Materials of Trade Training for the Transportation of Fuel
Materials of Trade Objectives

Provide employees with skills to:

• Determine when transporting hazardous materials (hazmat) falls under Materials of Trade.
• Identify common hazmat.
• Introduce container requirements.
• Identify materials that are incompatible for transportation in the same vehicle.
Who Must Take This Training?

- Employees who transport hazmat
- Employees who prepare hazmat for transport
- Employees who load, unload, or handle hazmat for transport
- Employees who are responsible for the safe transport of hazmat
This Training Is Required When Transporting:

Any amount of fuel

- All fuel in containers 8 gallons or smaller with the total weight of all hazmat transported in a single vehicle being 440 pounds or less
- Transporting fuel that exceeds these restrictions does not meet Materials of Trade exceptions and requires this training and:
  - General Awareness training
  - Function-Specific training
  - Safety training
  - Security Awareness training
What Is Materials of Trade?

Materials of Trade allows small amounts of hazmat to be transported without following all the U.S. Department of Transportation (DOT) Hazardous Materials Regulations (HMR) for transporting hazmat.
Common Hazardous Materials

- Gasoline
- Mixed gas
- Drip-torch Fuel
- Fusees
- Flares
- Propane
- Plastic Spheres (for aerial ignition)
Allowable Amounts That Meet Materials of Trade Requirements

• The weight of all hazmat being transported in a single vehicle must not exceed 440 pounds, including the weight of the containers.

• Individual containers may not be larger than 8 gallons or weigh more than 66 pounds when full.
Example

When transporting 80 pounds of fusees, no more than 360 pounds of drip-torch fuel (including the weight of the fuel cans) may be carried on a single vehicle.
Advantages of Materials of Trade

• Less training is required.
  • U.S. Occupational Safety and Health Administration (OSHA) Hazard Communication training
  • Materials of Trade training
• Shipping Papers are not required.
• Special driver’s licensing is not required.
• Use of some containers that would not otherwise comply with DOT HMR are allowed.
Inspect Containers Before Transporting

• Ensure containers are:
  • Leak tight for liquids
  • Sift proof for solids
  • Securely closed
  • Secured against shifting
  • Protected from damage

• Inspect containers, caps, gaskets, O-rings, and seals for damage.

• Repair or replace damaged containers before transporting.
Allowable Containers
Safety Transport Cans

Safety transport cans meet DOT requirements for transporting fuel as well as OSHA safety can requirements.
Safety Transport Can Specifications

- United Nations (UN) 3A1
- UN 1A1
Safety Transport Can Color Requirements

- Gasoline, mixed gas, and drip-torch fuel
  - Red with yellow markings
- Diesel
  - No color requirements
  - Yellow cans are available
Number of Safety Transport Cans That May Be Transported

Up to nine full cans may be carried if no other hazmat is transported.

- Each can weighs about 49 pounds when full.
Metal Military Jerricans

Also known as Jeep cans
Metal Military Jerrican Specifications

- Use only UN 3A1
- Older DOT 5 specification jerricans are not acceptable
Metal Military Jerrican Color Requirements

Jerricans must be red
Metal Military Jerrican Self-Closing Lid

U.S. Department of the Interior agencies must equip their metal Jerricans with a self-closing lid assembly (Justrite part number 11192).
Number of Metal Military Jerricans That May Be Transported

Up to nine full cans may be carried if no other hazmat is transported.

• Each Jerrican weighs about 46 pounds when full.
Safety Cans

- Meet OSHA safety can requirements
- Do not meet DOT requirements for transporting fuel in large quantities (more than 440 pounds of all hazmat in a single vehicle)
Safety Can Specifications

- Underwriters Laboratories (UL)
- Factory Mutual (FM)
Safety Can Color Requirements

- Gasoline, mixed gas, and drip-torch fuel
  - Red with yellow markings
- Diesel
  - No color requirements
  - Yellow cans are available
Number of Safety Cans That Can Be Transported

• 2.5-gallon metal safety can
  • Up to 17 full cans may be carried if no other hazmat is transported.
    • Each 2.5-gallon safety can weighs about 26 pounds when full.

