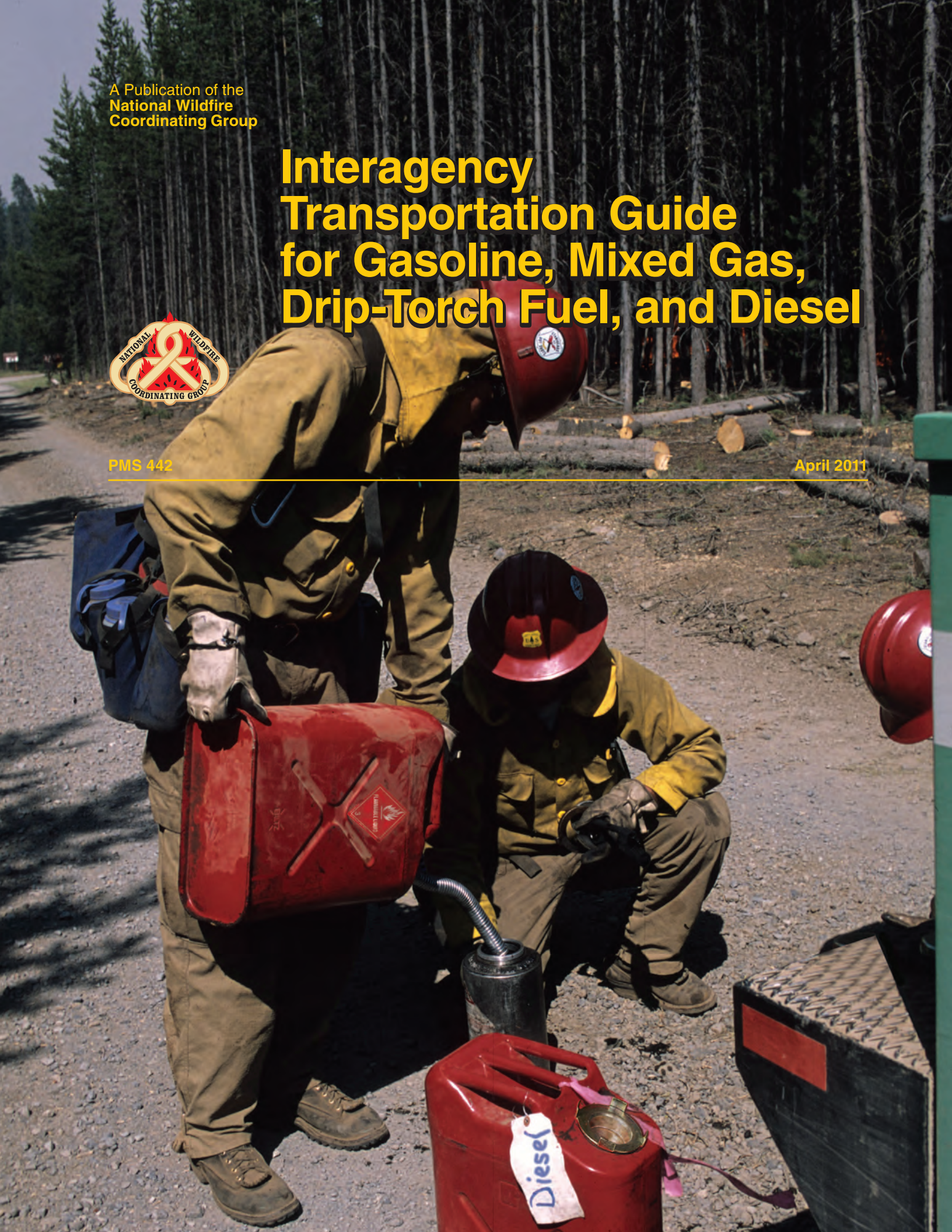
A Publication of the
National Wildfire Coordinating Group

Interagency Transportation Guide for Gasoline, Mixed Gas, Drip-Torch Fuel, and Diesel



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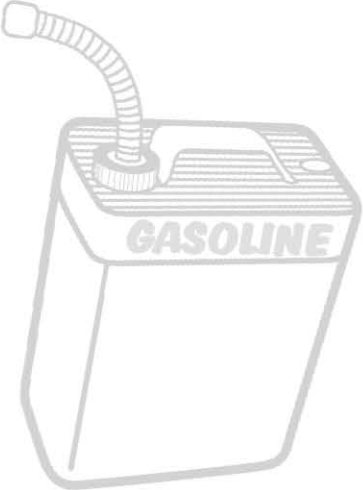
GASOLINE

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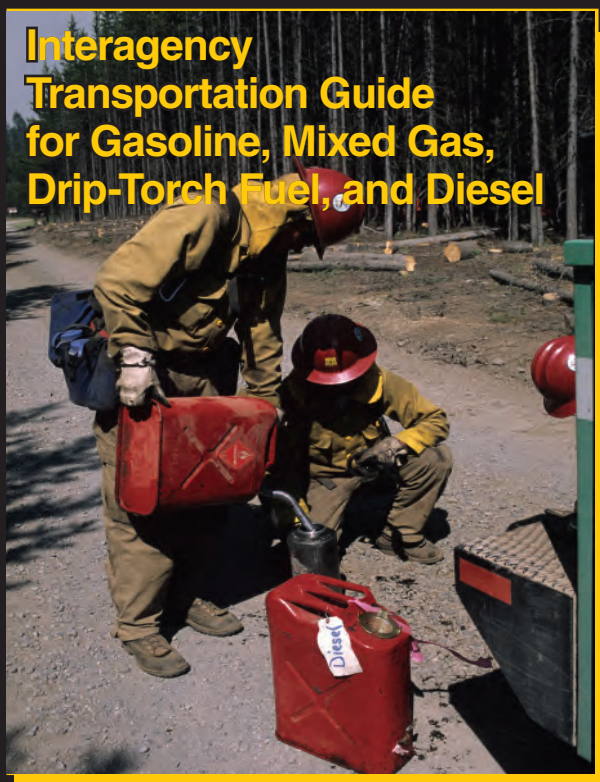

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Preface

Part One

This document establishes interagency guidance for the ground transportation of gasoline, mixed gas, drip-torch fuel, and diesel in Government vehicles driven by Government employees. This guide is based as closely as practical on the U.S. Department of Transportation (DOT) and U.S. Department of Labor Occupational Safety and Health Administration (OSHA) regulations.

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Part One

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Firefighter using a drip torch.

Contents

Part One

Part One

Introduction 1

Summary Tables 2

Approved Fuel Containers and Drums 7
- Manufacturers' Original Containers 7
- Safety Transport Cans (UN 3A1 and UN 1A1) 7
- Military-Style Metal Jerricans (UN 3A1) 8
- Safety Cans (UL or FM) 9
- Two-Compartment Fuel and Oil Containers (UL) 9
- Pump Fuel Tanks 9
- Plastic Fuel Containers 10
- Drip Torches That Meet DOT Specifications (UN 3B1) 11
- Drip Torches That Do Not Meet DOT Specifications 11
- Aluminum Fuel Bottles 12
- Steel Drums (8 to 55 Gallons) 12

Approved Fuel Tanks 13
- Tanks 119 Gallons or Smaller for Flammable Liquids 13
- Tanks Larger Than 119 Gallons for Flammable Liquids 13
- Tanks for Diesel 13

Limiting Fuel Transported To Limit Regulatory Requirements 15

Labeling, Marking, and Placarding 16
- Labeling 16
- Marking 16
- Placarding 17
- United Nations Identification Numbers 17

Shipping Papers and Emergency Response Information 18
- Shipping Papers 18
- *Emergency Response Guidebook* 19
- Location of Shipping Papers and the *Emergency Response Guidebook* 19
- MSDSs 19

Incompatible Materials 20

Leaking or Damaged Containers 21

Fire Extinguishers 22

Training 23
- OSHA *Hazard Communication* Training 23
- DOT *Materials of Trade* Training To Transport Small Amounts of Hazardous Materials 23
- Training To Transport Large Amounts of Hazardous Materials 23
- Refresher Training 24
- Training Records 24

Part Two

Information About Specific Types of Fuel Containers, Drums, and Tanks 25
- Drip Torches 25
- Safety Transport Cans and Metal and Plastic Jerricans 28
- Pump Fuel Tanks 33
- Safety Cans 35
- Two-Compartment Fuel and Oil Containers 37
- Consumer Plastic Containers 39
- Aluminum and Plastic Fuel Bottles 41
- Manufacturers' Original Containers 43
- Fuel in Drums 44
- Drip-Torch Fuel, Gasoline, or Mixed Gas in Tanks 48
- Diesel in Tanks 52
- Fuel in Crew Carriers, Helitenders, and Engines 55
- Fuel Trailers 58

Appendix A—Examples of Shipping Papers 59

Appendix B—Trailer Inspection Checklists 63

Appendix C—Estimated Weights of Full Containers 64

Appendix D—Procurement Sources 65

Appendix E—Sample Material Safety Data Sheets for Gasoline and No. 2 Diesel Fuel 67

Part One

Introduction

Land management agencies use many liquid fuels, such as gasoline, mixed gas, and drip-torch fuel, that are classified as flammable liquids. Special requirements apply for containers and tanks used to transport flammable liquids, and for licensing and training drivers.

Diesel is classified as a combustible liquid. In some cases, the requirements for transporting diesel may be less stringent than for transporting flammable liquids.

Gasoline, mixed gas, drip-torch fuel, and diesel must be transported in the approved fuel containers or tanks listed in this guide. Most of the listed containers meet U.S. Department of Transportation (DOT) specifications for transporting flammable liquids. DOT-specification containers are required, because they meet rigorous testing standards established by the United Nations (UN) before they are accepted for use. DOT-specification containers can be identified by their markings. For example, an approved closed-head steel drum will be marked UN 1A1 (figure 1), and an approved steel jerrican will be marked UN 3A1. **If a drum or jerrican does not have the proper specification marking, *do not use it!***

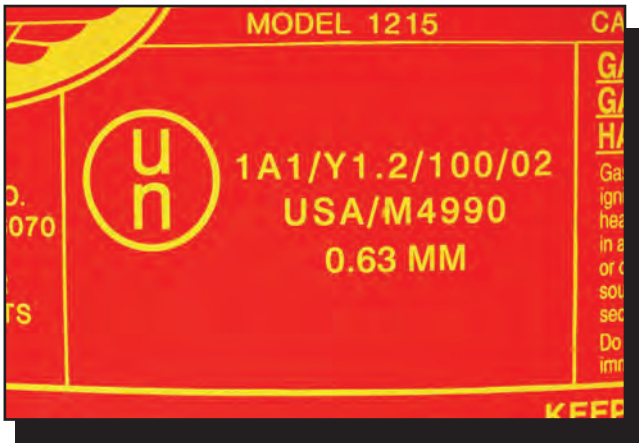

Figure 1—An example of a UN 1A1 specification marking.

Regulations requiring retailers to sell only spillproof fuel containers have been adopted by States (such as California) with air pollution problems. Individuals purchasing new fuel containers in these States must buy spillproof containers. Spillproof containers, commonly referred to as *CARB* (California Air Resource Board) compliant, are designed to reduce air pollution caused by fuel that evaporates from overfilled containers or from containers that are left open.

When this guide was prepared, regulations did not require existing fuel containers to be replaced. Existing nonspillproof fuel containers approved by this guide may continue to be used until they are no longer serviceable.

Safety cans meeting OSHA requirements are exempt from most States' spillproof container regulations. Pennsylvania does not exempt safety cans. **Check with your State environmental regulatory agency for details and the applicability of spillproof container regulations.** At the time this guide was prepared, States with these regulations included: California, Virginia, Maryland, Massachusetts, Pennsylvania, Connecticut, New Jersey, New York, and Maine. Other States, including Texas and Illinois, are considering adopting these regulations.

The tanks listed for transporting gasoline, mixed gas, and drip-torch fuel also meet DOT specifications. Most tanks available at ranch supply stores ***do not meet*** the requirements for transporting flammable liquid and must not be used to transport gasoline, mixed gas, or drip-torch fuel, even though they may be used to transport diesel.

A few types of nonspecification containers are allowed, such as aluminum (Sigg) fuel bottles, plastic (Nalgene) fuel bottles, and some drip torches. In addition, plastic two-compartment fuel and oil containers (often called Dolmars) are also allowed, providing they meet Underwriters Laboratories (UL) specifications. Fuel also may be carried in the container it was sold in, such as metal cans of Coleman stove fuel. Manufacturers' original containers must not be reused to transport other flammable liquids.

APPROVED FUEL CONTAINERS
For Gasoline, Mixed Gas, and Drip-Torch Fuel

Container type	Specification	Color requirement	Label or placard	Marking (Depends on fuel type)	Number of containers that may be transported
Safety transport cans Page 28	UN 3A1 or UN 1A1	Red with yellow markings	*FLAMMABLE LIQUID* label	Required	Depends on driver licensing and training
Metal jerricans[1] Page 28	UN 3A1	Red with yellow markings	*FLAMMABLE LIQUID* label	Required	Depends on driver licensing and training
Plastic jerricans[2] Page 28	UN 3H1	None	*FLAMMABLE LIQUID* label	Required	Depends on driver licensing and training
Safety cans Page 35	UL or FM	Red with yellow markings	*FLAMMABLE LIQUID* label	Required	No container larger than 8 gallons; total weight of all hazmat being transported is no more than 440 pounds
Dolmars Page 37	UL	Red	None	None	No container larger than 8 gallons; total weight of all hazmat being transported is no more than 440 pounds
Consumer plastic containers[2] Page 39	UL or FM	Red	None	None	No container larger than 8 gallons; total weight of all hazmat being transported is no more than 440 pounds
Plastic fuel bottles[2] Page 41	None	Red	None	None	40 fuel bottles; no other containers larger than 8 gallons; total weight of all hazmat being transported is no more than 440 pounds
Aluminum fuel bottles Page 41	NSN 7240–01–351–2133	Red	None	None	40 fuel bottles; no other containers larger than 8 gallons; total weight of all hazmat being transported is no more than 440 pounds
Pump fuel tanks Page 33	None	None	*FLAMMABLE LIQUID* label on box, rack, or crate	On box, rack, or crate	No more than needed to operate the pump

Continued

APPROVED FUEL CONTAINERS
For Gasoline, Mixed Gas, and Drip-Torch Fuel *(continued)*

Container type	Specification	Color requirement	Label or placard	Marking (Depends on fuel type)	Number of containers that may be transported
Drip torches (Nonspec)[3] Page 25	None	None	*FLAMMABLE LIQUID* label or *DRIP TORCH FUEL* tag	On box, rack, or crate	Transportation of full nonspec drip torches not recommended
Drip torches (DOT Spec) Page 25	FS 5100-614 UN 3B1 UN 1B1 UN 3A1 Others	None	*FLAMMABLE LIQUID* label or *DRIP TORCH FUEL* tag	On box, rack, or crate	Depends on driver licensing and training
Manufacturer's original container Page 43	Per manufacturer	Per manufacturer	Per manufacturer	Per manufacturer	No container larger than 8 gallons; total weight of all hazmat being transported is no more than 440 pounds
Steel drums 8 to 55 gallons Page 44	UN 1A1/X or Y UN 1A2/X or Y	None	*FLAMMABLE LIQUID* label	Required	Depends on driver licensing and training
Tanks 119 gallons or smaller Page 48	DOT E–11911 or UN 31A	None	*FLAMMABLE LIQUID* label	Required	Depends on driver licensing and training
Tanks larger than 119 gallons Page 48	DOT 406; MC 306; others per 49 CFR 173.242	None	*FLAMMABLE* placard	Identification number required	Depends on driver licensing and training

[1]Metal jerricans used by Department of the Interior agencies must be retrofitted with a self-closing lid that vents. This lid shall be approved by a nationally recognized laboratory such as Underwriters Laboratories (UL) or Factory Mutual (FM).
[2]Use of plastic jerricans, consumer plastic fuel containers, and plastic fuel bottles shall be discontinued no later than June 2012.
[3]Drip torches not manufactured in accordance with DOT specifications must be replaced no later than June 2019.

REQUIREMENTS FOR GASOLINE, MIXED GAS, AND DRIP-TORCH FUEL
That Depend on the Amount of Fuel and the Size of the Container

Amount of fuel and container size	Training Page 23	Shipping papers and *Emergency Response Guidebook* Page 18	Driver's licensing Page 15	Placarding Page 17	Minimum fire extinguisher size Page 22
All containers smaller than 8 gallons. The total amount of hazardous materials being transported is no more than 440 pounds.	OSHA *Hazard Communication* training; DOT *Materials of Trade* training	Not required	Regular driver's license	Not required	One 5–B:C or two 4–B:C
All containers smaller than 8 gallons. The total amount of hazardous materials being transported is more than 440 pounds and less than 1,001 pounds.	OSHA *Hazard Communication* training; DOT general awareness, function specific, safety, security awareness, and driver training	Required	Regular driver's license	Not required	One 5–B:C or two 4–B:C
Any container larger than 8 gallons but not larger than 119 gallons. The total amount of hazardous materials being transported is less than 1,001 pounds.	OSHA *Hazard Communication* training; DOT general awareness, function specific, safety, security awareness, and driver training	Required	Regular driver's license	Not required	One 5–B:C or two 4–B:C
1,001 pounds or more of hazardous materials is being transported, regardless of container size	OSHA *Hazard Communication* training; DOT general awareness, function specific, safety, security awareness, and driver training	Required	Commercial driver's license with hazardous materials endorsement	*FLAMMABLE* placard with identification number	One 10–B:C
Any tank larger than 119 gallons	OSHA *Hazard Communication* training; DOT general awareness, function specific, safety, security awareness, and driver training	Required	Commercial driver's license with hazardous materials endorsement. Some States require a tank endorsement as well.	*FLAMMABLE* placard with identification number	One 10–B:C

APPROVED FUEL CONTAINERS FOR DIESEL

Container type	Specification	Color requirement	Label or placard	Marking (Depends on fuel type)	Number of containers may be transported
Safety transport cans Page 28	UN 3A1 or UN 1A1	None	*FLAMMABLE LIQUID* label	DIESEL	Not limited
Metal jerricans[1] Page 28	UN 3A1	None	*FLAMMABLE LIQUID* label	DIESEL	Not limited
Plastic jerricans[2] Page 28	UN 3H1	None	*FLAMMABLE LIQUID* label	DIESEL	Not limited
Safety cans Page 35	UL or FM	None	*FLAMMABLE LIQUID* label	DIESEL	Not limited
Steel drums 8 to 55 gallons Page 44	UN 1A1/X or Y UN 1A2/X or Y	None	*FLAMMABLE LIQUID* label	DIESEL	Not limited
Tanks 119 gallons or smaller Page 52	None	None	*FLAMMABLE LIQUID* label	DIESEL	Not limited
Tanks larger than 119 gallons Page 52	None	None	*FLAMMABLE* placard	1202 identification number required	Limited only by driver licensing and training

[1]Metal jerricans used by the U.S. Department of the Interior agencies must be retrofitted with a self-closing lid that vents. This lid shall be approved by a nationally recognized laboratory such as Underwriters Laboratories (UL) or Factory Mutual (FM).
[2]Use of plastic jerricans shall be discontinued no later than June 2012.

