

# MATERIAL SAFETY DATA SHEET

## Unbranded Unleaded Gasoline with Ethanol (All Grades)

### 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Unbranded Unleaded Gasoline with Ethanol (All Grades)  
 Product Code: Multiple  
 Sap Code: Multiple  
 Synonyms: Arizona Clean Burning Gasoline (CBG) - All Grades with Ethanol  
 CARB Gasoline with Ethanol - All Grades  
 Conventional Unleaded Gasolines - All Grades with Ethanol  
 Gasohol  
 Motor Fuel  
 Petrol  
 RFG - All Grades with Ethanol  
 Reformulated Gasolines - All Grades with Ethanol  
 Unleaded Plus Gasoline with Ethanol  
 Unleaded Premium Gasoline with Ethanol  
 Unleaded Regular Gasoline with Ethanol (Including Reformulated)

Intended Use: Fuel  
 Chemical Family: Petroleum Hydrocarbon  
 Responsible Party: Phillips 66  
 A Division of ConocoPhillips  
 Bartlesville, Oklahoma 74007

For Additional MSDSs 800-762-0942

Technical Information: 918-661-8327

The intended use of this product is indicated above. If any additional use is known, please contact us at the Technical Information number listed.

### EMERGENCY OVERVIEW

24 Hour Emergency Telephone Numbers:

Spill, Leak, Fire or Accident  
Call CHEMTREC

California Poison Control System: (800) 356-3129

North America: (800)424-9300  
Others: (703)527-3887 (collect)

Health Hazards/Precautionary Measures: May be harmful or fatal if swallowed. Aspiration hazard. Possible cancer hazard based on animal data. Vapor harmful. Causes eye and skin irritation. A component is a birth defect hazard. Use ventilation adequate to keep exposure below recommended limits, if any. Avoid exposure during pregnancy. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash thoroughly after handling.

Physical Hazards/Precautionary Measures: Extremely flammable liquid and vapor. Vapor can cause flash fire. Keep away from heat, sparks, flames, static electricity or other sources of ignition.

Appearance: Clear to amber  
 Physical form: Liquid  
 Odor: Gasoline

NFPA Hazard Class:

HMIS Hazard Class



Health: 1 (Slight)  
 Flammability: 3 (High)  
 Reactivity: 0 (Least)

Health: 2\* (Moderate)  
 Flammability: 3 (High)  
 Physical Hazard: 0 (Least)

\*Indicates possible chronic health effects.

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>HAZARDOUS COMPONENTS</u>	<u>% WEIGHT</u>	<u>EXPOSURE GUIDELINE</u>		
		<u>Limits</u>	<u>Agency</u>	<u>Type</u>
Gasoline CAS# None	87-100	300 ppm 500 ppm	ACGIH ACGIH	TWA STEL
Toluene CAS# 108-88-3	<15	50 ppm 200 ppm 300 ppm 500 ppm 500 ppm	ACGIH OSHA OSHA NIOSH OSHA	TWA-SKIN TWA CEIL IDLH 10 min. peak; once per 8-hr shift
Xylenes CAS# 1330-20-7	<15	100 ppm 150 ppm 100 ppm 900 ppm	ACGIH ACGIH OSHA NIOSH	TWA STEL TWA IDLH
Ethanol CAS# 64-17-5	<10	1000 ppm 1000 ppm	ACGIH OSHA	TWA TWA
1,2,4-Trimethyl Benzene CAS# 95-63-6	1-5	25 ppm (Mixed Isomers)	ACGIH	TWA
Ethyl Benzene CAS# 100-41-4	1-5	100 ppm 125 ppm 100 ppm 800 ppm	ACGIH ACGIH OSHA NIOSH	TWA STEL TWA IDLH
Benzene CAS# 71-43-2	<4.9	0.5 ppm 2.5 ppm 1 ppm 5 ppm 500 ppm	ACGIH ACGIH OSHA OSHA NIOSH	TWA-SKIN STEL-SKIN TWA STEL IDLH
n-Hexane CAS# 110-54-3	<4	50 ppm 500 ppm 1100 ppm	ACGIH OSHA NIOSH	TWA-SKIN TWA IDLH
Cyclohexane CAS# 110-82-7	<2	100 ppm 300 ppm 1300 ppm	ACGIH OSHA NIOSH	TWA TWA IDLH

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

1%=10,000 PPM.

