

63<sup>rd</sup> Issue

# Safety tips

associated with

## **ALCOHOL BASED HAND SANITIZERS**



With the uncontrolled spread of the pandemic, the world has been reminded of the importance and measures of personal hygiene. In this progress a pronounced demand for sanitizing products like alcohol-based hand sanitizers got created. There even was a time when stores were mostly sold out of hand sanitizers.

Nationwide most of the pharmaceutical and healthcare companies including distilleries had swapped their operations to help meet the demand for alcohol-based sanitizers.

Alcohol-based hand sanitizers are a quick remedy for maintaining personal hygiene during this situation though it also brings along multiple risks with it.

We at Liberty General Insurance understand the importance of Hand Sanitizers handling and storage hazards associated with it. We intent to provide recommendations based on site specific conditions to help minimize such hazards and reduce the overall risk exposure associated with use and storage of hand sanitizers.

### **WHAT IS ALCOHOL-BASED HAND SANITIZER?**

Hand sanitizer in general is a liquid, gel, or foam generally used to decrease infectious agents (fungi, bacteria, and some enveloped viruses) on the hands.

As per FDA (Food and Drug Administration), CDC (Centers for Disease Control and Prevention) and WHO (World Health Organization) alcohol based hand sanitizers with alcohol content of at least 60% have proven to work well for killing the virus Covid-19.

As such, most alcohol-based hand sanitizers manufactured and used are 60 – 90 percent alcohol by volume. In general hand sanitizers use ethyl or isopropyl alcohol as the active ingredient in a solution to kill viruses and bacteria.

# WHY IT MATTERS/ WHAT IS THE HAZARD?



## HAND SANITIZERS ARE FLAMMABLE LIQUIDS:

**1** In general terms, the flash point of a liquid is the minimum temperature at which the liquid will ignite when exposed to an open flame. Due to the high concentrations of alcohol, hand sanitizers will largely take on the flash point of the alcohol present, which, for both ethanol and isopropyl alcohol-based solutions, is below 70°F. Meaning, at ambient conditions, hand sanitizers are flammable liquids that will ignite if exposed to an open flame.

## PLASTIC CONTAINERS PRESENT A FIRE PROTECTION CHALLENGE:

**2** Hand sanitizer is typically stored in plastic containers, which presents a unique and challenging fire hazard. When plastic containers are exposed to a fire's radiant heat or direct flame, they begin to melt and fail. This causes the ignitable contents to be rapidly released into the fire. In a warehouse storage array, rack and solid pile storage can further exaggerate the fire protection challenge due to the potential for multidimensional and large pool fires which can quickly overwhelm the automatic sprinkler system.

## INADEQUATE PROTECTION CAN MEAN AN UNCONTROLLED FIRE:

**3** If the area where hand sanitizer is stored is inadequately sprinkler protected, the entire contents of that area is often expected to be involved in the fire. If more than an incidental amount of hand sanitizer is stored in a warehouse, storage, or production area, pending fire walls or other passive construction protection features, the fire scenario is often a total loss of the building and contents, regardless of installed sprinklers.

## WASTE STORAGE:

**4** Used containers and dispensers will contain gel residues and flammable vapors. The containers further add to the risk.



# PREVENTION

**Until adequate fire protection can be implemented, take measures to reduce the risk of an uncontrolled fire.**

Reduce storage volume of hand sanitizer to the minimum amount necessary onsite. Have suppliers ship smaller quantities on a more frequent basis or use off-site warehousing for excess storage.

Store hand sanitizer no more than one pallet high and away from other ordinary combustible storage.

Provide noncombustible containment skids below all hand sanitizer storage. Secondary containment will give sprinkler water a better chance to mix with the water-miscible liquid and dilute the flammable alcohol further toward a noncombustible solution.

Do not store hand sanitizer in any rack configuration, except where protected with a specialized protection.

Spillage control kits must be available near sanitizer storage sections to collect accidentally spilled fluid.

Sanitizer dispensers must be placed away from any ignition sources.

Rinsing out used containers with large quantities of cold water will reduce the risk of fire and the containers may then be recycled or disposed of in general waste.

Avoid use of cigarettes, bidi etc. near dispenser sections or immediately after using hand sanitizer.



# PROTECTION

Due to the highly challenging nature of fire involving hand sanitizer in plastic containers, very few proven sprinkler protection options are available. For buildings  $\leq 30$  ft. high and where all hand sanitizer containers are 16 oz. or less, Early Suppression Fast Response (ESFR) sprinkler systems and high output control-mode sprinkler designs can offer adequate protection for varying storage heights  $\leq 12$  ft., depending on sprinkler system design. For locations where hand sanitizer cannot be adequately protected by the installed ceiling sprinklers or no sprinkler protection is present, one of the following should be implemented:

- Use flammable liquid cabinets/lockers for storing all cartons of hand sanitizer.
- Relocate storage to a properly designed flammable liquid cut-off storage room.
- Maintain storage in a trailer or low value, detached building. If the trailer is docked at a loading dock, the dock door should be replaced with a minimum 1-hour rated fire door, kept normally closed, and provided with a fusible link or other automatic closure system.
- Relocate storage to storage racks and provide protection to meet NFPA 30, Scheme B design criteria. This protection design includes horizontal barriers and in-rack sprinklers at all levels where hand sanitizer is stored.

# TRIVIA

*The first alcohol-based bottled disinfectant – Sterillium – was developed in 1965 by German researcher ‘Peter Kalmar’ who realized that due to lack of time, many surgeons did not wash their hands with soap.*

## Liberty General Insurance Limited

10th Floor, Tower A, Peninsula Business Park, Ganpatrao Kadam Marg, Lower Parel,  
Mumbai - 400 013 Phone: +91 2267001313 Fax: +91 2267001606 Email: [LiVSafe@libertyinsurance.in](mailto:LiVSafe@libertyinsurance.in)

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