REQUIREMENTS FOR DIESEL
That Depend on the Amount of Fuel and the Size of the Container

Amount of fuel and container size	Training Page 23	Shipping papers and *Emergency Response Guidebook* Page 18	Driver's licensing Page 15	Placarding Page 17	Minimum fire extinguisher size Page 22
All containers 119 gallons or smaller, regardless of amount transported	OSHA *Hazard Communication* training	Not required	Regular driver's license	Not required	One 5–B:C or two 4–B:C
Any tank larger than 119 gallons	OSHA *Hazard Communication* training; DOT general awareness, function specific, safety, security awareness, and driver training	Required	Commercial driver's license with hazardous materials endorsement. Some States require a tank endorsement as well.	*FLAMMABLE* placard with 1202 identification number	One 10–B:C

Approved Fuel Containers and Drum Part One

The following containers are approved for transporting fuel. These containers must meet the specifications shown in parentheses. Specific requirements for use of these containers are described in part two of this guide.

Manufacturers' Original Containers

Manufacturers' containers, such as Coleman fuel cans, may be used to transport their original contents, but shall not be reused (figure 2).

Figure 2—A manufacturer's original fuel container.

Safety Transport Cans (UN 3A1 and UN 1A1)

Safety transport cans (figure 3) are containers that meet DOT specifications for transporting fuel and the OSHA requirements for safety cans. Safety transport cans meeting OSHA requirements are exempt from most States' spillproof container regulations.

A redesigned jerrican-style safety transport can, the Safety Transport LM can, is available from Safeway Products, Inc. These cans have the following features:

Figure 3—A safety transport can.

- A relocated pour handle
- A linkage between the pour handle and the lid on the fill opening that vents the can during pouring and allows fuel to flow faster (figure 4)
- A quick-disconnect flexible pour spout and a clip on the top of the can to store the spout
- A stiffening rib to make the can less prone to damage during temperature changes
- A carrying handle spanning the top of the metal collar

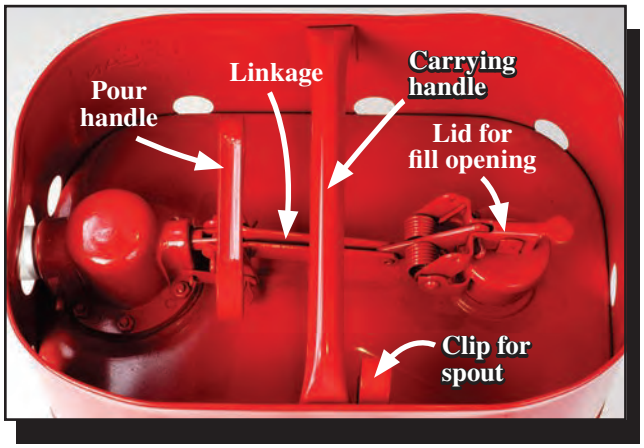

Figure 4—A top view of the Safety Transport LM can showing the linkage between the pour handle and lid for the fill opening.

See appendix D for ordering information.

Military-Style Metal Jerricans (UN 3A1)

Forest Service employees may use metal jerricans (figure 5) without modification. Employees in Department of the

Figure 5—A military-style metal jerrican.

Figure 6—Military-style metal jerrican retrofitted with a self-closing lid.

Figure 7—A detailed view of a self-closing lid.

Interior agencies must retrofit metal jerricans with a self-closing lid that vents (figures 6 and 7), such as Justrite part number 11192. See appendix D for ordering information. This self-closing lid shall be approved by a nationally recognized laboratory such as UL or Factory Mutual (FM). The self-closing lid may be removed and replaced with the jerrican's bung (leakproof screw-in top) when deemed necessary to prevent leakage during transportation. The approved self-closing lid must be reinstalled when the jerrican is used for dispensing or is stored.

The Forest Service will evaluate the self-closing lid assembly and make improvements so it is DOT compliant. When an OSHA- and DOT-compliant self-closing lid becomes commercially available, the remainder of the land management agencies will phase in the compliant lid's use over a 10-year period. The Forest Service also will develop a means to minimize spillage when fuel is dispensed from a jerrican retrofitted with a self-closing lid.

New metal jerricans that meet DOT, OSHA, and spillproof fuel container (CARB-compliant) specifications are commercially available (figure 8). In addition, replacement spillproof (CARB-compliant) spouts may be purchased to retrofit older metal jerricans (figure 9).

Figure 8—A military-style metal jerrican with a spout that complies with California Air Resources Board standards.

Figure 9—A detailed view of a spout that complies with California Air Resources Board standards.

Safety Cans (UL or FM)

Safety cans (figure 10) meeting OSHA requirements, such as those listed by UL or FM, are exempt from most States' spillproof container regulations. Because safety cans do not meet the UN specifications, fewer can be transported at a time.

Figure 10—A safety can.

Two-Compartment Fuel and Oil Containers (UL)

Two-compartment fuel and oil containers (figure 11)—often called *Dolmars*—may be used to transport fuel.

Figure 11—A two-compartment fuel and oil container, often called a *Dolmar*.

Pump Fuel Tanks

Fuel tanks for the Mark-3 pump (figure 12) and fuel tanks for other pumps are approved for transporting fuel.

Figure 12—A fuel tank for the Mark-3 pump.

Figure 14—A consumer plastic fuel container.

Figure 15—A Nalgene plastic fuel bottle.

Plastic Fuel Containers

Three types of plastic fuel containers are now being used: military-style plastic jerricans (UN 3H1, figure 13), consumer plastic containers (UL, figure 14), and plastic fuel bottles, such as Nalgene bottles (figure 15).

Figure 13—A military-style plastic jerrican.

These plastic fuel containers are being phased out. The purchase of new military-style plastic jerricans, consumer plastic containers, and plastic fuel bottles is prohibited.

Use of all military-style plastic jerricans, consumer plastic fuel containers, and plastic fuel bottles shall be discontinued no later than June 2012.

This prohibition does not include plastic two-compartment fuel and oil containers (often called *Dolmars*) that are used for chain saws.

The only exception to the use of plastic jerricans, containers, and fuel bottles after the phaseout period is when fuel must be transported or dispensed in environmental conditions that make the use of a metal container dangerous. An example is when fuel must be transported in a saltwater environment that can cause metal containers to corrode and leak. Under

those circumstances, plastic jerricans and containers may be used only if the following conditions are met:

- The regional/station/State safety manager, regional structural fire specialist, fire management officer, or structural fire chief, who has been designated as the authority having jurisdiction as defined by the National Fire Code, approves in writing the storage and use of plastic jerricans and containers.
- The plastic jerricans and containers meet DOT specifications or are approved by a nationally recognized laboratory, such as UL or FM, for the storage of flammable liquids.
- The inside storage area for the plastic jerricans and containers is equipped with a fire detection system. The fire detection system must be able to detect fires when they are small and activate an emergency alarm to alert employees.
- Employees, except members of fire brigades, will be totally evacuated from the container storage area as soon as the fire is detected.
- If employees are expected to fight fire in the storage area:
  —The storage area must be equipped with a fixed automatic fire suppression system designed to control, if not extinguish, a fire involving plastic containers.
  —The employees must be trained in specific methods for fighting plastic container fires and recognize the hazards associated with fighting fires in areas where plastic containers are stored.
- The storage area for the plastic jerricans and containers must be equipped with dikes or containment devices. If the storage area is in a general purpose warehouse or other occupied facility, it shall have diking or curbing and have drains installed to contain the volume of all the stored liquid and extinguishing agent and drain it to a safe location. The drainage paths must be designed so they do not intersect, pass over, or pass under employee emergency exit routes.

Drip Torches That Meet DOT Specifications (UN 3B1)

All new drip torches must meet Forest Service specification 5100-614 and DOT specifications (UN 3B1, UN 1B1, UN 3A1, and others, figures 16 and 17).

Figure 16—A drip torch.

Figure 17—The UN marking shows that this drip torch meets DOT specifications.

Drip Torches That Do Not Meet DOT Specifications

Drip torches that do not meet DOT specifications may be used, but:

- They are not recommended for carrying fuel on public highways.
- They shall be phased out no later than June 2019.
- Parts shall not be interchanged between DOT specification and nonspecification drip torches.

Aluminum Fuel Bottles

Aluminum fuel bottles (often called *Sigg* bottles, General Services Administration National Stock Number 7240–01–351–2133) are approved for transporting fuel (figure 18).

Figure 18—An aluminum fuel bottle (often called a *Sigg* bottle).

NOTE: Red aluminum fuel bottles must never be used as beverage containers!

Figure 19—A *UN 1A1* drum. This drum does not have a removable head.

Figure 20—A *UN 1A2* drum. This drum has a removable head.

Steel Drums (8 to 55 Gallons)

- Use steel drums without removable heads (UN 1A1) to transport flammable and combustible liquids (figure 19).
- Use steel drums with removable heads (UN 1A2, figure 20) or without removable heads (UN 1A1) for aerial ignition.
- Use steel drums with removable heads (UN 1A2) to transport hazardous waste or damaged fuel containers.

Part One

Approved Fuel Tanks

The following tanks are approved for transporting fuel.

All tanks that do not meet DOT specifications that are being used to transport gasoline or drip-torch fuel shall be replaced. [Note: Effective date of replacement—June 2010.]

Tanks 119 Gallons or Smaller for Flammable Liquids

Transfer Flow refueling tanks (UN 31A, marked *DOT-SP 11911*, figure 21).

Figure 21—A 100-gallon Transfer Flow tank.

- 30-gallon toolbox/tank, Transfer Flow part number 080–01–12975
- 50 gallon, Transfer Flow part number 080–01–09417
- 50-gallon toolbox/tank, Transfer Flow part number 080–01–13252
- 50/50-gallon split tank, Transfer Flow part number 080–01–13244
- 74 gallon, Transfer Flow part number 080–01–09420
- 100 gallon, Transfer Flow part number 080–01–09416 or 080–01–09418

Custom Metalcraft (UN 31A tanks)—The customer specifies the capacity of these tanks (figure 22).

Figure 22—A Custom Metalcraft tank.

Tanks Larger Than 119 Gallons for Flammable Liquids

- DOT 406 (figure 23)
- MC 306
- Other tanks (see 49 CFR 173.242)

Figure 23—A 240-gallon DOT-406 tank being used as a batch mixer.

Tanks for Diesel

- Tanks that do not meet specifications for transporting flammable liquids, such as the tanks found in ranch supply stores (figures 24a and 24b), may be used to transport diesel.

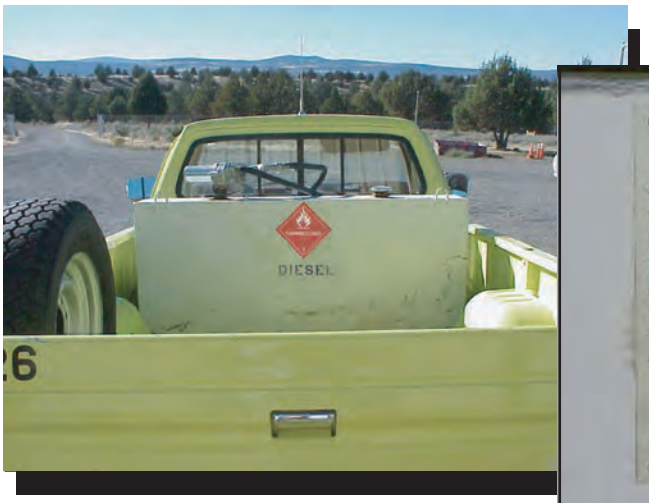

Figure 24a.

Figure 24b.

Figures 24a and 24b—A typical nonspecification tank (24a) for transporting diesel. Note the label (24b) warning that this tank does not comply with regulations for transporting gasoline. Regulations do not require a DOT-specification tank for transporting diesel. This photo has been digitally manipulated to show the *DIESEL* marking.

Part One

Limiting Fuel Transported To Limit Regulatory Requirements

The type of driver's license and training required depend on the amount of fuel being transported and the size and type of the fuel container. If no more than 440 pounds of hazardous materials (including the weight of the containers) are being transported in containers with a capacity of no more than 8 gallons, shipping papers are not required. The only training needed is OSHA *Hazard Communication* training and DOT *Materials of Trade* training. The 440 pounds includes all hazardous materials being transported, not just gasoline, mixed gas, or drip-torch fuel. For example, if you are carrying 140 pounds of fusees, you may carry only 300 pounds of fuel and containers. Empty containers that contain residual amounts of fuel also must be included in the 440-pound weight limit.

If the overall weight being transported is more than 440 pounds, but less than 1,001 pounds, or if the capacity of any container is more than 8 gallons but is 119 gallons or less, the following are required:

- Shipping papers must be carried in the vehicle (page 18).
- A copy of the *Emergency Response Guidebook* (ERG) must be carried in the vehicle (page 19).
- Additional training is required (page 23).

When a shipment weighs 1,001 pounds or more or when fuel is being carried in a container larger than 119 gallons, the following are required:

- A commercial driver's license (CDL) with a hazardous materials endorsement.

To avoid the need for a commercial driver's license, limit the total amount of fuel being transported to 119 gallons or less than 1,001 pounds.

- Shipping papers (carried in the vehicle, page 18).
- The *Emergency Response Guidebook* (carried in the vehicle, page 19).
- Additional training (page 23).
- In certain States—a tank endorsement.

To avoid the need for shipping papers and to reduce training requirements, limit the total amount of hazardous materials—including fuel being transported—to 440 pounds, with no fuel container larger than 8 gallons.

Labeling, Marking, and Placarding Part One

Labeling, marking, and placarding are required so employees and emergency response personnel can identify the contents of a container or tank rapidly and respond appropriately in an emergency.

Labeling

The diamond-shaped (red background with white letters) *FLAMMABLE LIQUID* label (figure 25) is required on many gasoline, mixed gas, drip-torch fuel, and diesel containers of 119 gallons or less. These labels are available through several vendors. They must be maintained in good condition.

Figure 25—A *FLAMMABLE LIQUID* label.

Marking

Most containers must be marked with a description of its contents and the UN identification number, if applicable.

- Metal gasoline or mixed gas containers (except for aluminum fuel bottles) shall be marked *GASOLINE UN1203* (figures 26a and 26b).

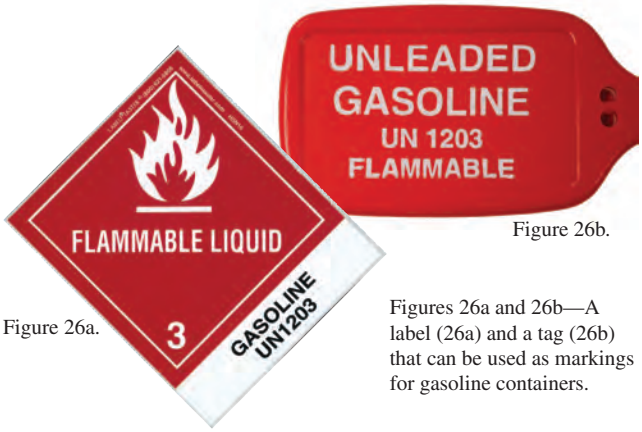

Figure 26a.

Figure 26b.

Figures 26a and 26b—A label (26a) and a tag (26b) that can be used as markings for gasoline containers.

- Aluminum fuel bottles that have the words *Fuel Bottle* on the body of the bottle are acceptable for use with no additional marking.
- Plastic fuel containers that have the word *GASOLINE* molded into the side of the container are acceptable for use with no additional marking.
- Drip-torch fuel containers shall be marked *FLAMMABLE LIQUIDS N.O.S. (DIESEL GASOLINE MIXTURE) UN1993*. The abbreviation *N.O.S.* stands for *not otherwise specified*. In addition, containers also may be marked with the words *DRIP TORCH FUEL* to help employees identify the contents (figures 27a and 27b).

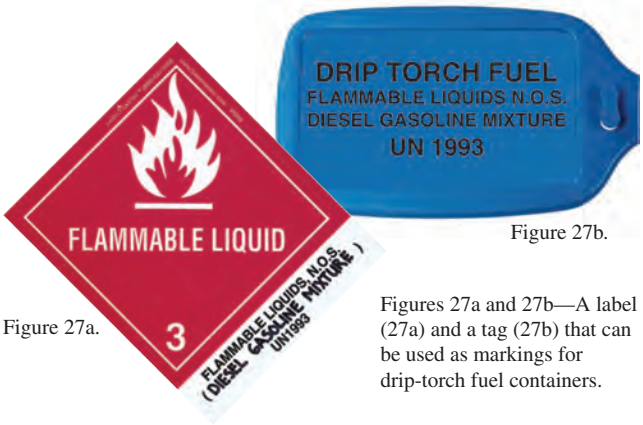

Figure 27a.

Figure 27b.

Figures 27a and 27b—A label (27a) and a tag (27b) that can be used as markings for drip-torch fuel containers.

- Diesel containers shall be marked *DIESEL*.

The minimum size of the lettering depends on the container:

- Safety transport cans, metal jerricans, safety cans: $^{3}/_{16}$ inch high by $^{1}/_{8}$ inch wide
- 55-gallon drums: $^{1}/_{2}$ inch high by $^{3}/_{16}$ inch wide
- Tanks 119 gallons or smaller: $^{3}/_{4}$ inch high by $^{3}/_{16}$ inch wide
- Tanks larger than 119 gallons: 2 inches high by $^{1}/_{4}$ inch wide

Markings shall be printed on the surface of the container, applied to the container as a sign or label, or attached to the container as a tag (figure 28). They must be maintained in good condition.

Figure 28—Plastic tags are available for marking gasoline, mixed gas, drip-torch fuel, and diesel containers. See appendix D for ordering information.

Markings must be displayed on a background of sharply contrasting color, not obscured by labels or attachments, and be far enough away from other labels and signs to prevent confusion.

Placarding

A *FLAMMABLE* placard (figure 29) is required when the gross weight of all hazardous materials is 1,001 pounds or more or when any tank is larger than 119 gallons. Placards must be installed on each side and on each end of the transport vehicle or tank.

Figure 29—A *FLAMMABLE* placard.

United Nations Identification Numbers

If placards are required, the UN identification number also must be displayed. The identification number may be shown separately as an orange panel (figure 30) or may be included as part of the placard (figure 31). The UN identification number for:

- Gasoline or mixed gas is 1203.
- Drip-torch fuel is 1993.
- Diesel is 1202.

