

# Spiral Coolers

from Liberty Mutual **Property**



**S**piral coolers are common pieces of process equipment, particularly in the food products industry. They consist of a conveyor belt, made of plastic or metal, that is located in a circular metal frame. The conveyor belt cools products by winding them through a long circular path.

Recent loss experience has shown that fires occurring in a spiral cooler can be devastating. Combustible loading, upward cooling drafts, closely spaced tiers and continuous movement of product throughout the cooler can result in a rapidly spreading fire that normally cannot be controlled by a standard automatic fire sprinkler system.

High rates of heat along with significant release of smoke and contaminants associated with this type of fire can cause extensive structural damage to the building, loss of product and an interruption to production operations.

This risk management guide will explain how to properly evaluate spiral coolers to help determine if an increased exposure to loss exists at your facility.

### EVALUATING THE LOSS POTENTIAL

Both combustible loading and ignition sources must be evaluated when assessing the hazard posed by spiral coolers.

#### Combustible Loading

Combustible loading describes the amount of material that can burn in a fire. The combustible load in a spiral cooler can come from the conveyor belt itself and the product on the conveyor belt.

Spiral coolers that use a plastic conveyor belt as opposed to a metal one, create the greatest concern for a fast spreading fire because the belt itself presents a combustible fuel load. Regardless of the combustibility of the material on the conveyor belt, a spiral cooler with a plastic conveyor belt warrants increased concern for loss.

If a metal conveyor belt is used, the potential for loss is much lower and additional protection is not usually

required. For example, potato chips on a metal conveyor belt pose a greater potential for loss than bagels due to their high oil content.

If the belt is a combination of metal and plastic, it must be carefully evaluated to determine if plastic exists in quantities great enough to present a significant fuel load. Combustibility of the product being transferred must also be evaluated to help determine the need for additional protection.

#### Ignition Sources

Given the right conditions, almost any food product will burn. If the product comes from a baking line or is cooling from an elevated temperature, the type of product, temperature of the product, distance from the oven and presence of controls and interlocks must be evaluated to assess the hazard.



Plastic conveyor belt



Metal conveyor belt





If there is uncertainty about a product's combustibility, a Liberty Mutual Property loss prevention consultant can help analyze the hazard and suggest ways to reduce the exposure.

A fire outside the cooler is another source that could ignite the cooler itself. To assess this exposure, carefully examine any sources of ignition in the immediate area such as storage, motors, equipment with a potential for overheated bearings and other mechanical or electrical devices that could allow a fire access to the cooler.

Pay close attention to general maintenance in the area to ensure that it is free of combustible materials. Liberty Mutual Property recommends that at least eight feet of clear space is maintained around any combustible storage to help prevent the spread of fire, should one occur.

Regularly inspect and properly maintain all mechanical and electrical equipment associated with, and in the general area of, a spiral cooler. Preventative maintenance is critical to eliminating this source of ignition.

## Protection

There is currently no recognized protection scheme that can adequately protect all spiral coolers. In some situations, existing protection may be adequate. However, improved maintenance procedures, infrared detection devices, interlocks for automatic shutdown or specialized automatic suppression systems may be required to adequately protect the hazard.

If any of the conditions discussed above are present, they could pose an elevated potential for loss. The spiral cooler configuration should be reviewed with a Liberty Mutual Property loss prevention consultant who will make recommendations to help minimize your exposure to a costly loss.

While following the procedures and information outlined in this guide may aid in fire safety, they do not contemplate every potential for loss or damage. Therefore, every situation should be reviewed by the appropriate safety manager in an effort to take all appropriate steps and precautions to minimize spiral cooler hazards. No duty or undertaking is intended or assumed by Liberty Mutual by this publication as it is informational in purpose.

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