



MITSUI PLASTICS, INC.

MITSUI & CO.

www.MitsuiPlastics.com

One-Stop Shop for Sustainable Rigid Packaging

Our commitment to sustainability and the global shift towards utilizing eco-friendly materials drives the Mitsui Plastics packaging division. We offer an extensive line of rigid packaging solutions suitable for all industries that meet or exceed product specifications of traditional materials.

Rigid Packaging

Rigid packaging is versatile, affordable, highly protective and easy to recycle. We offer a full line of sustainable high-quality resins and film roll stocks to produce rigid packaging materials used for food packaging, cosmetics, chemicals, pharmaceuticals and much more!

Reduction



Impact Modifiers

- Improve impact strength of polyolefins and polyamides especially at low temperatures.
- Resin modifiers for polyolefins can improve the toughness, impact and heat resistance of the polymer, and transparency of the final compound. With lower density, lower modulus and lower melting point vs. traditional polyolefins, these modifiers can be used to modify impact and softness in finished compounds.
- Acid-modified elastomers, with grades based in POE or EPDM, are well dispersed throughout nylon resin to prevent cracking and improve the durability of the polymer. Suitable for both filled and neat polyamide resins.

Recycled Content



PET Melt Viscosity Improver

- For those looking to increase the rPET content in their products, our PET melt viscosity improver is a clever solution.
- Using this additive to increase the melt viscosity of polyester, customers have the flexibility to increase impact strength and improve processing, all while adding more recycled material into their system.
- Potential to improve yellowness index of rPET when using this Melt Viscosity Improver.

MAH-Polymers

- Trying to get extra performance out of your PCR-containing compounds? With our Maleic Anhydride (MAH) grafted polymer masterbatches, customers can improve compatibility between PCR/Virgin resin resulting in better mechanical properties across the board – tensile strength, flexural strength, impact strength, etc.
- Mitsui's MAH-polymers are low VOC, and minimize free Maleic Acid content on the final polymer – leaving customers with less worry of polymer degradation.

POE (Polyolefin Elastomer)

- Provides critical durability benefits such as impact and high-heat resistance.
- Boasts high clarity and anti-whitening resistance properties.



Renewable



TPX™

- With high heat resistance, this plastic resin is suitable for high-temperature applications. It features a low surface tension, second lowest compared to fluorine polymers, giving it excellent release-ability against various materials.
- It has a high chemical resistance compared with traditional polymers.
- TPX™ (PMP) has excellent transparency and high UV transmittance, comparable to that of glass. Its low density makes PMP ideal for applications requiring a light weight.
- As of November 2021, TPX™ will include material derived from renewable hydrocarbons.

Ultra High Molecular Weight Polyethylene (UHMWPE)

- A unique self-lubricating UHMW polyethylene resin, it outshines traditional UHMWPE products. With high mechanical strength and abrasion resistance, this injection-moldable material can be used to replace PA6/PA66 modifiers and improve the lifespan of lubricant-free moving parts.
- As of November 2021, this resin is produced using renewable hydrocarbons originating from biogenic materials.

Recyclability



O₂ Scavenger

- Designed for oxygen-sensitive food and beverage packaging, O₂ Scavenger provides users with an effective O₂ barrier solution for their product while maintaining glass-clear, attractive optics.
- Eliminate the need for a multilayer EVOH/Nylon-based barrier structure – with O₂ Scavenger, material is polyester based and will actively scavenge Oxygen throughout the shelf life of the product.
- By replacing passive, hard-to-recycle barrier solutions such as EVOH, O₂ Scavenger can be recycled in the base PET stream with limited yellowing.

Acid Scavenger

- Offerings range from different synthetic hydrotalcites to metallic soaps, including regular type hydrotalcite as well as dehydrated hydrotalcite.
- Regular-type hydrotalcite is commonly used in polyolefin production.
- Dehydrated hydrotalcite is used in production where higher processing temperature is needed.
- Zinc-type hydrotalcite is also available.
- Metallic soaps include calcium stearate, zinc stearate and magnesium stearate.

