



The Cycle of Plastic

Innovations for
Sustainable Manufacturing





For over three decades, Tosaf has been developing and manufacturing high quality additives, compounds and color masterbatches for the plastics industry, offering breakthrough ideas and pioneering solutions. In a global economy that is demanding more sustainable practices from manufacturers, Tosaf has placed a priority on developing solutions that will aid our partners to operate and develop products that are more sustainable and healthier to both consumers and the planet. Tosaf offers a variety of innovative products and solutions that enable plastics to be recycled, enable manufacturers to use more recycled raw materials and enable plastic products to biodegrade.



Recyclable Plastics

Recyclable Additives for
a Sustainable & Greener
Production

The Environmentally-Friendly Alternative to Matte Coatings

Matte MT7636PE

Tosaf's new Matte material delivers a flawless matte finish with a premium chic look and feel, excellent brightness in light transition and no transparency. Based on PE, it is recyclable and does not require additional converting processes. Offering thermal stability, it can replace BOPP or BOPET, enabling our customers to meet the new MONO film trend with a

Code#4 film which is a more environmentally conscious alternative to matte coatings.

The newly developed matte compound is suitable for PE films with thin skin layers of 5-7 microns, and provides superb haze (~80%) at a very low gloss (<10). An excellent printing substratum, it enables print on clear lacquer, for complete transparency. It can also be used in overlap sealing applications, which isn't possible with traditional BOPET.

Select areas of the matte effect can be made transparent, simply by applying a lacquer coating or by gluing a clear stamp on top.

Recyclable Barrier Compatible With PE

Barrier BR7503PE

Tosaf had developed a new compound that provides a high barrier to oxygen and fumigants. BR7503PE is PE based masterbatch that enable the

production of barrier silage and mulch films using a three-layer extrusion line. Agricultural barrier films most frequently use EVOH in the barrier layer, which is incompatible with polyethylene, requiring an additional tie layer. The accepted method for producing these films involves a five-layer extruder, which most film producers do not have, blocking their accessibility to the barrier film market. Tosaf's innovative MB products are compatible with PE, enabling film producers to recycle their barrier films and produce a greener product, subsequently removing the obstacles to this untapped market share.

Additives Compatible with Recycled Raw Materials in XPS

HBCD-Free FR MB

Tosaf has developed an HBCD-free FR masterbatch for extruded foamed polystyrene (XPS). The masterbatch can be polymer based, non-polymeric based or a combination of the

two, depending on the quantity of recycled polymer in the final product and the customer's need for thermal stability. This masterbatch is highly recommended for greener, low bromine boards.

Unique flame-retardant masterbatches and compounds for polyolefins (PO)

FR8906PE EU

Our new development Halogen free Flame Retardant FR8906PE EU designed to provide self-extinguishing properties and can ~~provide~~ UV stability for PO fibers and film application. This grade especially recommended for PO films, tapes, synthetic grass (or artificial turf) nonwoven and woven films and fibers in outdoor application. Provides outstanding UV Stability, fully transparent product with excellent efficiency. FR8906PE EU meets DIN 4102 B1 and B2 classifications FMVSS302



Recyclable Enablers

Additives Enabling Successful Integration and Processing of Recycled & Recyclable Materials

Identifiable Black Pigments for Recycling Processes

Near Infra-Red Detectable Black MB

Black pigment can be challenging for packagers, especially those who are environmentally conscious and here's why. Carbon black is the pigment that is traditionally used. Its downside is that it completely absorbs the majority if not all of the near infra-red (NIR) radiation used by optical sorting systems typically used in recycling plants, rendering materials undetectable during

sorting. As a result, black plastics used in applications like ready-meal boxes are sent to landfills instead of being recycled. Black food packaging plastics that do get recycled either require labor and energy intensive manual sorting processes, or end up as low-quality, low-value materials. Tosaf's IR-detectable black MB offers a strong, jet-black coloration, without compromising detectability by NIR sorting equipment. Products using our pigment are recyclable and renewable, without additional processing costs or depreciation in value.

Recycled Raw Materials Enabler for Processing

Flow-Enhancer (CRPP) MB

Recycled raw materials propose many challenges for different industrial processes, to which Tosaf has developed a series of solutions. Tosaf's polypropylene flow enhancer MB range

modifies melt viscosity and improves the flow characteristics of recycled and prime PP. Its application extends the range of potential uses for low-cost recycled materials, improving processability and contributing to faster mold-fill rates and shorter overall cycle times. These benefits can be achieved without compromising mechanical properties or costs. Tosaf's flow-enhancer MBs are safe to handle, transport and store, and do not require any special safety measures. They comply with food contact regulations and are REACH registered.

