



IGNITIBLE LIQUIDS AND NFPA 30

During 2014–2018, local fire departments responded to an average of 970 structure fires per year that began with the ignition of flammable or combustible liquids. These fires caused an estimated average of three civilian deaths, 57 civilian injuries, and \$180 million in direct property damage annually. The fires occurred on manufacturing, industrial, warehouse (including cold storage), and storage tank properties, as based on data from a March 2021 analysis by National Fire Protection Association® (NFPA®) Applied Research.

Ignitable (flammable and combustible) liquids generate vapors that can burn. Baseline fire and explosion prevention requirements for using and storing ignitable (flammable and combustible) liquids are provided in NFPA 30, *Flammable and Combustible Liquids Code*, and they can help protect people and property from such incidents.

EXAMPLES OF IGNITABLE LIQUIDS



Fuels
Gasoline, diesel, home heating oil



Hand Sanitizers
Many types contain alcohol



Coatings
Paints, stains, varnishes, and other finishes



Cooking Oils
Peanut oil, olive oil, canola oil

Why NFPA 30?

Since 1913, NFPA 30 has helped professionals such as plant managers, environmental health and safety managers, design consultants, regulatory personnel, and fire protection engineers who work with ignitable liquids to design facilities and implement procedures to safely handle these materials. The requirements in NFPA 30 are based on decades of experience minimizing the risk of fire and explosions at industrial, mercantile, and warehouse occupancies. Complying with this code

can help minimize the risk of accidents, fires, and fines while enabling the facility to operate safely without business interruptions.

How NFPA 30 Can Improve Safety

Implementation of the requirements of NFPA 30 can help to control the fire hazards related to the storage and handling of ignitable (flammable or combustible) liquids in the following areas:

Storage and Warehousing	Tanks	Operations
<ul style="list-style-type: none"> Approved containers Maximum allowable quantities (MAQs) Automatic fire protection Storage and mercantile occupancies Outdoor storage and hazardous materials storage lockers 	<ul style="list-style-type: none"> Aboveground storage tanks (ASTs) Underground storage tanks (USTs) Piping Storage tank buildings Storage tank vaults 	<ul style="list-style-type: none"> Dispensing, handling, transferring, and using liquids Processing liquids Bulk loading and unloading of tank cars and tank vehicles



IGNITIBLE LIQUIDS AND NFPA 30 *continued*

Key Changes in the 2021 Edition

Changes in Terminology

To help clarify some issues, flammable and combustible liquids are now referenced by their liquid class, as shown in the chart below. The term *flammable and combustible liquid* has been replaced with *ignitable (flammable and combustible) liquid*. The reasons for these changes include the following:

- To reduce the confusion caused by various governmental definitions by emphasizing the existing liquid classifications tied to ignitable liquid properties.
- To reduce the perception that fires involving combustible liquids pose lesser fire hazards than those involving flammable liquids.

Ignitibility of liquids is indicated by their liquid class (Class IA, IB, IC, II, IIIA, or IIIB), which is determined using a liquid’s flash point and, for some Class I liquids, its boiling point. The following figure shows the relation between the liquid classes and flammable and combustible liquids.

Flash point °F (°C)	200°F (93.3°C)	IIIB (lubricating oil)		Combustible Liquids
	140°F (60°C)	IIIA (pine oil)		
	100°F (37.8°C)	II (jet fuel)		
	73°F (22.8°C)	IC (xylene)		
	0°F (-17.8°C)	IA (pentane)	IB (ethanol)	
	100°F (37.8°C) Boiling point			

* Also must have a Reid vapor pressure of less than 40 psia (276 kPa) at 40°F (4.4°C)

Changes to Storage Requirements

Changes to the storage requirements of ignitable (flammable and combustible) liquids have been developed for the 2021 edition based on results of recent fire testing and include:

- The application of NFPA 30 container requirements to beverages, medicines, food, cosmetics, and other consumer products containing water-miscible ignitable liquids that are greater than 20 percent by volume ignitable liquids instead of greater than 50 percent by volume.
- Six new storage designs for containers storing Class IB, IC, II, IIIA, and IIIB liquids.
- Additional storage options for protected general-purpose warehouses.

How NFPA 30 Gets Developed

The requirements for NFPA 30 are developed among five committees consisting of representatives from manufacturing, consulting, insurance, research and testing, and industry and trade organizations, as well as government officials. NFPA uses a consensus-based standard development process that is open to the public. NFPA 30 is currently on a 3-year revision cycle to be responsive to the latest issues in handling and storing ignitable liquids. Check nfpa.org/30 for the status of the revision cycle and to submit input for committee review.

How the Codes Work Together

NFPA 30 provides baseline ignitable liquid fire safety requirements for various industries. However, other codes and standards have been developed to provide additional industry-specific regulations, for example:

- NFPA 30A, *Code for Motor Fuel Dispensing Facilities and Repair Garages*
- NFPA 30B, *Code for the Manufacture and Storage of Aerosol Products*
- NFPA 31, *Standard for the Installation of Oil-Burning Equipment*
- NFPA 36, *Standard for Solvent Extraction Plants*
- NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*
- NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*

NEXT STEPS YOU CAN TAKE

- ✓ Get free digital access to the standard at nfpa.org/30.
- ✓ Subscribe to NFPA LiNK™ for digital access to NFPA 30 with enhanced content at nfpa.org/link.
- ✓ Engage with our experts and your peers on NFPA Xchange™ at <https://community.nfpa.org>.
- ✓ Visit nfpa.org/30news for access to resources to implement NFPA 30.



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LET'S PROTECT IT TOGETHER.®

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