

Driving Plastics Processing Performance while Improving Profits and Ensuring Sustainability Through Holistic, Customer-Centered Innovation





In the pursuit of progress, there comes a time when every industry must reassess its approach to innovation. The plastics industry finds itself at this inflection point today.

In the past, new product developments of TiO_2 pigments for plastics applications focused only on the TiO_2 particle chemistry itself. The pigment was viewed largely as a composition designed for incorporation into the plastics matrix, and while plastics processing was recognized as important for the TiO_2 design, it was not in the forefront as the primary consideration of product development and optimization.

But addressing the demanding goals of high-performing plastics today while improving profits is not achievable with this simple, one-dimensional approach. To meet the evolving cost, performance, and sustainability needs of modern masterbatchers and plastics producers, a new approach to innovation is required. Innovation that will advance the plastics industry must first and foremost center around the plastics masterbatcher and producer. Only with deep understanding of their products, production processes, and ultimate goals can disruptive innovations for the plastics industry be achieved.

At Chemours, we call this holistic, customer-centered innovation, and it is the cornerstone of our product development process. It requires deep customer relationships, an understanding of the downstream value these customers provide, and a willingness to collaborate across the entire value chain – bringing new value to masterbatchers and plastics producers and giving them a competitive edge in the market.

When executed effectively, customer-centered innovation can serve as a force multiplier that optimizes performance, drives cost efficiencies, and creates lasting, mutual trust, partnership, and value.

To help illustrate this impact, here's one example to bring this approach to life:

Delivering superior TiO₂ pigment processability while improving profits

Recent feedback from our customers indicated opportunities for improvement in TiO₂ handling, processability, and processing rates. When thinking about ways to address this challenge, our technology team identified bulk density enhancement as a possible means to improve the processability of masterbatch. In our team's research, we innovated a novel processing technology to deliver enhanced material bulk density while maintaining all other pigment properties. We assessed the resultant new pigment design and its performance in masterbatchers' applications to deliver a solution with multifaceted benefits to address processability challenges while simultaneously delivering savings and sustainability value potential.

We understand the challenges of managing costs in plastics production and were intensely focused on price and finding innovations that create value while improving profits throughout the process to create the end product. Through a close understanding of the market and customer needs, this work led to the development of Ti-Pure™ TS-1510, a highly efficient rutile TiO₂ pigment designed for processing performance in plastics applications, including polyolefin masterbatch.

Enabled by proprietary technology, this innovative new grade is truly unique and provides numerous quantifiable benefits to masterbatchers while improving profits.

With the higher bulk density of TS-1510 enabling a smaller package volume, this grade requires less warehouse and line storage space. Its improved handling with low dusting helps masterbatchers keep production areas clean with less engineering control maintenance, all while ensuring all of the pigment is fully delivered to the masterbatch production process. Additionally, the pigment's improved flowability requires less labor, feeder energy, and time to unload, ultimately saving masterbatchers money through efficiencies in energy and labor while delivering sustainability value. By ensuring all pigment is fully discharged from the package, masterbatchers can also more easily facilitate package reuse and recycling.



Perhaps most impactful for masterbatchers, the improved properties of the pigment innovation enables faster processing rates through key masterbatch production units beyond unloading. This includes compounding rate improvements of 30% compared to traditional grades while reducing the energy consumption of these processes by up to 12.5%. These benefits offer more line capacity and labor efficiency opportunities for the masterbatch

producers. All of this is achieved while delivering the foundational value of opacity and color delivered by Ti-Pure™ pigments, which is essential to the production of high quality masterbatch products.

