

Clariant Case Study



With more than 50 manufacturing operations, 3,500 employees and sales offices on five continents, Clariant Masterbatches communicates in a number of languages and services to a wide range of industries. But for the world's largest provider of colour and additive concentrates for the plastics manufacturing industry, colour is the most important language of all.

"What we sell is essentially a tailor-made, turnkey solution for colouring plastics used in a wide variety of industries," says Patrick Emmel, head of colour communication for Clariant Masterbatches, a business unit of Clariant International Ltd based in Muttenz, Switzerland. "Colour is added to most plastics — including packaging, cars, household appliances and even cables and wiring — at some point in the manufacturing process." An expert in colour science, Emmel is in charge of colour communication, colour quality control and colour matching systems for 56 labs worldwide.

Clariant Masterbatches became a global leader in its industry by offering a comprehensive service based on its wealth of technology experience, and by providing consultancy on the latest market developments, such as government regulations on packaging.

Developing robust processes

Clariant Masterbatches' customers want to produce plastic goods that meet their exact specifications on colours at the highest possible production rate with the lowest amount of scrap and rework — but they don't want to invest resources in becoming colour experts themselves.

"Our customers don't want to concern themselves with the specialist knowledge required to determine the best way to colour a plastic part," says Emmel. "For example, the identical concentrate and resin placed in two different brand plastic injection molding machines on the same production floor running the same part may result in two different colour parts. Our customers want to know why that happens — but more importantly, they want us to give them a process that works."

To help develop robust processes for its customers, Clariant Masterbatches relies on color measurement solutions developed by X-Rite Inc., the world's largest designer and manufacturer of colour measurement instruments and software.

X-Rite provides Color i7 benchtop spectrophotometers and Color iMatch software that can precisely determine the constituent colours that make up even the most complex hue. The company also provides a software package called NetProfiler that can calibrate instruments remotely, enabling all companies in a supply chain to produce and share reliable data.

Understanding customer needs

Clariant Masterbatches' first task working with a customer is to completely understand the application of the product, the plastic resin used, additives, equipment and how precisely colours must match between locations or markets. With years of experience in the plastics industry, the company has accumulated many types of production equipment at its technical facilities that it uses to produce prototype parts or samples.

With thousands of customers worldwide, Clariant Masterbatches develops approximately 80,000 colours annually. They range from a simple black to sophisticated metallic flake and pearlescent colours. The company stores many of these formulations in its massive database for future reference.

Helping customers work faster and more flexibly

Clariant Masterbatches helps companies operating in virtually any type of plastic manufacturing: plastic injection molding, blow molding, extrusion of plastic sheets — even spin dyeing of synthetic fibers used in carpets and fabrics. The industries the company serves include packaging, automotive, appliances, durable goods, construction, cables and wiring, electronics and textiles.

The corporation specializes in developing and selling formulations so customers can carry a large stock of uncoloured resin and a small supply of colour concentrates. This allows them to produce a wide assortment of colours at will.

"This approach allows our customers to work quicker and be more flexible. They don't need to buy and store large stocks of several different compounded resins that have already been coloured," says Emmel. Speed and flexibility is particularly important for manufacturers that have relatively short production runs of various coloured products.

Defining colour standards and developing processes

When developing a plastic formulation and process, Clariant Masterbatches identifies and defines the colour standard that a customer wants to achieve. It then runs tests with pigments and resins to replicate that colour. The resulting samples are compared using spectrophotometers and X-Rite software against the agreed standard. Armed with this precise data, Clariant Masterbatches can quickly develop a process for customers that satisfies — or is very close to meeting — all specifications when a finished

sample is run on a piece of equipment or assembly line for final approvals, which can be a very expensive proposition.

"A trial to make an actual part can be very simple or extremely elaborate," explains Emmel. "In some cases, it can cost a customer \$25,000 for one test run, so you can see why we want to provide a thoroughly developed process and formulation before it gets to that stage."

