

NEW RUBBER ELIMINATES PRODUCT RECALLS

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Over the last 18 months, a number of high profile product recalls due to rubber contamination have occurred in the UK. Leading food manufacturers with powerful brands and reputations built over decades, recalled products because they may have contained small pieces of rubber which could have posed a health risk to consumers. Product recalls are not only legally required if there is a potential health risk, they are also a necessary business step to protect a brand and a company's reputation by preventing serious damage to a consumer's health or life.

Although there is debate about the effectiveness of product recalls – caused by the sheer number that are needed every year – there is no doubt that recalls remain necessary for any company that wants to do its best to minimise any effect on consumer health and well being. Although potentially damaging and costly to a company, product recalls can help limit, contain and control a potential catastrophe.

In the current economic downturn, when cutting costs and preparing business for the tough times ahead is the priority, manufacturers are keener than ever to investigate technologies that can help reduce the need for costly and unexpected product recalls altogether.

Risk management

As food manufacture becomes increasingly global, preventing product recalls is even more challenging. When products are manufactured in different legal, business and regulatory environments for different markets with distinct regulations and laws, the ability to manage risk and prevent recalls becomes more complex.

Larger manufacturers with sufficient resources have product recall prevention initiatives in place. Risk analysis methods to determine how a product can fail can include failure modes and effects analysis, fault tree analysis and event tree analysis. The time, resources and costs associated with such rigorous testing are simply not available for smaller manufacturers who must consider alternative methods for minimising risk. A first step is to assess where contamination can occur and seek products and services that will minimise the chance of it happening.

Food safety first

There are many sources of potential contamination in food processing. Major culprits are; water, air, dust, equipment, sewage, insects, rodents and employees. With companies increasingly relocating manufacture to emerging markets, it is crucial that all sites are audited and closely monitored on a regular basis. Effective training and the availability of resources such as clean uniforms, gloves, hair nets etc can help reduce the risk of contamination (often microbial) being introduced by employees. Similarly, contamination from chemical sources can be prevented by careful analysis of substances used and changes to procedures and processes to ensure that toxic compounds cannot come into contact with food manufacturing systems or the foods they produce.

Equipment contamination can take many forms and fragments of glass, rubber and metal can arguably do more harm than other sources of contamination if accidentally consumed. As metal

detection technology has improved – and as more manufacturers have installed the equipment on their lines – there has been an increased focus on another common contaminant: rubber. Most metal detectors are unable to spot rubber fragments and this has been highlighted by the number of product recalls recorded in the last 18 months that have been due to rubber contamination.

Reducing the risk of rubber

Rubber contamination can come from a number of sources including conveyor belts, hoses, tubing, closures and netting. However, a significant proportion of the risk is due to the wide variety of pipework components, pumping systems and processing equipment that rely on effective seals. These seals perform under often aggressive processing conditions – high pH and temperature extremes – that make them vulnerable to failure. Although a relatively small part of a production line, seals are ubiquitous and critical to the smooth running of a plant. Seal failure not only affects production, but fragments can easily break away and contaminate the products being manufactured.

Seals used in food manufacture have to be resistant to steam and other cleaning-in-place (CIP) agents. Process operating conditions such as temperature, high pressure and vacuum also have a direct influence on elastomer suitability. When static and dynamic applications are also thrown into the equation, such as for IBCs or pump shaft seals, the complexity of selecting the right elastomer and hardness becomes apparent.

Up to Standard

Unlike other industries where chemical or temperature resistance are the key seal selection criteria, food manufacture demands these and more. Elastomers used in food manufacture have to be compliant to a growing range of legislative food manufacturing regulations. Typically they have to be compliant with FDA regulatory standard 21CFR 177.2600 for 'rubber articles intended for repeated use' and often US Pharmacopoeia (USP) Class VI standards. FDA-compliant, hygienic sealing materials, range from grades of EPDM (Ethylene Propylene Rubber), NBR (Acrylonitrile Butadiene Rubber), silicone rubber, fluoroelastomer, and HNBR (Hydrogenated Nitrile Rubber) to Perlast® FFKM perfluoroelastomers.

In addition, EU law requires that all plastic and rubber products used in food manufacturing plants must be blue in colour. This helps manufacturers and their employees more easily identify any rubber products that have broken down or shredded and entered foodstuffs.

Blue – and metal detectable

The latest advances in seal design not only surpass the technical and legislative challenges – they also provide food manufacturers with a valuable means of reducing rubber-seal based product contamination. A good example is the Detectaseal® range of food grade elastomer sealing compounds that have been developed by high performance rubber seal specialist, Precision Polymer Engineering (PPE).

PPE worked closely with leading food, pharmaceutical and contamination detection organisations to understand their requirements and simulate their exact processing conditions. The result, Detectaseal, is a unique range of specially designed metal detectable elastomer compounds that can be detected at fragment sizes as small as 2mm. Detectaseal seals and O-rings can operate in temperatures from -40°C to +200°C.

TECHNICAL ARTICLE



Detectaseal has received positive feedback from users. Tested and proven in use at leading food manufacturing plants, Detectaseal is now demonstrating its value with food processors, including one of the world's leading ready meals producers, in Europe, Australia and the USA.

Summary

The cost of a product recall can impact a company for months or even years if not handled effectively. As consumer spending slows, competition intensifies and margins come under pressure, the need to avoid product line stoppage and minimise the possibility of a product recall increases.

As food processors have introduced systems to reduce the chance of contamination from employees and metal, the focus has moved to rubber components and seals. Thanks to recent advances in technology, such as the launch of Detectaseal, rubber contamination is now easily avoidable.