Figure 30—A *FLAMMABLE* placard with a separate identification number.

Figure 31—A *FLAMMABLE* placard with the identification number included.

Shipping Papers and Emergency Response Information

Part One

Shipping papers and the *Emergency Response Guidebook* are used to help emergency responders during an accident. These materials must be carried so they are available immediately to emergency responders and accident investigators.

For transporting gasoline, mixed gas, and drip-torch fuel, shipping papers and the *Emergency Response Guidebook* must be carried in a vehicle when either:

- A container's capacity is more than 8 gallons.
- More than 440 pounds of all hazardous materials, such as fuel, fusees, or propane, are being carried.

Shipping papers and the *Emergency Response Guidebook* are not required for gasoline, mixed gas, and drip-torch fuel when either:

- All containers are 8 gallons or smaller and 440 pounds or less of all hazardous materials, such as fuel, fusees, or propane, are being transported.
- Residual fuel (residue) is transported in containers 119 gallons or smaller.

Shipping papers and the *Emergency Response Guidebook* are required only when diesel is transported in tanks larger than 119 gallons.

Shipping Papers

Follow these steps when preparing shipping papers (see appendix A for examples) and when determining how long to retain them:

- All entries must be legible and printed in English.
- Codes and abbreviations are not allowed.
- A copy of the shipping paper must be maintained at the local unit for 2 years after the shipment.

Information to be shown on a shipping paper:

- The UN identification number.
  - —For gasoline and mixed gas, the identification number is *UN1203*.
  - —For drip-torch fuel, the identification number is *UN1993*.
  - —For diesel, the identification number is *UN1202*.
- The proper shipping name.
  - —For gasoline and mixed gas, the proper shipping name is *GASOLINE*.
  - —For drip-torch fuel, the proper shipping name is *FLAMMABLE LIQUIDS N.O.S (DIESEL GASOLINE MIXTURE)*.
  - —For diesel, the proper shipping name is *DIESEL FUEL*. Shipping papers are required only when the container is larger than 119 gallons.
- The hazard class or division number.
  - —For gasoline, mixed gas, drip-torch fuel, and diesel, the hazard class is 3.
- The packing group number designated by Roman numerals.
  - —For gasoline, mixed gas, and drip-torch fuel, the packing group number is *II*.
  - —For diesel, the packing group number is *III*.
- The total quantity of fuel.
  - —For containers and tanks 119 gallons or smaller, the amount of each type of fuel being carried must be expressed in gallons or liters.
  - —For tanks larger than 119 gallons, the total quantity of fuel may be indicated by the words: *1 CARGO TANK*.
- The number and types of containers, including descriptions, such as 14 jerricans.
  - —The container specification number may also be identified, for example, 14 UN 3A1 jerricans.
  - —A separate description must be included for each type of container being transported.
- An emergency response telephone number and contact name.
  - —This phone number must be monitored at all times when the material is in transit (including storage incidental to transportation), and must be the phone number of someone who has comprehensive knowledge of the emergency response and incident mitigation information for the material or has immediate access to a person with this knowledge.
  - —The emergency response phone number and contact name must either be printed following the description of the hazardous material or written once on the shipping paper in a clearly visible location. The toll-

free CHEMTREC (chemical transportation emergency center) telephone number, commonly listed as an emergency response phone number, cannot be used by most land management agencies because the agencies do not subscribe to this service. When an emergency response provider (such as CHEMTREC) is used, include the contract identification number with the emergency response phone number. In such cases a contact name is not required.

Emergency Response Guidebook

The *Emergency Response Guidebook* (figure 32) must be carried in the cab of each vehicle anytime shipping papers are required. The *Emergency Response Guidebook* describes the hazards of material being transported so emergency responders can take the appropriate actions during an accident. The potential hazards and emergency response information for each hazardous material are listed in the guidebook by guide number. The guide number for gasoline, mixed gas, drip-torch fuel, and diesel is 128. The *Emergency Response Guidebook* is available from several vendors or can be downloaded from the DOT Web site at <http://hazmat.dot.gov>.

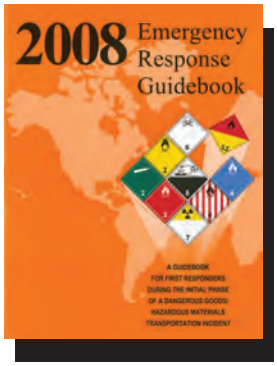

Figure 32—The *Emergency Response Guidebook*.

Location of Shipping Papers and the *Emergency Response Guidebook*

The shipping papers and *Emergency Response Guidebook* must be carried where they are easily available to the driver and emergency responders. When the driver is at the vehicle's controls, the shipping paper and *Emergency Response Guidebook* shall be:

- Within the driver's immediate reach when the driver is restrained by the seatbelt
- Readily visible to a person entering the driver's compartment, such as in plain sight on the seat or in a holder mounted to the inside of the driver's side door

When the driver is not at the vehicle's controls, the shipping paper and *Emergency Response Guidebook* shall either be:

- In a holder mounted on the inside of the driver's side door (figure 33)
- On the vehicle's driver's seat

Figure 33—An example of an appropriate storage location for shipping papers and the *Emergency Response Guidebook*.

MSDSs

OSHA allows MSDSs to be kept at the "primary workplace facility" as long as employees can "immediately obtain the required information in an emergency." Employees must ensure that MSDSs for the hazardous materials they will be transporting are available at their duty station (ranger district, work center, fire camp, or other facility) and that they can immediately contact someone at the duty station to obtain the information on the MSDS. If employees will be working where they cannot contact their duty station immediately, copies of the MSDSs for the hazardous materials they will be transporting and using must be carried in the vehicle, regardless of the amount of fuel being transported. Sample MSDSs are included in appendix E.

Incompatible Materials

Do not transport liquid fuels, such as gasoline, mixed gas, drip-torch fuel, or diesel in the same vehicle with:

- Explosives.
- Poisonous gases.
- Oxidizers, such as plastic spheres filled with potassium permanganate that are used for aerial ignition (figure 34). Oxidizers may be transported in the same vehicle with fuels if the oxidizers are placed in a separate compartment.
- Poisonous liquids.

Figure 34—Plastic spheres used for aerial ignition.

Leaking or Damaged Containers

Leaking containers shall not be transported. If a container is damaged in the field, empty the contents of the damaged container into an undamaged container. The damaged container may be transported from the field to a proper disposal location by placing it in a UN 1A2 removable-head drum and installing the drum head or by evaporating the residue. To evaporate the residue from the damaged container, make sure that the container has been emptied as thoroughly as possible into another undamaged container and remove the caps or prop open the spring-loaded lids until the contents evaporate.

Fire Extinguishers

A fire extinguisher must be carried on each vehicle transporting fuel or other hazardous materials. The required size of the extinguisher depends on the amount of hazardous materials being transported and the capacity of any tank that is being used.

If the amount of hazardous materials being transported is less than 1,001 pounds or the tank capacity is 119 gallons or less:

- A minimum of one 5–B:C or two 4–B:C fire extinguishers must be carried on the transport vehicle.

If 1,001 pounds or more of hazardous materials are being transported or the tank is larger than 119 gallons:

- A minimum of one 10–B:C (figures 35a and 35b) fire extinguisher must be carried on the transport vehicle.

Figure 35a.

Figure 35b.

Figures 35a and 35b—A 10–B:C fire extinguisher (35a) and the label (35b) showing that the fire extinguisher is UL listed and that it is rated 10–B:C.

Monthly inspections—OSHA requires that fire extinguishers be visually inspected monthly by facility personnel (who check the recharge dial and make sure that the pin is in place). Typically, this information is documented on the back of the annual inspection tag or on an additional tag.

Annual inspections—OSHA requires that fire extinguishers be inspected annually by certified personnel. This inspection checks the condition of a variety of the extinguisher's components including, but not limited to:

- Whether the hose is in good condition
- Whether the extinguishing agent needs to be replaced
- Whether the extinguisher is due for hydrostatic testing

The annual inspection date must be recorded and maintained for at least 1 year. Typically, this information is documented on a tag (figure 36) or sticker secured to the fire extinguisher.

Figure 36—A fire extinguisher inspection tag.

Training

Part One

Training is required for all employees who transport, prepare for transport, load and unload, or are responsible for the safety of hazardous materials that are being transported, such as gasoline, mixed gas, drip-torch fuel, and diesel. The type of training required depends on the amount of hazardous materials being transported.

All training must be completed. [Note: Effective date of training—June 2010.]

OSHA *Hazard Communication* Training

All employees who transport, prepare for transport, load and unload, or are responsible for the safety of hazardous materials that are being transported must complete OSHA *Hazard Communication* training.

DOT *Materials of Trade* Training To Transport Small Amounts of Hazardous Materials

If fuel is being transported in containers 8 gallons or smaller and the total weight of hazardous materials being transported is 440 pounds or less, employees must have the DOT *Materials of Trade* training.

A training program designed specifically for Federal land-management agencies is expected to be developed by the Forest Service during Fiscal Year 2011. A thorough reading and understanding of the following topics will fulfill the DOT *Materials of Trade* training requirement until a formal training program is adopted:

- Identification of common hazardous materials, such as fuels, propane, and plastic spheres filled with potassium permanganate and their associated hazards.
- Container requirements including:
  —Approved containers (page 7)
  —Labeling and marking requirements (page 16)
  —Inspection for damage and leakage (page 26, 30, 33, 36, 37, 39, 41, 43)
  —Size limitations (maximum size is 8 gallons)
  —Weight limitations (maximum weight is 440 pounds for all hazardous materials)
  —Requirements to secure containers so they cannot move, protecting them from damage (page 26, 31, 33, 36, 38, 40, 42, 43)
- Identification of materials that should not be transported with liquid fuels (page 20)

Training To Transport Large Amounts of Hazardous Materials

When fuel is transported in any container larger than 8 gallons or when the total weight of hazardous materials being transported is more than 440 pounds, regardless of container size, employees must have additional training. This training consists of general awareness/familiarization, function-specific, safety, security awareness, and driver training. Before handling or transporting gasoline, mixed gas, or drip-torch fuel, DOT regulations require that they:

- Attend this training
- Pass a test
- Be certified

For transporting diesel, this additional training is required only for drivers transporting tanks larger than 119 gallons.

Here's a little background about each component of the additional training:

- General awareness/familiarization training acquaints employees with the general requirements of the DOT regulations and enables them to recognize and identify hazardous materials.
- Function-specific training addresses the requirements of the DOT regulations and exemptions that apply directly to the tasks employees are performing.
- Safety training provides employees with the emergency response information required by DOT regulations, measures needed to protect them from the hazards of the

materials they will be exposed to, and methods and procedures for avoiding accidents.

- Security awareness training identifies security risks associated with handling hazardous materials and methods designed to enhance transportation security. This training also covers how to recognize and respond to possible security threats.
- Driver training includes:
  —Pretrip safety inspections
  —Use of vehicle controls and equipment
  —Vehicle operation
  —Procedures for maneuvering at tunnels, bridges, and railroad crossings
  —Times when the driver must be present at the vehicle
  —Procedures for loading and unloading materials
  —Specialized requirements for tanks

The requirement for driver training can be met by obtaining a CDL with a hazardous materials or tank endorsement. For drivers who do not need a CDL, driver training must be taken as a separate course.

Training programs required by other Federal or international agencies, such as OSHA *Hazard Communication* training or Environmental Protection Agency training, may be used to satisfy the referenced training requirements if the training addresses the elements listed. Until a training program is designed specifically for Federal land management agencies, training is available from the DOT training center in Oklahoma City and from commercial vendors.

Refresher Training

Employees must receive applicable training at least once every 3 years.

Training Records

Keep records of each employee's training history for the previous 3 years. Retain these records for 90 days beyond the last date of the employee's employment. Training records shall include:

- Employee's name
- Date of most recent training
- Description, copy, or location of materials used during training
- Name and address of trainer
- Certification of training

Information About Specific Types of Fuel Containers, Drums, and Tanks Part Two

DRIP TORCHES

The DOT-specification drip torches (figure 37) became available in April 2003. All new drip torches shall meet Forest Service specification 5100-614. This specification not only meets the DOT specification, but also requires that the container be red and that the breather valve be large enough to operate with a gloved hand. No drip torches manufactured before 2003 meet DOT specifications. Nonspecification drip torches shall be replaced with drip torches that conform to Forest Service specification 5100-614 as nonspecification drip torches wear out or become damaged beyond repair. Only DOT-specification drip torches should be transported full of fuel.

Figure 37—A drip torch.

All drip torches that do not meet DOT specifications shall be replaced by June 2019. Do not interchange parts between DOT-specification drip torches and those that do not meet DOT specifications.

Container Specifications—UN 3B1 (figure 38), UN 1B1, UN 3A1, and others

Labeling—

- All drip torches must have the diamond-shaped *FLAMMABLE LIQUID* label (figure 39) or the *DRIP TORCH FUEL* tag.
- If more than a total of 440 pounds of hazardous material (including the weight of the containers) is being transported, the diamond-shaped *FLAMMABLE LIQUID* label must be applied to the box, rack, or crate used to secure the drip torches while they are being transported.

Figure 39—A *FLAMMABLE LIQUID* label.

Marking—The following marking (see page 16 for additional information) is required on the crate, rack, or box (figure 40) used to secure drip torches during transport.

Figure 38—The *UN* marking shows that this drip torch meets DOT specifications.

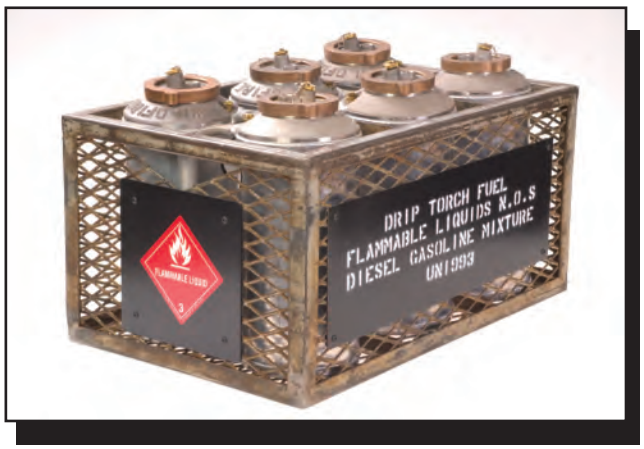

Figure 40—This rack is marked properly for transporting drip torches.

DRIP TORCHES

- *FLAMMABLE LIQUIDS N.O.S. (DIESEL GASOLINE MIXTURE) UN1993.*
- In addition, the box, rack, or holder also may be marked with the words *DRIP TORCH FUEL* to help employees identify the contents.

Markings must be at least $\frac{1}{2}$ inch high by $\frac{3}{16}$ inch wide and must:

- Be permanent.
- Contrast sharply with the background color of the crate, rack, or box.
- Not be obscured by any labels or attachments.
- Be far enough away from other markings or labels to prevent confusion.

If a closed box is used to secure the drip torches, the box shall be clearly marked with orientation arrows showing *up* (figure 41).

Figure 41—Orientation arrows that are used to show *up* on a closed box of fuel containers.

Placarding—A *FLAMMABLE* placard (see page 17 for additional information) with UN1993 identification number (figure 42) is required on all four sides of the vehicle or trailer only if 1,001 pounds or more of all hazardous materials are being transported. Placarding is required to transport 67 or more full drip torches, assuming no other hazardous materials are transported.

Figure 42—A placard with the UN identification number for drip-torch fuel included. When the identification number is not included in the placard, a separate identification number (see figure 30) must be with the placard.

Inspection Criteria—Inspect each drip torch before transporting it full of fuel to make sure that the lock ring and plug gaskets are not cut, cracked, or weather checked, and to make sure that neither the body nor the cover of the drip torch has been damaged. Replace or repair drip torches that do not meet these criteria.

Container Capacity Restrictions—Do not fill drip torches to more than 90 percent of their capacity to allow room for fuel to expand and to reduce the possibility that they might leak.

Securing Drip Torches for Transport—

- Make sure that the lock ring is tight, the vent is closed, the plug is screwed into the cover, and that no closures leak. Do not transport drip torches that leak.
- Wipe any fuel from the outside of each drip torch.
- Drip torches shall not be mounted on the bumper of a vehicle.
- Secure the drip torches so they will not fall over or move during transport by placing them in a crate, rack, or box, or by restraining them in some other way (figure 43). If the drip torches are in a closed box, the box shall be clearly marked with orientation arrows pointing up and the words *FLAMMABLE LIQUIDS N.O.S. (DIESEL GASOLINE MIXTURE) UN1993.* Secure each crate, rack, or box so it cannot move or tip over while it is being transported.

Figure 43—Drip torches secured in a rack.

DRIP TORCHES

- Remove or secure loose articles in the vehicle so they cannot damage the drip torches while they are being transported.

Special Driver's License Requirements—

- If the total weight of all hazardous materials being transported is less than 1,001 pounds and no container is larger than 119 gallons:
  —No special licensing is required.
  —Up to 66 full drip torches can be transported, assuming that no other hazardous materials are being transported.
- If the total weight of all hazardous materials being transported is 1,001 pounds or more, or if any container is larger than 119 gallons:
  —A commercial driver's license with hazardous materials endorsement is required.
  —This requirement must be met if 67 or more full drip torches are being transported.

Training—(See page 23 for additional information.)

- If the total weight of all hazardous materials being transported is 440 pounds or less and no fuel container is larger than 8 gallons, the following training is required:
  —OSHA *Hazard Communication* training.
  —DOT *Materials of Trade* training.
  —Up to 29 full drip torches can be transported, assuming that no other hazardous materials are being transported.
- If the total weight of all hazardous materials being transported is more than 440 pounds, or if any container is larger than 8 gallons, the following training is required:
  —OSHA *Hazard Communication* training.
  —DOT general awareness/familiarization, function-specific, safety, security awareness, and driver training.
  —This requirement must be met if 30 or more full drip torches are being transported.

Shipping Papers and the *Emergency Response Guidebook*—(See page 18 for additional information.)

- If the total weight of all transported hazardous materials is less than 440 pounds and no fuel container is larger than 8 gallons:
  —None required.
  —Up to 29 full drip torches can be transported, without shipping papers and the *Emergency Response Guidebook*, assuming that no other hazardous materials are being transported.
- If the total weight of all hazardous materials being transported is more than 440 pounds or if any container is larger than 8 gallons:
  —Shipping papers and the *Emergency Response Guidebook* are required.
  —This requirement must be met if 30 or more full drip torches are being transported.