Contains benzene. If exposure concentrations exceed the 0.5 ppm action level, OSHA requirements for

Cyclohexane

110-82-7

<2

California Proposition 65:

Warning: This material contains the following chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Effect
Benzene	Cancer, Developmental and Reproductive Toxicant
Toluene	Developmental Toxicant
Unleaded Gasoline (wholly vaporized)	Cancer

Carcinogen Identification:

Unleaded gasoline has been identified as a carcinogen by IARC. For carcinogenicity information on individual components, see Section 11.

EPA (CERCLA) Reportable Quantity:

--None--

Canada - Domestic Substances List: Listed

WHMIS Class:

B2-Flammable Liquid  
D2B-Materials causing other toxic effects - Toxic Material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

## 16. OTHER INFORMATION

Issue Date: 02/13/03  
Previous Issue Date: 01/01/03  
Product Code: Multiple  
Revised Sections: 1, 5, 16  
Previous Product Code: Multiple  
MSDS Number: 724060  
Status: Final

**Disclaimer of Expressed and Implied Warranties:**

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

personal protective equipment, exposure monitoring, and training may apply (29CFR1910.1028). Also see Section 4.

All components are listed on the TSCA inventory.

### 3. HAZARDS IDENTIFICATION

#### Potential Health Effects:

**Eye:** Eye irritant. Contact may cause stinging, watering, redness, and swelling.

**Skin:** Skin irritant. Contact may cause redness, itching, burning, and skin damage. Prolonged or repeated contact can worsen irritation by causing drying and cracking of the skin, leading to dermatitis (inflammation). Not acutely toxic by skin absorption, but prolonged or repeated skin contact may be harmful (see Section 11).

**Inhalation (Breathing):** Low to moderate degree of toxicity by inhalation.

**Ingestion (Swallowing):** Low degree of toxicity by ingestion. ASPIRATION HAZARD - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

**Signs and Symptoms:** Effects of overexposure may include irritation of the nose and throat, irritation of the digestive tract, nausea, vomiting, flushing, transient excitation followed by signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue), blurred vision, drunkenness, stupor, tremors, respiratory failure, unconsciousness, convulsions and death.

**Cancer:** A component is a known cancer hazard (see Sections 11 and 14).

**Target Organs:** Overexposure to a component may cause injury to the central nervous system, stomach, liver, male reproductive system and heart (see Section 11). Animal studies have shown that overexposure to gasoline with ethanol may cause injury to the immune system (see Section 11).

**Developmental:** No data available for this material. A component is a potential hazard to the fetus (see Section 11).

**Other Comments:** Most adverse health effects associated with ethanol, a component of this material, are related to the chronic ingestion of alcoholic beverages. Alcoholism has been associated with liver, stomach, heart, and nervous system damage, cancer, adverse reproductive effects, and effects on the developing fetus. Many of these effects may be related to metabolic changes that result from constantly high blood levels of alcohol. This exposure pattern is significantly different from that of persons handling industrial ethanol in the workplace or from refueling cars with gasoline containing ethanol.

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage (sometimes referred to as Solvent or Painters' Syndrome). Intentional misuse by deliberately concentrating and inhaling this material may be harmful or fatal.

**Pre-Existing Medical Conditions:** Conditions aggravated by exposure may include skin disorders, respiratory (asthma-like) disorders and liver disorders.

Exposure to high concentrations of this material may increase the sensitivity of the heart to certain drugs. Persons with pre-existing heart disorders may be more susceptible to this effect (see Section 4 - Note to Physicians).

### 4. FIRST AID MEASURES

Gasoline floats on water and evaporates rapidly from water or soil surfaces. However, spilled gasoline may penetrate soil and could contaminate groundwater.

Gasoline is biodegradable but in situations of low oxygen, such as in soil below grade or in groundwater, may persist for many years.

Gasoline does not readily dissolve in water but will be adsorbed to soils. Gasoline in the environment can be toxic to plants and animals.

