

Sustainable colorants for the plastics industry

- **Permanent coloring of components for high-voltage applications with heat-stable Macrolex Orange HT**
- **Heat-resistant yellow pigments from the Colortherm range for high-performance polymers**
- **Facilitating waste separation and preventing production losses with Bayferrox**

Cologne, June 21, 2022 – Specialty chemicals company LANXESS offers the plastics industry high-performance and sustainable colorants for the coloration of engineering plastics. At K 2022, to be held from October 19 to 26 in Düsseldorf, Germany, the company will present its product ranges for the energy-efficient production of plastic goods which eliminate the need for subsequent coating and thus avoid reworking. This includes both universal products and specialties for particular requirements. Depending on the product, heat stability, color strength, light and weather resistance, and brilliance determine the property profile.

Permanent coloring of components for high-voltage applications with heat-stable Macrolex Orange HT

The range of colorants offered by the Polymer Additives business unit comprises around 150 products and, in addition to Macrolex-brand colorants, a range of high-performance pigments and pigment preparations for use in a wide range of demanding applications. Anne Stelzer, Head of Global Marketing Colorant Additives Business, says: “Our soluble dyes from the Macrolex brand can be used in a wide range of applications, for virgin polymers and also in recycled materials. The products can be used to achieve any desired hue.”

The color orange is mandatory as a safety feature for high-voltage components. This color is increasingly being used to mark live cables in electric and hybrid vehicles as well as components for high-voltage

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applications. The signal color is intended to alert mechanics and emergency services to the potential danger of electric shock. To permanently color plastics with the RAL 2003 shade of orange, LANXESS has developed a soluble organic dye. Macrolex Orange HT is highly heat-stable, light fast and weather resistant and offers outstanding color strength and brilliance. Unlike most conventional colorants, the halogen-free Macrolex Orange HT is perfect not only for use in polyamide, but also for other common plastic types such as polycarbonate or polyphenylene sulfide, which, due to their high processing temperatures, normally pose a challenge for colorants.

Detailed information on colorants from Polymer Additives can be found online at <https://lanxess.com/en/Products-and-Solutions/Industries/Colorants>.

Heat-stable, migration-resistant, and readily dispersible

The Colortherm-brand iron oxide and chromium oxide pigments from LANXESS' Inorganic Pigments business unit meet the requirements of plastics processors in full since they offer good dispersibility combined with short dwell times and low shear forces in the processes. Due to their special micronization, the finely ground pigments can be distributed in the plastic quickly, which enables high productivity. Due to their high degree of heat stability, the pigments can be heated to temperatures of more than 300°C depending on their type and also maintain their performance when used in high-performance polymers, which increasingly have to replace glass, ceramics and steel in a wide variety of applications. The pigments from the Colortherm range are also approved as raw materials for coloring food packaging and toys.

For reliable yellow coloring of high-temperature polymers, LANXESS offers the modular Colortherm Yellow product range. It comprises the Colortherm Yellow 5 and Colortherm Yellow 20 iron oxides as well as Colortherm Yellow 26, Colortherm Yellow 30 and Colortherm Yellow 3950 zinc ferrites. The range covers not only the

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color spectrum of light, saturated yellow shades but also orange tones. Due to their special manufacturing process, the color strength of the Colortherm Yellow 26 and Colortherm Yellow 30 zinc ferrites is up to 20 percent higher than that of alternative products. This means a corresponding reduction in the amount of material required to color the plastic.

“The special feature of our Colortherm Yellow product range is the high flexibility in pigment selection. Processors can choose the right pigments for them, tailored to suit the type of plastic to be colored and the requisite thermal stability,” says Stefano Bartolucci, Global Market Segment Manager for Plastics at the Inorganic Pigments business unit at LANXESS.

Facilitating waste separation and preventing production losses

The circular economy is a key topic for the plastics industry and is crucial for LANXESS, too. “For example, one of our new developments will help to increase the recycling rate of plastic packaging, which is still far too low worldwide. This is because optical sensors often cannot identify black plastic packaging correctly during waste separation due to its color, meaning that it cannot be sorted. As a result, it has to be disposed of through incineration,” explains Bartolucci. The iron oxide pigment Bayferrox 303 T that was developed by LANXESS for coloring black plastic, which exhibits reflectance of near infrared (NIR) of 20 percent, enables efficient identification of plastics using NIR detectors. Thus black plastic packaging can be detected in sorting plants during waste separation because the iron oxide pigment reflects infrared radiation, unlike the carbon black that is most commonly used for coloring.

“Thanks to a special manufacturing process, we have succeeded in synthesizing a pigment with an extremely low magnetic value. If you compare Bayferrox 303 T with standard manganese ferrites, the magnetism has been reduced by more than 50 percent,” explains Bartolucci. “With our black pigment, false alarms in food production,

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for example, can be avoided, and a higher degree of process reliability can be achieved because there are fewer interruptions. After all, metal detectors cannot distinguish between pigments and pieces of metal in an edible item. This is why metal contaminants must be avoided in both the masterbatch and the packaging,” he adds.

Detailed information on the range of products offered by Inorganic Pigments can be found here: <https://lanxess.com/en/Products-and-Solutions/Brands/Bayferrox>.

All news releases from LANXESS regarding K 2022 are available at <https://lanxess.com/K2022/Press>.

Images:



The specialty chemicals company LANXESS has developed Macrolex Orange HT, a dye that can be used to permanently color plastics with the RAL 2003 shade of orange. This color is increasingly being used to mark live cables in electric and hybrid vehicles as well as components for high-voltage applications. The signal color is intended to alert mechanics and emergency services to the potential danger of electric shock. Photo: LANXESS AG

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The yellow pigments of the Bayferrox and Colortherm brands from LANXESS are used for all common polymer materials as well as for engineering thermoplastics. The products have been specially developed to enable efficient processing in all extrusion systems while ensuring excellent color performance even at the highest production temperatures. Photo: LANXESS AG

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Consistent quality is a crucial requirement for plastics coloration. LANXESS ensures maximum product reliability by constantly monitoring the raw materials used and maintaining ongoing quality control using testing methods in accordance with global standards at its own in-house laboratories. Photo: LANXESS AG

LANXESS is a leading specialty chemicals company with sales of EUR 7.6 billion in 2021. The company currently has about 14,900 employees in 33 countries. The core business of LANXESS is the development, manufacturing and marketing of chemical intermediates, additives, specialty chemicals and plastics. LANXESS is listed in the leading sustainability indices Dow Jones Sustainability Index (DJSI World and Europe) and FTSE4Good.

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