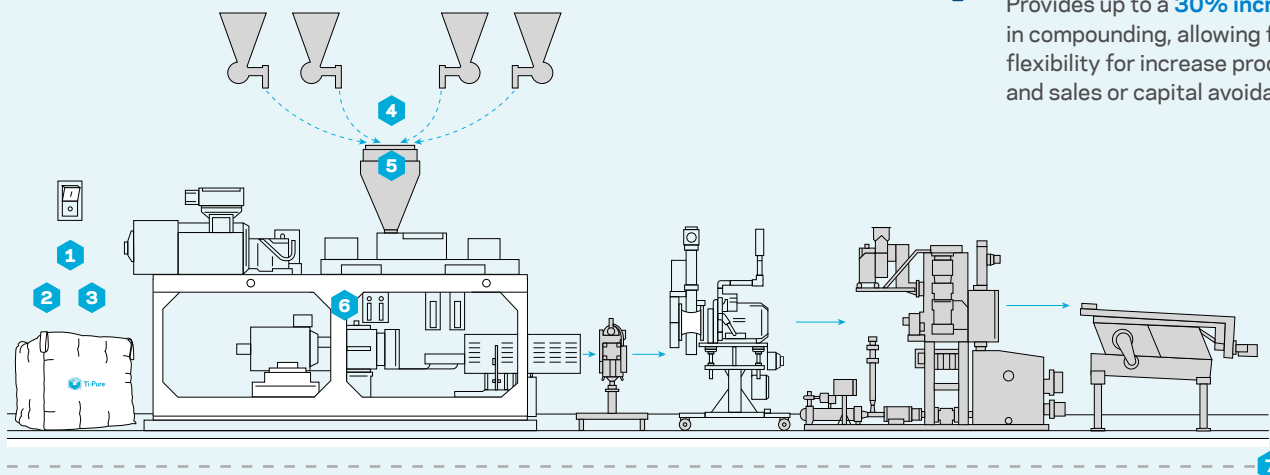
Finally, through improved line productivity, Ti-Pure™ TS-1510 opens up new line capacity with existing capital, enabling expanded production or capital avoidance for masterbatchers.

Advancing plastics sustainability industry-wide

Aside from the cost efficiencies and line productivity, this new standard of processing efficiency will help masterbatchers and downstream customers reduce their environmental footprints and improve sustainability for the plastics industry.

To quantify the impact this pigment can make, we [conducted](#) a [rigorous](#) Life Cycle Assessment for polyolefin masterbatch production using this new grade. For polyolefin masterbatchers, using Ti-Pure™ TS-1510 over traditional grades enables energy and labor efficiencies that unlock an up to 6% lower net carbon footprint. This grade also comes in packages that are designed to be recycled or reused, leading to further sustainability impact.

- 1 ⚡ Up to 12.5% processing energy reduction**
Provides cost savings through efficiencies in processing, enabling less energy use
- 2 🏠 Smaller package = Savings**
50% reduction in package height lowers storage space and warehouse cost
- 3 ♻️ Recyclable Packaging**
Packaging designed for ease of recycling and reduced material usage
- 4 🧤 Enhanced handling through low dusting reduces potential for contamination**
Leads to cleaner production areas, minimizes pigment loss, and reduces dust collection system maintenance
- 5 🌊 Increased flowability**
Drives cost savings through efficiencies in energy and labor
- 6 🧪 Superior pigment properties**
Drive easier and more complete unloading with faster feed rates
- 7 ⚙️ Improved line productivity**
Provides up to a 30% increase in compounding, allowing for asset flexibility for increase production and sales or capital avoidance





A true win-win

This customer-centered innovation approach is an example of how we strive to be a thought partner and innovation resource for masterbatchers, helping address their challenges, working together to optimize their processes, and collaborating on their next great offering to deliver value downstream in our value chain. In doing so, we're also able to help them deliver sustainability value on our shared planet while improving profits. As part of our sustainability goals, we pledge that 100% of our new offerings include a sustainability value proposition while

remaining committed to delivering solutions that drive profitability. This new product is part of our recently launched [Ti-Pure™ Sustainability \(TS\) product series](#), a portfolio designed to simplify our customers' sustainability-minded decision making. This commitment to sustainability will help masterbatchers and the plastics industry advance its goals too, by enabling the creation of more efficient, durable, and safe plastics products that are better for both the planet and bottom lines.



About Ti-Pure™ Titanium Dioxide from Chemours

Ti-Pure™ titanium dioxide (TiO₂) from Chemours strives to make the world brighter, more durable, and efficient by tackling some of society's greatest challenges through TiO₂ innovation and reliability. For nearly a century, we have produced and delivered high-quality TiO₂ for customers around the globe in coatings, plastics, and laminates applications. Guided by industry-leading innovation, technical expertise, and continued collaboration, we're committed to moving our customers and our planet forward.

[Watch a short video to learn more.](#)

Plastics that contain Ti-Pure™ offer:

- **Excellent Processability:** High-quality Ti-Pure™ TiO₂ pigments ensure consistency in dispersion and processing from batch to batch, while enabling thinner films and parts.
- **High Opacity:** Ti-Pure™ delivers opacity efficiently for thinner films, brighter colors, and enhanced reflectivity.
- **Uncompromising Endurance:** The performance afforded by Ti-Pure™ resists weathering and discoloration over time, extending product life even in demanding environments.
- **A Global Manufacturing Footprint:** Ti-Pure™ grades are produced at multiple sites around the world to minimize the potential for supply disruption.



For more information, visit [tipure.com](https://www.tipure.com) or contact us at [tipure.com/en/contact-us](https://www.tipure.com/en/contact-us).

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