### 13. DISPOSAL CONSIDERATIONS

This material, if discarded as produced, would be a RCRA "characteristic" hazardous waste due to the characteristic(s) of ignitability (D001) and benzene (D018). If the spilled or released material impacts soil, water, or other media, characteristic testing of the contaminated materials may be required prior to their disposal. Further, this material, once it becomes a waste, is subject to the land disposal restrictions in 40 CFR 268.40 and may require treatment prior to disposal to meet specific standards. Consult state and local regulations to determine whether they are more stringent than the federal requirements.

Container contents should be completely used and containers should be emptied prior to discard. Container rinsate could be considered a RCRA hazardous waste and must be disposed of with care and in full compliance with federal, state and local regulations. Larger empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller empty containers, consult with state and local regulations and disposal authorities.

### 14. TRANSPORT INFORMATION

DOT Shipping Description: Gasoline,3,UN1203,II  
 Non-Bulk Package Marking: Gasoline, UN1203  
 Non-Bulk Package Label: Flammable  
 Bulk Package Placard/Marking: Flammable/1203  
 Hazardous Substance/RQ: None  
 Packaging References: 49 CFR 173.150, 173.202, 173.242  
 Emergency Response Guide: 128

### 15. REGULATORY INFORMATION

#### EPA SARA 311/312 (Title III Hazard Categories):

Acute Health: Yes  
 Chronic Health: Yes  
 Fire Hazard: Yes  
 Pressure Hazard: No  
 Reactive Hazard: No

#### SARA 313 and 40 CFR 372:

This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

Component	CAS Number	Weight %
Toluene	108-88-3	<15
Xylenes	1330-20-7	<15
1,2,4-Trimethyl Benzene	95-63-6	1-5
Ethyl Benzene	100-41-4	1-5
Benzene	71-43-2	<4.9
n-Hexane	110-54-3	<4

**Eye:** Move victim away from exposure and into fresh air. If irritation or redness develops, flush eyes with clean water and seek medical attention. For direct contact, hold eyelids apart and flush the affected eye(s) with clean water for at least 15 minutes. Seek medical attention.

**Skin:** Remove contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops, seek medical attention.

**Inhalation (Breathing):** If respiratory symptoms or other symptoms of exposure develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek immediate medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

**Ingestion (Swallowing):** Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

**Note To Physicians:** Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

Federal regulations (29 CFR 1910.1028) specify medical surveillance programs for certain exposures to benzene above the action level or PEL (specified in Section (i)(1)(i) of the Standard). In addition, employees exposed in an emergency situation shall, as described in Section (i)(4)(i), provide a urine sample at the end of the shift for measurement of urine phenol.

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Flash Point: -49°F/-45°C  
 OSHA Flammability Class: Flammable Liquid  
 LEL%: 1.4 / UEL%: 7.6  
 Autoignition Temperature: 833°F/444°C

**Unusual Fire & Explosion Hazards:** This material is extremely flammable and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

**Extinguishing Media:** Dry chemical, carbon dioxide, or alcohol-resistant foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

**Fire Fighting Instructions:** For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

State or local fire agencies or advisory groups may have established more stringent requirements.

Isolate immediate hazard area; keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk.

See Section 8.

Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling.

**Target Organ(s):** Excessive exposure to n-hexane can result in peripheral neuropathies. The initial symptoms are symmetrical sensory numbness and paresthesias of distal portions of the extremities. Motor weakness is typically observed in muscles of the toes and fingers but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. The neurotoxic properties of n-hexane are potentiated by exposure to methyl ethyl ketone and methyl isobutyl ketone.

Prolonged exposure to high concentrations of n-hexane (>1,000 ppm) has resulted in decreased sperm count and degenerative changes in the testes of rats but not those of mice.

**Acute Data:**

**Gasoline:**

Dermal LD50>5 ml/kg (Rabbit)

LC50> 4500 ppm (Rat)

Oral LD50= 18.75 ml/kg. (Rat)

**1, 2, 4-Trimethyl Benzene:**

Dermal LD50 = No data available

LC50 = 18 gm/m<sup>3</sup>/4hr (Rat)

Oral LD50 = 3-6 g/kg (Rat)

**Benzene:**

Dermal LD50> 9400 mg/kg (Rabbit), (Guinea Pig)

LC50= 9980 ppm (Mouse); 10000 ppm/7hr. (Rat)

