City of Crystal Lake
Department of Public Works
Flammable & Combustible Liquid Storage and Handling Policy

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Approved By:	**M. Magnuson**
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PURPOSE

The City of Crystal Lake Public Works Department has developed this policy to establish safe work practices for employees responsible for the handling of flammable and combustible liquids. This policy has been developed based on the requirements of the OSHA Standard 29 CFR 1910.106 (Flammable Liquids), National Fire Protection Association (NFPA) 30 guidelines, and the 2018 International Fire Code (IFC).

SCOPE

Flammable and combustible liquids are commonly used in daily operations, and require careful handling. These liquids ignite easily and burn with extreme rapidity. The City of Crystal Lake's Public Works Department has established this policy to provide guidelines for the safe use and storage of flammable and combustible liquids.

RESPONSIBILITIES

Management

- Management shall implement all sections of this policy.
- Management shall periodically monitor employees safely and correctly handling and storing flammable and combustible liquids.

Employees

- Employees shall follow all applicable portions of this policy while performing work duties.
- Employees shall safely and correctly handle and store flammable and combustible liquid.
- Employees shall report inferior flammable and combustible liquid storage or handling practices to their Supervisor.

PROPERTIES OF FLAMMABLE AND COMBUSTIBLE LIQUIDS

Information on the properties of flammable and combustible liquids used by the Public Works Department can be found in the Safety Data Sheet (SDS).

An important characteristic used to classify flammable liquids is the flashpoint. OSHA defines flammable liquids as those having a flashpoint at or below 199.4 °F (93 °C). Flammable liquids are classified based on their flashpoint and boiling point, with different categories indicating their relative hazards and the required storage or container methods.

- Category 1: Flash point below 73.4 °F (23 °C) and boiling point at or below 95 °F (35 °C)
- Category 2: Flash point below 73.4 °F (23 °C) and boiling point above 95 °F (35 °C)
- Category 3: Flashpoint at or above 73.4 °F (23 °C) and at or below 140 °F (60 °C)
- Category 4: Flashpoint above 140 °F (60 °C) and at or below 199.4 °F (93 °C)

In general, the relative hazard of a flammable or combustible liquid increases as the flashpoint decreases. Always verify specific storage and handling requirements on the product's SDS.

STORAGE OF FLAMMABLE AND COMBUSTIBLE LIQUIDS

Maximum Storage Quantities (Per Control Area)

As defined by the 2018 International Fire Code:

- Class IA flammable liquid (e.g. gasoline) (2018 IFC Section 5003.1.1(1))
  - Maximum of 30 gallons in buildings without sprinkler protection
  - Maximum of 60 gallons in building with sprinkler protection
- Class IB flammable liquid (e.g. methanol) (2018 IFC Section 5003.1.1(1))
  - Maximum of 120 gallons in building without sprinkler protection
  - Maximum of 240 gallons in building with sprinkler protection
- Class II combustible liquid (diesel fuel) (2018 IFC Section 5003.1.1(1))
  - Maximum of 120 gallons in building without sprinkler protection
  - Maximum of 240 gallons in building with sprinkler protection

- The above total quantities in a building shall not be exceeded unless designated control areas are established in rooms with fire rated barriers constructed in compliance with the International Building Code. **(This bullet point only applies to the interior wall that separates the Fleets Division service area from the Public Works garage area. No such fire rated barrier exists in any other Public Works building or facility.)**
- When storing fueled maintenance equipment for the season (such as snow throwers, mowers, and weed trimmers) the aggregate fuel capacity shall not exceed 10 gallons (2018 IFC Section 313.1).

Flammable Storage Cabinets

- Quantities of flammable and combustible liquid in excess of 10 gallons shall be stored in an approved metal storage cabinet.
- All flammable liquids, regardless of container size, must be stored in an approved flammable storage cabinet (Always verify storage requirements on the product's SDS).
- Cabinets must be labeled "Flammable – Keep Fire Away".
- A maximum amount of 120 gallons of Class I, Class II and Class IIIA liquids shall be stored in any one cabinet. Of this maximum amount, there shall not be more than 60 gallons of Class I and Class II liquids.
- Do not exceed the specified capacity of the cabinet.
- Never store items on top of flammable storage cabinets.
- Flammable and combustible liquids should never be stored outside of an approved storage cabinet unless they are being utilized on a job or task requiring refueling.

Other Storage Considerations

- No more than 10 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.
- Avoid storing flammable liquids on high shelves or in direct sunlight.
- Store flammable liquids in a well-ventilated area.
- Class I liquids must not be stored in basements.
- Flammable liquids shall not be stored so as to limit use of exits, stairways, or areas normally used for the safe egress of people.
- Flammable liquids storage areas should be kept free from debris, dust, storage of combustible materials, and clutter.
- Containers over 30 gallons of capacity shall not be stacked one upon the other.