Fire Extinguishers—

- If the total weight of hazardous materials being transported is less than 1,001 pounds:
  —A minimum of one 5–B:C or two 4–B:C fire extinguishers are required.
  —Up to 66 drip torches can be transported, assuming that no other hazardous materials are being transported.
- If the total weight of hazardous materials being transported is 1,001 pounds or more:
  —A minimum of one 10–B:C fire extinguisher is required.
  —This requirement must be met if 67 or more drip torches are being transported.

SAFETY TRANSPORT CANS AND METAL AND PLASTIC JERRICANS

Safety Transport Cans and Metal and Plastic Jerricans—Gasoline, mixed gas, and drip-torch fuel may be transported in safety transport cans (figure 44), military-style metal jerricans (figure 45), and plastic jerricans (figure 46).

Figure 44—A safety transport can.

Figure 45—A military-style metal jerrican.

Figure 46—A military-style plastic jerrican.

Plastic jerricans shall be phased out by June 2012.

A redesigned jerrican style safety transport can is available from Safeway Products Inc. This new can is identified by Safeway Products as the Safety Transport LM can. These Safety Transport LM cans have the following features:

- A relocated pour handle to make use of the can easier
- A linkage between the pour handle and the back fill port lid that vents the can during pouring and allows fuel to flow faster (figure 47)

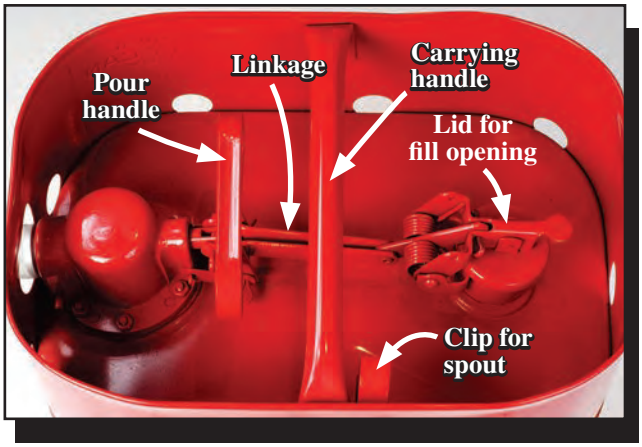

Figure 47—A top view of the Safety Transport LM can showing the linkage between the pour handle and lid for the fill opening.

- A quick disconnect flexible pour spout and a clip on the top of the can to store the spout
- A stiffening rib to make the can less prone to damage due to changes in temperature
- A carrying handle spanning the top of the metal collar

See appendix D for ordering information.

Metal jerricans used by Department of the Interior agencies must be equipped with an approved self-closing lid that vents (figure 48). An example of such a lid is Justrite part number 11192 (see appendix D for ordering information).

Part Two

SAFETY TRANSPORT CANS AND METAL AND PLASTIC JERRICANS

Figure 48—The Department of the Interior requires a self-closing lid for metal jerricans.

Figure 50—Safety transport cans showing the colors required by OSHA and the proper markings.

Container Specifications—

- UN 3A1 (figure 49), UN 1A1, UN 3H1

Figure 49—A UN 3A1 marking.

OSHA Color Requirements—

- Gasoline, mixed gas, and drip-torch fuel in metal jerricans or safety transport cans:
  —The container shall be red with a yellow band around it or the markings shall be stenciled or painted on the container in yellow (figure 50).
- Gasoline, mixed gas, and drip-torch fuel in plastic jerricans:
  —No color requirements for the container or the markings.
- Diesel:
  —No color requirements.

Labeling—A diamond-shaped *FLAMMABLE LIQUID* label (figure 51) shall be on each can.

Figures 51—A *FLAMMABLE LIQUID* label.

Part Two

SAFETY TRANSPORT CANS AND METAL AND PLASTIC JERRICANS

Marking—(See page 16 for additional information.)

- Gasoline or mixed gas:
  —*GASOLINE UN1203* (figures 52a and 52b).

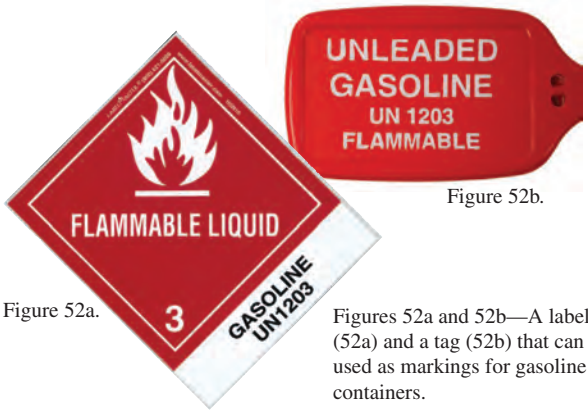

Figure 52a.

Figure 52b.

Figures 52a and 52b—A label (52a) and a tag (52b) that can be used as markings for gasoline containers.

- Drip-torch fuel:
  —*FLAMMABLE LIQUIDS N.O.S. (DIESEL GASOLINE MIXTURE) UN1993* (figures 53a and 53b).
  —In addition, the container may also be marked with the words *DRIP TORCH FUEL* to help employees identify the contents.

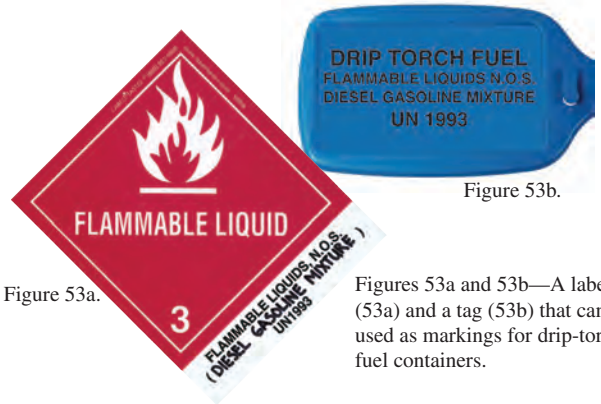

Figure 53a.

Figure 53b.

Figures 53a and 53b—A label (53a) and a tag (53b) that can be used as markings for drip-torch fuel containers.

- Diesel:
  —*DIESEL.*
- Markings must be at least $^{3}/_{16}$ inch high by $^{1}/_{8}$ inch wide and must:
  —Be permanent.
  —Contrast sharply with the background color of the can.
  —Not be obscured by any labels or attachments.
  —Be far enough away from other markings or labels to prevent confusion.

Placarding—(See page 17 for additional information.)

- Gasoline and mixed gas:
  —A *FLAMMABLE* placard with *UN1203* identification number is required on all four sides of the vehicle or trailer if 1,001 pounds or more of hazardous materials are being transported.
  —Placarding is required to transport 21 or more full safety transport cans, 22 or more full metal jerricans, or 24 or more full plastic jerricans, assuming that no other hazardous materials are being transported.
- Drip-torch fuel:
  —A *FLAMMABLE* placard with the *UN1993* identification number (figure 54) is required on all four sides of the vehicle or trailer if 1,001 pounds or more of hazardous materials are being transported.
  —This requirement must be met if 21 or more full safety transport cans, 22 or more full metal jerricans, or 24 or more full plastic jerricans are being transported.

Figure 54—A placard with the UN identification number for drip-torch fuel included. When the identification number is not included in the placard, a separate identification number (see figure 30) must be with the placard.

- Diesel:
  —Placarding is not required.

Inspection Criteria—Inspect each container before it is transported to make sure that all lid gaskets, pouring valve gaskets, and seals are not cut, cracked, or weather checked. Verify that safety can linkages (see figure 47) operate without binding and that the lids are not deformed. Check the body of the can to make sure there is no damage that could allow it to leak. Replace or repair cans that do not meet these criteria.

Part Two

SAFETY TRANSPORT CANS AND METAL AND PLASTIC JERRICANS

Container Capacity Restrictions—Do not fill jerricans or safety transport cans beyond the fill line (figure 55) or 90 percent of capacity to allow fuel to expand and to reduce the possibility that the container might leak.

Figure 55—The fill line on a safety transport can.

Securing Containers for Transport—

- If a jerrican is equipped with a spillproof (CARB-compliant) spout, the spout must be replaced with a bung before the jerrican is transported.
- Make sure that the can is tightly closed and does not leak. Do not transport containers that leak.
- Wipe any fuel from the outside of the can.
- Secure the containers so they will not fall over or move during transport by placing them in a crate, rack, or box or by restraining them in some other way (figure 56). If the containers are in a closed box, the box shall be clearly marked with orientation arrows pointing up and the applicable marking, such as *GASOLINE UN1203*. Secure each crate, rack, or box so it cannot move or tip over while it is being transported.
- Secure other loose items in the back of the vehicle to prevent them from damaging the cans.

Figure 56—Jerricans secured for transport.

Special Driver's License Requirements—

Gasoline, mixed gas, and drip-torch fuel:

- If the total weight of all hazardous materials transported is less than 1,001 pounds, and no container is larger than 119 gallons:
  - —No special licensing is required.
  - —Up to 20 full safety transport cans, 21 full metal jerricans, or 23 plastic jerricans can be transported, assuming that no other hazardous materials are being transported.
- If the total weight of all hazardous materials being transported is 1,001 pounds or more or any container is larger than 119 gallons:
  - —A commercial driver's license with hazardous materials endorsement is required.
  - —This licensing requirement must be met if 21 or more full safety transport cans, 22 or more metal jerricans, or 24 or more plastic jerricans are being transported.

Diesel:

- No special licensing is required.

Training—(See page 23 for additional information.)

Gasoline, mixed gas, and drip-torch fuel:

- If the total weight of all hazardous materials being transported is less than 440 pounds, and no fuel container is larger than 8 gallons, the following training is required:
  - —OSHA *Hazard Communication* training.
  - —DOT *Materials of Trade* training.
  - —Up to 9 full safety transport cans or metal jerricans or 10 plastic jerricans can be transported, assuming that no other hazardous materials are being transported.
- If the total weight of all hazardous materials being transported is more than 440 pounds or any container is larger than 8 gallons, the following training is required:

SAFETY TRANSPORT CANS AND METAL AND PLASTIC JERRICANS

—OSHA *Hazard Communication* training.

—DOT general awareness/familiarization, function-specific, safety, security awareness, and driver training.

—This requirement must be met if 10 or more full safety transport cans or metal jerricans or 11 plastic jerricans are being transported.

Diesel:

- OSHA *Hazard Communication* training.

Shipping Papers and the *Emergency Response Guidebook*—(See page 18 for additional information.)

Gasoline, mixed gas, and drip-torch fuel:

- If the total weight of all hazardous materials being transported is 440 pounds or less and no fuel container is larger than 8 gallons:

  —None required.

  —Up to 9 full safety transport cans or metal jerricans or 10 plastic jerricans can be transported, assuming that no other hazardous materials are being transported.
- If the total weight of all hazardous materials being transported is more than 440 pounds or any container is larger than 8 gallons:

  —Shipping papers and copy of the *Emergency Response Guidebook* are required.

  —This requirement must be met if 10 or more full safety transport cans or metal jerricans or 11 plastic jerricans are being transported, even if no other hazardous materials are being transported.
- Diesel:

  —None required.

Fire Extinguishers—

- If the total weight of hazardous materials being transported is less than 1,001 pounds:

  —At least one 5–B:C or two 4–B:C fire extinguishers are required.

  —Up to 20 jerricans can be transported, assuming that no other hazardous materials are being transported.
- If all the hazardous materials being transported weigh 1,001 pounds or more:

  —At least one 10–B:C fire extinguisher is required.

  —This requirement must be met if 21 or more jerricans are being transported, even if no other hazardous materials are being transported.

Part Two

PUMP FUEL TANKS

Fuel for pumps with detachable fuel tanks, such as the Mark–3 (figure 57), may be transported in the fuel tank provided with the pump. No more than the minimum number of fuel tanks required to operate the pump shall be transported.

Figure 57—A fuel tank attached to a Mark–3 pump that is ready for operation.

Pump fuel tanks shall be used only to transport pump fuel and shall not be used to transport other fuels, such as saw gas, gasoline, and drip-torch fuel.

Container Specifications—

- None.

Labeling—

- Not required for individual tanks.
- Required on boxes, racks, or crates used to secure fuel tanks.

Marking—Fuel tanks shall have a tag indicating the type of fuel (gasoline or mixed gas), the mix ratio, and the date the fuel was mixed (figure 58).

Figure 58—A tag identifying mixed fuel in a fuel tank.

Placarding—

- Not required.

Inspection Criteria—Inspect each fuel tank before it is transported to make sure that all gaskets, seals, and O-rings are not cut, cracked, or weather checked. Inspect all fuel connection and vent fittings and verify that the fuel tank has not been damaged in a way that could allow it to leak. Replace or repair fuel tanks that do not meet these criteria.

Container Capacity Restrictions—Do not fill pump fuel tanks beyond 90 percent of capacity to allow room for the fuel to expand and to reduce the possibility that tank might leak.

Securing Containers for Transport—

- Make sure that the fuel hose is disconnected and the vent is closed.
- Make sure that the fuel tank is tightly closed and does not leak. Do not transport fuel tanks that leak.
- Wipe any fuel from the outside of the fuel tank.
- Secure the fuel tanks so they will not fall over or move during transport by placing them in a crate, rack, or box, or by restraining them in some other way (figure 59). If the containers are in a closed box, the box shall be clearly marked with orientation arrows pointing up and the words

Figure 59—Fuel tanks for the Mark–3 pump secured properly for transport.

PUMP FUEL TANKS

GASOLINE UN1203. Secure each crate, rack, or box so it cannot move or tip over while it is being transported.

- Secure other loose items in the back of the vehicle to prevent them from damaging the fuel tanks.

Special Driver's License Requirements—

- None.

Training—(See page 23 for additional information.)

- OSHA *Hazard Communication* training.
- DOT *Materials of Trade* training.

Shipping Papers and the *Emergency Response Guidebook*—

- None required.

Fire Extinguishers—

- At least one 5–B:C or two 4–B:C fire extinguishers are required.

SAFETY CANS

Limited quantities of metal safety cans that do not meet DOT specifications (figure 60) may be transported. Each safety can must have a *UL* or *FM* marking.

Figure 60—A safety can. Because safety cans do not meet UN specifications, no more than 440 pounds of safety cans can be transported at a time.

Packaging Specifications—

- *UL* (figure 61) or *FM* (figure 62) listed.

Figure 61—The Underwriters Laboratories (UL) marking.

Figure 62—The Factory Mutual (FM) marking.

OSHA Color Requirements—

- Gasoline, mixed gas, and drip-torch fuel in safety cans:
  —The container shall be red with a yellow band around the can or markings shall be stenciled or painted on the can in yellow.
- Diesel:
  —No color requirements.

Labeling—

- Diamond-shaped *FLAMMABLE LIQUID* label (figure 63).

Figure 63—A *FLAMMABLE LIQUID* label.

Marking—(See page 16 for additional information.)

The following marking is required on the each container:

- Gasoline or mixed gas:
  —*GASOLINE UN1203.*
- Drip-torch fuel:
  —*FLAMMABLE LIQUIDS N.O.S. (DIESEL GASOLINE MIXTURE) UN1993.*
  —In addition, the container may be marked with the words *DRIP TORCH FUEL* to help employees identify the contents (figure 64).

Figure 64—A safety can marked properly for transporting drip-torch fuel. Because safety cans do not meet the UN specifications for safety transport cans, fewer can be transported at a time.

SAFETY CANS

- Diesel:
  —*DIESEL*.
- Markings must be at least $^{3}/_{16}$ inch high by $^{1}/_{8}$ inch wide and must:
  —Be permanent.
  —Contrast sharply with the background color of the can.
  —Not be obscured by any labels or attachments.
  —Be far enough away from other markings or labels to prevent confusion.

Placarding—

- Not required.

Inspection Criteria—Make sure that all lid gaskets, pouring valve gaskets, and seals are not cut, cracked, or weather checked. Verify that linkages operate without binding and that the lids are not deformed. Make sure that the body of the can has not been damaged in a way that could allow it to leak. Replace or repair cans that do not meet these criteria.

Container Capacity Restrictions—Do not fill safety cans beyond 90 percent of their capacity to leave room for fuel to expand and to reduce the possibility that the cans might leak.

Quantity Limitations—

- Gasoline, mixed gas, and drip-torch fuel:
  —The total weight of hazardous materials being transported (including container weights) must be 440 pounds or less, and no fuel container shall be larger than 8 gallons. Up to nine full 5-gallon safety cans or 17 full $2^{1}/_{2}$-gallon safety cans may be transported, assuming that no other hazardous materials are transported.
- Diesel:
  —None.

Securing Containers for Transport—

- Make sure that all closures do not leak. Do not transport containers that leak.
- Wipe any fuel from the outside of each container.
- Secure the containers so they will not fall over or move during transport by placing them in a crate, rack, or box or by restraining them in some other way. If the containers are in a closed box, the box shall be clearly marked with orientation arrows pointing up and the applicable marking, such as *GASOLINE UN1203*. Secure each crate, rack, or box so it cannot move or tip over while it is being transported.
- Remove or secure loose articles in the vehicle so they cannot damage the cans while they are being transported.

Special Driver's License Requirements—

- None.

Training—(See page 23 for additional information.)

- Gasoline, mixed gas, and drip-torch fuel:
  —OSHA *Hazard Communication* training.
  —DOT *Materials of Trade* training.
- Diesel:
  —OSHA *Hazard Communication* training.

Shipping Papers and the *Emergency Response Guidebook*—

- None required.

Fire Extinguishers—

- At least one 5–B:C or two 4–B:C fire extinguishers are required.

TWO-COMPARTMENT FUEL AND OIL CONTAINERS

Limited quantities of two-compartment fuel and oil containers, such as Dolmars (figure 65), may be carried. For the 1½-gallon two-compartment container, no more than 23 full containers may be carried per vehicle, assuming that no other hazardous materials are being transported. The total weight of hazardous materials (including the containers) cannot be more than 440 pounds and no fuel container can be larger than 8 gallons. Each container must have a *UL* marking.

Figure 65—A two-compartment fuel and oil container (often called a *Dolmar*).

Packaging Specifications—

- *UL* (molded into container, figure 66).

Figure 66—The *UL* marking molded into a two-compartment fuel and oil container.

Labeling—

- Not required.

Marking—

- Gasoline (molded into container, no additional markings required, figure 67).

Figure 67—The *GASOLINE* marking molded into a two-compartment fuel and oil container.

Placarding—

- Not required.

Inspection Criteria—Inspect each container before using it to transport fuel to make sure that the spout closure cap and spout O-rings are in good condition, the vent cap is undamaged, and the body is not damaged. Replace or repair containers that do not meet these criteria.

Container Capacity Restrictions—Do not fill the container beyond the fill line (figure 68) or 90 percent of capacity to allow room for fuel to expand and to reduce the possibility that the container might leak.