Oral LD50= 4700 mg/kg (Mouse); 930 mg/kg (Rat); 5700 mg/kg (Mammal)

**Cyclohexane:**

Dermal LD50=>2g/kg (Rabbit)

LC50>4,044 ppm (4-hr., Rat)

Oral LD50> 2g/kg (Rat)

**Ethanol:**

Dermal LD50 = 9.4 ml/kg (Rabbit)

LC50 = 20,000 ppm/10 hr. (Rat)

Oral LD50 = 6.2-13.7 g/kg (Rat); LD50 = 6300 mg/kg (Rabbit)

**Ethyl Benzene:**

Dermal LD50= 17800 mg/kg (Rabbit)

LC50=4000 ppm/4 hr.; 13367 ppm (Rat)

Oral LD50=3500 mg/kg (Rat)

**n-Hexane:**

Dermal LD50 = >2,000 mg/kg (Rabbit)

LC50>3,367 ppm (4-hr., Rat)

Oral LD50>5,000 mg/kg (Rat)

**Toluene:**

Dermal LD50 = 14 g/kg (Rabbit)

LC50 = 8,000 ppm (4-hr., Rat)

Oral LD50 = 2.5 - 7.9 g/kg (Rat)

**Xylene:**

Dermal LD50 >3.16 ml/kg (Rabbit)

LC50= 5000 ppm/4 hr. (Rat)

Oral LD50 = 4300 mg/kg (Rat)

## 12. ECOLOGICAL INFORMATION

Spilling of gasoline can result in environmental damage.



purposes.

## 6. ACCIDENTAL RELEASE MEASURES

Extremely flammable. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of explosion-proof equipment is recommended.

Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).

Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Use foam on spills to minimize vapors (see Section 5). Use water sparingly to reduce disposal requirements. Spilled material may be absorbed into an appropriate absorbent material.

Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

## 7. HANDLING AND STORAGE

Handling: Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharge. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8).

Wash thoroughly after handling. Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames. Use good personal hygiene practices.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1 and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area "No Smoking or Open Flame." Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

### Portable Containers:

Static electricity may ignite gasoline vapors when filling portable containers. To avoid static buildup do not use a nozzle lock open device. Use only approved containers for the storage of gasoline. Place the container on the ground before filling. Keep the nozzle in contact with the container during filling.

Xylenes (CAS# 1330-20-7)

Target Organ(s): A six week inhalation study with xylene produced hearing loss in rats.

Developmental: Both mixed xylenes and the individual isomers produced limited evidence of developmental toxicity in laboratory animals. Inhalation and oral administration of xylene resulted in decreased fetal weight, increased incidences of delayed ossification, skeletal variations and resorptions.

Ethanol (CAS# 64-17-5)

Carcinogenicity: Ingestion of alcoholic beverages has been classified by IARC as "carcinogenic to humans" (Group 1). Occupational exposures to ethanol and exposures other than by ingestion (i.e., dermal and inhalation) have not been associated with cancer in humans.

Target Organ(s): Chronic alcoholism has been associated with damage to the liver in humans (e.g., cirrhosis of the liver). Excessive consumption of alcoholic beverages has also been associated with adverse effects on the central nervous system, digestive system, cardiovascular system, and the reproductive system including reduced sperm count and motility and loss of libido in men, abnormal menstrual function, and decreased plasma estradiol and progesterone levels in women.

Developmental: Excessive consumption of alcoholic beverages during pregnancy has been associated with effects on the developing fetus referred to collectively as the fetal alcohol syndrome. The effects most frequently manifested include psychomotor dysfunction, growth retardation and a characteristic cluster of facial anomalies.

Mutagenicity: Excessive consumption of alcoholic beverages has been associated with chromosomal aberrations in white blood cells. Depending on the animal species being tested, ethanol may produce chromosomal damage, DNA damage and mutation in both somatic and germ cells.

Ethyl Benzene (CAS# 100-41-4)

Carcinogenicity: Rats and mice exposed to 0, 75, 250, or 750 ppm ethyl benzene in a two year inhalation study demonstrated limited evidence of kidney, liver, and lung cancer. Ethyl benzene has been listed as a possible human carcinogen by IARC. Ethyl benzene has not been listed as a carcinogen by NTP, or OSHA.

