

Sukano and Emery Oleochemicals Announce **Joint Product Development and Launch for PET Antifogging Compound**

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- *New antifogging compound is designed to be used at 100% in cold applications to prevent fogging in packaging surfaces*
- *Designed for all kinds of Coex-films (rigid and oriented) with Sukano's co-polyester-compound in one cap-layer of a film extrusion line A/B structure and PET as core-layer*
- *Final parts were shredded, ground, washed and submitted to additional heating conditions, simulating the critical recycling steps of a PET tray dedicated recycling stream*

Schindellegi, October 17, 2022 - Sukano, a global specialist in the development and production of additive and color masterbatches and compounds for polyesters, biopolymers, and specialty resins, and Emery Oleochemicals, a leading global manufacturer of natural-based chemicals made predominantly from natural oils and fats, today announced the launch of their jointly developed PET Antifogging compound for direct food contact PET packaging.

Two years of intensive testing and simulations of end use applications in real life scenarios in research and development laboratories resulted in this new antifogging compound. It is formulated to be used at 100% in cold applications to prevent fogging in packaging surfaces.

The product is designed for all kinds of Coex-films (rigid and oriented) having Sukano's co-polyester-compound in one cap-layer of a film extrusion line A/B structure and PET as core-layer.

The resulting product performance is so robust that, even after orientation in several different ratios, the antifogging function remains active and integral, and the film remains transparent.

The challenge of existing technologies

Fogging, or the undesired formation of small water droplets on the surface of films, is a common problem when packing moisture-containing products such as fruit, vegetables, or meat in a tight container. When the water condenses on the surface,

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it often forms droplets due to the lower surface tension of plastic materials. These droplets 'fog' the film and hinder a clear view into the packaging. This not only makes packed food look less fresh and less attractive, but sensitive applications can even be damaged or have their shelf life reduced due to the presence of water droplets.

Antifogging agents solve these issues by inhibiting the formation of water droplets through a homogeneous, transparent water layer. However, the PET food packaging industry is longing for an antifog performance in the form of a compound that can be used in their packaging materials to replace the painful existing coating process.

Antifog coatings are well known and in use, but have the downside of adding another operational step to filmmaking. And typical solution-based coatings are inactivated when the surface is washed. As an internal additive in plastics, antifog additives work on polyolefins due to the migration readiness of the polar additive in the nonpolar polymer and the low glass-transition temperature. However, polyolefins have limitations in recyclability and gas barrier performance. PET, on the other hand, is a well recyclable packaging material with good barrier performance and transparency. However, the current antifog additives on the market do not work in PET. Due to the polymer polarity, coupled with the glass transition temperature. Until today's announcement, the industry had to make do with the limitations faced by polyester packaging structures.

It is an extensive understanding of polyesters, molecule design and packaging processes that worked as the foundation for this new antifog compound for polyester packaging applications

Partnership driven by specialized companies to overcome the challenge

Antifogging agents are already common products in the portfolio of Emery Oleochemicals' Green Polymer Additives business. "However, additives that work well in flexible vinyl meat wrap films or polyolefin films do not necessarily work well in PET," says Dr. Annika Heinrich, Technical Development Manager at the production site in Loxstedt, Germany. "Polarity, crystallinity and other physical or chemical characteristics of the base polymers are too different, and the additive molecule design needs to take that into consideration."

"At a very early stage, we understood that to be successful in producing effective antifogging agents for PET we must find a strong masterbatch specialist partner," adds Dr. Christian Mueller, Global Technical Market Manager by Emery Oleochemicals' Green Polymer Additives. "Antifogging for PET is a very challenging application in polymer additives, and Sukano is one of the most renowned companies when it comes to developing functional additive masterbatches and compounds. Sukano's significant experience creating state-of-the-art masterbatches and compounds for PET applications made them an ideal fit for this joint development project."

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The key overall benefits of this new internal antifogging agent compound for PET are transparency, durability, and homogenous effect associated with easy handling, since no additional machinery investment is required to make it work. Beyond this, customers will be able to minimize any material wastage.

“Internally added antifogging agents are known to create processing issues in PET such as a strong viscosity drop of the polymer melt. Clouding of the final article is another obstacle”, states Christian Schanzer, Global Product Manager of antifogging additives compounds at Sukano.

That’s why Emery Oleochemicals and Sukano decided to bring together their unique specializations into a collaboration to overcome the challenge.

“Emery globally masters the development and production of LOXIOL® antifogging agents. Our partnership combined a specialist in designing internal antifogging agents' molecules with Sukano ´s expertise in masterbatches and compound applications and processing of polyesters to make it possible to incorporate such long desired functionality directly into the plastics material in the compounding step,” reinforces Mr Michael Kirch, Global Head of Research and Development at Sukano.

RECYCLABILITY: innovation principles respected from cradle to cradle

The compound additive was tested in PET lidding films applications, PET clam shells and thermoformed lids and trays. The final parts were then shredded, ground, washed and submitted to additional heating conditions, simulating the critical recycling steps of a PET tray dedicated recycling stream according to the PETCORE TCEP protocol.

As responsible companies, the very natural step to evaluate the influence of such innovative technology in the PET tray recycling stream is in the core of the design principles of both companies. The tests reflected consumer habits and local countries demands, such as extracting or not the lidding film, when the packaging is disposed of.

It is with great satisfaction that we confirm the launch of this long-awaited technology for the PET industry.



Driven by expertise



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About Emery Oleochemicals

Emery Oleochemicals is a leading global manufacturer of natural-based chemicals made predominantly from natural oils and fats. They offer an extensive product portfolio, including renewable solutions for the Agro Green, Bio-Lubricants, Eco-Friendly Polyols, Green Polymer Additives and OleoBasics markets.

The company is headquartered in Cincinnati, OH, USA and has manufacturing plants in North America and Europe. Emery Oleochemicals' global operations are supported by a diverse workforce and an extensive global distribution network covering over 50 countries worldwide.

Learn more about Emery Oleochemicals' full portfolio of Green Polymer Additives at: <http://greenpolymeradditives.emeryoleo.com/additives/>

About Sukano

Sukano is a global specialist in the development and production of additive and color masterbatches and compounds for polyesters, biopolymers, and specialty resins. The company is driven by expertise and devotes its technical knowledge to developing innovative products and highly specialized solutions.

The pioneering and entrepreneurial spirit that the company was founded upon continues to this day. The emphasis on partnerships and collaborations that catalyze change and drive sustainable business models and innovative products is at the heart of this effort.

For more information, visit www.sukano.com