

Special

Color & Design

Trend Report “Coloring of Plastics”

Crises Add Variety

Things have not been this colorful for a long time. Consumers’ color preferences are becoming much more diverse. That is what the pigment and masterbatch manufacturers are predicting for the near future. We asked some of them about current and future color and design trends. We also wanted to know whether color in plastics is not retreating in the face of increased recycling, and what the current situation is like for companies.



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There is a sense of crisis in the color world. Consumers’ mood, and therefore their color preferences, are being influenced by the war in Ukraine, growing global political tensions, for example between China and the USA, climate change and social upheavals and social

changes. The result is a wide range of requested colors. This is reported by, for example, Jessica Knoch (**Fig. 1**), Marketing Manager at the masterbatch manufacturer Lifocolor: “The global challenges posed by these polycrises are in context with the rapid development of

technological progress, including the digital transformation and artificial intelligence. This leads to an equally large heterogeneity in the color world,” she explains.

And she is not alone in her estimation of the cause. Roberto Romanin



Fig. 1. Jessica Knoch, Lifocolor: “We know from our business partners that there is still high demand for highly authentic imitation of natural materials, such as stone, metal and wood, with plastics.” © Lifocolor

(**Fig. 2**), designer at the pigment manufacturer Avient, refers to the company’s trend color report, ColorForward 2025. This states that consumers’ color desires are being shaped this year by, among other things, the demographic changes that are per-



Fig. 2. Roberto Romanin, Avient: “Because of the complex nature of humans, however, we also expect some consumers to appreciate more dramatic design concepts.” © Avient

ceived as shocking and the desire to prepare for future crises and a potential end of the world. Together with a more positive attitude towards life and death, and the return of reparability and modularity, according to Romanin, it is leading to a desire for resilience and endurance. This goes hand in hand

with demand for muted colors. “In our ColorForward 2025 trend report, we predict a focus on midtone blue, green and orange and neutral colors for the coming year,” he reports.

In its annual report, Avient mentions that it is investigating various current social and cultural trends and developing a suitable color palette for them. Besides the muted shades, however, Avient also assumes there will be some brighter outliers: “Due to the complexity of human nature, we also expect some consumers to choose more dramatic design concepts such as copper undertones or heavier material choices matching the gravity of the challenges, or on the other end, moderately brighter shades to inspire more optimism,” summarizes Romanin.

Increased Demand for Midtones

Lifocolor, too, produces a trend color report every year. The report, called Colour Road, is produced together with trend research institutes and experts. It also »



Fig. 3. Lars Schulze, Grafe: "Large, optically visible elements, such as fibers or flakes, are gaining ever greater popularity, for example to make the recycling background of the products more visible." © Grafe



Fig. 4. Helmut Wenzlik, Eckart: "We are seeing metallic effects growing strongly again. They add value to the end product." © Eckart

sees midtones as very much in demand in the coming year. In addition, according to Marketing Manager Jessica Knoch, there are also brown, green and blue, conveying calm and depth. They would impart a certain closeness to nature and groundedness. "In addition, digital, metallic and vivid colors, such as lilac, mint, light blue and apricot, are gaining in importance," she explains. With these, it would be easy to aesthetically accompany the aforementioned technical progress.

According to Knoch, young consumers, on the other hand, demand very striking colors, such as purple, bright red, royal blue, frog green and pink, as well as high-contrast, so-called candy colors. "They symbolize self-confidence, retro trends, rebellion and a playful retreat from the seriousness of life," she explains. In the case of beauty and care products, eye-

catching colors are also in demand, representing the summertime atmosphere and festive mood, and giving expression to people's longing for an escape from everyday life.

Things Are Becoming More Colorful

Lars Schulze (**Fig. 3**), Head of Color Development and Material Science at Grafe, confirms the interest in bright colors. According to Schulze, neon colors are in high demand, particularly in the lifestyle sector. The masterbatch manufacturer is apparently showing a growing interest in different colors. "Things are becoming much more colorful. Inquiries are coming in about all color families. Ever more parts, including those for technical applications, are required to be multi-colored," says Schulze.

