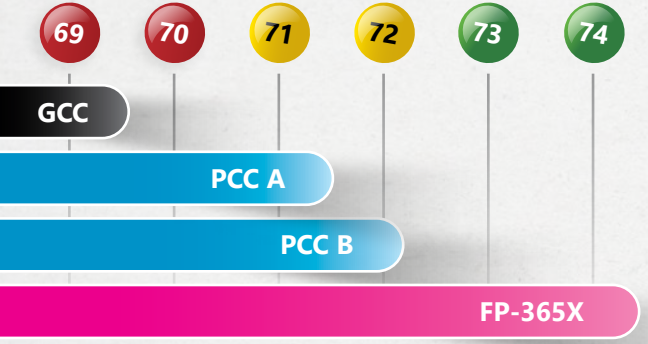

Chart 2: Achieved opacities (%) in filler applications

The chart above shows the immense potential in opacity increase when changing from a standard filler (GCC) to a speciality pigment slurry like FP-365. In the tested 45 gsm paper, even with the identical ash content, the opacity could be raised by five absolute percentage points, without using any TiO_2. The chart below shows the measured scattering coefficient for the papers containing the tested four fillers. Compared to GCC and standard scalenohedral PCC grades, we see a clear improvement in the light scattering coefficient "s" when using FP-365X.

The absorption coefficient "k" is practically identical in all of the papers, meaning that the difference in the measured opacity comes from the light scattering power of the filler pigment. At the same time, the brightness of the paper can be raised by multiple %-points.

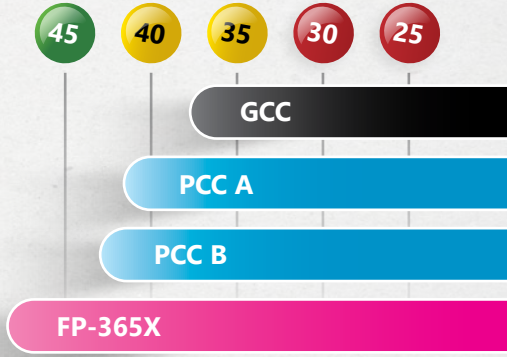

Chart 3: The scattering coefficient "s", given in m^2/g

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As in 2020, FP-Pigments was once again granted the Silver Recognition Level in the EcoVadis Corporate Social Responsibility rating.

Ranking corporations in terms of environmental and social performance, **Ecovadis** is a globally accredited measurement tool for sustainability.

EcoVadis is a trusted provider of business sustainability ratings, intelligence and performance improvement tools for global supply chains. The easy-to-use sustainability scorecards provide insight into environmental, social and ethical risks.

In 160 countries, there are over 75,000 businesses on the EcoVadis network. They all work with a single methodology to evaluate and improve their own sustainability performance.

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