If you have anything other than the products shown above, contact your hazmat coordinator for specific guidance—restrictions and dangers may be significantly greater than for the flammable liquids described here.
Combustible liquids are less dangerous than flammable liquids because they have higher flashpoints. Class II combustible liquids have flashpoints between 100 and 140 °F. Class IIIA combustible liquids have flashpoints between 140 and 200 °F. Class IIIB combustible liquids have flashpoints higher than 200 °F. Follow the specific storage, use, and transportation requirements for the appropriate type of combustible liquid.

<table>
<thead>
<tr>
<th>Product Flashpoint (°F) (MSDS section IV, see page 6)</th>
<th>Class II Combustibles (Flashpoint ≥100 °F, but &lt;140 °F)</th>
<th>Class IIIA Combustibles (Flashpoint ≥140 °F, but &lt;200 °F)</th>
<th>Class IIIB Combustibles (Flashpoint ≥200 °F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td></td>
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<td>See Keeping Incompatible Hazardous Materials Separated (page 100)</td>
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<td>140</td>
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</tbody>
</table>

See Hazardous Materials Storage Cabinets (page 94).

See The Transition to Hazardous Waste (page 98).

See Hazardous Product Containers (page 96).

Storage Cabinets

Proper storage cabinets can protect workers and the environment, and can allow you to store larger quantities of combustible liquids safely.
Storage of combustible liquids is strictly regulated for the safety of personnel and facilities. Incidental storage of combustibles is permissible as long as the quantity does not exceed the maximum allowed, and proper storage containers are used. Permissible quantities differ depending on the occupancy of the building where the incidentals are located. Empty containers previously used for combustible liquids must be stored as if they still contained a combustible liquid.

**Indoor Storage**

**Incidental Storage**

**Floor Plan**

**Approved Safety Cans**

**Important Requirements**

- No more than 10 gallons of flammable and combustible liquids incidental to the operation and maintenance of equipment, and for demonstration, treatment, and laboratory work, outside of an approved cabinet.

- Incidental liquids must be stored in approved containers and in a garage or other approved location.

- An approved cabinet must be used to store more than 10 gallons of flammable and combustible liquids incidental to the operation and maintenance of equipment, and for demonstration, treatment, and laboratory work.
Control areas increase the quantity of liquids you can store. However, there are limits. These amounts can be increased if you use approved cabinets and if the area has sprinklers. Several control areas can be used if they are properly separated. Empty containers previously used for combustible liquids must be stored as if they still contained a combustible liquid.

**Important Requirements**

- Avoid storing combustible liquids in basements.
- Containers with less than 30 gallons capacity may not be stacked more than two containers or 3 feet high unless they are on shelving or are otherwise secured.
- Containers that hold more than 30 gallons may not be stacked.
- Containers must be stored in an upright position.
- Combustible commodities must not be stored above flammable and combustible liquids.
- Combustible liquids must be at least 3 feet from beams, girders, or other obstructions.
- Combustible liquids must be at least 3 feet below sprinkler deflectors, discharge orifices, or other overhead fire protection systems.
- Combustible liquids must not be stored in the same rack or group as flammable materials.
- The maximum amount of combustible liquids that can be stored in a control area is: 120 gallons of class II liquids, 330 gallons of class IIIA liquids, and 13,200 gallons of class IIIB liquids.
- Amounts can be increased by 100 percent if proper cabinets are used, and by another 100 percent if the area has sprinklers—not to exceed 300 percent of the original volume with both cabinets and sprinklers. An unlimited amount of class IIIB liquids can be stored in buildings with sprinklers.
- Spill control and secondary containment are required if any individual container has more than a 55-gallon capacity or if the total capacity of all containers exceeds 1,000 gallons.
For larger quantities of flammable and combustible liquids, you can use cutoff and inside rooms. A room with one outside wall is a cutoff room, and a room with no outside walls is an inside room. Empty containers previously used for combustible liquids must be stored as if they still contained a combustible liquid.