Next year, the colorful pigment range will also be complemented by a strong demand for metallic effects. "We are seeing metallic effects growing strongly again. They give the end product value," says Helmut Wenzlik (**Fig. 4**), Technical Service and Marketing Plastics Manager at the effect pigment manufacturer Eckart. The trend is confirmed by a large proportion of the manufacturers surveyed. According to Sandrine Reboux (**Fig. 5**), Senior Marketing Manager at Avient, that is the case with packaging for cosmetics, for example: "Polyolefin caps and closures in silver and gold colors remain popular as well as shimmering effects in cosmetic packaging like mascara or lip gloss." Besides the cosmetics sector, Avient is also noticing an increased interest in the automotive industry. However, this is not because of growing customer interest, but because, in this sector, molded-in color is being used more frequently as an alternative to painting or other finishing operations.

Improving the Metallic Effect of Pigments

Parts are produced from already colored plastics instead of painting or coating them in a secondary step after injection molding. That not only saves time, energy and technology for finishing, but also reduces rejects. With the elimination of painting, parts manufactured in this manner are also regarded as significantly more environmentally friendly and



Fig. 5. Sandrine Reboux, Avient: "We are not seeing a decline in color, but rather a change in expectations for the optical appearance." © Avient

easier to recycle. The manufacturing process is not new, it has already been used in the automotive sector for some time. However, it is increasingly being used because it is more environmentally friendly, according to Laura Carrillo (**Fig. 6**), Senior Marketing Manager for Transportation at Avient. In the case of the parts manufactured by this process, a metallic appearance is often required, which can be produced by means of metallic effect pigments. To further improve the technology, Eckart is currently attempting to increase the metallic effect of its own pigments. As a result, the optical properties of molded-in colored parts should approach those of coated variants more closely, explains Helmut Wenzlik of the effect pigment manufacturer. This is planned for the company's next generation of Stapa AC Reflexal products.

Besides metallic effects, a design resembling natural material is also in demand, reports Lifocolor Marketing Manager Jessica Knoch: "We know from our business partners that there is still a high demand for the most authentic imitation of natural materials, such as stone, metal and wood in plastic." The company has therefore developed a masterbatch for manufacturing plastic parts with a granite appearance. They are suitable for polyolefins and engineering plastics, such as acrylonitrile-butadiene-styrene (ABS) and poly-methyl methacrylate (PMMA) and thermoplastic elastomers. They are



Fig. 6. According to Laura Carrillo of Avient, interest in the “speckle look” in the automotive sector is increasing. © Avient

mainly intended for household, garden and office consumer goods.

Speckled Appearance Underscores the Use of Recyclate

The granite masterbatches pick up on another design trend: the so-called speckle effect. According to Development Manager Lars Schulze of Grafe, this is currently very popular as a design element for cars and consumer products. With this speckle look, products contain differently sized elements in different colors. These can be spots reminiscent of color specks, elements

resembling mineral inclusions, as in the granite batches, or deliberately introduced effects, such as contamination or color deviations.

According to Schulze, one of the drivers of this development is the increased desire to use recyclate. “The introduction of large optically visible elements, such as fibers or flakes, is gaining ever greater popularity. As a simple design tool but also to make the recycling history of the products even more visible and bring it into the spotlight,” he explains. This trend has also been picked up at Avient. The company has also developed products for speckle effects. According to Laura Carrillo, there is currently a growing interest in a corresponding “recycling look” in the automotive sector.

Coloring Especially for Recyclates

The topics of recycling and use of recyclate remain one of the main focuses of colorant manufacturers, as in previous years. Customers’ interest in the products for this remains unbroken and continues to increase, as various representatives report. “The demand for specially adapted colors of already recycled polymers is increasing,” explains, for example, Schulze, head of development at Grafe. The companies are therefore working on products specifically for this purpose. “Solutions for the circular economy remain one of



Fig. 7. Marco Meixner, Lifocolor: “Consumers and the market remain strongly driven by the desire for variety through color.” © Lifocolor

our clear focuses,” says Marco Meixner (Fig. 7), head of research and development at Lifocolor.