• 5-gallon metal safety can
  • Up to nine full cans may be carried if no other hazmat is transported.
    • Each 5-gallon safety can weighs about 46 pounds when full.
Pump Fuel Tanks

Example: Fuel tank for Mark III pumps
Pump Fuel Tank Specifications

None
Pump Fuel Tank Color Requirements

None
Number of Mark III Pump Fuel Tanks That May Be Transported

Up to nine full Mark III pump fuel tanks may be carried if no other hazmat is transported.

• Each Mark III pump fuel tank weighs about 46 pounds when full.
Drip Torches

2 types of drip torch

• DOT specification
• Nonspecification
Drip Torch Specification

DOT specification drip torches may be identified by their UN marking.
Drip Torches

• Transporting fuel in nonspecification drip torches is not recommended.

• Nonspecification drip torches are to be phased out over a 10-year period (by June 2019).

• Do not interchange parts between DOT specification drip torches and nonspecification drip torches.
Drip Torch Color Requirements

None, but all new drip torches will be red
Number of Drip Torches That May Be Transported

Up to 29 full drip torches may be carried if no other hazmat is transported.

- The weight of each drip torch is about 15 pounds when full.
Aluminum Fuel Bottles

Also known as Sigg bottles
Aluminum Fuel Bottle Specifications

• General Services Administration National Stock Number 7240-01-351-2133

• At this time, the only bottle that meets these requirements is one that Mountain Safety Research (MSR) markets
Aluminum Fuel Bottle Color Requirements

Bottles must be red
Number of Aluminum Fuel Bottles That May Be Transported

Up to 40 full aluminum fuel bottles may be transported.
Manufacturer’s Original Containers

Example: Coleman fuel can
Manufacturer’s Original Containers
Specifications

As provided by the manufacturer
Manufacturer’s Original Containers
Color Requirements

As provided by the manufacturer
Number of Manufacturer’s Original Containers That May Be Transported

Limited to 440 pounds of fuel and containers in a single vehicle if no other hazmat is transported.
Plastic Containers—Dolmars

Dolmars are allowed because OSHA determined they are a special container.
Dolmar Specifications
Dolmar Color Requirements

Red
Number of Dolmars That May Be Transported

Up to 23 full 1.5-gallon Dolmars may be carried if no other hazmat is transported.

- The weight of each full 1.5-gallon Dolmar is about 19 pounds.
Other Plastic Containers

The following containers generally are not allowed after June 2012:

- Consumer plastic
- Plastic military Jerricans
- Plastic fuel bottles
Exception to Phaseout of Plastic Containers

If environmental conditions make the use of metal containers dangerous (such as the transport of fuel in a saltwater environment)
If Plastic Containers Are Necessary After the Phaseout Period

• A local safety professional and line officer must approve use

• Proper storage facilities must exist with:
  • A fire detection system
  • One of the following:
    • Dikes or containment devices installed and a provision that employees must evacuate when fire is detected
    or
    • A fixed automatic fire suppression system installed and a provision that employees be trained in fighting plastic container fires
If used, plastic containers must meet the following requirements:
Consumer Plastic

Typical plastic gas can purchased at hardware stores
Consumer Plastic Can Specifications

UL
Consumer Plastic Can Color Requirements

Red
Number of Consumer Plastic Containers That May Be Transported

- **2.5 gallon**
  - Up to 22 full 2.5-gallon consumer plastic fuel containers may be carried if no other hazmat is transported.
    - The weight of each fuel container is about 20 pounds when full.

- **5 gallon**
  - Up to 11 full 5-gallon consumer plastic fuel containers may be carried if no other hazmat is transported.
    - The weight of each fuel container is about 39 pounds when full.
Plastic Military Jerricans

Commonly obtained military surplus
Plastic Military Jerrican Specifications

UN 3H1
Plastic Military Jerrican Color
Requirements

None
Number of Plastic Military Jerricans That May Be Transported

Up to 10 full plastic military Jerricans may be carried if no other hazmat is transported.