**Important Requirements**

- Cutoff and inside rooms can be used if the storage volumes of class I, II, and III liquids exceed the amount that can be stored as incidentals or within control areas inside a building.
- The quantities of class I, II, and III liquids that can be stored in cutoff and inside rooms depend on the size of the building and its structural features.
- Check with your hazmat coordinator for specific structural requirements and safety features before designating an existing room for liquid storage or constructing a new room.
- Spill control and secondary containment are required if any individual container has more than a 55-gallon capacity, or if the total capacity of all containers exceeds 1,000 gallons.
USDA Forest Service policy and regulations determine how to store combustible liquids outside of buildings on USDA Forest Service land. The primary considerations are the amount of combustible liquids being stored and how close they are to structures, property lines, and roads. Keeping the amount of combustibles stored below the permitted levels per group will avoid more complicated storage requirements. Empty containers previously used for combustible liquids must be stored as if they still contained a combustible liquid.

**Outdoor Storage**

- No more than 8,800 gallons of class II liquids and 22,000 gallons of class III liquids are allowed. If a group includes more than one class of liquids, use the maximum of the lowest class. You may store twice as much if the liquids are stored in portable tanks.

**Other Important Requirements**

- Spill control and secondary containment are required if any individual container has more than 55-gallon capacity or the total capacity of all containers exceeds 1,000 gallons.
- All drums and portable tanks must be properly labeled.
- Each storage area must have a **NO SMOKING** sign.
- All containers must be sound and tightly closed at all times.
- Drums must be protected from the weather.
- Each group must be protected from tampering; use guard posts to prevent vehicles from damaging the stored materials.
- If a canopy or roof is used, the wall and supports must not restrict more than 25 percent of the perimeter of the storage area, or the configuration must be considered an inside storage area. Canopy and supports must be of noncombustible construction.
- Access must be available for firefighting equipment to reach each group.
Dispensing combustible liquids can be dangerous, especially in enclosed areas. Follow the regulatory restrictions on dispensing all combustible products and be sure to check with your local fire marshal to see if your area has more restrictive requirements.

- Do not dispense combustible liquids inside a building unless the building is specifically designed for indoor dispensing.
- Bond the container to the drum before dispensing combustible liquids.
- Do not dispense combustible liquids into a container in a plastic-lined truck bed.
- Never pressurize the drum to aid in dispensing combustible liquids.
- Have spill containment and cleanup materials readily available.
- Have the MSDS on hand.
- Use secondary containment for drums when dispensing combustible liquids.
- Do not dispense combustible liquids within 25 feet of an ignition source.
- Post NO SMOKING signs in areas where you are dispensing combustible liquids.
- Do not dispense combustible liquids near open flames or hot work.
- Do not dispense combustible liquids within 25 feet of building openings, property lines, alleys, or public ways.
- Use personal protective equipment as specified by the MSDS.
- Combustible liquids can be gravity dispensed, but only if you use a self-closing or automatic-closing valve.
- Spill control and secondary containment are required if:
  - Combustible liquid is dispensed into a container exceeding 1.1 gallons.
  - Any container exceeds 55 gallons or the total capacity of all containers inside a building exceeds 100 gallons.
  - The capacity of all containers outdoors exceeds 5.3 gallons.
The regulations for transporting combustible liquids are far less stringent than those for transporting flammable liquids. The primary concern is marking packages if you transport large quantities. Use the following guideline to identify some of these situations. If you plan to move combustible liquids by air, refer to the USDA Forest Service *Interagency Aviation Transport of Hazardous Materials*.

**Transportation**

**Pickup Trucks**

- There are no special quantity, packaging, or operator restrictions for transporting diesel on the highway in containers smaller than 119 gallons. To transport diesel or other combustible liquids by air, see chapter 4 of the *Interagency Aviation Transport of Hazardous Materials*.
- Diesel containers must be leak free, tightly closed, and secured to the vehicle to prevent them from moving during transportation.
- The transportation of combustibles other than diesel may not be exempt from DOT regulations.
- Drip-torch fuel is considered a flammable liquid because it contains gasoline. Flammable liquid regulations apply.

