

OSC 10
Ohio Safety Congress & Expo

Safe use of combustible and flammable liquids in the rubber and plastics industry
415
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Tuesday, March 30, 2010 2:15 to 3:15 p.m.

COMPLACENCY



OSHA standard 29CFR 1910.106 governs the requirements for handling and storage of Flammable and Combustible Liquids. It is important that these standards be followed at all times.

When working around or handling Flammable or Combustible Liquids, the following safety rules are mandatory:

- No smoking at any time.
- Never use flammable or combustible liquids for starting fires.
- Use only approved safety containers and cabinets at all times.
- Contents of containers are to be clearly labeled.
- Do not remove the flame arrester from safety containers.

- Use only approved drum dispensing devices.
- Ground and bond drums when transferring flammable and combustible liquids.
- Keep away from open flames or sparks at all times.



CLASSIFICATION OF FLAMMABLE & COMBUSTIBLE LIQUIDS

- A Flammable and Combustible Liquids are classified according to their flash point. The flash point is the lowest temperature of the liquid at which enough vapors are given off to form an ignitable mixture of vapor and air immediately above the liquid surface.

B Flammable liquids shall mean a liquid having a flash point at or below 100 degrees F and shall be known as Class I liquids.

Class IA - A flash point below 73 degrees F and boils below 100 degrees F.

Class IB - A flash point below 73 degrees F and boils above 100 degrees F.

Class IC - A flash point at or above 73 degrees F and below 100 degrees F

C Combustible liquids shall mean a liquid having a flash point at or above 100 degrees F. All such liquids shall be classified as Class II or Class III liquids.

1 Class II liquids shall include those having a flash point at or above 100 degrees F and below 140 degrees F.

2 Class IIIA liquids shall include those having flash points at or above 140 degrees F and below 200 degrees F.

3 Class IIB liquids shall include those having flash points at or above 200 degrees F. These liquids are generally exempt from the requirements in this guideline, except that they may assume characteristics of lower flash points when subjected to heat.

4 When a combustible liquid is heated for use to within 30 degrees F (16.7 degrees C) of its flash point, it shall be handled in accordance with the requirements for the next lower class of liquids.

CONTAINERS

A Containers for flammable and combustible liquids, as described previously, shall be painted bright red and have the contents marked on the receptacle along with the hazardous ingredients, hazard warnings, health hazards and the supplier's name and address. Containers shall only be used for the material noted on the container label.

B Only safety containers bearing the label of the Underwriter's Laboratories and/or Factory Mutual shall be purchased as portable containers for flammable or combustible liquids, such as gasoline, diesel fuel, xylene, toluene, naphtha, turpentine, kerosene, alcohol, drying and cleaning solutions or any other flammable or combustible liquid.

An approved safety container shall be of not more than 5 gallons capacity, have a spring-closing lid and spout cover and so designed that it will safely relieve the internal pressure when subjected to any fire exposure. Safety containers shall be provided with self closing lids or with an approved spout for pouring. Safety containers with flexible pouring spouts are required for refueling diesel and gasoline engines when approved pumps are not used.

Open flames of any type or flame-producing articles, such as matches, lighted cigarettes, or lighters are absolutely prohibited where flammable and combustible liquids are used, stored or produced. Electrical wiring and equipment at those locations where flammable or combustible liquids are used shall be of the approved type as required by the National Electrical Code. Such locations shall be prominently posted with the appropriate signs to warn of the specific hazard.

Employees shall not use naphtha, gasoline, xylene, toluene or any other flammable or combustible liquid for washing hands or clothing.

Where flammable or combustible liquids are used for washing or cleaning parts and equipment, the tanks or containers should be Underwriters' Laboratories and/or Factory Mutual approved. The tanks or containers shall be adequately bonded or grounded to eliminate potential static electricity. The tank or container shall be designed and constructed so as to automatically close the cover by use of fusible links. Open containers of flammable or combustible liquids are not permitted. Foot pedal operated dip or wash tanks should be equipped with a closing device to prevent a free-falling lid.

Flammable or combustible liquids are permitted outside an inside storage room or cabinet when inside a building or fire area of a building (as defined as an area separated from the rest of a building by a 1-hour fire resistant wall) only in the following quantities:

IA - 25 gallons (in appropriate containers)

IB, IC, II or III - 120 gallons (in appropriate containers)

IB, IC II or III - 660 gallons (in a single portable container)

Flammable or combustible liquid containers, when not in use, shall be stored only in approved metal cabinets. The cabinets must be kept closed at all times where practical and located in a well ventilated area.

A Metal double-walled cabinets shall be located to provide a 1 1/2 inch air space on all sides, top and bottom and be equipped with vents. The cabinets should be kept away from any heat-producing device such as space heaters, radiators or near windows where the sun's rays could create sufficient heat to induce combustion. "Flammable Keep Fire Away" shall be prominently stenciled on the cabinet.

The total storage of flammable or combustible liquids shall be limited to not more than sixty gallons of Class I or II liquids in these cabinets. The storage area must be kept clear of combustible materials and waste rags. All persons having access to the storage place shall be instructed not to use these cabinets for any other purpose. Suitable fire fighting equipment should be stationed near the location of flammable or combustible liquid storage areas.

Drums are to be protected with the Underwriters' Laboratories and/or Factory Mutual approved flame arresters and automatic quick closing shut off valves. Approved type return pumps and drains shall be used on all vertical draw off drums. All drums are to be properly identified and grounded. Drip pans are to be provided for all horizontal draw off drums and shall be cleaned regularly.

