

Trends in Metal and X-Ray Detectable Plastics in Food/Food Processing

By: John Collins, [Eriez®](#) Manager, Plastics & PolyMag® Processing

Food safety vigilance and increasingly stringent government guidelines continue to drive the importance of keeping foreign material out of food and food ingredients. More often than not, the threat to food safety comes when some unwanted element—a fragment of metal, piece of rubber, plastic or grain husk—enters a food ingredient or its package.

Technological improvements in both equipment and chemical additives are helping food processors detect and reject unwanted elements before the final product reaches consumers—helping to ensure product safety and quality while reducing the risk of unwanted media attention and legal snafus.

Ensuring effective measures to prevent contamination of food products is a major concern for food manufacturers. Not only do contamination accidents require production line stoppages and incur huge recall costs, they also involve vast amounts of time and money to regain consumer confidence.

Foodservice safety guidelines are affecting not only how food is prepared, but the types of products used in food manufacturing. For example, major restaurant chains insist that food processors now use plastic and rubber articles that are metal and x-ray detectable. This has become part of many company's HACCP (Hazard Analysis Critical Control Point) programs.

Metal detectors and x-ray machines have long been used to detect metal and non-metal contamination in food processing operations. The trend today is the continued improvement in the detectability of supplies and equipment—including those made of plastic or rubber.

Ordinary plastics cannot be detected by metal detectors or x-ray machines. However, by incorporating new resin additives during manufacturing, broken pieces or fragments of plastic materials can be detected by a metal detector or x-ray inspection system before getting mixed in with food products. This allows manufacturers to prevent contaminated products from reaching the market. Detectable additives can be included in the resin to impart magnetic susceptibility in plastics so they can be separated magnetically or detected by metal detectors and x-ray inspection systems.

This technology significantly increases the added safety culture in a food processing operation by adding detectability to items which are not naturally detectable or separable. Parts or pieces that can potentially contaminate food products can be detected, located and isolated using standard inspection equipment.

The use of metal detectable plastics in food processing and packaging operations is causing manufacturers to produce a variety of detectable products. Cable ties and cable tie mounts, tote bins, pallets, elevator buckets, gaskets, screening balls, labels, shovels, ear plugs, pens,

measuring cups, wear strips, guide rails on processing equipment, and packaging equipment machinery parts, are just a few of the products now available in detectable plastic materials.

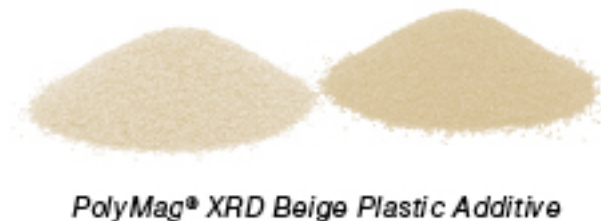


By incorporating these special additives, such as the [Eriez® PolyMag® Additive](#), manufacturers can expand current product lines to offer detectable versions of existing products, or even introduce brand new offerings.

How the additive process works

All resins, including thermosets and thermoplastics, are candidates for metal detectable additives. To make plastic and rubber articles detectable, the first step is to blend the additive into the resin. By including the additive during compounding or molded part manufacturing, enough magnetic susceptibility is imparted to enable detection in conductive products using standard metal detectors.

By design, the additive imparts magnetic susceptibility. Eriez PolyMag Additives are available in a dry, free flowing pellet, with polyethylene, polypropylene, polycarbonate and other resin carriers. The additive can also be supplied in a powder form for compounding or other thermoset applications.



Resins containing the PolyMag Gray HSCP can be pigmented darker colors such as blue, gray, green, red and purple. (Detectable plastics are most often pigmented blue which can be accomplished while using the gray additive.) The lower cost PolyMag Black HSCP is suitable for black applications. PolyMag Beige XRD is

preferred for applications that require a high level of x-ray contrast. Molders can include both the PolyMag HSCP and XRD masterbatch additives to impart metal detectability and x-ray contrast in plastic parts.

How detectable is the material? Typically, the PolyMag Additive is included at 10 to 20 percent loadings by the molder. Tests in 1/8" plastic cubes, with a 10 percent PolyMag loading, produces detectability similar to a 1 mm mild steel sphere, a detection level that meets most industry standards.

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Eriez is recognized as world authority in advanced technology for magnetic, vibratory and inspection applications. The company's magnetic lift and separation, metal detection, x-ray, materials feeding, screening, conveying and controlling equipment have application in the process, metalworking, packaging, plastics, rubber, recycling, mining, aggregate and textile industries. Eriez manufactures and markets these products through 12 international facilities located on six continents. For more information, call toll-free (888) 300-ERIEZ (3743) within the U.S. and Canada. For online users, visit www.eriez.com or send email to eriez@eriez.com. Eriez World Headquarters is located at 2200 Asbury Road, Erie, PA 16506.

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