

# FLAMMABLE LIQUIDS

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## INTRODUCTION

1. The storage and handling of flammable liquids is a serious matter. Failure to follow even basic safety practices can result in devastating fires, acute or chronic health problems, and damage to the reputation of Jehovah's organization when the environment is affected. Flammable liquids evaporate at room temperature, creating an environment that can quickly ignite with the smallest spark or heat source.

2. Overseers must be aware of the types and quantities of flammable liquids used or stored by their departments. They must take the lead to ensure that safe storage and handling practices are followed.

3. All workers should be educated on the dangers of flammable liquids. They should receive specific instruction about the materials that they will be exposed to in the course of their work and how these can be safely handled and stored.

4. All residents should be informed of which liquids cannot be stored in personal rooms or storage areas. If a resident has flammable liquids or other potentially hazardous items they wish to store, they should consult with the Bethel office or their overseer to ensure a safe storage arrangement.

5. A Safety Data Sheet (SDS), formerly referred to as Material Safety Data Sheet (MSDS), must exist for each flammable liquid. The SDS should be readily available for all workers who will handle, transport, or use the liquid. Such documentation may be made available in digital format, provided that this form of documentation is easily accessible to those who need it. If digital documentation is not easily accessible at the point of use, printed copies should be made available. All those using or encountering the liquid should be familiar with the directions on the SDS.

6. When the work to be performed requires the use of a liquid, the overseer should carefully analyze what is needed and the options available. Wherever possible, avoid using a flammable liquid. If this is not possible, use a liquid that has a lower flammability rating among the options available. Reducing the volume of flammable liquids being used or stored will also reduce the risk. The quantities kept in storage and used at the work site should be limited to the amount necessary for the work to progress.

7. Annually, overseers should complete a *Flammable and Combustible Liquids Audit Checklist* (A-127) to review the handling and storage of all flammable and combustible liquids in their department. Not all portions of the checklist may be applicable to the operations. Once the audit has been completed, any noted deficiencies should be prioritized and addressed promptly. The overseer should sign and date the corrective actions as they are completed. Audit reports should be retained for five years and made available if requested during a headquarters or Local Design/Construction Department facility audit.

## STORAGE

8. Flammable liquids should be stored in the manufacturer's container or in approved safety containers if dispensed from a bulk container. The safety containers should have the following features:

- (1) Approved type for the flammable liquid being stored.
- (2) Properly labeled as to the contents.
- (3) Self-closing lid.
- (4) Spark arrestor screen inside the lid.
- (5) Safety or pressure relief valve.
- (6) Free of any defects or damage that compromise the integrity of the container.
- (7) Minimum necessary size and no larger than 20 liters (5 gallons).
- (8) Properly color-coded according to the regulatory standards of the country they are used in, if applicable. (For example: red containers for gasoline, yellow containers for diesel, and blue containers for kerosene.)

9. Flammable liquids should never be stored in open-top containers. For example, when workers clean paint brushes using solvents, a small quantity of a solvent might be poured into a metal can to be used for cleaning the brushes. The solvent left over in the can may not be kept for future use. The leftover solvent must be transferred to an approved waste solvent container.

10. Flammable liquids that are transferred from bulk storage into safety containers must be stored in an approved flammable liquids cabinet or in a designated storage room for flammable liquids. A maximum of three flammable liquids cabinets for storage may be stored in any single area. If quantities greater than what can be stored in three cabinets are needed, a flammable liquids room should be used. Follow any specific regulatory requirements in the local country.

11. Appropriate fire extinguishers should be mounted within 23 meters (75 feet) of outside area containing flammable liquids and within 3 meters (10 feet) of any inside storage area for such materials.

12. Where flammable liquids are used frequently, there is likely a need for a limited quantity to be stored in the work area for practical purposes. The overseer should perform a risk assessment to justify the need to store any quantity of flammable liquid in the work area. However, the guiding principle is that only the minimum quantity needed for frequently occurring activities or that is required for use during one shift should be present in the work area. When not in use, containers of flammable liquids needed for current work activities should be kept closed and stored in suitable cabinets or bins of fire-resistant construction that are designed to retain spills (at least 110% volume of the largest vessel normally stored in it). These should be located in designated areas that are, where possible, away from the immediate processing area and where they will not jeopardize the means of escape from the work area. The flammable liquids should be stored separately from other dangerous substances that might increase the risk of fire or compromise the integrity of the container.

13. When a flammable liquids storage room is used, it should have ventilation to the exterior. The electrical installation/equipment and lighting in the room should be explosion-proof, meaning that the fixture is able to contain any sparks or explosions occurring inside the fixture. Ventilation systems must be designed for exposure to flammable vapors. Explosion venting to the exterior should be provided. Signage outside the room should identify the room as a flammable liquids storage room. Fire detection equipment should be installed in the room and connected to a central system where applicable. Floors should be coated with a liquid-tight finish, and no floor drains should be located in the room. A raised lip at the door should prevent any spilled liquids from escaping.

