

THINKING OUTSIDE THE CAN: Taking a Holistic Approach to Measuring a Coatings' Total Carbon Footprint





As the world pushes to create a more sustainable future, coatings producers are seeking ways to minimize the impact of their products on the environment, public health, and the world at large.

Between the increasing frequency of severe weather events, heightening temperatures, rising sea levels, and continued regulatory pressures—to name just a few drivers—sustainable offerings are no longer a nice to have, they are becoming a need to have. But how can formulators achieve that efficiently and effectively, without compromising quality or ballooning costs?

Shifting the Formulator Focus: Product to System

Many formulators assess the potential environmental impacts of their products by estimating the amount of greenhouse gas emissions associated with manufacturing a can of paint. Considering the impacts from the paint manufacturing alone does not capture the overall impact from a paint's use and beyond, which can lead to poor decisions with unintended consequences and costs. Instead, formulators should take a more holistic approach by assessing the product's impact over its total lifecycle.

This lifecycle approach requires evolving formulator thinking from a product design focus to one centered on a systems design, which will help maximize contributions to environmental protection, social progress, and economic growth—the three pillars of sustainable development as personified by the United Nations Sustainable Development Goals (UN SDGs). By examining coatings' "cradle-to-grave" or "cradle to cradle" impact, formulators can make better decisions about which materials to use based on their true lifecycle impact.

Taking this holistic, systems approach, formulators may find surprising ways to achieve a more sustainable product, such as using high quality TiO₂ like Ti-Pure™ TS-6300, which not only enhance hiding power through greater light scattering efficiency, but can also reduce raw material usage, waste generation, and even reduce water use.

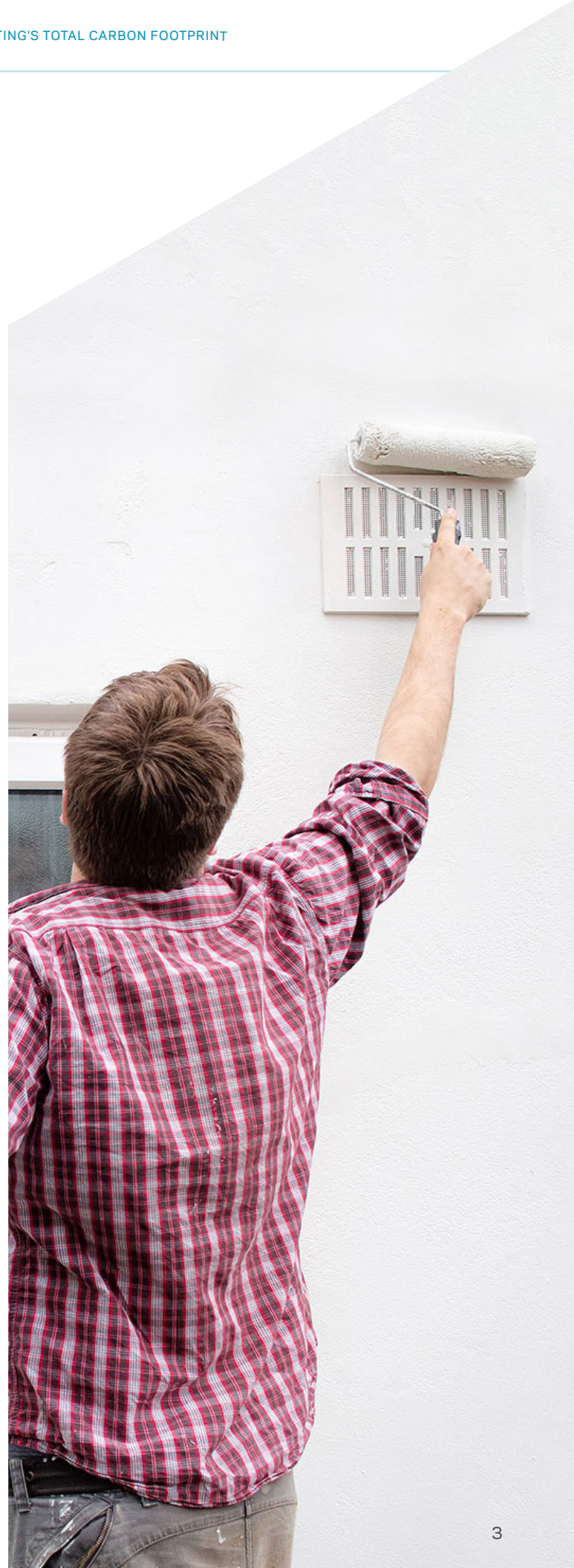
Sound too good to be true? It's not. Through the science-based Chemours EVOLVE 2030 methodology, we were able to assess the impact of Ti-Pure™ TS-6300 on the UN SDGs, providing a broader view of environmental and societal impact. This holistic perspective is critical to tackling society's greatest challenges and moving our industry forward. We believe chemistry can—and should—be as responsible as it is essential, which is why we've set a goal that 100% of our new TiO₂ offerings will include a sustainability value proposition, helping to create a brighter, more durable, efficient, and sustainable world.