Flammable or combustible liquids received in drums shall be stored in a well ventilated building or liquid-tight room of fire-resistant construction equipped with an automatic fire extinguishing system. Ground floor locations are preferred rather than basements or upper floors. These buildings or rooms shall have at least two means of egress and doors equipped with panic hardware. A distance of 75 feet from any important building shall be maintained when outdoor storage is necessary.

Inside storage rooms shall have these additional restrictions: self-closing non-combustible doors, storage area 4 inches below surround floors, shall not exceed 500 square feet in area, have 3 feet aisle clearance, and containers over 30 gallons shall not be stacked one upon the other.

Proper Drum Labeling

General Marking Requirements

The HMR states that markings must be

- Durable
- Written in English
- Printed on or affixed to the surface of the package
- Displayed on a sharply contrasting color background
- Unobscured by other labels or attachments
- Located away from other marking



USE OF THE MSDS SHEET

Safe Handling of Flammable and Combustible Liquids

Close Encounters with Chemicals

- We encounter chemicals almost every day
 - Filling your vehicle with gasoline
 - Cleaning the bathroom
 - Applying pesticides or insecticides
 - Using solvents or acids at work
- Many chemicals can cause injury or illness if not handled properly.

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Hazard Communication 'Goals'

- Right to Know chemical hazards
- PPE, first aid, spills/leaks
- Labels, Material Safety Data sheets
- Quiz

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Right to Know

- OSHA created the Hazard Communication Standard to help ensure your safety when working with hazardous chemicals.
- You have a **RIGHT TO KNOW** about the hazardous chemicals you use on the job and how to work safely with those chemicals.

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Hazard Communication Standard

Chemical manufacturers must:

- Determine a chemical's hazards
- Provide labels and MSDSs

Employers must:

- Provide a hazard communication program
- Maintain MSDSs
- Train on hazardous materials

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HazCom Standard (cont.)

Employees must:

- Read labels and MSDSs
- Follow employer instructions and warnings
- Identify hazards before starting a job
- Participate in training

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Chemical Hazards

Physical Hazards:

- Flammable
- Explosive
- Reactive

Health Hazards:

- Corrosive
- Toxic

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Routes of Entry

- Skin and eye contact
- Inhalation
- Swallowing
- Penetration (skin absorption)

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Chemical Exposure

- Dosage
- Acute effects
- Chronic effects

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Hazard Communication 'Goals'

- Right to know and chemical hazards
- PPE, first-aid, and spills/leaks
- Labels and MSDS
- Quiz

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PERSONAL PROTECTIVE EQUIPMENT

- Dust masks and respirators
- Glasses, goggles, and face shields
- Hearing protection
- Gloves
- Foot protection
- Head protection
- Aprons or full-body suits



Hazardous Materials First Aid

- Eyes: Flush with water for 15 minutes
- Skin: Wash with soap and water
- Inhalation: Move to fresh air
- Swallowing: Get emergency medical assistance

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Spills and Leaks

- Evacuate the area
- Notify a supervisor or the emergency response team
- Remove ignition sources (if safe to do so)
- Stay away

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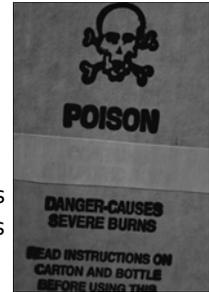
Hazard Communication Goals

- Right to know and chemical hazards
- PPE, first aid, and spills/leaks
- Labels and Material Safety Data Sheets
- Quiz

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IMPORTANCE OF LABELS

- The identity of the chemical
- Name, address, and emergency phone number of the manufacturer
- Physical and health hazards
- Special handling instructions
- Basic PPE recommendations
- First aid, fire response, spill cleanup



NFPA Labeling Systems

NFPA = National Fire Protection Association

- Blue = Health
 - Red = Flammability
 - Yellow = Reactivity
 - White = Other hazards or special handling = Other hazards or Special handling
- Scale: 0 (No Hazard) to 4 (Extreme Hazard)

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OTHER LABEL WARNINGS

- The identity of the chemical
- Name, address, and emergency phone number of the manufacturer
- Physical and health hazards
- Special handling instructions
- Basic PPE recommendations
- First aid, fire response, spill cleanup



Material Safety Data Sheet Program

- Reading an MSDS
- MSDS locations
- Finding a specific MSDS

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Material Safety Data Sheets

- Chemical and manufacturer identity
- Hazardous ingredients
- Physical and chemical characteristics
- Fire, explosion, and reactivity

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Material Safety Data Sheets (cont.)

- Health hazards
 - Routes of entry
 - Exposure levels (PEL or TLV)
 - Symptoms of exposure
 - First-Aid and emergency information

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Material Safety Data Sheets (cont.)

- Personal Protective Equipment (PPE)
- Safe handling and storage
- Spills and leaks
- Compliance issues

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Hazard Communication Goals

- Right to Know and Chemical Hazards
- PPE, First aid, and Spills/leaks
- Labels and Material safety data sheets
- Quiz

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Hazard Communication Summary

- Identify chemical hazards by reading labels and MSDSs
- Follow warnings and instructions, or ask your supervisor if in doubt
- Use the correct personal protective equipment
- Practice sensible, safe work habits
- Learn emergency procedures

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