



The GOJO Guide to Fire Safety and Alcohol-Based Hand Rubs



Background

In the U.S., fire departments responded to, on average, 5,650 structure fires in healthcare facilities each year between 2009 and 2013. In the same period, these fires caused an average of four deaths, 160 injuries, and \$44.9 million in property damage annually – all in healthcare facilities.¹ This is why fire prevention remains a crucial life safety component of healthcare, and why fire and building regulations are so important to our safety. In the context of healthcare facilities, there are three fire safety essentials:

- **Egress** – The action of exiting a place. In an emergency, there can be no obstacles preventing a quick exit.
- **Ignition sources** – Required to start a fire. Without them, a fire cannot exist, so all unnecessary ignition sources must be avoided.
- **Flammable liquids** – Liquids that are easily ignited and can cause a fire. Many very useful, and even essential, products are flammable liquids, so proper use and storage of flammable liquids is necessary to prevent accidents.

Alcohol-based hand rubs (ABHR) are the gold standard for hand hygiene (except when hands are visibly soiled or contaminated) due to their convenience and ability to effectively kill germs, save time, and care for the skin.² Because ABHR contain ethyl alcohol, which readily evaporates at room temperature into an ignitable vapor, they are considered a flammable liquid.³ Although the incidence of fires related to ABHR is very low,^{4,5} it is vital that ABHR are used and stored properly and that ABHR dispensers are both installed and maintained correctly.

Because of the many different fire authorities and regulations across the U.S., ensuring compliance can be challenging at times. This document is intended to provide recommendations based on the model fire codes and establish a starting point from which to work with local fire code officials.



Who Is Responsible for Enforcing Fire Codes in Healthcare?

AUTHORITY HAVING JURISDICTION

The term “Authority Having Jurisdiction,” or AHJ, is used to describe an entity “responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.”⁶ In short, the AHJ is an entity responsible for enforcing various codes and standards. In all U.S. healthcare facilities, there are multiple AHJs with overlapping code enforcement authority, including:

- **The Joint Commission** - Accredits and certifies healthcare organizations and programs in the U.S.
- **Local Fire Code Official** - The fire chief or other designated authority charged with the administration and enforcement of the applicable fire code(s); a.k.a., local fire marshal.
- **State Fire Code Official** - The officer or other designated authority charged with the administration and enforcement of the state fire code; a.k.a., state fire marshal or equivalent in each state.
- **Building Official** - Officer or other designated authority charged with administration and enforcement of the building code.

Frequently Asked Questions



Model Code – A model fire or building code is a code that is developed and maintained by a standards organization, such as the National Fire Protection Association (NFPA) or International Code Council (ICC), independent of the jurisdiction responsible for enacting the code. A local government can choose to adopt all or part of a model code as its own.

Question	Recommended Approach Based on National Model Fire Codes and Standards ^{7,8,9,10,11}
What is the maximum allowable volume of a single ABHR dispenser?	1.2 L (41 ounces, 0.32 gal) is the maximum size for dispenser refills.
What is the maximum quantity of ABHR allowed in-use (i.e., in dispensers)?	10 gal (37.8 L) in-use outside of a storage cabinet within a single smoke compartment. One dispenser per room off corridors may not be included in the calculation.
Can an ABHR dispenser be installed in a corridor of any width?	A corridor must be at least 6 feet (1830 mm) wide to install an ABHR dispenser.
What is the distance ABHR dispensers need to be from ignition sources?	Do not install ABHR dispensers above an ignition source or less than 6 inches (152 mm; horizontal or vertical, measured from the center of the dispenser) to the side or beneath an ignition source such as an electrical outlet, switch, or thermostat. Note: The National Fire Protection Association (NFPA) 101 Life Safety Code 2012 edition states that dispensers shall not be installed within one inch distance (horizontal or vertical) above, to the side, or beneath an ignition source. ⁷ While this may be acceptable, the most conservative approach is to follow the 6-inch rule, as described above.
Are ABHR dispensers permitted over carpeted areas?	Install ABHR dispensers over carpeted areas ONLY if the smoke compartment is equipped throughout with an approved automatic sprinkler system.
What is the distance ABHR dispensers must be separated from each other?	Dispensers must be separated from each other by horizontal spacing not less than 48 inches (1220 mm).
What are the rules for using automatically activated “touch-free” dispensers?	When installing touch-free dispensers, ensure that: <ul style="list-style-type: none"> • Activation occurs only when an object is placed within 4 inches (100 mm) of the sensor. • An object placed and left in the activation zone does not cause more than one activation. • It does not dispense more than what is needed for hand hygiene consistent with label instructions. In addition: <ul style="list-style-type: none"> • Install a dispenser that is designed, constructed, and operated in a manner that minimizes accidental or malicious activations. • Test it according to the manufacturer’s care and use instructions each time a new refill is installed.
How much ABHR can be stored outside of dispensers in healthcare facilities?	In each smoke compartment, do not store outside of dispensers more than 5 gal (18.9 L) or an amount of ABHR that exceeds that which is necessary for normal maintenance of the area, whichever is less.
How much ABHR can be stored in a warehouse-type storage location?	Up to 120 gal (460 L). If there is need to exceed storage of 120 gal (460 L), consult with fire official.