Figure 68—The fill line molded into a two-compartment fuel and oil container.

Part Two

TWO-COMPARTMENT FUEL AND OIL CONTAINERS

Quantity Limitations—The total weight of hazardous materials being transported (including the containers) must not be more than 440 pounds, and no fuel container shall be larger than 8 gallons. Up to 23 full 1½-gallon containers may be transported, assuming that no other hazardous materials are being transported.

Securing Containers for Transport—

- Make sure that the vent is closed, the spouts are inserted in the container, and the caps that seal the spouts are screwed on (figure 69). Verify that all closures are tight and do not leak. Do not transport containers that leak.

Figure 69—Verify that the caps sealing the spouts are screwed on and that the vent cap is undamaged and closed.

- Wipe any fuel from the outside of each container.
- Secure the containers so they will not fall over or move during transport by placing them in a crate, rack, or box or by restraining them in some other way. If the containers are in a closed box, the box shall be clearly marked with orientation arrows pointing up and the applicable marking, such as *GASOLINE UN1203*. Secure each crate, rack, or box so it cannot move or tip over while it is being transported.
- Remove or secure loose articles in the vehicle so they cannot damage the containers while they are being transported.

Special Driver's License Requirements—

- None.

Training—(See page 23 for additional information.)

- OSHA *Hazard Communication* training.
- DOT *Materials of Trade* training.

Shipping Papers and the *Emergency Response Guidebook*—

- None required.

Fire Extinguishers—

- At least one 5–B:C or two 4–B:C fire extinguishers are required.

CONSUMER PLASTIC CONTAINERS

Limited quantities of consumer plastic containers (figure 70) may be carried. Each container must have a *UL* marking.

Figure70—A consumer plastic fuel container.

Consumer plastic containers shall be phased out by June 2012.

Packaging Specifications—

- UL (figure 71) or FM listed.

UL

Labeling—

- Not required.

Marking—

- *GASOLINE* (molded into the container; no additional markings required, figure 72).

Figure 72—The *GASOLINE* marking molded into a consumer plastic fuel container.

Placarding—

- Not required.

Inspection Criteria—Inspect each container before using it to transport fuel to make sure that all seals or O-rings are in good condition, the vent cap is undamaged, and that the body is not damaged. Replace or repair containers that do not meet these criteria.

Container Capacity Restrictions—Do not fill the container beyond the fill line (figure 73) or 90 percent of its capacity to leave room for the fuel to expand and to reduce the possibility that the container might leak.

Figure 73—The fill line molded into a consumer plastic fuel container.

Quantity Limitations—The total weight of all hazardous materials being transported (including the containers) must be 440 pounds or less, and no fuel container shall be larger than 8 gallons. Up to 22 full 2½-gallon or 11 full 5-gallon containers may be transported, assuming that no other hazardous materials are being transported.

Part Two

CONSUMER PLASTIC CONTAINERS

Securing Containers for Transport—

- Make sure that the vent is closed, the spout is inserted in the container, and the cap that seals the spout is screwed on. Verify that all closures are tight and do not leak. Do not transport containers that leak.
- Wipe any fuel from the outside of each container.
- Secure the containers so they will not fall over or move during transport by placing them in a crate, rack, or box or by restraining them in some other way. If the containers are in a closed box, the box shall be clearly marked with orientation arrows pointing up and the applicable marking, such as *GASOLINE UN1203*. Secure each crate, rack, or box so it cannot move or tip over while it is being transported.
- Remove or secure loose articles in the vehicle so they cannot damage the containers during transport.

Special Driver's License Requirements—

- None.

Training—(See page 23 for additional information.)

- OSHA *Hazard Communication* training.
- DOT *Materials of Trade* training.

Shipping Papers and the *Emergency Response Guidebook*—

- None required.

Fire Extinguishers—

- At least one 5–B:C or two 4–B:C fire extinguishers are required.

Part Two

ALUMINUM AND PLASTIC FUEL BOTTLES

Limited quantities of aluminum (figure 74) and plastic (figure 75) 1-quart fuel bottles may be transported.

Figure 74—Aluminum fuel bottle.

Figure 75—Plastic fuel bottle.

Never use red aluminum or plastic fuel bottles as beverage containers!

Plastic fuel bottles shall be phased out by June 2012.

Container Specifications—Aluminum fuel bottle, General Services Administration National Stock Number 7240–01–351–2133. The only bottle known to meet these requirements now is marketed by Mountain Safety Research (sometimes known as *MSR*).

Color Requirements—

- Bottles must be red.

Labeling—

- None required.

Marking—

- Aluminum fuel bottles marked *FUEL BOTTLE* by the manufacturer do not require additional marking.
- Plastic fuel bottles: none required.

Placarding—

- None required.

Inspection Criteria—Before using a bottle to transport fuel, it shall be inspected to make sure there is no damage to the body, cap, or seal and that the bottle does not leak. Replace or repair bottles that do not meet these criteria.

Container Capacity Restrictions—Do not fill the bottle beyond the manufacturer's fill line (figure 76). If the bottle does not have a fill line, leave 2 inches below the top of the bottle to allow fuel to expand.

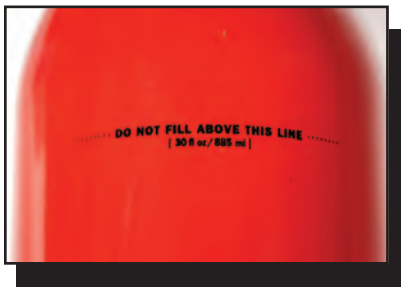

Figure 76—The fill line on an aluminum fuel bottle, often called a *Sigg* bottle.

Aluminum fuel bottles filled above the fill line can develop enough pressure to rupture the container or blow the top off (figure 77). A National Wildfire Coordinating Group Safety Warning issued August 22, 2002 provides additional details. See <http://safenet.nifc.gov/notice.nsf> and click on *Safety Warnings*.

Figure 77—An aluminum fuel bottle that failed because it was overfilled.

Part Two

ALUMINUM AND PLASTIC FUEL BOTTLES

Quantity Limitations—Up to 40 full fuel bottles plus the remaining hazardous materials (including their containers) must not weigh more than 440 pounds, and no fuel container shall be larger than 8 gallons.

Securing Containers for Transport—

- Make sure that caps are tight and that the containers do not leak. Do not transport bottles that leak.
- Wipe any excess fuel from the outside of each bottle.
- Secure the bottles so they will not fall over or move during transport by placing them in a crate (figure 78), rack, or box, or by restraining them in some other way. If a closed box is used, the box shall be clearly marked with orientation arrows pointing up and marked *GASOLINE*. Secure each crate, rack, or box so it cannot move or tip over while it is being transported.
- Remove or secure loose articles in the vehicle so they cannot damage the bottles while they are being transported.

Figure 78—Aluminum fuel bottles secured for transport in a milk crate.

Special Driver's License Requirements—

- None.

Training—(See page 23 for additional information.)

- OSHA *Hazard Communication* training.
- DOT *Materials of Trade* training.

Shipping Papers and the *Emergency Response Guidebook*—

- None required.

Fire Extinguishers—

- At least one 5–B:C or two 4–B:C fire extinguishers are required.

Part Two

MANUFACTURERS' ORIGINAL CONTAINERS

Limited quantities of fuel in the manufacturer's original container, such as Coleman fuel cans (figure 79), may be transported.

Figure 79—An example of a manufacturer's original container.

Container Specifications—

- A manufacturer's original container.

Labeling—

- A manufacturer's original label.

Marking—

- A manufacturer's original marking.

Placarding—

- Not required.

Inspection Criteria—Inspect the container for damage to the body and cap before it is transported. Do not transport leaking containers.

Container Restrictions—

- Containers shall not be refilled.

Quantity Limitations—The total weight of hazardous materials (including their containers) being transported must be 440 pounds or less, and no fuel container shall be larger than 8 gallons.

Securing Containers for Transport—

- Make sure that the caps are tight and do not leak.
- Make sure the outside of each container is free of fuel.
- Secure the containers so they will not fall over or move during transport by placing them in a crate, box, or rack, or by restraining them in some other way (figure 80). If a closed box is used, the box shall be clearly marked with orientation arrows pointing up and with the name of the hazardous material, such as *STOVE FUEL*. Secure each crate, rack, or box so it cannot move or tip over while it is being tran

Figure 80—A box containing the manufacturer's original containers.

- Remove or secure loose articles in the vehicle so they cannot damage the containers.

Special Driver's License Requirements—

- None.

Training—(See page 23 for additional information)

- OSHA *Hazard Communication* training.
- DOT *Materials of Trade* training.

Shipping Papers and the *Emergency Response Guidebook*—

- None required.

Fire Extinguishers—

- At least one 5–B:C or two 4–B:C fire extinguishers are required.

Part Two

FUEL IN DRUMS

Gasoline, mixed gas, drip-torch fuel, and diesel may be transported in approved steel drums (figure 81).

Figure 81—A 55-gallon drum.

Container Specifications—

- Transportation of gasoline, mixed gas, drip-torch fuel, and diesel:
  —8- to 55-gallon drums (*UN 1A1/X* or *Y*) (figure 82).

Figure 82—Approved drums have a UN number.

- Transportation of damaged fuel containers:
  —8- to 55-gallon drums (*UN 1A2/X* or *Y*).
- For aerial ignition:
  —8- to 55-gallon drums (*UN 1A1/X* or *Y* or *UN 1A2/X* or *Y*).

Labeling—

- Gasoline, mixed gas, drip-torch fuel and diesel:
  —Diamond-shaped *FLAMMABLE LIQUID* label on each drum (figure 83).

Figure 83—A *FLAMMABLE* label.

Marking—

- Gasoline or mixed gas:
  —*GASOLINE UN1203.*
- Drip-torch fuel:
  —*FLAMMABLE LIQUIDS N.O.S. (DIESEL GASOLINE MIXTURE) UN1993* (figure 84).

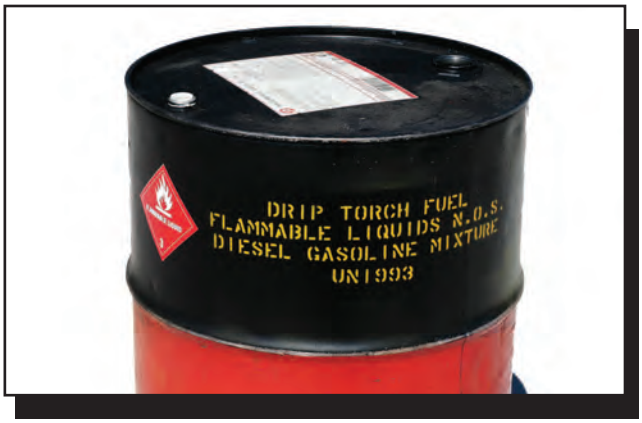

Figure 84—A drum marked for transporting drip-torch fuel.

- Diesel:
  —*DIESEL.*
- The markings must:
  —Be permanent.
  —Contrast sharply with the background color of the drum.
  —Not be obscured by any labels or attachments.
  —Be far enough away from other markings or labels to prevent confusion. These markings can be stenciled on the drum.
  —Be at least $\frac{1}{2}$ inch high by $\frac{3}{16}$ inch wide.
  —Be applied to the drum where they can be seen easily.

Part Two

FUEL IN DRUMS

Placarding—(See page 17 for additional information.)

- Gasoline and mixed gas:
  - —*FLAMMABLE* placard with *UN1203* identification number required on all four sides of the vehicle or trailer if 1,001 pounds or more of hazardous materials are being transported.
  - —Placarding is required to transport three or more 55-gallon drums, even if no other hazardous materials are being transported.
- Drip-torch fuel:
  - —*FLAMMABLE* placard with *UN1993* identification number (figure 85) required on all four sides of the vehicle or trailer if 1,001 pounds or more of hazardous materials are being transported.

Figure 85—A placard with the UN identification number for drip-torch fuel included. When the identification number is not included in the placard, a separate identification number (see figure 30) must be with the placard.

  - —Placarding is required to transport three or more 55-gallon drums, even if no other hazardous materials are being transported.
- Diesel:
  - —None required.

Inspection Criteria—

- The bung and head (if the head is removable) seals are in good condition.
- There is no visible rusting or damage to the drum that could allow it to leak.
- The drum does not leak along any seam.
- The head of the drum is not bulged above its rim (figures 86a and 86b).

Replace drums that do not meet these criteria.

Figure 86a.

Figure 86b.

Figures 86a and 86b—A drum that should not be reused because the head is bulging (86a) and the side is dented (86b).

Container Capacity Restrictions—Each drum shall be filled to no more than about 90-percent capacity (for instance, no more than 50 gallons of fuel in a 55-gallon drum) to allow fuel to expand and to reduce the possibility that the drum might leak.

Securing Drums for Transport—Remove the pump before transporting drums on public highways. Allow fuel to drain back into the drum from the pump, suction piping, and discharge hose. Protect the pump, suction piping, and discharge nozzle from contamination and secure the pump so that it will not move while it is being transported.

- Make sure that all bungs are tight and do not leak.

Do not transport leaking drums.

- Wipe any fuel from the outside of the drum.

Secure each drum to the vehicle so that it cannot move or tip over while it is being transported (figure 87). Use ratchet straps, tie downs, or other suitable materials to secure the drums.

Part Two

FUEL IN DRUMS

Figure 87—A drum that has been secured for transport.

- No part of the drum shall extend above the vehicle's cab or beyond the vehicle's body.
- Other loose items in the back of the vehicle shall be secured to prevent them from damaging the drums.

Special Driver's License Requirements—

Gasoline, mixed gas, and drip-torch fuel:

- If the total weight of hazardous materials being transported is less than 1,001 pounds and no container is larger than 119 gallons:
  —No special licensing is required.
  —Up to two 55-gallon drums can be transported, assuming that no other hazardous materials are being transported.
- If the total weight of hazardous materials being transported (including their containers) is 1,001 pounds or more or if any container is larger than 119 gallons:
  —A commercial driver's license with hazardous materials endorsement is required. This licensing requirement must be met if three or more 55-gallon drums are being transported, even if no other hazardous materials are being transported.
- Diesel:
  —No special licensing is required.

Training—(See page 23 for additional information.)

- Gasoline, mixed gas, or drip-torch fuel:
  —OSHA *Hazard Communication* training.
  —DOT general awareness/familiarization, function-specific, safety, security, and driver training sessions are required if any drums larger than 8 gallons are being transported.
- Diesel:
  —OSHA *Hazard Communication* training.

Shipping Papers and the *Emergency Response Guidebook*—(See page 18 for additional information.)

- Gasoline, mixed gas, or drip-torch fuel:
  —Shipping papers and the *Emergency Response Guidebook* are required if any drum is larger than 8 gallons.
- Diesel:
  —None required.

Part Two

FUEL IN DRUMS

Pump Requirements—

- The pump shall be listed by UL or FM for dispensing flammable liquids (figure 88).

- The pump hose shall be approved for transferring flammable liquids and shall have an internal bonding wire or a conductive cover (figure 89). The entire hose assembly, including the ends of the hose, shall be electrically conductive.

Figure 89—An approved hose.

Dispensing Requirements—

- Drip torches, jerricans, and other approved containers shall be filled on the ground, never in the back of a vehicle.
- The pump nozzle shall contact the container before and during filling to make sure that the container is electrically bonded to the drum (figure 90).

Figure 90—When a drip torch is filled properly, the pump nozzle touches the container, preventing sparks from static electricity generated by flowing fuel.

Fire Extinguishers—

- If the total weight of hazardous materials being transported (including their containers) is less than 1,001 pounds:
  —At least one 5–B:C or two 4–B:C fire extinguishers are required. Up to two 55-gallon drums can be transported, assuming that no other hazardous materials are being transported.
- If the total weight of hazardous materials being transported (including their containers) is 1,001 pounds or more:
  —At least one 10–B:C fire extinguisher is required. This requirement must be met if three or more 55-gallon drums are being transported, even if no other hazardous materials are being transported.

Part Two

DRIP-TORCH FUEL, GASOLINE, OR MIXED GAS IN TANKS

Drip-torch fuel, gasoline, or mixed gas shall be transported only in DOT-specification tanks. Most tanks available at general supply stores are designed just to transport diesel and do not meet DOT specifications for transporting drip-torch fuel, gasoline, and mixed gas.

Do not transport drip-torch fuel, gasoline, or mixed gas in a tank that does not meet DOT specifications.

Most DOT-specification tanks are larger than 119 gallons (figure 91), requiring the driver to have a CDL with a hazardous materials endorsement. Two manufacturers, Transfer

Figure 91—A 240-gallon DOT–406 tank being used to mix gelled fuel.

Flow and Custom Metalcraft, manufacture DOT-specification tanks smaller than 119 gallons. A CDL is not required to transport these tanks. The Transfer Flow tank (figure 92) is available in:

- 30-gallon toolbox/tank (Transfer Flow part number 080–01–12975).
- 50 gallon (Transfer Flow part number 080–01–09417).
- 50-gallon toolbox/tank (Transfer Flow part number 080–01–13252).
- 50/50-gallon split tank (Transfer Flow part number 080–01–13244).
- 82 gallon (Transfer Flow part number 080–01–09420).
- 100-gallon L-shaped tank (Transfer Flow part number 080–01–09418).
- 109 gallon (Transfer Flow part number 080–01–09416).

Figure 92—A Transfer Flow tank.

The Custom Metalcraft tank (figure 93) can be manufactured in any capacity specified by the customer.

All tanks that do not meet DOT specifications that are used to transport gasoline or drip-torch fuel shall be replaced. [Note: Effective date of replacement—June 2010.]

Part Two

DRIP-TORCH FUEL, GASOLINE, OR MIXED GAS IN TANKS

Tank Specifications—

- DOT–SP 11911, UN 31A, MC 306, DOT 406 (figure 94), and others (see 49 CFR 173.242).

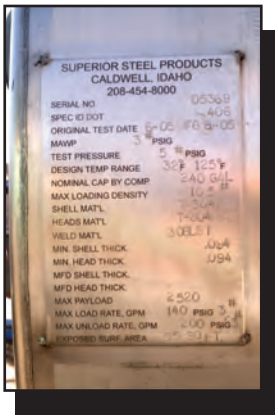

Figure 94—A label plate from a DOT 406 tank.

Labeling and Placarding—

- If the tank is 119 gallons or smaller, it must be labeled with the diamond-shaped *FLAMMABLE LIQUID* label (figure 95).

Figure 95—A *FLAMMABLE LIQUID* label.

- If the tank's capacity is more than 119 gallons, the vehicle or trailer must be placarded with the *FLAMMABLE* placard on all four sides (figure 96).
  —See page 17 for additional information.

Figure 96—A placard with the UN identification number for drip-torch fuel included. When the identification number is not included in the placard, a separate identification number (see figure 30) must be with the placard.