In many cases, Clariant Masterbatches has methods of replicating a test run for a customer. "We can make containers and bottles with our blow molding equipment, or produce plastic injection molded parts. In one facility, we have a mold for ski boots that we use for a customer."

A global operation

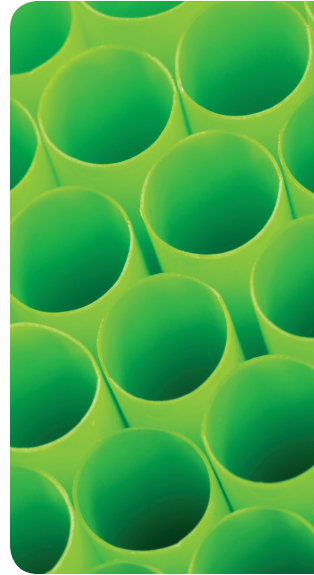
One advantage Clariant Masterbatches has over its competitors is its presence in nearly every industrialized country in the world. This was another reason why the company chose X-Rite when it decided to modernize its colour measurement processes. "X-Rite's presence in many countries was a major selection factor for us," says Emmel. "We need a partner that can support us in all the major regions around the world."

As the world leader in colour measurement, X-Rite has sales and service offices that cover Europe, the Americas, Asia, the Middle East and Africa. Many of the company's software packages are translated into native languages. Mr. Nikles, Sales Director at X-Rite, summarizes how X-Rite assists its customers in colour assessment: "We offer a full suite of solutions that deals with every aspect of precise colour measurement, including viewing booths that illuminate samples under exact lighting, and tests to check whether an individual has any colour vision deficiencies."

Protecting brand identities

Multinational corporations that manufacture and sell in many countries expect vendors such as Clariant Masterbatches and X-Rite to provide seamless and reliable communication between far-flung facilities and vendors. "The stakes can be high for some of the world's largest corporations that sell foods and beverages, personal care products and other goods, as they must protect their colours as part of their strong brand identities.", Mr. Emmel adds.

"A customer may come to us and say 'this is our colour and we need to launch it worldwide'," says Emmel.



“Clariant Masterbatches has to know not just how to formulate the right colour, but also we must account for differences in raw materials around the world — and even how regulations imposed by different countries can affect a process.”

Plastic food packaging is a case in point. The European Union has one set of regulations governing the types of chemical compounds that it considers safe to contact food stuffs for human consumption, while the United States has a different set of regulations.

“Everyone wants to have one colour, one formulation that is the same throughout the world,” says Emmel. “We may advise them that one formulation is possible, but it also carries a much higher price tag. Often we help our customers reach a compromise that maintains the integrity of the brand at an affordable price.”

To strike the right balance between cost and colour accuracy everyone in the supply chain — specifiers, formulators and suppliers — would ideally use the same colour standards and measurement methods.

Ensuring data integrity

To maintain integrity of the data, X-Rite developed a way that its instruments can be calibrated remotely at plants anywhere in the world to X-Rite’s original factory specifications. X-Rite has embedded its NetProfiler technology in its Color i7 instruments so they can read a set of colour standards and transmit data via the internet for verification.

Within approximately 15 minutes, the central laboratory processes the data and generates a profile that adjusts the instrument to in-field specifications and creates documentation that satisfies ISO-9000 procedures. Subsequent

measurements in X-Rite software are then ‘marked’ with a secure data signature, ensuring robust digital results.

X-Rite instruments also can communicate with instruments manufactured by other companies that suppliers may already have in service, improving data sharing among the supply chain.

But even the most advanced instruments and software in colour matching systems have not made trained operators obsolete: “The tasks that a colourist is expected to perform have evolved,” says Emmel. “A colourist is no longer a colour guru working alone in a lab, spilling out formulas. Today, a colourist is expected to work closely with customers to solve problems in a team environment.”

With X-Rite color measurement solutions, Clariant Masterbatches provides that human touch and offers a smooth implementation of new processes and consistent results from existing manufacturing techniques.



Color i7 Benchtop

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