**Vehicle Placard and ID Number**

Placards and ID numbers are generally not required when transporting combustible liquids in containers smaller than 119 gallons, although it would be a good practice to use them.
### Examples of Combustible Liquid Products Used in the USDA Forest Service

#### NFPA Class II
- Acetic acid ........................................... 2790
- Fuel oils ............................................. 1993
- Kerosene .............................................. 1223
- Stoddard solvent .................................... 1268
- Diesel fuel ........................................... 1202
- Jet fuel .................................................. 1863
- Heating oils ........................................... 1202

#### NFPA Class IIIA
- Linseed oil
- Most motor oils
- Hydraulic oils

#### NFPA Class IIIB
- Ethylene glycol
Flammable Solids

Flammable solids include self-reactive materials that can catch fire even without oxygen, readily combustible solids that can ignite from friction, and powdered or granular substances that can ignite. Federal regulations for flammable solids are noted in this guideline. You should also check with your local fire marshal to see if your area has more restrictive requirements.

Flammable Solids—The Dangers

Flammable solids are dangerous because they can cause a fire easily. The fire could give off toxic combustion products. Some flammable solids are difficult to extinguish. Common firefighting materials (water, CO₂) may increase the risk of damage if they are used on some flammable solids.

Definitions

See Keeping Incompatible Hazardous Materials Separated (page 100).

See Hazardous Materials Storage Cabinets (page 94).

See The Transition to Hazardous Waste (page 98).

See Hazardous Product Containers (page 96).

Storage Cabinets

Proper storage cabinets can protect workers and the environment and can allow you to store larger quantities of flammable solids safely.

See page 94.
Flammable solids can be stored inside buildings so long as certain precautions are taken. These precautions are based on fire code requirements. Check with your local fire marshal because your area may have additional restrictions. Keeping the total volume of flammable solids below the exempt amount (125 pounds) per control area will avoid additional restrictions; see your hazmat coordinator if you have more than 125 pounds of flammable solids per control area.

**Indoor Storage**

- No more than four control areas per structure.
- Each control area is separated from other areas by a 1-hour firewall.
- No more than 125 pounds of flammable solids per control area. Amounts can be increased by 100 percent if proper cabinets are used, and by another 100 percent if the area has sprinklers—not to exceed 300 percent of the original volume with both cabinets and sprinklers.

**Other Important Requirements**

- Floors in flammable solid storage areas should be noncombustible.
- Noncombustible shelving should be used.
- Notify your local fire department if you have more than 100 pounds of flammable solids onsite.
- All products should be labeled with a flammable solid label.
- Each control area must have a **NO SMOKING** sign.
- Each control area must have a flammable solid hazard identification sign.
- Don’t store or transport damaged fusees.
Flammable solids can be stored outside as well as inside, as long as storage does not degrade the quality of the product. You can have up to two control areas, possibly more if you have a large area, but each control area has restrictions. Keeping the total storage volume of flammable solids below the exempt amount (125 pounds) per control area will avoid additional restrictions.

Other Important Requirements

- Notify your local fire department if you have more than 100 pounds of flammable solids onsite.
- All products should be labeled with a flammable solid label.
- Each control area must have a NO SMOKING sign.
- Each control area must have a flammable solid hazard identification sign.