Markings for Tanks 119 Gallons or Smaller—(See page 16 for additional information.)

- Gasoline or mixed gas:
  —*GASOLINE UN1203.*
- Drip-torch fuel:
  —*FLAMMABLE LIQUIDS N.O.S. (DIESEL GASOLINE MIXTURE) UN1993* (figure 97).

Figure 97—A Transfer Flow tank marked for drip-torch fuel.

- The markings must:
  —Be permanent.
  —Contrast sharply with the background color of the tank.
  —Not be obscured by any labels or attachments.
  —Be far enough away from other markings or labels to prevent confusion.
  —Be at least $^{3}/_{4}$ inch high by $^{3}/_{16}$ inch wide.
  —Be applied on the tank where they can be seen easily.

Identification Numbers for Tanks Larger than 119 Gallons—(See page 17 for additional information.) UN identification numbers must be displayed on all four sides of the tank or transport vehicle. UN identification numbers can be displayed as part of the placard or on a separate orange panel in addition to the placard.

- Gasoline or mixed gas:
  —*1203.*
- Drip-torch fuel:
  —*1993.*

Part Two

DRIP-TORCH FUEL, GASOLINE, OR MIXED GAS IN TANKS

Inspection Criteria for Tanks 119 Gallons or Smaller—Small tanks, such as the Transfer Flow and Custom Metalcraft tanks, must be inspected by a DOT-registered cargo tank inspector at the following intervals:

- A "leakproofness test" and external visual inspection shall be conducted every 2½ years.
- An internal visual inspection shall be conducted every 5 years.
- Records must be kept of tank inspections. These records must include the:
  —Tank's design type and specification.
  —Inspection date.
  —Name and address of the inspection facilities.
  —Name of the inspector.
  —Inspection and test results.
- Keep the records in a secure location at the unit responsible for the tank as long as the tank is in service.

Inspection Criteria for DOT–406 and MC-306 Tanks—DOT–406 and MC–306 tanks must be inspected by a DOT-registered cargo tank inspector. The tank's inspection history is coded (figure 98) with letters indicating the type of inspections, two numbers indicating the month, and two numbers indicating the year.

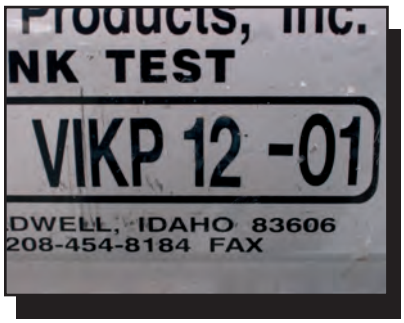

Figure 98—Tank inspection markings on a DOT–406 tank. This tank was last inspected during December 2001.

- An external visual inspection shall be performed every year. The letter *V* indicates that this inspection has been completed.
- An internal visual inspection shall be performed every 5 years. The letter *I* indicates that this inspection has been completed.
- The "leakage test" shall be performed every year. The letter *K* indicates that this inspection has been completed.
- The pressure test shall be performed every 5 years. The letter *P* indicates that this inspection has been completed.
- Keep records of the inspections in a secure location at the unit responsible for the tank as long as the tank is in service. These records must include the:
  —Tank's design type and specification.
  —Inspection date.
  —Name and address of the inspection facilities.
  —Name of the inspector.
  —Inspection and test results.

Tank Capacity Restrictions—Tanks shall not be filled to more than 90 percent of the capacity to leave room for fuel to expand and to reduce the possibility that the tank might leak.

Securing Tanks for Transport in Pickup Trucks— Tanks 119 gallons or smaller must be mounted as close to the front of the bed as possible.

- Mount the tank in accordance with manufacturer's instructions. Do not exceed the vehicle GVWR (gross vehicle weight rating) with a full tank.
- Loose items in the vehicle shall be removed or secured so they cannot damage the tank during transport.
- All valves must be closed.
- If the tank is to be transported with an electric or manual pump installed, no part of the pump or its piping shall extend above the vehicle's cab or beyond the vehicle's body.

Special Driver's License Requirements—

- For tanks 119 gallons or smaller:
  —None.
- For tanks larger than 119 gallons:
  —CDL with hazmat endorsement. Some States also may require a tank endorsement.

Part Two

DRIP-TORCH FUEL, GASOLINE, OR MIXED GAS IN TANKS

Training—(See page 23 for additional information.) OSHA *Hazard Communication* and DOT general familiarization awareness, function-specific, safety, drivers training and security training sessions are required.

Shipping Papers and the *Emergency Response Guidebook*—(See page 18 for additional information.)

- Required.

Pump Requirements—

- The pump shall be approved by UL or FM for dispensing flammable liquids (figures 99a and 99b).

Figure 99a.

Figure 99b.

Figures 99a and 99b—Examples of manual (99a) and electric (99b) fuel pumps.

- The pump hose shall be approved for transferring flammable liquids and shall have an internal bonding wire or a conductive cover (figure 100). The entire hose assembly, including the ends of the hose, shall be electrically conductive.

Figure 100—An approved hose.

Dispensing Requirements—

- When dispensing fuel, do not leave the tank unattended.
- Drip torches, jerricans, and other approved containers shall be filled on the ground, never in the back of a vehicle.
- The pump nozzle shall contact the container before and during filling to make sure that the container is electrically bonded to the tank (figure 101).

Figure 101—When a drip torch is filled properly, the pump nozzle touches the container, preventing sparks from static electricity generated by flowing fuel.

Fire Extinguishers—

- If the tank is 119 gallons or smaller:
  —At least one 5–B:C or two 4–B:C fire extinguishers are required.
- If the tank is larger than 119 gallons:
  —At least one 10–B:C fire extinguisher is required.

Part Two

DIESEL IN TANKS

Diesel may be transported in tanks that do not meet DOT specifications (figure 102). These tanks are readily available at farm and ranch supply stores. Do not transport drip-torch fuel, gasoline, or mixed gas in these tanks.

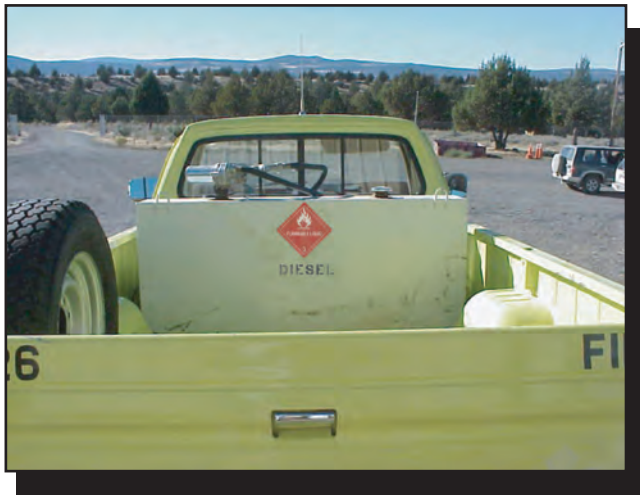

Figure 102—A typical nonspecification tank used for transporting diesel. This photo has been digitally manipulated to show the proper *DIESEL* marking.

Tank Specifications—

- None.

Labeling and Placarding—

- If the tank is 119 gallons or smaller:
  - —The diamond-shaped *FLAMMABLE LIQUID* label (figure 103).
  - —See page 16 for additional information on labeling.

Figure 103—A *FLAMMABLE LIQUID* label.

- If tank is larger than 119 gallons:
  - —The vehicle or trailer must be placarded with the *FLAMMABLE* placard on all four sides (figure 104, UN identification number included in this example).
  - —See page 17 for additional information on placarding.

Figure 104—A pla
showing the UN identification number for diesel.

Markings (Only for Tanks 119 Gallons or Smaller)—

(See page 16 for additional information).

- *DIESEL* (figure 105).

Figure 105—A small tank marked for transporting diesel.

- The markings must:
  - —Be permanent.
  - —Contrast sharply with the tank's background color.
  - —Not be obscured by any labels or attachments.
  - —Be far enough away from other markings or labels to prevent confusion.
  - —Be at least $\frac{3}{4}$ inch high by $\frac{3}{16}$ inch wide.
  - —Be applied on the tank where they are easily visible.

Identification Numbers (Only for Tanks Larger than 119 Gallons)—

(See page 17 for additional information.)

- The identification number *1202* must be displayed on all four sides of the tank or transport vehicle.

DIESEL IN TANKS

- The identification number can be displayed as part of the placard or on a separate orange panel near the placard.

Inspection Criteria—

- Visually inspect the outside of the tank before each use to ensure there is no leakage.

Tank Capacity Restrictions—Tanks shall not be filled to more than 90-percent capacity to leave room for fuel to expand and to reduce the possibility that the tank might leak.

Securing Tanks for Transport in Pickup Trucks— Tanks 119 gallons or smaller must be mounted as close to the front of the bed as possible.

- Mount the tank in accordance with manufacturer's instructions. Do not exceed the vehicle GVWR (gross vehicle weight rating), even when the tank is full.
- Loose items in the vehicle shall be removed or secured so they cannot damage the tank during transport.
- All valves must be closed.
- If the tank is to be transported with an electric or manual pump installed, no part of the pump or its piping shall extend above the vehicle's cab or beyond the vehicle's body.

Special Driver's License Requirements—

- For tanks 119 gallons or smaller:
  —None.
- For tanks larger than 119 gallons:
  —CDL with hazmat endorsement. Some States also may require a tank endorsement.

Training—(See page 23 for additional information.)

- For tanks 119 gallons or smaller:
  —OSHA *Hazard Communication* training.
- For tanks larger than 119 gallons:
  —OSHA *Hazard Communication* training.
  —DOT general awareness/familiarization, function-specific, safety, security, and driver training.

Shipping Papers and the *Emergency Response Guidebook*—(See page 18 for additional information.)

- For tanks 119 gallons or smaller:
  —Not required.
- For tanks larger than 119 gallons:
  —Required.

Pump Requirements—

- The pump shall be approved by UL or FM for dispensing flammable liquids (figures 106a and 106b).

Figure106a.

Figure 106b.

Figures 106a and 106b—Examples of manual (106a) and electric (106b) fuel pumps.

DIESEL IN TANKS

- The pump's hose shall be approved for transferring flammable liquids and shall have an internal bonding wire or a conductive cover (figure 107). The entire hose assembly, including the ends of the hose, shall be electrically conductive.

Figure 107—An example of an approved hose.

Dispensing Requirements—

- When dispensing fuel, do not leave the tank unattended.
- Containers shall be filled on the ground, never in the back of a vehicle.
- The pump nozzle shall contact the container before and during filling to make sure that the container is electrically bonded to the tank.

Fire Extinguishers—

- If the tank is 119 gallons or smaller:
  —At least one 5–B:C or two 4–B:C fire extinguishers are required.
- If the tank is larger than 119 gallons:
  —At least one 10–B:C fire extinguisher is required.

Part Two

FUEL IN CREW CARRIERS, HELITENDERS, AND ENGINES

Fuel and other hazardous materials shall not be transported in a crew carrier (figure 108) if other options are available.

Figure 108—A crew carrier.

Under no circumstances shall fuel be carried in the crew compartment.

If fuel must be transported in a crew carrier, helitender, or engine, the following conditions shall be met:

Allowable Containers and Their Specifications—

- Metal jerricans and safety transport cans (UN 3A1 and UN 1A1).
- Drip torches (UN 3B1, UN 1B1, UN 3A1, and those that do not meet DOT specifications).

All drip torches that do not meet DOT specifications shall be replaced by June 2019.

- Metal safety cans (UL or FM listed).
- Two-compartment fuel and oil containers (often called Dolmars, UL listed).
- Aluminum fuel bottles (National Stock Number 7240–01–351–2133).
- Plastic fuel bottles.

Plastic fuel bottles shall be phased out by June 2012.

Labeling—

- Metal jerricans, safety transport cans, drip torches, and metal safety cans:
  —Diamond-shaped *FLAMMABLE LIQUID* label.
- Two-compartment fuel and oil containers, aluminum fuel bottles, and plastic fuel bottles:
  —Not required.

Marking—

- Metal jerricans, safety transport cans, and metal safety cans, gasoline or mixed gas:
  —*GASOLINE UN1203.*
- Drip-torch fuel:
  —*FLAMMABLE LIQUIDS N.O.S. (DIESEL GASOLINE MIXTURE) UN1993.* In addition, the container also may be marked with the words *DRIP TORCH FUEL* to help employees identify the contents.
- Two-compartment fuel and oil containers:
  —*GASOLINE* molded into the container (no additional markings required).
- Drip torches, aluminum fuel bottles, and plastic fuel bottles:
  —None.
- For all of these containers, the markings must:
  —Be permanent.
  —Contrast sharply with the container's background color.
  —Not be obscured by any labels or attachments.
  —Be far enough away from other markings or labels to prevent confusion.
  —Be at least $^{3}/_{16}$ inch high by $^{1}/_{8}$ inch wide.
  —Be applied on the container where they are easily visible.

Part Two

FUEL IN CREW CARRIERS, HELITENDERS, AND ENGINES

Inspection Criteria—

- Drip torches: Inspect each drip torch before transporting it full of fuel to make sure that the lock ring and plug gaskets are not cut, cracked, or weather checked, and that neither the body nor the cover of the torch has been damaged. Replace or repair drip torches that do not meet these criteria.
- Metal jerricans: Make sure that the lid's gasket is not cut, cracked, or weather checked. Check the body of the can to make sure there is no damage that could allow the can to leak. Replace or repair cans that do not meet these criteria.
- Safety transport cans and safety cans: Make sure that all lid gaskets and pouring valve gaskets and seals are not cut, cracked, or weather checked. Verify that the safety can's linkages operate without binding and that the lids are not deformed. Check the body of the can to make sure there is no damage that could allow the can to leak. Replace or repair cans that do not meet these criteria.
- Two-compartment fuel and oil containers: Make sure that the spout's closure cap and spout O-rings are in good condition, the vent cap is undamaged, and that the container's body has not been damaged. Replace or repair containers that do not meet these criteria.
- Aluminum and plastic fuel bottles: Make sure the body, cap, and seal are not damaged and the bottle does not leak. Replace or repair bottles that do not meet these criteria.

Container Capacity Requirements—

- Containers shall not be larger than 8 gallons.
- Containers shall not be filled more than 90 percent to allow fuel to expand and to reduce the possibility that the container might leak.

Quantity Limitations—The total weight of all hazardous materials being transported (including their containers) must be 440 pounds or less, and no fuel container shall be larger than 8 gallons.

Securing Containers for Transport—

- If a jerrican is equipped with a spillproof (CARB-compliant) spout, the spout must be replaced with a bung before the jerrican is transported.
- Make sure that all closures are tight and do not leak. Do not transport leaking containers.
- Wipe any excess fuel from the outside of all containers.
- Containers shall be secured so that they will not fall over or move while they are being transported.
- Loose articles in the fuel storage compartment shall be removed or secured so they cannot damage the containers while they are being transported.
- Drip torches shall not be mounted on a vehicle's bumper.

Incompatible Items—Fuel shall be transported in a separate compartment from other hazardous materials such as fusees, flares, and oxidizers. Do not transport fuel in the same vehicle with explosives, poisonous gases, or poisonous liquids.

Design of Fuel Storage Compartments—
If fuel containers will be transported in a vehicle storage compartment, the storage compartment shall be:

- Separated from the crew compartment by a fireproof boundary, such as a metal floor or walls. The fuel compartment and passenger compartment shall not be connected by any openings.
- As far as possible from the crew compartment doors or exits.
- As far as possible from the vehicle's exhaust system.
- Vented to allow fumes to escape. Expanded metal mesh in the sides or floor of the compartment, louvered doors, or a vent pipe may be used for venting (figures 109a and 109b). The compartment shall not be vented near the exhaust system.

Part Two

FUEL IN CREW CARRIERS, HELITENDERS, AND ENGINES

Figure 109a.

Figure 109b.

Figures 109a and 109b—Examples of vented compartments for carrying fuel. Figure 109a shows the vent on the outside of the vehicle. Figure 109b shows the vent on the inside of a compartment used to carry fuel containers.

Labeling Fuel Storage Compartments—

- A diamond-shaped *FLAMMABLE LIQUID* label shall be applied to the outside of a storage compartment for flammable liquids (figure 110).

Figure 110—A *FLAMMABLE LIQUID* label.

- This label shall be applied where it is visible and it must be maintained in good condition.

Special Driver's License Requirements—

- None.

Training—(See page 23 for additional information.)

- OSHA *Hazard Communication* training.
- DOT *Materials of Trade* training.

Shipping Papers and the *Emergency Response Guidebook*—

- None required.

Fire Extinguishers—

- At least one 5–B:C or two 4–B:C fire extinguishers are required.

Part Two

FUEL TRAILERS

When fuel is transported on trailers, the container and tank specifications, labeling, marking, placarding, training, and driver's licensing requirements are the same as those in previous sections of this guide. Additional trailer-specific requirements also must be followed.

Mounting the Tank Properly—Tanks shall be bolted to metal cross bracing on the trailer—not to expanded metal mesh or wooden decking.

Roll Protection—Roll protection is not required.

Pump Installation—The pump shall be removed before the tank is transported on public roads unless the pump does not protrude above the top of the tank. Transfer Flow tanks that have a recessed housing for the pump are designed to meet this requirement (figure 111). On those tanks, the pump does not have to be removed for transport as long as all of the following requirements are met:

- The assembly is purchased as a single unit.
- The tank only has approved gas caps manufactured by Transfer Flow.
- The tank is tested every 2.5 years with the pump attached.
- The discharge hose is emptied of all fuel before transport.
- The pump's electrical power is disconnected during transportation.

It is not necessary to remove a pump when repositioning the trailer at a burn site.

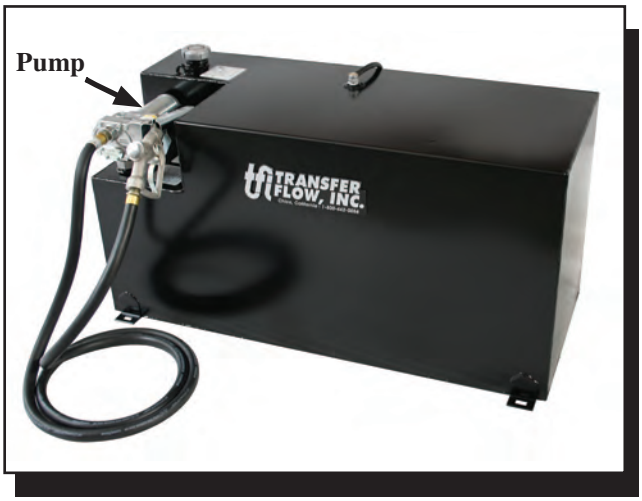

Figure 111—Transfer Flow tanks that have a recessed housing for the pump are designed so the pump does not protrude above the top of the tank. On these tanks, the pump does not have to be removed for transport as long as it meets requirements. —*Photo courtesy of Transfer Flow, Inc.*

Trailer Brakes (Forest Service only)—Trailers with a gross trailer weight rating of 1,500 pounds or more shall be equipped with trailer brakes that can stop and hold the trailer. The trailer brakes must be designed so the operator can activate them independently of the vehicle's foot brakes. This requirement is based on the trailer's capacity, not on the load the trailer will be carrying. See Forest Service Handbook FSH 7109.19, section 31.3 for more details.