- Each plastic military Jerrican weighs about 43 pounds when full.
Plastic Fuel Bottles

Also known as Nalgene bottles
Plastic Fuel Bottle Color Requirements

Bottles must be red
Number of Plastic Fuel Bottles That May Be Transported

No more than 40 plastic bottles may be carried in a single vehicle.
Labeling Containers
The Flammable Liquid Label

• Identifies the type of hazard presented by the material in the container

• Provides information for employees and emergency response providers
Containers That Must Be Labeled

- Safety transport cans
- Metal Jerricans
- Safety cans
- Plastic Jerricans
- Drip torches
Containers That Do Not Need To Be Labeled

- Manufacturer’s original containers
- Pump fuel tanks
- Dolmars
- Consumer plastic containers
- Plastic fuel bottles
- Aluminum fuel bottles
Marking Containers
Purpose of Markings

To provide a nationally recognized way to identify the contents of a container

• For use by employees and emergency response personnel
Minimum Marking Size

- Minimum size depends on the container
  - Safety transport cans, metal and plastic Jerricans, and safety cans
    - $\frac{3}{16}$ inch high* by $\frac{1}{8}$ inch wide
    - May use a tag
  - Drip-torch racks and holders
    - $\frac{1}{2}$ inch high by $\frac{3}{16}$ inch wide
  - Pump fuel tanks
    - Use tag indicating the type of fuel, mix ratio, and date the fuel was mixed

* Marking must be $\frac{1}{4}$ inch high beginning January 1, 2017, unless the container is permanently marked
Marking for Gasoline

GASOLINE

UN1203
Marking for Mixed Gasoline

GASOLINE
UN1203
DATE MIXED
MIX RATIO
Marking for Drip-Torch Fuel

FLAMMABLE LIQUIDS N.O.S.
(DIESEL GASOLINE MIXTURE)
UN1993

Note—The marking “DRIP-TORCH FUEL” may also be included for employee identification.

N.O.S. = Not Otherwise Specified
Marking for Diesel

DIESEL
Marking Methods
Container, Rack, or Holder Stenciling
Parts of a Label
Tags

[Images of tags with various labels and UN codes]

UNLEADED GASOLINE
UN 1203 FLAMMABLE

2 STROKE MIX
UN 1203 FLAMMABLE
DATE MIXED
24 32 40 50 : 1
Containers That Must Be Marked

- Safety transport cans
- Metal and plastic Jerricans
- Safety cans
- Pump fuel tank rack or holder
- Drip-torch rack or holder
Containers That Do Not Need To Be Marked

- Individual drip torches
- Dolmars
- Consumer plastic containers with “GASOLINE” molded into the side of the container
- Plastic fuel bottles
- Aluminum fuel bottles
Preparing Containers for Transport
All Closures Must Be Tight and Leak Free
Filling Containers

• Place the container on the ground while filling.
• If filling with a pump, ensure the nozzle touches the container.
• Do not fill to more than 90 percent of capacity (to allow for expansion).
• Do not refill the manufacturer’s original containers.
Special Filling Precautions for Aluminum Fuel Bottles

- Do not fill the bottle above the fill line.
- If the bottle does not have a fill line, leave at least 2 inches of air space between the top of the bottle and the fuel.
Results of Overfilling Aluminum Fuel Bottles

Overfilled fuel bottles can develop pressures of more than 550 pounds per square inch before failing.
Secure Containers So They Do Not Tip Over
Secure Loose Objects So They Do Not Damage Containers
Do Not Transport Containers on Vehicle Bumpers
Incompatible Materials
Do Not Transport Fuel With the Following:

- Explosives
- Poisonous gases
- Oxidizers (such as plastic spheres used for aerial ignition)
  - Oxidizers may be transported with fuel if placed in a separate compartment.
- Poisonous liquids
The Driver Must Be Notified of the Hazmat Being Transported
Fire Extinguishers
Must Be Carried Anytime Fuel Is Transported
Fire Extinguisher Size Requirements

- Must carry a minimum of one 5-B:C or two 4-B:C fire extinguishers
- Markings shown are for a 10-B:C fire extinguisher
Fire Extinguisher Accessibility

• Must be easily accessible
• Must not be stored with fuel containers
Fire Extinguisher Inspection
Requirements

Must be Inspected:
- Monthly by employees
- Yearly by certified personnel
Summary

• Materials of Trade regulations can be followed:
  • When transporting no more than 440 pounds of hazmat in a single vehicle
  • When transporting containers no larger than 8 gallons or that weigh more than 66 pounds

• Hazmat must be transported properly in allowable containers.

• Some types of hazmat are incompatible and may not be transported in the same vehicle.