Outdoor Storage

- No closer than 20 feet to a road
- Recommend no closer than 20 feet to a structure
- No more than 125 pounds of flammable solids per control area.
- Remove weeds and combustibles within 15 feet of each control area.
- Have a proper fire extinguisher outside if dispensing flammable solids within 50 feet of a storage area or structures.
- If the property is larger than 10,000 square feet, you may have a maximum of two control areas if they are separated by 50 feet; if the property is larger than 35,000 square feet, additional control areas are permitted if they are separated by more than 300 feet.
- USDA Forest Service buildings (inhabited or uninhabited)
- Alley, gravel road, street, or highway
- No closer than 20 feet to a property line
- Commercial or private property
- USDA Forest Service property line

Section III—Hazardous Materials Management—Flammable Solids
When transporting flammable solids, you must meet requirements that depend on the amounts being transported. These include placarding, the type of vehicle that can be used, and the types of roads that can be traveled. Transportation by aircraft must be coordinated with the aircraft owners or operators. If you plan to move flammable solids by air, refer to the USDA Forest Service Interagency Aviation Transport of Hazardous Materials.

### 4.14.1 Transportation

**USDA Forest Service-Operated Pickups and Trucks**

- You can avoid placarding and shipping papers by transporting fusees and matches in packages that do not weigh more than 66 pounds (including packaging) per package. The total weight of all packages may not exceed 440 pounds. See your hazmat coordinator for further details or if you are shipping other flammable solids.
- Regardless of how much hazardous materials are being shipped, the driver must be informed of the types of products and their quantities.
- Remember, to avoid the complexities of shipping papers, placarding, and emergency response training, keep the total weight of all hazardous materials below 440 pounds.

**Other Requirements**

- No smoking during loading and unloading.
- Keep fire away from the vehicle.
- Prevent the vehicle from moving (set brakes).
- Use tools that will not damage packaging.
- Brace packages to prevent them from moving.
- Do not ship incompatible materials with flammable solids (see page 101 for an explanation of incompatible materials).
- Have shipping papers in order.
- If the load is 1,001 pounds or more, the driver must have a commercial driver’s license, hazmat endorsement, medical certificate, and the training required by the DOT.
- Make sure each container is marked with the proper shipping name of the product (as defined by the DOT), the identification number for the specific product, and the sender’s or receiver’s name and address. The technical name of the product may be required.
- All products must have the flammable solid label.
Examples of Flammable Solid Products Used in the USDA Forest Service

- Matches (safety) ................................. 1944
- Fusees ............................................. 1325

For fusees, North American Number—United States and Canada only
Buy only the quantity you need for a task.

Use up all inventory so you don’t have to handle it as a hazardous waste.

Centrally locate all hazardous products to minimize storage cabinets and storage areas.

Store fusees in the original box.

If the original box for fusees is not available, use a metal storage box that is secure.

Look for green products at the USDA Forest Service green purchasing Web site: http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/green.htm
Section III—Hazardous Materials Management—Pesticides

Pesticides

Pesticides are another group of hazardous materials that are commonly found at USDA Forest Service facilities. Pesticides include insecticides, herbicides, insect repellents, deer repellents, rodenticides, and fungicides. Federal regulations and USDA Forest Service requirements specify how these materials must be stored and managed. Check with your local fire marshal to see if your area has more restrictive requirements.

Definitions

Poisons—What Are They?

Poisonous materials are defined as highly toxic and toxic liquids and highly toxic and toxic solids that can be dangerous if ingested, inhaled, or allowed to contact your skin. Exposure dangers are often stated in terms of lethal dose concentrations. Most USDA Forest Service poisons are insecticides and herbicides (both are commonly referred to as pesticides). Information on pesticides can be found at:

http://www.fs.fed.us/foresthealth/pesticide/

See Keeping Incompatible Hazardous Materials Separated (page 100).

See Hazardous Materials Storage Cabinets (page 94).

See The Transition to Hazardous Waste (page 98).

See Hazardous Product Containers (page 96).

Storage Cabinets

Proper storage cabinets can protect workers and the environment and can allow you to store larger quantities of poisons safely.
The USDA Forest Service and environmental management agencies have established specific requirements for facilities and the location of facilities that store pesticides. This guideline contains many of these requirements. If you have specific questions about your situation, contact your regional pesticide coordinator or hazmat coordinator.

