THE GLOBAL COLORS NEWSLETTER

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ISSUE CONTENTS:

POINTS OF INTEREST:

- Solutions for biodegradable carrier bags are already available
- Masterbatches for polyester end applications, including liquid colors, enrich the Global Colors portfolio
- Micro pellets is a new physical form of the Global Colors masterbatches
- Romcolor offers an extensive range of HBCD -free masterbatches

SOLUTIONS FOR BIODEGRADABLE CARRIER BAGS ARE LAUNCHED BY PLASTIKA KRITIS

In May 2015 the European Parliament and Council adopted Directive 2015/720/EU, amending Article 4 (prevention) of the Packaging and Packaging Waste Directive (Directive 94/62/EC). This legislation requires member states to implement measures to reduce the consumption of lightweight plastic carrier bags. The Directive allows two possibilities for member states to transpose the amendments into their national laws.

One option for EU countries is to take measures that ensure plastic bag consumption is reduced to a maximum of 90 bags per capita per year by the end of 2019, and not more than 40 per capita by 2025. How member states decide to achieve these reductions is up to them. For example, they may use nationwide bans, taxes, marketing restrictions or other policies. Alternatively, member states can adopt measures that ensure that by the end of 2018, no such bags are provided free at the point of sale, unless "equally effective tools are applied."

One possible direction for achieving compliance to the above requirements is the production of biodegradable carrier bags. These bags will be made by a biodegradable/compostable polymer which will replace polyethylene. Plastika Kritis can now offer solutions for the producers of carrier bags. These are:

Kritilen® Compound BIO563: It is a biodegradable compound based on a combination of compostable polymers. It is used at 100% in a blown film line, enabling end processors to produce films with thickness even below 20mic. Cutting, sealing and printing of film, in order to form the carrier bag, can be made with some minor modifications in comparison to polyethylene film. Compound BIO563 gives a milky shade in the carrier bag.

Kritilen® Filler BIO527: It is a calcium carbonate masterbatch based on a biodegradable polymeric carrier. It can be added to Compound BIO563, in order to reduce its cost or improve stiffness and cooling time.

Kritilen® White BIO8153: It is a 60% TiO_2 masterbatch based on a biodegradable carrier. It can be added to Compound BIO563, for increasing its whiteness.

The above products are currently evaluated, in order to achieve an OK Home Compost certification.

Picture 1: Compound BIO563 is easily processed in conventional blown film extrusion lines

SPECIAL FUNCTIONAL FILLERS IMPROVE THE PROPERTIES OF PLASTIC PRODUCTS

Filler 5804 is a unique calcium carbonate masterbatch based on a special polyolefin carrier. It is mainly used in blown HDPE, MDPE, LLDPE or LDPE films, offering cost reduction, increased extruder output, better bubble stability, antiblocking properties, improved welding ability and printability, without affecting the mechanical properties of the films. In some applications this special masterbatch improves the impact strength and the tear resistance of films. Filler 5804 can be added at 40%-50% at the film recipe and is very popular in the production of hygienic films, imparting a soft touch effect in the end product.

Furthermore, Global Colors offer the new Filler 5704, which contains 70% of a prime talc grade on a polyethylene carrier. It can effectively improve end product quality and reduce the cost of these products, improving their rigidity, hardness and wear resistance. It also gives a good antiblocking property to films.

A NEW PORTFOLIO OF SINGLE PIGMENT CONCENTRATES FOR POLYESTER FIBERS IS LAUNCHED

With over than forty years of experience in color masterbatches, Plastika Kritis is able to offer unique solutions for the polyester fibers industry.

A portfolio of single pigment concentrates (monomasters) that contain a very high concentration of a single pigment or solvent dye is now available by Plastika Kritis. Two or more of them can be combined by masterbatch producers or synthetic yarn manufacturers to produce tailor-made shades, avoiding the use of powder pigments.

The careful selection of raw materials and the excellent spinnability of these monomasters assure that the longest screen pack life is achieved in the end processor's production. Before commercialization, these monomasters undergo a set of demanding tests in the specialized Global Colors fiber laboratory.

Such products have been tested in PET fiber production in Gaziantep, Turkey with excellent results.

Plastika Kritis salespeople can provide details about the color indices that are included in this monomasters portfolio.

Picture 2: The new Kritilen® monomasters include a variety of color indices for the coloration of polyester fibers

COLOR MASTERBATCHES IN MICROPELLETS ARE NOW POSSIBLE

Global Colors companies are now able to offer color masterbatches in the form of micro pellets. These micro pellets are round shaped particles with a diameter lower than 0.9mm.