Special Considerations for Aerosols

- Flammable aerosols are Category 1 liquids. Never store cans at temperatures above 120 degrees Fahrenheit as high temperatures can increase the pressure in a can to the point of explosion.
- Do not puncture aerosol cans as this causes a sudden release of pressure that can turn the can into the equivalent of an unguided missile.

- Flammable liquids (including flammable aerosol cans, paint thinners, etc.) in containers of 60 gallons or less must be kept in a fire-resistant storage cabinet or inside storage room rated for fire resistance.

TRANSFERRING MATERIALS

Flammable and combustible liquids may at times need to be transferred from one container to another.

- Transfer flammable and combustible liquids in a proper dispensing location. Dispensing shall be by approved pump or self-closing faucet only.
- Wear appropriate PPE (goggles and face shield, gloves, non-synthetic clothing) when transferring material.
- Use proper bonding and grounding techniques when transferring Class I flammable liquids.
    - Bonding and grounding is the process of providing an electrically conductive path between a dispensing container, a receiving container, and the ground. This pathway eliminates the potential buildup of static electricity and possible spark that can cause a flash fire if there is a flammable mixture of fuel and air.
- Always return flammable and combustible liquids to approved storage cabinets when not being used.

IGNITION PREVENTION

- Open flames, smoking, cutting or welding are strictly prohibited in areas where flammable or combustible liquids are stored.
- If hot work is required on or near a flammable liquid container, all associated equipment and its piping shall be drained, cleaned and purged with an inert gas prior to beginning work to eliminate ignition risk.
- Portable fire extinguishers and control equipment shall be provided in such quantities and sizes needed and appropriate for the types of fire hazards on site. See the product's SDS for proper extinguishing types.
- Flammable, combustible, or ignitable materials should be kept a minimum 35 feet away from any approved hot work, or those materials should be covered with a flame-retardant covering for protection.
- Use only approved metal receptacles for disposal of waste materials such as rags, cleaning tools, etc. that have been exposed to flammable and combustible materials and remove the receptacle daily.
- Immediately clean up spills of flammable or combustible liquids. Never use sawdust to absorb a spill of these liquids.

VEHICLE MOUNTED TRANSFER TANKS

- Transfer Tanks are to be used to transport gasoline and diesel fuel only.
- Portable tanks must be marked “Diesel Fuel” or “Gasoline” and have the proper placard. This placard must indicate the fuel being transported. Once labeled, the tank may only be used to transport either diesel fuel or gasoline, as specified by the label.
- Tanks must be attended at all times during loading and unloading operations by a qualified person.
- For tanks with electrical pumps, electrical power must be disconnected from the pump during transportation.
- Hoses may be attached to discharge outlets during transportation provided the operator purges the contents of the hose by pumping from the hose back into the tanks for a minimum of 15 seconds.
- The engines of all equipment being fueled shall be shut off during the fueling operation.
- A current copy of the SDS sheets for the fuel being transported shall be kept in the cab of the vehicle at all times.
- Dispensing nozzles shall be an approved automatic-closing type without a latch-open device. Nozzles shall remain in constant contact with the vessel that is being fueled to reduce the chance of static discharge.
- Trucks used for transporting gasoline or diesel fuel must have a 2018 IFC Table 906.3(2) 40B:C fire extinguisher.
- When refueling from portable tanks, the extinguisher should be out of its bracket, easily reachable, and in a fully charged and operable condition.
- Smoking is not allowed while loading or unloading flammable or combustible liquids. Keep fire away from the loading and unloading area.
- If you are transporting a flammable liquid and have an accident or your vehicle breaks down, prevent bystanders from gathering. Warn people of the danger. Keep them from smoking.
- Never transport a leaking tank further than needed to reach a safe place. Get off of the roadway, if you can do it safely. Do not transfer flammable liquids from one vehicle to another on a public roadway except in an emergency.
- Shut down equipment before refueling. Allow two minutes before refueling equipment if fuel tank is in close proximity to engine, or other hot surfaces.

TRAINING

Upon initial hiring employees will be trained in the hazards presented by flammable and combustible liquids in the workplace, as well as the safe handling and storage of flammable and combustible liquids. Before being permitted to undertake jobs that require the use of flammable and combustible liquids, employees shall be fully instructed in the characteristics, hazards, and methods of control. Training will be repeated annually for each employee.

Annual training will include:

- The hazards of flammable liquids and the factors that influence material flammability (e.g., flash point, ignition temperature).
- Requirements for the handling, storage, and use of flammable liquids.
- Safe procedures for handling, storing, and using flammable liquids, including proper container selection, grounding, and ventilation.

POLICY REVIEW

The Public Works Department will review Flammable and Combustible Liquid Storage and Handling Policy on a 2-year cycle and update the policy as needed.