



# Property Risk Consulting Guidelines

XL Risk Consulting

A Publication of AXA XL Risk Consulting

PRC.10.2.10

## SUGAR STORAGE FACILITIES

### INTRODUCTION

A fire in a sugar warehouse could be one of two types. The first is the burning of the sugar by itself in the absence of other combustibles. There will be a low, bluish flame similar to that of an alcohol fire. This type of fire is low intensity and low heat release. A rate-of-rise fire detector or sprinkler system would not detect the fire. The second type is when other combustibles, such as paper bags, burlap bags, wooden bins, are involved in the fire. This type of fire is very high intensity, high heat release. The sugar turns to a brownish, molten state and flows to low points causing the sugar and other combustibles in its path to ignite.

Since sugar is sold on the Commodities Market, the value to raw sugar is subject to drastic swings in the market place. An upward swing in values could make a small storage facility very valuable.

### POSITION

Where required, install automatic sprinkler protection in accordance with NFPA 13 and PRC.12.1.1.0 as modified by this guideline.

### Raw Sugar Bulk Storage

#### Building Construction

Construct storage buildings of noncombustible material with sufficient exterior doors to allow firefighters to enter the building. Locate catwalks over the storage piles to facilitate fire fighting operations. Design the building to contain a maximum 25,000 tons (22,700 metric tons) of sugar in each fire area.

If the storage building is constructed of combustible materials, provide automatic sprinkler protection.

Provide automatic heat and smoke venting on a ratio of 1 unit of effective venting for every 100 units of floor area in unsprinklered buildings. The installation should be in accordance with PRC.2.1.4.

Do not allow these buildings to store engine-driven mechanical equipment, empty bags, or temporary storage of any type. Do not house bagging operations in these buildings. These buildings should contain raw sugar only.

#### Equipment

Provide automatic sprinkler protection over and 10 ft (3 m) beyond both sides of any conveyors.

## Refined Sugar Bulk Storage

### Silo Storage

Construct silos of noncombustible materials having smooth interior surfaces that are free of dust collecting surfaces. Equip the silo with low inertia type explosion venting on the top of the silo. Provide each silo with “chokes” in the conveyor system to prevent explosions from communicating from one silo to another.

If the silos have combustible construction or linings, provide ionization type smoke detectors in the recirculating air system. Provide access into concealed spaces and into the interior of the silo to allow for firefighting operations. Provide each silo with manually operated sprinklers beneath the top of the silo.

### Bin Storage

Construct bins of noncombustible materials having smooth interior surfaces that are free of dust collecting surfaces. Equip the bin with low inertia type explosion venting on the top of the bin. Vent to a safe outdoor location. Provide an explosion resisting fire barrier separating the bin storage from the surrounding occupancies. Provide each bin with “chokes” in the conveyor system to prevent explosions from communicating from one bin to another.

If the bins are of combustible construction, provide automatic sprinkler protection in addition to the above noted items.

### Equipment

Provide automatic sprinkler protection over and 10 ft (3 m) beyond both sides of any conveyors. Install electrical equipment in the area to conform to Class II, Group G electrical equipment in accordance with the *National Electrical Code*<sup>®</sup>.

### Bagged Storage Of Sugar

Protect storage of bagged sugar with automatic sprinklers. Sugar in 50 lb - 100 lb (22.7 – 45.4 kg) paper bags on wood pallets is a Class II commodity. Sugar in 5 lb (2.3 kg) paper bags in cardboard boxes on wood pallets is a Class III commodity due to the additional packaging. Design protection in accordance with the appropriate commodity class and storage configuration.