Trailer Inspections—The trailer shall be inspected before each use. A more thorough inspection should be performed annually. See appendix B for sample trailer inspection checklists.

Fire Extinguishers—If the tank is:

- 119 gallons or smaller:
  —At least one 5–B:C or two 4–B:C fire extinguishers must be carried on the towing unit.
- Larger than 119 gallons:
  —A minimum of one 10–B:C fire extinguisher must be carried on the towing unit.

Shipping Paper for Tanks Larger Than 119 Gallons Containing Gasoline

MOTOR CARRIER DATE

U.S. Department of Agriculture
Forest Service

NUMBER and TYPE	DESCRIPTION OF HAZARDOUS MATERIALS (ID no., Proper shipping name, Hazard class, Packing group)	QUANTITY	
1 tank	UN1203, GASOLINE, 3, PG II	1	tank

Emergency response telephone number:
(xxx)-xxx-xxx
Name or contract number

Shipping Paper for Tanks Larger Than 119 Gallons Containing Diesel

MOTOR CARRIER DATE

U.S. Department of Agriculture
Forest Service

NUMBER and TYPE	DESCRIPTION OF HAZARDOUS MATERIALS (ID no., Proper shipping name, Hazard class, Packing group)	QUANTITY	
1 tank	UN1202, DIESEL FUEL, 3, PG III	1	tank

Emergency response telephone number:
(xxx)-xxx-xxx
Name or contract number

Part Two

Shipping Paper for Tanks Smaller Than 119 Gallons Containing Drip-Torch Fuel

MOTOR CARRIER DATE

U.S. Department of Agriculture
Forest Service

NUMBER and TYPE	DESCRIPTION OF HAZARDOUS MATERIALS (ID no., Proper shipping name, Hazard class, Packing group)	QUANTITY	
1 tank	UN1993, FLAMMABLE LIQUIDS, N.O.S. (DIESEL GASOLINE MIXTURE), 3, PG II	100	gallons

Emergency response telephone number:
(xxx)-xxx-xxx
Name or contract number

Part Two

Shipping Paper for Jerricans Containing Gasoline and for Drums and Drip Torches Containing Drip-Torch Fuel

MOTOR CARRIER DATE

U.S. Department of Agriculture
Forest Service

NUMBER and TYPE	DESCRIPTION OF HAZARDOUS MATERIALS (ID no., Proper shipping name, Hazard class, Packing group)	QUANTITY	
10 jerricans	UN1203, GASOLINE, 3, PG II	50	gallons
2 drums	UN1993, FLAMMABLE LIQUIDS, N.O.S. (DIESEL GASOLINE MIXTURE), 3, PG II	110	gallons
30 drip torches	UN1993, FLAMMABLE LIQUIDS, N.O.S. (DIESEL GASOLINE MIXTURE), 3, PG II	38	gallons

Emergency response telephone number:
(xxx)-xxx-xxx
Name or contract number

Appendix B—Trailer Inspection Checklists

Part Two

Pretrip Trailer Inspection Checklist

____Wheel bearing play within acceptable limits
____Tires and wheels in good condition
____Lug nuts tight
____Lights operational
____Trailer brake operation satisfactory
____Fenders and mud flaps (if equipped) secure and undamaged
____Springs and shackles in good condition
____Trailer floor undamaged
____Safety chains in good condition
____Warning equipment (such as reflective triangles) in the vehicle or trailer

Annual Trailer Inspection Checklist

Chassis—

____Frame
____Axle beam
____Springs
____U bolts
____Shackles
____Wheel bearings repacked
____Hub bolts
____Wheels
____Tires
____Trailer hitch
____Safety chain

Lights—

____Clearance
____Stop and tail lights
____Turn signals

Electric Brakes—

____Lining
____Shoe adjustment
____Backing plate bolts
____Drum condition
____Electromagnet
____Armature disc
____Wiring
____Terminals
____Connection plug

Brake Controls—

____Electric controller unit
____Proper voltage
____Connector plug
____Wiring
____Manual brake controls
____Hydraulic brake controls

Appendix C—Estimated Weights of Full Containers

Part Two

This chart assumes that no other hazardous materials are being transported. *CDL* stands for commercial driver's license.

Container type	Weight when full (pounds)	Maximum number allowed without additional training or shipping papers	Maximum number allowed without placarding or CDL
Drip torch	15	29	66
Safe-T-Way safety transport can (5 gallons)	49	9	20
Metal jerrican (5 gallons)	46	9	21
Plastic jerrican (5 gallons)	43	10	23

Container type	Weight when full (pounds)	Maximum number allowed
Plastic consumer (2½ gallons)	20	22
Plastic consumer (5 gallons)	39	11
Two-compartment container (1½ gallons gasoline + 2½ quarts oil)	19	23
Metal safety can (2½ gallons)	26	17
Metal safety can (5 gallons)	46	9
Aluminum fuel bottle (1 quart)	2½	40
Plastic fuel bottle (1 quart)	2½	40

Appendix D—Procurement Sources Part Two

Plastic Marking Tags for Fuel Containers

- ASP Inc.
  Redmond WA 98073–0010
  Phone: 425–556–1900

Labels, Markings, and Placards

- LabelMaster
  5724 North Pulaski Rd.
  Chicago, IL 60646–6797
  Phone: 800–621–5808
  Web site: http://www.labelmaster.com

- J.J. Keller and Associates, Inc.
  3003 West Breezewood Lane
  P.O. Box 368
  Neenah, WI 54957–0368
  Phone: 800–327–6868
  Web site: http://www.jjkeller.com

- Lab Safety Supply
  P.O. Box 1368
  Janesville, WI 53547-1368
  Phone: 800–356–0783
  Web site: http://www.lss.com

- HAZMATPAC Inc.
  5301 Polk St., Bldg. 18
  Houston, TX 77023
  Phone: 800–923–9123
  Web site: http://www.hazmatpac.com

Self-Closing Lids

- Justrite Manufacturing Co.
  2454 Dempster St.
  Des Plaines, IL 60016–5315
  Phone: 800–798–9250
  Web site: http://www.justritemfg.com

Gas Cans

- Safeway Products, Inc.
  1810 15th Ave.
  Rockford, IL 61104
  Phone: 800–894–7233
  Web site: http://www.safewayproductsinc.com

- Lab Safety Supply
  P.O. Box 1368
  Janesville, WI 53547–1368
  Phone: 800–356–0783
  Web site: http://www.lss.com

- Grainger
  Web site: http://www.grainger.com
  (Log on to find the branch nearest you.)

- McMaster-Carr
  P.O. Box 54960
  Los Angeles, CA 90054–0960
  Phone: 562–692–5911
  Web site: http://www.mcmaster.com

Drums

- Lab Safety Supply
  P.O. Box 1368
  Janesville, WI 53547–1368
  Phone: 800–356–0783
  Web site: http://www.lss.com

- Grainger
  Web site: http://www.grainger.com
  (Log on to find the branch nearest you.)

- McMaster-Carr
  P.O. Box 54960
  Los Angeles, CA 90054–0960
  Phone: 562–692–5911
  Web site: http://www.mcmaster.com

- HAZMATPAC Inc.
  5301 Polk St., Bldg. 18
  Houston, TX 77023
  Phone: 800–923–9123
  Web site: http://www.hazmatpac.com

- LabelMaster
  5724 North Pulaski Rd.
  Chicago, IL 60646–6797
  Phone 800–621–5808
  Web site: http://www.labelmaster.com

Tanks for Gasoline and Drip-Torch Fuel (These Will Also Work for Diesel)

- Transfer Flow, Inc.
  1444 Fortress St.
  Chico, CA 95973
  Phone: 800–442–0056
  Web site: http://www.transferflow.com

- Custom Metalcraft
  2332 East Division
  P.O. Box 10587
  Springfield, MO 65808–0587
  Phone: 417–862–0707
  Web site: http://www.custom-metalcraft.com

Tanks for Diesel Only

- Delta Consolidated Industries, Inc.
  2728 Capital Blvd.
  Raleigh, NC 27604
  Phone: 800–643–0084
  Web site: http://www.deltastorage.com

Pumps (UL and FM Listed)

- Grainger
  Web site: http://www.grainger.com
  (Log on to find the branch nearest you.)

- McMaster-Carr
  P.O. Box 54960
  Los Angeles, CA 90054–0960
  Phone: 562–692–5911
  Web site: http://www.mcmaster.com

- Lab Safety Supply
  P.O. Box 1368
  Janesville, WI 53547–1368
  Phone: 800–356–0783
  Web site: http://www.lss.com

ERG, DOT Regulations, and Training Materials

- LabelMaster
  5724 North Pulaski Rd.
  Chicago, IL 60646–6797
  Phone: 800–621–5808
  Web site: http://www.labelmaster.com

- J.J. Keller and Associates, Inc.
  3003 West Breezewood Lane
  P.O. Box 368
  Neenah, WI 54957–0368
  Phone: 800–327–6868
  Web site: www.jjkeller.com

CARB-Compliant Spouts for Metal Jerricans

- McMaster-Carr
  P.O. Box 54960
  Los Angeles, CA 90054–0960
  Phone: 562–692–5911
  Web site: http://www.mcmaster.com

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Sample

REGULAR UNLEADED GASOLINE

Product Number(s):
Synonyms:
Company Identification
Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887
Health Emergency
Product Information

SPECIAL NOTES: This MSDS applies to: Federal Reformulated Gasoline, California Reformulated Gasoline, Wintertime Oxygenated Gasoline, Low RVP Gasoline and Conventional Gasoline.

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Gasoline	86290-81-5	100 %volume
Benzene	71-43-2	0.1 - 4.9 %volume
Ethyl benzene	100-41-4	0.1 - 3 %volume
Naphthalene	91-20-3	0.1 - 2 %volume
Ethanol	64-17-5	0 - 10 %volume
Methyl tert-butyl ether (MTBE)	1634-04-4	0 - 15 %volume
Tertiary amyl methyl ether (TAME)	994-05-8	0 - 17 %volume
Ethyl tert-butyl ether (ETBE)	637-92-3	0 - 18 %volume

Motor gasoline is considered a mixture by EPA under the Toxic Substances Control Act (TSCA). The refinery streams used to blend motor gasoline are all on the TSCA Chemical Substances

Inventory. The appropriate CAS number for refinery blended motor gasoline is 86290-81-5. The product specifications of motor gasoline sold in your area will depend on applicable Federal and State regulations.

SECTION 3 HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW

- EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE
- HARMFUL OR FATAL IF SWALLOWED - MAY CAUSE LUNG DAMAGE IF SWALLOWED
- VAPOR HARMFUL
- CAUSES SKIN IRRITATION
- CAUSES EYE IRRITATION
- LONG-TERM EXPOSURE TO VAPOR HAS CAUSED CANCER IN LABORATORY ANIMALS
- KEEP OUT OF REACH OF CHILDREN
- TOXIC TO AQUATIC ORGANISMS

****

IMMEDIATE HEALTH EFFECTS

Eye: Contact with the eyes causes irritation. Symptoms may include pain, tearing, reddening, swelling and impaired vision.

Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death.

Inhalation: The vapor or fumes from this material may cause respiratory irritation. Symptoms of respiratory irritation may include coughing and difficulty breathing. Breathing this material at concentrations above the recommended exposure limits may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:

Reproduction and Birth Defects: This material is not expected to cause birth defects or other harm to the developing fetus based on animal data.

Cancer: Prolonged or repeated exposure to this material may cause cancer. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).
Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).
Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Risk depends on duration and level of exposure. See Section 11 for additional information.

SECTION 4 FIRST AID MEASURES

Eye: Flush eyes with water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get medical attention if irritation persists.
Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.
Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

See Section 7 for proper handling and storage.

FIRE CLASSIFICATION:
OSHA Classification (29 CFR 1910.1200): Flammable liquid.

NFPA RATINGS: Health: 1 Flammability: 3 Reactivity: 0

FLAMMABLE PROPERTIES:
Flashpoint: (Tagliabue Closed Cup) < -45 °C (< -49 °F)
Autoignition: > 280 °C (> 536 °F)
Flammability (Explosive) Limits (% by volume in air): Lower: 1.4 Upper: 7.6

EXTINGUISHING MEDIA: Dry Chemical, CO2, AFFF Foam or alcohol resistant foam if >15% volume polar solvents (oxygenates).

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: Use water spray to cool fire-exposed containers and to protect personnel. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.
Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required. This material is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Petroleum Exclusion. Therefore, releases to the environment may not be reportable under CERCLA.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Never siphon gasoline by mouth.

Use only as a motor fuel. Do not use for cleaning, pressure appliance fuel, or any other such use. Do not store in open or unlabeled containers. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.

Unusual Handling Hazards: WARNING! Do not use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating an accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'. Improper filling of portable gasoline containers creates danger of fire. Only dispense gasoline into approved and properly labeled gasoline containers. Always place portable containers on the ground. Be sure pump nozzle is in contact with the container while filling. Do not use a nozzle's lock-open device. Do not fill portable containers that are inside a vehicle or truck/trailer bed.

General Storage Information: DO NOT USE OR STORE near heat, sparks or open flames. USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:
Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.
Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: Chlorinated Polyethylene (or Chlorosulfonated Polyethylene), Nitrile Rubber, Polyurethane, Viton.
Respiratory Protection: Determine if airborne concentrations are below the recommended exposure limits. If not, wear an approved respirator that provides adequate protection from measured concentrations of this material, such as: Air-Purifying Respirator for Organic Vapors. When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon monoxide. If not, wear an approved positive-pressure air-supplying respirator.
Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling	Notation
Benzene	ACGIH_TLV	.5 ppm	2.5 ppm		Skin_A1
Benzene	OSHA_PEL	1 ppm	5 ppm		
Benzene	OSHA_Z2	10 ppm		25 ppm	
Ethanol	ACGIH_TLV	1000 ppm			A4
Ethanol	OSHA_PEL	1000 ppm			
Ethyl benzene	ACGIH_TLV	100 ppm	125 ppm		A3
Ethyl benzene	OSHA_PEL	100 ppm	125 ppm		
Ethyl tert-butyl ether (ETBE)	ACGIH_TLV	5 ppm			
Gasoline	ACGIH_TLV	300 ppm	500 ppm		A3
Gasoline	OSHA_PEL	300 ppm	500 ppm		
Methyl tert-butyl ether (MTBE)	ACGIH_TLV	50 ppm			A3

Naphthalene	ACGIH_TLV	10 ppm	15 ppm		Skin_A4
Naphthalene	OSHA_PEL	10 ppm	15 ppm		
Tertiary amyl methyl ether (TAME)	CHEVRON		50 ppm		

Refer to the OSHA Benzene Standard (29 CFR 1910.1028) and Table Z-2 for detailed training, exposure monitoring, respiratory protection and medical surveillance requirements before using this product.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Colorless to yellow
Physical State: Liquid
Odor: Petroleum odor
pH: NA
Vapor Pressure: 5 psi - 15 psi (Typical) @ 37.8°C (100°F)
Vapor Density (Air = 1): 3 - 4 (Typical)
Boiling Point: 37.8°C (100°F) - 204.4°C (400°F) (Typical)
Solubility: Insoluble in water; miscible with most organic solvents.
Freezing Point: NA
Melting Point: NA
Specific Gravity: 0.7 g/ml - 0.8 g/ml @ 15.6°C (60.1°F)
Viscosity: <1 SUS @ 37.8°C (100°F)

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous Decomposition Products: None known (None expected)
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS

Eye Irritation: The Draize eye irritation mean score in rabbits for a 24-hour exposure was: 0/110.
Skin Irritation: For a 4-hour exposure, the Primary Irritation Index (PII) in rabbits is: 4.8/8.0.
Skin Sensitization: This material did not cause sensitization reactions in a Modified Buehler guinea pig test.
Acute Dermal Toxicity: 24 hour(s) LD50: >3.75g/kg (rabbit).
Acute Oral Toxicity: LD50: >5 ml/kg (rat)
Acute Inhalation Toxicity: 4 hour(s) LD50: >2000ppm (rat).

ADDITIONAL TOXICOLOGY INFORMATION:

Gasolines are highly volatile and can produce significant concentrations of vapor at ambient temperatures. Gasoline vapor is heavier than air and at high concentrations may accumulate in confined spaces to present both safety and heath hazards. When vapor exposures are low, or short duration and infrequent, such as during refuelling and tanker loading/unloading, neither total hydrocarbon nor components such as benzene are likely to result in any adverse health effects. In situations such as accidents or spills where exposure to gasoline vapor is potentially high, attention should be paid to potential toxic effects of specific components. Information about specific components in gasoline can be found in Sections 2, 8 and 15 of this MSDS.

NEUROTOXICITY: Pathological misuse of solvents and gasoline, involving repeated and prolonged exposure to high concentrations of vapor is a significant exposure on which there are many reports in the medical literature. As with other solvents, persistent abuse involving repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments. In an inhalation study, groups of 6 Fischer rats (3 male. 3 female) were exposed to 2056 ppm of wholly vaporized unleaded gasoline for 6 hours per day, 5 day per week for up to 18 months. Histopathology of the peripheral nervous system and spinal cord revealed no distal axonal neuropthy of the type associated with exposure to n-hexane even though gasoline contained 1.9% n-hexane. The authors concluded that gasoline treatment may have amplified the incidence and prominence of some naturally occurring age-related (subclinical) in the nervous system.

BIRTH DEFECTS AND REPRODUCTIVE TOXICITY: An inhalation study with rats exposed to 0, 400 and 1600 ppm of wholly vaporized unleaded gasoline, 6 hours per day on day 6 through 16 of gestation, showed no teratogenic effects nor indication of toxicity to either the mother or the fetus. Another inhalation study in rats exposed to 3000, 6000, or 9000 ppm of gasoline vapor, 6 hours per day on day 6 through 20 of gestation, also showed no teratogenic effects nor indications of toxicity to either the mother or the fetus.