Work With Your Local Fire Official



Local fire officials usually try to inspect commercial buildings in their jurisdictions twice per year and may be required to do so. In healthcare facilities, they are also typically very receptive to planning these as tours to meet their requirements, help refresh their familiarity with the structure, and identify vulnerabilities. There are several advantages to the healthcare facility initiating the request of such a tour including building and strengthening relationships, demonstrating and asserting a commitment to safety, and avoiding surprises. Call your local fire code official and schedule these tours in advance to improve the chances of a positive interaction and result.

DEFINITION OF TERMS

Control Area – A building or portion of a building or outdoor area within which hazardous materials are allowed to be stored, dispensed, used, or handled in quantities not exceeding the maximum allowable quantities (MAQ).^{6,8}

Fire Compartment – A space within a building that is enclosed by fire barriers on all sides, including the top and bottom.⁶

Flammable Liquid – Any liquid that has a closed-cap flash point below 100°F (37.8°C) and a vapor pressure that does not exceed an absolute pressure of 40 psi (276 kPa) at 100°F (37.8°C).⁶ ABHR, in both gel and foam forms, are typically considered a Class IC liquid (flash point above 73°F [22.8°C] and boiling point at or above 100°F [37.8°C]).

Flash Point – The minimum temperature of a liquid at which sufficient vapor is given off to form an ignitable mixture with the air, near the surface of the liquid or within the vessel used⁶ but will not sustain combustion.⁹

Healthcare Occupancy – An occupancy used to provide medical or other treatment or care simultaneously to four or more patients on an inpatient basis, where such patients are mostly incapable of self-preservation due to age, physical or mental disability, or because of security measures not under the occupants' control.⁶

Hospital – A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients.⁶

Maximum Allowable Quantity (MAQ) – The quantity of hazardous material permitted in a control area.^{6,8} The MAQ per control area is based on the material state (solid, liquid, or gas) and the material storage or use conditions.⁹

Institutional Group (I-2) Occupancy Classification – Includes buildings and structures used for medical care on a 24-hour basis for more than five persons who are not capable of self-preservation, including, but not limited to, detoxification facilities, hospitals, nursing homes, and psychiatric hospitals.⁹

Smoke Compartment – A space within a building enclosed by smoke barriers on all sides, including the top and bottom.⁶

REFERENCES

1. Campbell R. National Fire Protection Association (NFPA) News and Research. Fires in health care facilities. <http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/fires-by-property-type/health-care-facilities/fires-in-health-care-facilities>. Published September 2016. Accessed March 20, 2018.
2. Centers for Disease Control and Prevention (CDC). Hand hygiene in healthcare settings: show me the science. CDC web site. <https://www.cdc.gov/handhygiene/science/index.html>. Updated April 2016. Accessed March 20, 2018.
3. Cavage W. Flammability test of alcohol-based hand sanitizer. DOT/FAA/AR-TN10/19. FAA.GOV. <https://www.fire.tc.faa.gov/pdf/TN10-19.pdf>. Accessed March 20, 2018.
4. Kramer A, Kampf G. Hand rub-associated fire incidents during 25,038 hospital-years in Germany. *Infect Control Hosp Epidemiol*. 2007;28(6):745-746. doi:10.1086/517953.
5. Boyce JM, Pearson ML. Low frequency of fires from alcohol-based hand rub dispensers in healthcare facilities. *Infect Control Hosp Epidemiol*. 2003;24(8):618-619. doi:1086/502262.
6. National Fire Protection Association [NFPA]. NFPA Glossary of terms. <http://www.nfpa.org/got>. Updated January 2018. Accessed March 20, 2018.
7. National Fire Protection Association [NFPA]. NFPA 101 Life Safety Code. 2012 edition. Quincy, MA: National Fire Protection Association; 2012.
8. The Joint Commission. Acceptable practices of using ABHR. The Joint Commission web site: <https://www.jointcommission.org/assets/1/18/Acceptable%20Practices%20of%20Using%20Alcohol2.PDF>. Accessed March 20, 2018.
9. International Code Council, Inc. [ICC]. 2012 International Fire Code. Country Club Hills, IL: International Code Council, Inc.; 2012.
10. National Fire Protection Association [NFPA]. NFPA 1 Fire Code. 2012 edition. Quincy, MA: National Fire Protection Association; 2012.
11. National Fire Protection Association [NFPA]. NFPA 30 Flammable and Combustible Liquids Code. 2012 edition. Quincy, MA: National Fire Protection Association; 2012.

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