### Facilities

**Storage Facilities**

- Storage time in permanent facilities should be less than 1 year unless the planned application is delayed due to appeal or litigation. Temporary storage may include: small quantities of pesticides (1 pound of active ingredient or 1 gallon of formulated product), microbial pesticides that have low mammalian toxicity, and pesticides needed onsite for a project. Temporary storage should not exceed 60 days.
- Permanent facilities must be well illuminated for inspection of labels and containers in storage.
- Permanent facilities must have flooring that is continuous and that will not absorb pesticides.
- Permanent facilities must have secondary containment for 110 percent of the largest container in storage, or for the contents of a 55-gallon drum, whichever is larger.
- Temporary facilities may include research labs, fenced compounds, trucks, boxcars, tankcars, empty paint sheds, storerooms, and warehouses.
- Temporary facilities must have an eyewash station.
- All facilities must protect products from sunlight, heat, freezing temperatures, and humidity, and must provide the environment specified by the manufacturer.
- All facilities must be locked when they are not in use or have access restricted to authorized personnel.
- All facilities must have one or more visible and readily accessible ABC-type fire extinguishers.
- All facilities must have 10 gallons of clean water, soap, and towels for decontamination.
- All facilities must have spill kits on hand for cleanup.
- All facilities must have ventilation (natural or mechanical) to prevent the buildup of fumes.
- All containers must be sound and tightly closed at all times; if you smell a product in your cabinet or room, either a container is not securely closed or there has been a spill.
- Personal protective equipment (for example, respirators) must be readily accessible and protected from contamination when they are not being used.
Managing pesticide inventories is as critical as providing the proper facilities where pesticides are stored. The USDA Forest Service imposes specific requirements on permanent storage and temporary storage. Pesticides cannot be in temporary storage longer than 60 days, or in permanent storage longer than 1 year. Do not stockpile pesticides.

**Pesticide Inventory in Storage**

- The storage area should be neat with all original container labels visible; do not deface labels.
- Keep all containers tightly closed. Add a separate label indicating whether the container is full or empty. Do not transfer pesticides into other storage containers.
- Store containers off the ground and only on the first floor.
- Store pesticides with the same active ingredients together and segregate them from other pesticides or poisons by a 4-foot aisle; post signs identifying different pesticides.
- Inspect the storage area regularly for leakers. Separate leakers from clean and undamaged containers. Isolate containers that have been contaminated by leakers for cleanup later. Clean the outside of leaking containers, collect residue, and repackage by overpacking or by putting the contents into a new, approved container. Relabel and date the new container. Clean up the contaminated area after repackaging.
- Notify the local fire department of the types and quantities of pesticides in storage.
- Employees who have access to pesticide storage areas should be trained in hazards and mitigation measures as stated on product MSDSs; a trained emergency response coordinator must be available to act as incident commander.
- Do not allow eating, drinking, or smoking in or near pesticide storage facilities.
- Separate pesticides from incompatible materials such as explosives, flammables, compressed gases, corrosives, oxidizers, peroxides, combustible materials, fertilizers, potable water, clothing, all food and animal feed, personal items, and furniture.
- Store pesticides 25 feet from incompatible materials or use a 1-hour liquid-tight firewall.
- Label all pallets, tools, and applicators used in pesticides operations as **CONTAMINATED WITH PESTICIDES**.
- Keep all tools and applicators used with pesticides in the pesticide storage area.
- Mark applicators that are used for pesticides and do not use them for other purposes.
- Do not store pesticides in containers meant for food, feed, or beverages.
- Treat empty containers as if they were full. Wear full personal protective equipment and triple rinse or pressure wash the containers for at least 30 seconds (or clean empty containers following the manufacturer’s recommendations). Store empty containers in a pesticide storage facility with empty containers segregated according to disposal method. Mark empty containers with **FOR DISPOSAL ONLY**. Recycle empty containers if possible. Destroy containers if they are to be sent to a landfill. Do not reuse empty containers or allow them to be reused.