Eliminating Bad Odors From Recycled & New Materials

Odor Scavenger OD7904LL EU

Most recycled plastic develops a bad odor throughout storage and processing. Tosaf's Odor Scavenger masterbatch absorbs and reduces rancid odors of recycled material enabling plastic convertors to successfully use low-cost, environmentally friendly raw materials

to create an abundance of consumer products. OD7904LL EU absorbs and eliminates malodors throughout production processes and in final products. This is particularly helpful in the production of food packaging such as beverage bottles, caps and closures. It is also useful for materials with strict and challenging organoleptic and/or VOC demands. As well as absorbing the odor, OD7904LL EU stabilizes the virgin or recycled material against further thermal degradation. OD7904LL EU is suitable for use with any polyolefin. Equivalent grades for specific carriers and/or applications are also available.

Barrier Film Recycling Enabler

CP8487PE Recycling MB

When producing barrier films the main problem producers face is how to recycle accumulated scrap materials. Barrier films are produced with 5-layer extruders that glue two incompatible polymers (EVOH/PE, EVOH/PP, etc.) with a tie

layer. When this film is later granulated the incompatible polymers are grinded together. If re-used or recycled, these granules form unstable bubble and/or holes that form due to delamination between incompatible polymers. Tosaf's CP8487PE, is a novel masterbatch that glues incompatible components together to produce continuous films, allowing for the recycling of barrier films.



Biodegradable Plastics

Additives Based on Polymers From Renewable Sources and Decomposed Into Water, CO₂ and Organic Mass.

Biodegradable Compounds, Masterbatches & Solutions

The utilization of biodegradable and compostable polymers is a growing regulatory and market demand and a rising concern of the modern consumer on a global scale. Tosaf offers standard, custom-made color masterbatches and compounds compatible with all biodegradable carriers such as PLA, PHA/PHB, PBS, PBAT etc. These solutions have the added value of enhancing the performance, properties,

processability and stability of such resins. Tosaf's solutions support a wide spectrum of applications, flexible and rigid, durable and disposable, transparent and opaque, etc. Our biodegradable masterbatches and all its components, pigments, and additives are certified according to current regulatory requirements (e.g. EN 13432, ASTM D6400). Our biodegradable solutions are certified to meet all global regulations (e.g. FC, REACH, Toys, RoHS, etc.).

Recycling Solutions for Non-Compatibilized Materials and Mixtures

Tosaf has established TopGreen which is dedicated to advancing a positive environmental impact. TopGreen offers sustainable polymer solutions and a wide range of environmentally friendly products,

such as wood compounds bio-polymers,
PLA compounds, and compounds based on
renewable resources

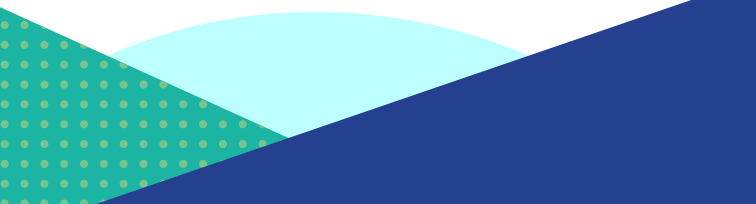
For more information please visit our website:
topgreenpolymers.com



Bringing Added Value to Our Customers.

Having a Better Impact on the Environment,
Reducing Waste and Saving Resources.

Tosaf is continuing to research and develop innovative solutions that help create more durable and healthier products for consumers and the environment. Our researchers are studying ways to minimize human impact on the environment and promote a better use of material resources throughout all the industries that we serve around the world. As governments and regulations change to respond to the issues of health and safety, the environment and sustainability, our scientists and engineers are developing solutions to accommodate these changes and to grow and evolve with our customers to create better materials for a better world.



The background is composed of several overlapping regions. The top and right portions are a dark blue field with a fine, repeating pattern of small white dots. A large, smooth, light blue curve cuts across the top right corner. The bottom portion of the image is a teal field with a repeating pattern of small yellow dots. A large, smooth, yellow curve cuts across the bottom left corner. The text 'TOSAF.COM' is centered in the dark blue dotted area.

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