CHRONIC TOXICITY/CANCER: Wholly vaporized unleaded gasoline was used in a 3 month inhalation study. Groups of 40 rats (20 males, 20 female) and 8 squirrel monkeys (4 male, 4 female) were exposed 6 hours per day and 5 days per week for 13 weeks to 384 or 1552 ppm gasoline. One group of each species served as unexposed controls. The initial conclusion of this study was that inhalation of gasoline at airborne concentrations of up to 1522 ppm caused no toxicity in rats or monkeys. However, further histopathological examination of male rat kidneys on the highest dose group revealed an increased incidence and severity of regenerative epithelium and dilated tubules containing proteinaceous deposits. Lifetime inhalation of wholly vaporized unleaded gasoline at 2056 ppm has caused increased liver tumors in female mice. The mechanism of this response is still being investigated but it is thought to be an epigenetic process unique to the female mouse.

This exposure also caused kidney damage and eventually kidney cancer in male rats. No other animal model studied has shown these adverse kidney effects and there is no physiological reason to believe that they would occur in man. EPA has concluded that mechanism by which wholly vaporized unleaded gasoline causes kidney damage is unique to the male rat. The effects in that species (kidney damage and cancer) should not be used in human risk assessment. In their 1988 review of carcinogenic risk from gasoline, The International Agency for Research on Cancer (IARC) noted that, because published epidemiology studies did not include any exposure data, only occupations where gasoline exposure may have occurred were reviewed. These included gasoline service station attendants and automobile mechanics. IARC also noted that there was no opportunity to separate effects of combustion products from those of gasoline itself. Although IARC allocated gasoline a final overall classification of Group 2B, i.e. possibly carcinogenic to humans, this was based on limited evidence in experimental animals plus supporting evidence including the presence in gasoline of benzene and 1, 3-butadiene. The actual evidence for carcinogenicity in humans was considered inadequate.

MUTAGENICITY: Gasoline was not mutagenic, with or without activation, in the Ames assay (Salmonella typhimurium), Saccharamyces cerevisesae, or mouse lymphoma assays. In addition, point mutations were not induced in human lymphocytes. Gasoline was not mutagenic when tested in the mouse dominant lethal assay. Administration of gasoline to rats did not cause chomosomal aberrations in their bone marrow cells. EPIDEMIOLOGY: To explore the health effects of workers potentially exposed to gasoline vapors in the marketing and distribution sectors of the petroleum industry, the American Petroleum Institute sponsored a cohort mortality study (Publication 4555), a nested case-control study (Publication 4551), and an exposure assessment study (Publication 4552). Histories of exposure to gasoline were reconstructed for cohort of more than 18,000 employees from four companies for the time period between 1946 and 1985. The results of the cohort mortality study indicated that there was no increased mortality from either kidney cancer or leukemia among marketing and marine distribution employees who were exposed to gasoline in the petroleum industry, when compared to the general population. More importantly, based on internal comparisons, there was no association between mortality from kidney cancer or leukemia and various indices of gasoline exposure. In particular, neither duration

of employment, duration of exposure, age at first exposure, year of first exposure, job category, cumulative exposure, frequency of peak exposure, nor average intensity of exposure had any effect on kidney cancer or leukemia mortality. The results of the nested case-control study confirmed the findings of the original cohort study. That is, exposure to gasoline at the levels experienced by this cohort of distribution workers is not a significant risk factor for leukemia (all cell types), acute myeloid leukemia, kidney cancer or multiple myeloma.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

The 96 hour(s) LC50 for rainbow trout (Oncorhynchus mykiss) is 2.7 mg/l.
The 48 hour(s) LC50 for water flea (Daphnia magna) is 3.0 mg/l.
The 96 hour(s) LC50 for sheepshead minnow (Cyprinodon variegatus) is 8.3 mg/l.
The 96 hour(s) LC50 for mysid shrimp (Mysidopsis bahia) is 1.8 mg/l.
This material is expected to be toxic to aquatic organisms. Gasoline studies have been conducted in the laboratory under a variety of test conditions with a range of fish and invertebrate species. An even more extensive database is available on the aquatic toxicity of individual aromatic constituents. The majority of published studies do not identify the type of gasoline evaluated, or even provide distinguishing characteristics such as aromatic content or presence of lead alkyls. As a result, comparison of results among studies using open and closed vessels, different ages and species of test animals and different gasoline types, is difficult.

The bulk of the available literature on gasoline relates to the environmental impact of monoaromatic (BTEX) and diaromatic (naphthalene, methylnaphthalenes) constituents. In general, non-oxygenated gasoline exhibits some short-term toxicity to freshwater and marine organisms, especially under closed vessel or flow-through exposure conditions in the laboratory. The components which are the most prominent in the water soluble fraction and cause aquatic toxicity, are also highly volatile and can be readily biodegraded by microorganisms.

ENVIRONMENTAL FATE

This material is expected to be readily biodegradable. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions (temperature, wind, mixing or wave action, soil type, etc), photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the weathering of spilled gasoline.

The aqueous solubility of non-oxygenated unleaded gasoline, based on analysis of benzene, toluene, ethylbenzene+xylenes and naphthalene, is reported to be 112 mg/l. Solubility data on individual gasoline constituents also available.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Name: GASOLINE
DOT Hazard Class: 3 (Flammable Liquid)
DOT Identification Number: UN1203
DOT Packing Group: II

SECTION 15 REGULATORY INFORMATION

SARA 311/312 CATEGORIES:

1.	Immediate (Acute) Health Effects:	YES
2.	Delayed (Chronic) Health Effects.	YES
3.	Fire Hazard:	YES
4.	Sudden Release of Pressure Hazard:	NO
5.	Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

4_I1=IARC Group 1	15=SARA Section 313
4_I2A=IARC Group 2A	16=CA Proposition 65

4_I2B=IARC Group 2B	17=MA RTK
05=NTP Carcinogen	18=NJ RTK
06=OSHA Carcinogen	19=DOT Marine Pollutant
09=TSCA 12(b)	20=PA RTK

The following components of this material are found on the regulatory lists indicated.

Benzene	15, 16, 17, 18, 20, 4_I1, 5, 6
Ethanol	17, 18, 20
Ethyl benzene	15, 17, 18, 20, 4_I2B
Gasoline	17, 18, 20
Methyl tert-butyl ether (MTBE)	15, 17, 18, 20, 9
Naphthalene	15, 16, 17, 18, 20, 4_I2B
Tertiary amyl methyl ether (TAME)	9

CERCLA REPORTABLE QUANTITIES(RQ)/SARA 302 THRESHOLD PLANNING QUANTITIES(TPQ):

Component	Component RQ	Component TPQ	Product RQ
Benzene	10 lbs	None	186 lbs
Ethanol	100 lbs	None	1961 lbs
Ethyl benzene	1000 lbs	None	34964 lbs
Methyl tert-butyl ether (MTBE)	1000 lbs	None	7513 lbs
Naphthalene	100 lbs	None	4000 lbs

CHEMICAL INVENTORIES:

CANADA: All the components of this material are on the Canadian DSL or have been notified under the New Substance Notification Regulations, but have not yet been published in the Canada Gazette.

UNITED STATES: All of the components of this material are on the Toxic Substances Control Act (TSCA) Chemical Inventory.

WHMIS CLASSIFICATION:
Class B, Division 2: Flammable Liquids
Class D, Division 2, Subdivision A: Very Toxic Material - Carcinogenicity
Class D, Division 2, Subdivision B: Toxic Material - Skin or Eye Irritation

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 3 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator) These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

Additional Product Number(s):

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet: Section 1 (Product Codes). This Material Safety Data Sheet has been prepared using the ProSteward MSDS system.

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
			CAS	-	Chemical Abstract Service Number
NDA	-	No Data Available	NA	-	Not Applicable
<=	-	Less Than or Equal To	>=	-	Greater Than or Equal To

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

DIESEL FUEL No. 2

Sample

Product Use: Fuel
Product Number(s):
Synonyms:
Company Identification

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887
Health Emergency
Product Information
SPECIAL NOTES: The sulfur content is less than 0.5% (mass). Red dye is added to non-taxable fuel. (MSDS 6894)

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Diesel Fuel No. 2	68476-34-6	100 %wt/wt
Distillates, hydrodesulfurized, middle	64742-80-9	0 - 100 %wt/wt
Distillates, straight run middle (gas oil, light)	64741-44-2	0 - 100 %wt/wt
Kerosine	8008-20-6	0 - 25 %wt/wt
Kerosine, hydrodesulfurized	64742-81-0	0 - 25 %wt/wt
Distillates (petroleum), light catalytic cracked	64741-59-9	0 - 50 %wt/wt
Naphthalene	91-20-3	0.02 - 0.2 %wt/wt
Total sulfur	None	0 - 0.5 %wt/wt

SECTION 3 HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW

- COMBUSTIBLE LIQUID AND VAPOR
- HARMFUL OR FATAL IF SWALLOWED - MAY CAUSE LUNG DAMAGE IF SWALLOWED
- CAUSES SKIN IRRITATION
- MAY CAUSE CANCER BASED ON ANIMAL DATA
- TOXIC TO AQUATIC ORGANISMS

****

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.

Inhalation: Mists of this material may cause respiratory irritation. Symptoms of respiratory irritation may include coughing and difficulty breathing. Breathing this material at concentrations above the recommended exposure limits may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:

Cancer: Prolonged or repeated exposure to this material may cause cancer. Whole diesel engine exhaust has been classified as a Group 2A carcinogen (probably carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Diesel exhaust particulate has been classified as reasonably anticipated to be a human carcinogen in the National Toxicology Program's Ninth Report on Carcinogens. The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. Diesel engine exhaust is known to the State of California to cause cancer. Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

See Section 11 for additional information. Risk depends on duration and level of exposure.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.
Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

See Section 7 for proper handling and storage.

FIRE CLASSIFICATION:
OSHA Classification (29 CFR 1910.1200): Combustible liquid.

NFPA RATINGS: Health: 0 Flammability: 2 Reactivity: 0

FLAMMABLE PROPERTIES:
Flashpoint: (Pensky-Martens Closed Cup) 52 °C (125 °F) (Min)
Autoignition: 257 °C (494 °F)
Flammability (Explosive) Limits (% by volume in air): Lower: 0.6 Upper: 4.7

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO_2) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.
Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce

vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive force. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 29C (85F). Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Do not breathe mist. Wash thoroughly after handling. Keep out of the reach of children.

Unusual Handling Hazards: WARNING! Do not use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Suggested materials for protective gloves include: Chlorinated Polyethylene (or Chlorosulfonated Polyethylene), Nitrile Rubber, Polyurethane, Viton.

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors.

When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon monoxide. If not, wear an approved positive-pressure air-supplying respirator. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Diesel Fuel No. 2	ACGIH	100 mg/m3	--	--	Skin A3 total hydrocarbon
Diesel Fuel No. 2	CVX	--	1000 mg/m3	--	--
Kerosine	ACGIH	200 mg/m3	--	--	Skin A3 Total hydrocabon vapor
Kerosine	CVX	--	1000 mg/m3	--	--
Kerosine, hydrodesulfurized	ACGIH	200 mg/m3	--	--	Skin A3 Total hydrocabon vapor
Kerosine, hydrodesulfurized	CVX	--	1000 mg/m3	--	--
Naphthalene	ACGIH	10 ppm (weight)	15 ppm (weight)	--	Skin
Naphthalene	OSHA Z-1	50 mg/m3	--	--	--

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Varies depending on specification
Physical State: Liquid
Odor: Petroleum odor
pH: Not Applicable
Vapor Pressure: 0.04 kPa (Approximate) @ 40 °C (104 °F)
Vapor Density (Air = 1): >1
Boiling Point: 175.6°C (348°F) - 370°C (698°F)
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: Not Applicable
Melting Point: Not Applicable
Specific Gravity: 0.8 - 0.88 @ 15.6°C (60.1°F) (Typical)
Viscosity: 1.9 cSt - 4.1 cSt @ 40°C (104°F)

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous Decomposition Products: None known (None expected)
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS

Eye Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.

Skin Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.

Skin Sensitization: This material did not cause skin sensitization reactions in a Buehler guinea pig test.

Acute Dermal Toxicity: LD50: >5ml/kg (rabbit).

Acute Oral Toxicity: LD50: > 5 ml/kg (rat)

Acute Inhalation Toxicity: 4 hour(s) LC50: > 5mg/l (rat).

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains gas oils.

CONCAWE (product dossier 95/107) has summarized current health, safety and environmental data available for a number of gas oils, typically hydrodesulfurized middle distillates, CAS 64742-80-9, straight-run middle distillates, CAS 64741-44-2, and/or light cat-cracked distillate CAS 64741-59-9. CARCINOGENICITY: All materials tested have caused the development of skin tumors in mice, but all featured severe skin irritation and sometimes a long latency period before tumors developed. Straight-run and cracked gas oil samples were studied to determine the influence of dermal irritation on the carcinogenic activity of middle distillates. At non-irritant doses the straight-run gas oil was not carcinogenic, but at irritant doses, weak activity was demonstrated. Cracked gas oils, when diluted with mineral oil, demonstrated carcinogenic activity irrespective of the occurrence of skin irritation. Gas oils were tested on male mice to study tumor initiating/promoting activity. The results demonstrated that while a straight-run gas oil sample was neither an initiator or promoter, a blend of straight-run and FCC stock was both a tumor initiator and a promoter.

GENOTOXICITY: Hydrotreated & hydrodesulfurized gas oils range in activity from inactive to weakly positive in in-vitro bacterial mutagenicity assays. Mouse lymphoma assays on straight-run gas oils without subsequent hydrodesulphurization gave positive results in the presence of S9 metabolic activation. In-vivo bone marrow cytogenetics and sister chromatic exchange assay exhibited no activity for straight-run components with or without hydrodesulphurization. Thermally or catalytically cracked gas oils tested with in-vitro bacterial mutagenicity assays in the presence of S9 metabolic activation were shown to be mutagenic. In-vitro sister chromatic exchange assays on cracked gas oil gave equivocal results both with and without S9 metabolic activation. In-vivo bone marrow cytogenetics assay was inactive for two cracked gas oil samples. Three hydrocracked gas oils were tested with in-vitro bacterial mutagenicity assays with S9, and one of the three gave positive results.

Twelve distillate fuel samples were tested with in-vitro bacterial mutagenicity assays & with S9 metabolic activation and showed negative to weakly positive results. In one series, activity was shown to be related to the PCA content of samples tested. Two in-vivo studies were also conducted. A mouse dominant lethal assay was negative for a sample of diesel fuel. In the other study, 9 samples of No 2 heating oil containing 50% cracked stocks caused a slight increase in the number of chromosomal aberrations in bone marrow cytogenetics assays.

DEVELOPMENTAL TOXICITY: Diesel fuel vapor did not cause fetotoxic or teratogenic effects when pregnant rats were exposed on days 6-15 of pregnancy. Gas oils were applied to the skin of pregnant rats daily on days 0-19 of gestation. All but one (coker light gas oil) caused fetotoxicity (increased resorptions, reduced litter weight, reduced litter size) at dose levels that were also maternally toxic.

This product contains naphthalene.

GENERAL TOXICITY: Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts.

REPRODUCTIVE TOXICITY AND BIRTH DEFECTS: Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta. GENETIC

TOXICITY: Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests.

CARCINOGENICITY: In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30, and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

This product may contain significant amounts of Polynuclear Aromatic Hydrocarbons (PAH's) which have been shown to cause skin cancer after prolonged and frequent contact with the skin of test animals. Brief or intermittent skin contact with this product is not expected to have serious effects if it is washed from the skin. While skin cancer is unlikely to occur in human beings following use of this product, skin contact and breathing, of mists, vapors or dusts should be reduced to a minimum.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

96 hour(s) LC50: 21-210 mg/l (Salmo gairdneri)
48 hour(s) EC50: 20-210 mg/l (Daphnia magna)
72 hour(s) EC50: 2.6-25 mg/l (Raphidocellus subcapitata)
This material is expected to be toxic to aquatic organisms.

ENVIRONMENTAL FATE

On release to the environment the lighter components of diesel fuel will generally evaporate but depending on local environmental conditions (temperature, wind, mixing or wave action, soil type, etc.) the remainder may become dispersed in the water column or absorbed to soil or sediment. Diesel fuel would not be expected to be readily biodegradable. In a modified Strum test (OECD method 301B) approximately 40% biodegradation was recorded over 28 days. However, it has been shown that most hydrocarbon components of diesel fuel are degraded in soil in the presence of oxygen. Under anaerobic conditions, such as in anoxic sediments, rates of biodegradation are negligible.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: GAS OIL, Combustible Liquid, UN1202,III

IMO/IMDG Shipping Description: GAS OIL,3,UN1202,III, FLASH POINT SEE SECTION 5

ICAO/IATA Shipping Description: GAS OIL,3,UN1202,III,

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES: 1. Immediate (Acute) Health Effects: YES
2. Delayed (Chronic) Health Effects: YES
3. Fire Hazard: YES
4. Sudden Release of Pressure Hazard: NO
5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

The following components of this material are found on the regulatory lists indicated.

Diesel Fuel No. 2	07
Distillates, straight run middle (gas oil, light)	06
Kerosine	05, 06, 07
Naphthalene	01-2B, 02, 03, 04, 05, 06, 07

CERCLA REPORTABLE QUANTITIES(RQ)/EPCRA 302 THRESHOLD PLANNING QUANTITIES(TPQ):

Component	Component RQ	Component TPQ	Product RQ
Naphthalene	100 lbs	None	55556 lbs

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

NEW JERSEY RTK CLASSIFICATION:
Refer to components listed in Section 2. Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: DIESEL FUEL

WHMIS CLASSIFICATION:
Class B, Division 3: Combustible Liquids
Class D, Division 2, Subdivision A: Very Toxic Material - Carcinogenicity
Class D, Division 2, Subdivision B: Toxic Material - Skin or Eye Irritation

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 2 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

Additional Product Number(s):
REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet: 1,8
Revision Date: 02/14/2006

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Government Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - ChevronTexaco	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Library Card

Ground Ignition Subcommittee of the Equipment Technology Committee, National Wildfire Coordinating Group. 2011. Interagency transportation guide for gasoline, mixed gas, drip-torch fuel, and diesel. NWCG PMS 442. Boise, ID: National Wildfire Coordinating Group, Equipment and Technology Committee, National Interagency Fire Center. 92 p.

This document establishes interagency guidance for the ground transportation of gasoline, mixed gas, drip-torch fuel, and diesel in Government vehicles driven by Government employees. The guide is based as closely as practical on the U.S. Department of Transportation and U.S. Department of Labor, Occupational Safety and Health Administration regulations.

Participating agencies include the U.S. Department of the Interior, Bureau of Land Management and National Park Service and the U.S. Department of Agriculture, Forest Service.

Keywords: bottles, containers, Dolmars, drums, fire extinguishers, fuel bottles, identification numbers, inspections, jerricans, labels, licenses, markings, placards, shipping papers, Sigg bottles, specifications, tags, tanks, training

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