14. Barrels containing flammable liquids must be equipped with a safety vent to prevent pressure from building up. Such barrels should be stored in containment areas or on containment pallets to prevent accidental discharge into floor, storm, or sewer drains. They should not be stored in high traffic areas where they could be struck by moving equipment. If flammable liquids barrels are stacked, they should be separated from each other by a stable separator to prevent static from building up or sparks.

15. Waste solvents must be stored in an approved steel container, or barrel, having a sealed lid and pressure relief valve. There should be no damage or defects that compromise the integrity of the container. The container should be labeled to indicate its contents. Waste solvents should not be used for any other purpose after being disposed of in the container. When a container becomes full, it should promptly be disposed of in an environmentally friendly manner approved by the local regulatory authority.

16. Flammable liquids should not be stored in areas of direct sunlight, near heat sources that could cause the internal pressure of the vessel to build, or in areas where hot work is being performed unless the risk assessment indicates it is safe to do so. Physical protection should be installed in large storage areas to prevent vehicles or moving equipment from damaging the containers. It is important that there be adequate ventilation to prevent the buildup of vapors from the liquids unless they are stored in a pressure vessel.

17. Electrical installation/equipment and lighting in storage and dispensing areas should be suitable for the flammable liquids being used and in accordance with local regulations. When relocating the storage of flammable liquids to a new area, a survey of the electrical installation/equipment and lighting should be done and any needed changes should be completed in advance. Many countries require explosion-proof fixtures and wiring in areas where flammables are being dispensed.

18. Flammable liquids must be stored separately from strong oxidizers, corrosives, or other incompatible materials. A review of the Safety Data Sheet for each chemical should be completed before adding new materials to the storage area.

19. Fire extinguishers rated for class B fires should be readily available where the flammable liquids are stored. It is recommended that extinguishers also rated for class C fires should be readily available if there is a potential for exposure to live electrical circuits.

20. **Personal Storage Areas:** Residents must be aware of storage requirements for the personal storage of such flammables as lighter fluids, camping fuels, cooking fats, and other solvents. These should not be stored in personal storage areas, in closets, or even at their work site.—See paragraph 4.

## TRANSPORTATION

21. Flammable liquids should be transported in the manufacturer's original container or in approved safety containers if dispensed from a bulk container. (See paragraph 8.) The containers must be properly secured in the cargo section of the vehicle to prevent damage, spillage, or the ejection of the container in the event of a sudden stop.

22. Transporting flammable liquids in a commercial vehicle on public roads might require special permits/documentation and/or vehicle placarding in accordance with the quantity being transported. A review of the liquids being transported should be performed with the department responsible for transportation at the branch office, and the method of transportation should conform to local regulatory requirements.

23. Caution should be taken when moving flammable liquids using material handling equipment, such as fork lifts, powered or manual pallet trucks, and carts. The liquids must be properly secured to prevent accidental spillage when being moved.

### **DISPENSING AND USING FLAMMABLE LIQUIDS**

24. When flammable liquids are transferred from one container to another, the containers must be bonded and grounded to prevent a static charge causing ignition. Additionally, metal surfaces or containers where flammables are being used must be properly grounded to discharge static electricity.

25. Bonding includes ensuring that there is a joining of metal parts together to form an electrically conducive path to equalize the electrical potential. This can be accomplished by connecting bonding jumpers of a sufficient gauge between the container being dispensed from and the container being dispensed to.

26. Grounding involves ensuring that there is an electrically conducive path from the dispensing container to a building ground connected to earth.

27. Prior to dispensing or using flammable liquids, the Safety Data Sheet should be reviewed to determine what controls or precautions must be observed to protect the workers. Required protection might include gloves, safety glasses, face shields, or other personal protective equipment (PPE). The dispensing or use of flammable liquids should not commence until all PPE is in place.

28. Flammable liquids should never be used to wash hands or other parts of the body.

29. Flammable liquids should never be dispensed or used in an area where hot work is taking place.

30. The dispensing of flammable liquids should always be done in an area that is well ventilated.

31. If rags or other cloths are used to work with or clean up flammable liquids, these must be stored in a metal container with a lid after use. They should not be left in the open. The contents of these containers should regularly be removed from the premises. Solvent-soaked rags are known to spontaneously combust. Metal containers assist in containing a potential fire and the lid restricts oxygen from sustaining the fire.

32. Water should never be used in an attempt to extinguish a fire involving flammable liquids.