



# Pigment Dispersant with Anti-static Function

SANYO  
PRODUCT  
TOPICS

From the cars on the roads to the food product packages lining the shelves of the supermarket. Many different colors blend together in our daily lives, bringing richness to our lives. Colors are believed to have a variety of psychological benefits, such as making us feel refreshed or giving us comfort. How exactly are those colors applied to products? In this edition, we will look at a behind-the-scenes player that supports the production of the beautiful colors on products – the pigment dispersant.

## Paints and inks that are essential to a rich life

From cars and buildings to electrical appliances and food packaging, industrial products of many different colors are all around us, bringing color to our lives. These colors are created by paints and inks. Paints are used as coatings to add color to entire items, such as the body of automobiles. At the same time, they play an important role in protecting the product. Inks are used to print images and text onto objects such as food product packaging. In coating and printing, the performance of the paint or ink is important for producing beautiful color and ensuring the long life of the coat.

## Important for beautiful color production, as well as for fixing the paint or ink and maintaining its quality

Paints and inks contain resins that form the coat, a pigment or dye that expresses the color, a solvent or water to dilute the pigment or dye, and various additives designed to regulate the coat or disperse the pigment. Pigments and dyes are the source of color. Pigments have larger color particles, ranging from 10 to several tens of nanometers, which are dispersed in a solvent or water. Dyes have smaller particles of 1 nanometer or less, dissolved in a solvent or water. They are each

used for different applications. Pigments are more durable than dyes and degrade less easily when exposed to the elements outdoors. For this reason, pigments are predominantly used for paints and inks. The primary role required of paints and inks is to produce beautiful colors. Therefore, it is important that the pigments, which constitute the color, be evenly dispersed throughout the paint or ink. However, because pigments have a tendency to group together, simply mixing them in water or a solvent would mean that the pigments would clump together in the paint or ink. The agent that serves to prevent this clumping tendency is the pigment dispersant. This agent serves to intervene between the pigment and the solvent or water to be compatible, creating a stabilized state in which the pigments do not clump together in the liquid. As well as enabling beautiful color production, optimal pigment dispersal also works to fix the paint or ink evenly on the surface, maintain a suitable viscosity to make the paint or ink easier to work with, and stop the pigment settling at the bottom of the container during long-term storage. In this way, pigment dispersants are an indispensable element of paints and inks.

## Prevention of static electricity that causes cobwebbing and combustion also an important function

When printing on thin films such as food product packaging, static electricity generated in the printing process can not only cause quality defects, but also unexpected accidents. For this reason, it is important to curb static electricity. Because both flexible packaging such as film and the inks themselves do not easily conduct electricity, static electricity is generated



## Anti-static Effect in Ink

0.5% CHEMISTAT added



No additive



## Prevent ink splatter from static electricity during printing

Ink on PET film that has been artificially charged by rubbing with cloth. On the sample without the additive, static electricity resistance from charging of the ink has caused the ink to splatter.

easily. When this happens, resistance to the static electricity can cause a phenomenon known as cobwebbing, in which thin strands of ink splatter around the images and text. If the ink splatters, then naturally that printed item will not be usable, so prevention of cobwebbing is an essential factor in improving printing yield. After printing, the film is wound into a large roll, and static electricity also occurs when peeling the printed film from the roll. If sparks caused by the static electricity ignite the film, in a worst-case scenario, it could cause a fire to break out. These kinds of accidents are usually prevented by discharging the static electricity mechanically with the use of static eliminators and similar equipment. However, because there are some areas that this equipment cannot reach, specialist additives that prevent static electricity are also added to the ink and the film. In the printing of film and other flexible packaging materials, the prevention of static electricity that causes product defects and accidents is also an

indispensable function in inks.

## CHEMISTAT 3500 has both pigment dispersal and anti-static functions

Both pigment dispersal and antistatic functions are essential in paints and inks. Usually, separate additives are used for each of these functions. Sanyo Chemical Industries' CHEMISTAT 3500 is a unique product that offers both of these functions in a single product. This long-selling product has been used since the late 1960s-early 1970s. In particular, in the area of printing of flexible packaging, such as confectionery, frozen foods, and retort-pouch food products, it is used in a variety of inks. This dual-function additive offers the major benefit of not requiring separate additives to be added. Customers have highly commended this product both for its

functional aspects and from a workability perspective. Meanwhile, in the past several years in the paint sector, there has been a shift toward water-based products for environmental reasons. It is predicted that a similar trend will be seen in inks in the future. The development of a pigment dispersant that works for water-based inks has become a major challenge for paint manufacturers. CHEMISTAT 3500 is actually compatible with both oil-based solvents and water, so is expected to make a significant contribution to the shift toward water-based inks. In the world of ink, as it aims to convert to water-based products, Sanyo Chemical Industries is continuing with development, in our aim to create a pigment dispersal agent that can contribute to both the enrichment of life and the protection of the environment.