ZrXL Series

- Additive blend that protects polyolefins 1-5 passes through the extruder with minimal polymer degradation.
- Designed to protect color, melt flow, and polymer integrity including low odor.



Rigid Packaging

Compostable



Bio-Based PBS

- This patented, certified-compostable resin offers high temperature resistance, good heat sealing at low seal temperatures, good printability without pretreatment.
- Compatible with natural fibers and other biodegradable materials, excellent processability and is food-contact approved.

Polylactic Acid (PLA)

- Your go to solution if seeking a plant-based and compostable resin, and looking to significantly reduce your carbon footprint. PLA is certified compostable and it's applications are limitless - from rigids, food serviceware and more. PLA offers the highest of optical clarity in the bioplastic offerings today. PLA is also compatible for compounding with PBS, PBAT and more recently, PHA.

Polybutylene Adipate-Co-Terephthalate (PBAT)

- These resins offer a lower cost alternative solution for compostable packaging. PBAT exhibits a wide melting point with good flexibility and toughness, thereby ideal for blending with TPS.

RTU Compostable Compounds

- Technological solutions can be found through the use of RTU (Ready-to-Use) compounds for enhanced performance and processability. Available options including a range of injection molding, ISMB, extrusion coating, and extrusion/thermoforming compounds to provide a solution for transforming to a circular economy.

Increased Shelf Life



EVOH (Ethylene Vinyl Alcohol Copolymer)

- Specialty polymer to provide superior barrier against the transmission of gases and other volatile products.
- It features excellent chemical and oil resistance.
- We offer various grades of EVOH containing between 29-44% of ethylene.

POK (Polyketone)

- Only engineered polymer that has a carbon footprint as low as Polyolefins. (
- For every two tons Polyketone produced, one ton carbon dioxide removed from the environment.
- Oxygen barrier properties at similar levels to EVOH depending on application details.



Application Examples

O₂ Scavenger & Melt Viscosity Improver for PET Applications

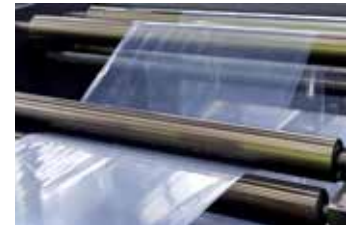
Looking to produce a food-safe thermoformable tray with recycled material? Using O₂ Scavenger + Melt Viscosity Improver, one can eliminate hard-to-recycle traditional barrier solutions such as EVOH or Nylon with an effective Oxygen scavenger in a monolayer structure. The O₂ Scavenger material package is effective with many rPET/PET systems. Where recycled content is a priority, using a Melt Viscosity Improver allows a higher rPET % while improving strength and processability.



After the lifecycle of a tray using O₂ Scavenger + Melt Viscosity Improver is reached, the product can be recycled in the PET stream with minimal yellowing effect.

Bio-Based Lubricant – Everglide®

Looking for a processing aid with roots in renewable resources? Everglide® Performance Series is a collection of formulated lubricant masterbatches based on green/renewable resource additive technology. Designed with performance in mind, Everglide® PS gives users a chance to match performance of a standard Everglide® material at an additional cost savings. For those looking to make an injection molded product, just 2% dosage of Everglide® PS can improve COF in processing and abrasion resistance of final product.



Bio-Based PBS Coated Paperboard

Need versatility in addressing your sustainability goals? Bio-based PBS is your solution for coated paperboard for use in on-the-go hot beverage cups, food/soup containers, or frozen food retail containers, paper lids and more. Bio-based PBS is food contact approved, is certified recyclable/repulpable as well, is compostable and produced from renewable resources! Bio-based PBS is a drop in to LDPE without need for modifications and has good processability compared with other bioplastics. It exhibits good adhesion to paper with excellent heat seal strength at lower seal temperatures, excellent printability without surface treatments. Options for both home and/or industrial compostable solutions are available!

