

Plastic containers, crates, totes, and pallets are all products that the reusable packaging industry produces which contribute to the investment of a circular and sustainable economy and future.


Many of these products are made from high-density polyethylene plastic (HDPE), which is a material chosen for superior performance factors including puncture resistance, chemical resistance during sanitization/pressure-washing processes, and long service life.



Polymer Fusion Technology

Reusable Packaging Solutions

*For Barcoding / Serialization / Branding & more
on LSE Polyolefin Thermoplastics*



However, the performance properties that make HDPE a versatile material (impervious to chemicals, fuels, extreme temperature and UV, long life durability and substantial cost-savings) also make it problematic for common “adhesion-based” labeling methods (this includes pressure-sensitive adhesive, in-mold, hot stamp foil, heat transfer, silkscreen, pad-printing) that are intended to be on the product for life use.

Why do traditional labeling methods fail when they are intended to remain in place for the life of a reusable plastic product?

Similar to Teflon[®], nothing can stick permanently to polyolefin thermoplastics and typical labeling methods are simply incompatible. This incompatibility is a problem for manufacturers and consumers alike. When it comes to safety, warning, branding, antimicrobial, or authentication labels, there should be no compromise that would ultimately tarnish your image or cost you money and labor in failed labeling.

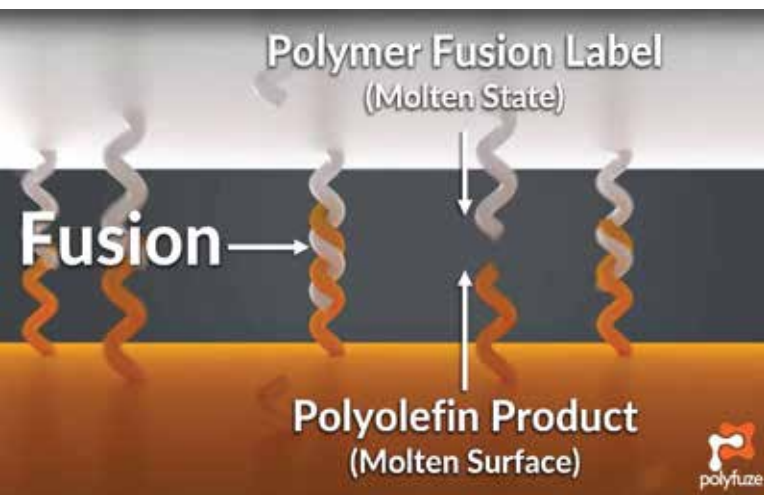
Not only do federal agencies like OSHA and CPSC give specific requirements on safety/warning labeling, multiple safety labeling standards and industry specific manufacturing standards all use similar “must be permanent” verbiage dictating how these labels are intended to perform.

Unfortunately, permanent doesn’t mean permanent anymore as “real world” results are consistently proving that common labeling methods are failing their duty to convey safety/warning information to consumers on polyolefin thermoplastic products, parts and components depended upon every day. To say it’s costing both OEM’s and consumers would be an understatement as litigation and injuries continue to prevail.

This comes as no surprise! Not only is the Teflon-like surface of polyolefin thermoplastics rejecting adhesion from the outset, the products and labeling are then repeatedly being subjected to all sorts of harsh environments (power washing, cleaners, fuels, oils, solvents, extreme temperatures, moisture, UV, and more) causing these “adhesion-based” methods to fail.



Polymer Fusion Technology label printed and fused to LSE pallets.



Polyfuzer technology fusing into part subsurface.

Polymer Fusion Labeling Technology

Polymer Fusion Labeling Technology is the science of merging two separate polyolefin thermoplastic polymers together (polyolefin label + polyolefin product) utilizing melting point, time and pressure producing a singular piece of plastic without the use of adhesives, tie layers, bonding agents, or secondary surface treatments.

Polymer Fusion Labeling Technology is specifically engineered for perfect compatibility with polyolefin thermoplastic products to deliver unrivaled lifelong performance.

During application, the Polymer Fusion Label and polyolefin thermoplastic product simultaneously reach melting point causing a “fusion reaction.” The result - a permanent safety, warning, brand, authentication, or antimicrobial mark on plastic that cannot be lifted, separated, or removed for the life of the product no matter the environment or exposure.

When labeling for longevity, durability, and permanence matter most, Polyfuzer’s industry-leading Lifetime Guarantee provides peace of mind that Polymer Fusion Technology has the reusable packaging industry’s unique problems in mind to support lifetime labeling.

Polymer Fusion Labeling Applications for Reusable Packaging

- Labels for pallets
- Labels for crates
- Labels for totes
- Labels for bulk containers
- Labels for food-grade containers

Polymer Fusion Labeling Performance Properties for Reusable Packaging

- FDA-Compliant
- 100% compatible with low surface energy (LSE) polyolefin (no inks, substrates, or adhesives)
- 100% polymer fusion melds at molecular level with LSE polyolefin
- Impervious to harsh environments, chemicals, sanitation processes, pressure-washing, moisture-rich environments, solvents, oils, and extreme temperatures
- Anti-Counterfeit & Authentication capabilities
- Life-use track & trace labeling solutions
- Antimicrobial due to “label-less” result
- Can be manufactured with BioCote® for added silver ion protection
- Branding labels
- Tracking & Tracing labels
- Anti-counterfeit & Authentication labels
- Antimicrobial labels
- Warning, safety, instructional, informational labels



Image description here for Biocote...



Integrated into the polymer matrix of Polymer Fusion Technology Inks, D-TECT™ crystals are impossible to remove or reverse engineer and detectable at parts per billion (ppb) concentrations using IMS custom sensor systems.

Image description here for D-Tect.....

Polymer Fusion Technology with BioCote®

BioCote® (silver ion) antimicrobial additives are introduced into the polymer matrix of our Fusion Technology Inks during production and printed as part of a logo, warning label, or informative label that is then applied onto customers products.

According to BioCote®, “the technology has been proven to be efficacious against a wide range of microbes – bacteria, mold and viruses while being resistant to exposure to commonly used cleaning disinfectants for the life of the product.”

During application, the Polymer Fusion Label with BioCote® and HDPE product simultaneously reach melt point causing a “fusion reaction.”

The result is a permanent branding, warning, or informative label on plastic that cannot be lifted, separated or removed for the life of the product no matter the environment or exposure. It also means no more exposed layers or sticky adhesives where microbes hide leaving users susceptible to contact.

Polymer Fusion Technology with D-TECT™

D-TECT™ are microscopic, highly tunable, physical, optical, and magnetic crystals introduced into the polymer matrix of our Fusion Technology Inks during production and printed as part of a logo, label, or as an imperceptible feature to be applied onto customers products.

During application, the Polymer Fusion Label and customers polyolefin thermoplastic product, part or component simultaneously reach melt point causing a “fusion reaction.” The result - a permanent authenticatable mark on plastic that cannot be lifted, separated, or removed for the life of the product no matter the environment or exposure.

* Polymer Fusion Labeling is fully recyclable with polyolefin thermoplastic products at the end of life use.

Contact us today at polyfuze.com or call 928-634-8888.