An important topic is still the recycling of black plastics. For a very long time, carbon black was the dominant pigment in the black plastic range. Although it offers many advantages, being inexpensive and ensuring an intensive black color, plastic products pigmented with it cannot be identified by the sorting technology typically used in recycling systems. Near-infrared sensors (NIR) are usually used for this purpose. They measure the light reflected by the individual plastic parts and recognize which polymers they consist of. Carbon »



Fig. 8. Dr. Martin Fritsch, Karl Finke: "In the packaging market, there is a clear trend towards less color." © Karl Finke

black absorbs the light and thereby prevents detection.

Are Black Plastics Less in Demand?

The problem has long been known. According to the companies, it is now also having noticeable effects on customer demand. "There is a clear trend of black tending to be somewhat less common. Formulations with carbon black can be regarded as declining," reports Dr. Martin Fritsch (**Fig. 8**), Head of Development and Application Technology at the masterbatch manufacturer Karl Finke. The colorant manufacturers have therefore developed NIR-detectable alternatives to carbon black for black coloration in recent years. They are now increasingly in demand from customers, reports Stefano Bartolucci (**Fig. 9**), Market Segment Manager for Specialties at Lanxess Inorganic Pigments. Unlike Fritsch, he therefore does not see a trend towards less black. "NIR sorting of black plastics according to their polymer class is currently a central challenge in material recycling. However, it is not resulting in a fundamental decline in demand. Instead, we are increasingly receiving requests for alternative solutions, in this case black pigments with a higher infrared reflection," he explains. Lanxess offers such a solution with, for example, the iron oxide pigment Bayferrox 303T. An increased demand for NIR-detectable alternatives to carbon black is also confirmed by Lars Schulze of Grafe for the masterbatch field. The manufacturers have also long

been offering corresponding products, in some cases with recyclates as matrix material. For example, Lifocolor has been offering such a product for some years.

And they recently presented another masterbatch for a different NIR problem. Not only carbon black, but also metallic pigments can disturb the sorting by means of near-infrared sensors. Although they do not absorb the irradiated light, they partially scatter or reflect it. Eckart has therefore developed silver pigments in which this effect does not occur and can be readily detected by NIR (see *Plastics Insights* 5/23 pp. 20–22). They were presented at the last K2022. This is now used by Lifocolor for silver masterbatches. According to the company, the good sortability could be demonstrated in tests with HDPE (high-density polyethylene) and PP (polypropylene).

Is Color Disappearing from Plastics?

Colors are also generally regarded as a problem for recycling. The color of the plastic wastes leads to a certain proportion of the recovered recyclates being gray-brown. They cannot therefore be used for some applications. In addition, the existing inherent color of the recyclates makes subsequent coloration difficult. In recycling systems, therefore, they are usually sorted not only according to polymer types, but also into transparent and colored plastic wastes. Transparent recyclates are regarded as higher quality. From a recycling point of view, it therefore makes sense not to use color.

However, this has not had any effect on demand. The customers' interest in colors and color variety continues to be unbroken, the surveyed manufacturers unanimously report. Dirk Schöning (**Fig. 10**), Product Manager at AF-Color, puts it in a nutshell: "There has not been a noticeable reduction of color diversity by our customers so far." The reason for this is the end customers' strong interest in colored and multicolored products and the product manufacturers' desire to produce striking, clearly recognizable products that stand out from the competition. The Head of Development Marco Meixner from Lifocolor summarizes this as follows, and at the same time points out another issue: "Consumers and the market are strongly driven by the desire for variety through color. Consumer-oriented

industries are looking for new and yet unseen effects. And if manufacturers use less pure-colored recyclates, desire clashes with reality in the variety of colors as a result of the more or less gray starting materials." The unsightly gray recyclates thus need color in order to become attractive products. But there is a small exception to the uniformity: "In the packaging market, there is clearly a trend toward less color," explains Development Manager Martin Fritsch of Karl Finke. According to Fritsch, less intensive colors are used, which leads to packaging with only low coloration.