Inventory
Poisons, especially pesticides, are associated with increased health risks and risks to the environment. To control health risks, specific signs are required, inventories are needed, and MSDSs must be readily available. This guideline includes some of these important requirements.

**Storage Facility Signs and Information**

- Post identification signs warning of the materials stored and of their hazards (for example, *DANGER, POISON, PESTICIDE STORAGE*). A *POISON* sign must be posted if **highly toxic** materials are stored. The MSDS will identify products as toxic or highly toxic.
- Post hazard signs (flammability, health, reactivity) depending on the specific poisons or pesticides.
- Post a *PESTICIDES* sign in 2-inch letters on a white background.
- Post *NO SMOKING, EATING, OR DRINKING* signs in storage areas.
- Each permanent storage facility must post phone numbers for the local poison control center, fire department, and the USDA Forest Service unit emergency coordinator. If the unit subscribes to CHEMTREC, the unit must post that number as well.
- Post the inventory of stored pesticides on the inside and the outside of the facility.
- Maintain an MSDS (see page 6) for each product at the storage facility and at the administrative office.
- Post the 24-hour telephone number for the person or persons responsible for the storage facility.

If the unit subscribes to CHEMTREC:
Post the Chemical Transportation Emergency Center (CHEMTREC) phone number:

**1-800-424-9300**
Regulations restrict the amount of pesticides you can have in temporary storage on a USDA Forest Service unit. Larger quantities of pesticides may require a permit from your local fire marshal. Be sure to check the MSDS to determine if you have a highly toxic or a toxic product.

Permits From the Fire Marshal

- A permit may be required if you store any amount of highly toxic liquids or highly toxic solids.
- A permit may be required if you store more than 10 gallons of a toxic liquid.
- A permit may be required if you store more than 100 pounds of toxic solids.
- A permit is required for any amount of a toxic gas or a highly toxic gas.

The local fire marshal may not elect to require permits based on the quantities of hazardous materials stored. Be sure to check with your local fire marshal for specific permitting requirements.
Pesticides can be transported in USDA Forest Service vehicles. However, you will need to follow several precautions to minimize safety risks. These guidelines are not intended to cover all regulations. For more information, contact your regional pesticide coordinator.

**Other Requirements**

- Transport pesticides in their original containers.
- Do not transport pesticides with food, animal feed, clothing, or potable water.
- Do not transport poisons or pesticides in the cab or passenger compartment of a vehicle.
- Transport only the amount of pesticide that is needed for the day’s operations.
- Keep all containers tightly closed.
- Check containers for leakage during transportation.
- Protect containers from direct sunlight.
- Prepare a manifest for each item in your cargo.
- Ship containers of liquids with a sign indicating *THIS END UP*.
- Do not use a truck with a wooden bed to transport pesticides.
Examples of Pesticides Used in the USDA Forest Service

**Fungicides and Fumigants**
- Chloropicrin
- Borax

**Herbicides**
- 2,4-D
- Glyphosate (Roundup)
- Picloram (Tordon)

**Insecticides**
- Carbaryl (Sevin)
- Diazinon

**Rodenticides**
- Strychnine

If you have anything other than the products shown above, contact your hazmat coordinator for specific guidance—restrictions and dangers may be significantly greater than for the pesticides described here.
Buy and mix only the quantity you need for a specific application.

Do not dispose of excess pesticides on the ground or in water; do not bury empty pesticide containers.

Consider outsourcing all pesticide applications to avoid the costly and complex management of pesticides at USDA Forest Service facilities.

Search for alternative, nonchemical methods for pest control.

Get the proper MSDS and make sure you understand the health and safety issues of the product before acquiring any pesticide.

Before disposing of an empty container, rinse it three times with water that will become part of the application mixture and be used immediately.

Look for green products at the USDA Forest Service green purchasing Web site: http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/green.htm