These masterbatches are proposed for use, among others, in PVC pipes, where the raw materials are in powder form and the colorants must be at a very low particle size, so that they are properly mixed with the rest of the raw materials or other end applications. They can be also used in the coloration of PET articles, such as preforms etc.

Due to their small particle size micro pellets spread much more uniformly and distribute finer into the end application polymer. Furthermore, micro pellets can be dosed with higher precision in contrast to the normal size pellets and this enables end processors to use highly concentrated masterbatches, reducing at the same time the cost of their final recipe. Therefore, using micro pellets, less colorants are required, which lead to significant cost savings as masterbatches are extremely expensive compared to virgin polymers.

Masterbatches in shape of micro pellets are easier to handle, better to dose and dust free.

"Due to their small particle size micro pellets spread much more uniformly and distribute finer into the end application polymer."

SPECIALTY BLACK MASTERBATCHES ARE IDEAL FOR THE COLORATION OF POLYESTER FIBERS

The polyester fibers segment dominates the textile fibers applications. Approximately 70% of the pigmented polyester fibers are black.

Plastika Kritis can now offer two Kritilen® Black masterbatches that are suitable for the mass coloration of polyester fibers. These products are:

Kritilen® Black PT6301: It is based on a PET/PBT mixture and contains 30% of a high jetness and extra clear carbon black. Its bluish tone makes it ideal for applications, where high color performance is required.

Kritilen® Black PT6302: It is also based on a PET/PBT mixture and contains 30% of a P type carbon black. It is a general purpose and cost efficient solution that has been very successful in the market.

Both above Kritilen® masterbatches have a perfect dispersibility of the carbon black in their carrier matrix and can demonstrate an excellent spinnability and filterability performance.

Picture 3: Black PT6302 is a proven solution for the coloration of polyester fibers.

LIQUID MASTERBATCHES: A NEW TREND IN THE PET PROCESSING INDUSTRY

Liquid masterbatches used to be considered as a new promising technology in PET processing industry a decade ago. Now this technology becomes more popular, due to the fact that loss in weight dosing systems became more accurate and reliable, in terms of dosing.

The main advantages to the end processors that liquid masterbatches offer are:

- Maximized color strength of colorants
- Perfect colorants dispersion in their carrier
- More brilliant colors due to lack of thermal history during the masterbatch production
- Better homogenization in PET without any spots compared to other coloring options
- A cost saving solution due to lower let down ratio (LDR) – the colorants in liquid masterbatches show color strengths, which cannot be achieved by solid concentrates
- Faster color changeover compared to solid concentrates

Romcolor 2000 has designed a liquid masterbatch product line for the entire Global Color Group needs. The Romcolor 2000 colorists have developed products according to the customer needs and all of them were validated into customer processes. Romcolor 2000 has tested various production equipment and selected the latest technologies, patent protected, which proved to have the highest efficiency. This includes automatic dosing systems of ingredients, with complete traceability related to the raw materials batches involved, milling equipment, filtering and packaging equipment.

To be more specific, Romcolor 2000 now offers the following basic liquid masterbatches solutions:

- White liquid masterbatches with maximum opacity for milk bottle packaging. Their LDR is between 1% and 3% and depends on the wall thickness and desired opacity effect
- Red and yellow shades for ketch-up and mayonnaise, opaque shades, with the same attributes as the ones for milk bottles
- Brown shades, from the most greenish amber to the most reddish brown for beer bottle packaging. The recommended LDR is between 0.1% to 0.3% and depends on PET bottle thickness
- Green shades from the most yellowish to the most bluish shades for juices, beer etc
- Blue shades from the most greenish to the most reddish for mineral water, sparkling or not, highly loaded or moderate, with recommended LDR from 0.001% to 0.01%, depending on the existing dosing system the end processors have
- Black shades for special drinks

Additionally, Romcolor 2000 can develop tailor made shades from the entire visible spectrum based on customer requests. All products' characteristics are checked at the design stage and later on in production, with state of the art laboratory equipment. Critical quality characteristics include:

- Shade
- Color strength

Picture 4: The Romcolor's liquid masterbatches portfolio enables Global Colors to offer a complete solution to PET bottles processors

- Dispersion
- Viscosity
- Yield
- Density

A modern pilot plant, installed in Romcolor's lab provides flexibility in the production of small test samples from 1kg to 25kg, needed by customers for their validation process.

All Global Colors liquid masterbatches are designed to satisfy all relevant European regulations for food contact. A declaration of compliance and a technical data sheet are issued for each product.