Fig. 9. Stefano Bartolucci, Lanxess Inorganic Pigments: "NIR sorting of black plastics is currently a central challenge in material recycling. However, it is not resulting in a decline in demand for black colorants." © Lanxess

Changed Color Selection for Packaging

The reduced demand for colorants in the packaging sector is not confirmed by Marketing Manager Sandrine Reboux of Avient. She also points out that, besides colors, other criteria are also relevant for the recyclability of a packaging, such as the size and shape, labels and subsequent decoration. She also notes, however, that the increased desire for recyclable packaging and use of recyclates result in changes in color selection and design. "We don't see a decrease in color requests but rather a change in visual appearance expectations. For instance, in polyethylene terephthalate (PET) packaging, where the main application is a bottle, recycling guidelines are becoming stricter to maintain a high-quality recycling stream. As a result, transparent-colored bottles are flourishing, particularly in European countries, where this



Fig. 10. Dirk Schöning, AF-Color: "Until now, we are not noticing a reduction in the variety of colors from our customers." © AF-Color

shift is expected to continue," she reports. In addition, the above-mentioned recycled look is increasingly in demand in the packaging sector.

Recycled materials are generally used more and more throughout many industries. For manufacturers, that also means more demands for coloration of recyclates, often associated with the above-mentioned problem of the inherent color of the recycled materials. It is therefore often necessary to adapt the formulations. Benoit Flammang (**Fig. 11**), Senior Marketing Manager for E&E at Avient, confirms this, for example, for the electronics sector: "In the electrical and electronics industry, there is pressure to use more recycled material, including PP and technical polymers, such as PC and PS. This creates a need for color masterbatches adapted to recycled grades with colors that may look less intense."

Online Tool for Color Prediction of Recyclates

To make it easier for manufacturers and plastics processors to switch to recyclates, Avient has developed an online

tool. The PCR Color Prediction Service is intended to make product design with recycled materials easier. According to the company, for example, it shows which colors can be achieved with the recyclates and where the limits lie. The appropriate ratio of virgin material to recycled plastics to achieve the desired coloration can then be determined. "A majority of packaging brand owners have indicated they are interested in such a service, but we also see interest from companies in the automotive, E&E, and a variety of other consumer sectors," says Marketing Manager Sandrine Reboux.

Besides recyclates, masterbatch manufacturers are also increasingly focusing on bioplastics. "The coloration of biodegradable polymers is growing considerably. Colored biopolymers such as PLA and PHBV in line with EN13432 certification are increasing in demand," says Lars Schulze of Grafe. In addition, customers are increasingly interested in bio-based matrix materials of the masterbatches, explains Development Manager Dr. Martin Fritsch from Karl Finke. The aim is to reduce the products' carbon footprint. At Finke, they are also working on the use of bio-based colorants, which, according to Fritsch, still poses problems with stability. Lifocolor presented the corresponding masterbatches at the end of 2022.

A Crisis Mood or a Positive Trend?

Colorants and masterbatch manufacturers thus have a number of topics. Perhaps one of the reasons why the mood in the company is surprisingly positive. After all, the difficult economic situation has not gone unnoticed by the companies. And there will continue to be an anxious view of the future, and particularly of Germany as a business location. Dirk Schöning of AF-Color currently sees a restrained or slightly



Fig. 11. Benoit Flammang, Avient: "In the electrical and electronics industry, there is pressure to use more recycled material. There is therefore a demand for color masterbatches that are adapted to the recycled materials." © Avient

rising trend, but the outlook remains worrying. Marco Meixner of Lifocolor is mainly worried about the German market. However, he also "currently notes cautious optimism as a whole."

The mood of crisis among consumers is therefore not necessarily the same for companies. A cautiously positive mood can be seen with many companies. "We currently have about 15 percent more development orders than last year, and the trend is continuing to rise," says Lars Schulze, Development Manager at Grafe, for example. Helmut Wenzlik of Eckart also notes a "positive trend." According to Stefano Bartolucci of Lanxess, demand has been "stable" in recent times. From the political tensions mentioned at the beginning, he even derives a something positive for Lanxess. Because of the difficult situation between China and the USA, Western companies would increasingly rely on regional suppliers, such as Lanxess. The crisis for one is therefore not necessarily the crisis for another. ■

Florian Streifinger, editor

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