Taking a holistic approach to measuring lifecycle impact can help paint formulators reduce environmental impact while addressing key societal needs. Learn how through this Ti-Pure™ TS-6300 case study:

1

Reducing the total amount of paint required

Using a pigment like Ti-Pure™ TS-6300 can create coatings with much greater light scattering efficiency. This greater scattering efficiency results in a higher spread rate, a key functional unit that can be used to measure a paint's sustainability. Coatings with higher spread rates reduce the total amount of paint required to cover surfaces, and therefore reduces the carbon footprint per square meter (functional unit) covered. The Ti-Pure™ TS-6300 pigment is so effective at scattering light that high-opacity paints with this pigment can often cover and protect surfaces in one coat, reducing the quantity of waste generated and materials and water used throughout the coating's lifecycle.





If a coating requires 10% less carbon to produce, it may appear to be the more sustainable option. But if this formulation requires twice as much paint to adequately cover a wall or piece of equipment, the cradle-to-grave footprint is likely much higher. By shifting perspective to view the product's impact over its entire lifecycle, paint formulators can make better decisions and create more sustainable products.

2

Finding further CO₂ emissions reductions

The material efficiency of Ti-Pure™ TS-6300 is not limited to the pigment alone. With less paint required to cover the same surface, less paint components will also be needed, including binders, additives, and paint can packaging. Beyond decreasing the required material resources, using Ti-Pure™ TS-6300 can also lead to a substantial reduction in greenhouse gas (GHG) emissions from chemical and packaging manufacturing and distribution.

Reducing the amount of paint required annually by millions of gallons also prevents millions of steel cans or plastic jugs from entering landfills or recycling centers. It would also decrease the quantity of some equipment (such as brushes, rollers, or pans) and supplies (like towels or drop cloths) required in large projects.

Fewer coats also leads to less time required by professional painters to complete the project. For professional painters, this means greater economic productivity and saved time in what is usually labor-intensive work (supporting UN SDG Target 8.2). Through these human resource efficiencies, decreased GHG emissions, reduced waste

generation, and decreased water usage, Ti-Pure™ TS-6300 pigment also contributes to the UN SDG of decoupling economic growth from environmental degradation, helping demonstrate that economic growth is possible without undue burden on the environment

3**Reducing water usage**

Creating coatings using the Ti-Pure™ TS-6300 grade also reduces the use of freshwater, a critical natural resource. A gallon of paint typically comprises of about 0.4 gallons of water. While using Ti-Pure™ TS-6300 does not reduce the amount of water used per gallon of paint created, using less paint to cover the same surface will result in decreased water usage. Considering annual global production of paints is on the scale of billions of gallons, creating paints that require less coats to cover surfaces could reduce freshwater withdrawals by hundreds of millions of gallons

A system mindset may be the secret to a sustainable future

For nearly a century, Chemours has delivered high-quality TiO₂ to our coatings customers around the globe. Guided by that industry-leading innovation, technical expertise, and tight customer collaboration, we believe we have an opportunity and an obligation to advance sustainability, moving our industry and our planet forward. This is more important than ever today as the pressure on coatings formulators to reduce their environmental impact is coming from all sides as new government regulations, international guidelines, and consumer demands call for more sustainable products. Doing so will require manufacturers to assess their impact in new, more thorough ways. By leveraging a systems approach that takes a holistic view of a product's impact over its entire lifecycle, in addition to measuring the in-the-can impact, coatings producers can create more environmentally friendly products that meet growing demands from all of their stakeholders and help create a more sustainable future





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.](#)

Paints that contain Ti-Pure™ offer:

- ◆ **Better Processability:** High-quality Ti-Pure™ TiO₂ pigments ensure consistency from batch to batch.
- ◆ **Superior Hiding Power:** Creating brighter brights and whiter whites, Ti-Pure™ increases hiding power for uniform, one-coat coverage without needing to prime.
- ◆ **Ease of Application:** With fewer drips, smoother brush strokes, and faster drying times, Ti-Pure™ pigments boost paints' productivity.
- ◆ **Uncompromising Endurance:** The UV protection afforded by Ti-Pure™ leaves a durable, washable surface that resists fading, cracking, and discoloration over time.



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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