CONDUCTIVE BLACK MASTERBATCHES SIGNIFICANTLY REDUCE THE ELECTRICAL RESISTIVITY OF PLASTIC PRODUCTS

Conductive plastics conduct electricity in contrary to normal thermoplastics. They have advantages compared to metals, such as adjustable electrical conductivity, lightweighting, recyclable etc. Conductive plastics are used for electrostatic discharge control as well as for ATEX and electromagnetic interference shielding.

The use of conductive plastics enables us to eliminate problems related to electrostatic discharge making the world safer after all.

Plastika Kritis helps plastics processors to reduce the surface or volume resistivity of their products by offering the following conductive black masterbatches:

Kritilen® Black 4216: It contains a combination of a super conductive carbon black of high purity and graphene. It is based on a LLDPE carrier.

Kritilen® Black 4285: It is a cost efficient solution containing a standard electro-conductive carbon black on a LLDPE carrier.

Both grades can give a volume resistivity below 10^6 Ohm, depending on their let down ratio to end plastic products. Plastika Kritis can provide detailed guidelines for each specific application and requirements.

Picture 5: Multilayer conductive geomembranes were successfully produced with the use of Kritilen® Black 4216.

A NEW HBCD-FREE PRODUCT LINE OF FLAME RETARDANT MASTERBATCHES IS NOW AVAILABLE FOR XPS INSULATION BOARDS

Since the use of hexabromocyclododecane (HBCD) has been restricted in the European Union, the manufacturers of XPS insulation panels have tried to adapt and find new "greener" solutions.

The Global Colors group has followed this market trend and invested in R&D and infrastructure in Romcolor 2000, so that it is able to propose the most efficient flame retardant systems for the XPS foamed boards market, being in compliance with the latest environmental legislation and technical requirements of the end application.

Romcolor 2000 offers a complete package of solutions, including HBCD-free flame retardant masterbatches and also specialty additive masterbatches for this industry.

This portfolio has the following masterbatches:

Rombest® FR PS6301, FR PS6302 and FR PS6303: These three masterbatches are based on a brominated, high molecular weight polymeric flame retardant of the latest technology. They have a specially selected polystyrene carrier that assures the best compatibility of the masterbatches with the application basic polymer.

Rombest® FR PS6201, FR PS6202 and FR PS6203: They are cost efficient solutions based on a monomeric brominated flame retardant.

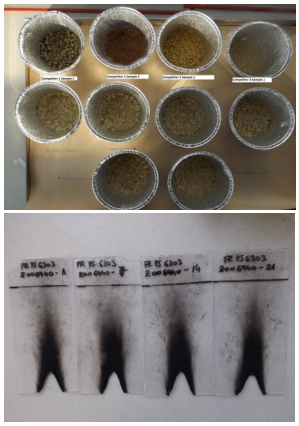
The flexibility provided by the above alternative formulations, enable the XPS foam manufacturers to select the optimum masterbatch that fits to their specific needs. Romcolor 2000 provides guidance related to the optimum let-down ratio of these masterbatches, so that the EN ISO11925-2 and DIN 4102 requirements are achieved.

Furthermore, in order to complete this range, Romcolor 2000 has developed the following two masterbatches that help XPS foam producers to enhance their production efficiency:

Rombest® FS EVA30: It is a masterbatch that shortens the foamed boards maturation time and enables the end manufacturers to reduce their residence time in their premises, respectively.

Rombest® NC PS50: It is a masterbatch that reduces the board cell size and doubles the number of cells. This attribute improves the mechanical and insulation properties of the extruded sheets.

Romcolor 2000 has a state of the art laboratory that enable its engineers to test the flame retardant properties of end products and develop solutions that satisfy the most demanding requirements of the industry.



Picture 6: A fully equipped Romcolor laboratory assesses the performance of various formulations and proposes the optimum flame retardant systems to the XPS board manufacturers

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Global Colors Masterbatches

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GLOBAL COLORS is an international Group serving the plastics industry with high quality color and additive concentrates. It ensures competitive solutions and localized service with a number of modern production plants in strategic locations.

All Group companies share the same technology, know-how, quality standards, economies of scale, financial resources, range of products and new developments. Decentralized management and marketing ensure a high level of responsiveness to customer requirements combined with fast and flexible decision-making.

The Group's annual production capacity exceeds 100000 MT.

Members of **GLOBAL COLORS** group are:

- PLASTIKA KRITIS S.A., Greece
- ROMCOLOR 2000 S.A., Romania
- SENKROMA S.A., Turkey
- GLOBAL COLORS POLSKA S.A., Poland
- GLOBAL COLORS z.a.o., Russia

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