Target Organ(s): In rats and mice exposed to 0, 75, 250, or 750 ppm ethyl benzene in a two year inhalation study there was mild damage to the kidney (tubular hyperplasia), liver (eosinophilic foci, hypertrophy, necrosis), thyroid (hyperplasia) and pituitary (hyperplasia).

Benzene (CAS# 71-43-2)

Carcinogenicity: Benzene is an animal carcinogen and is known to produce acute myelogenous leukemia (a form of cancer) in humans. Benzene has been identified as a human carcinogen by NTP, IARC and OSHA.

Target Organ(s): Prolonged or repeated exposures to benzene vapors has been linked to bone marrow toxicity which can result in blood disorders such as leukopenia, thrombocytopenia, and aplastic anemia. All of these diseases can be fatal.

Developmental: Exposure to benzene during pregnancy demonstrated limited evidence of developmental toxicity in laboratory animals. The effects seen include decreased body weight and increased skeletal variations in rodents. Alterations in hematopoiesis have been observed in the fetuses and offspring of pregnant mice.

Mutagenicity: Benzene exposure has resulted in chromosomal aberrations in human lymphocytes and animal bone marrow cells, and DNA damage in mammalian cells in vitro.

n-Hexane (CAS# 110-54-3)

Do not fill any portable container in or on a vehicle or marine craft.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering controls:** If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional engineering controls may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used (see appropriate electrical codes).

### Personal Protective Equipment (PPE):

**Respiratory:** A NIOSH certified air purifying respirator with an organic vapor cartridge may be used under conditions where airborne concentrations are expected to exceed exposure limits (see Section 2).

Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a NIOSH approved self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode if there is potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

**Skin:** The use of gloves impervious to the specific material handled is advised to prevent skin contact, possible irritation, absorption, and skin damage. Examples of approved materials are nitrile, or Viton® (see glove manufacturer literature for information on permeability). Depending on conditions of use, apron and/or arm covers may be necessary.

**Eye/Face:** Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield may be necessary.

**Other Protective Equipment:** A source of clean water should be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed.

Suggestions for the use of specific protective materials are based on readily available published data. Users should check with specific manufacturers to confirm the performance of their products.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Note:** Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm).

**Appearance:** Clear to amber

**Physical State:** Liquid

**Odor:** Gasoline

**pH:** Not applicable

**Vapor Pressure (mm Hg):** 330-775 @ 100°F

**Vapor Density (air=1):** >1

**Boiling Point/Range:** 80-437°F / 26-225°C

**Freezing/Melting Point:** No Data

**Solubility in Water:** Approx. 10%

**Specific Gravity:** 0.68-0.78 @ 60°F

**Percent Volatile:** 100 vol.%

**Evaporation Rate (nBuAc=1):** >1

**Bulk Density:** 5.66-6.50 lbs/gal

**Flash Point:** -49°F / -45°C

**Flammable/Explosive Limits (%):** LEL: 1.4 / UEL: 7.6

may be useful in extinguishing or dispersing vapors and to protect personnel and equipment exposed to fire with water, if it can be done without risk. Avoid contacting burning liquid with water used for cooling.

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. Extremely flammable liquid and vapor. Vapor can cause flash fire.

**Conditions To Avoid:** Avoid all possible sources of ignition (see Sections 5 and 7).

**Materials to Avoid (Incompatible Materials):** Contact with strong oxidizing agents such as chlorine, dichromates, or permanganates can cause fire or explosion.

**Hazardous Decomposition Products:** The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of combustion products (e.g., oxides of carbon, sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels. See Section 11 for additional information on hazards of engine exhaust, if any.

**Hazardous Polymerization:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

### Unbranded Unleaded Gasoline with Ethanol (All Grades) (CAS# Mixture)

**Target Organ(s):** Laboratory animals exposed to vapors of gasoline blended with 10% ethanol at concentrations of 2000, 10,000, and 20,000 mg/m<sup>3</sup>, 6hr/day, 5 days/week for four weeks showed a reduction in antibody forming cells. This immune suppressant effect was not seen in animals exposed to vapors of conventional gasoline.

### Gasoline (CAS# None)

**Carcinogenicity:** Two year inhalation studies of wholly vaporized unleaded gasoline produced increased incidences of kidney tumors in male rats and liver tumors in female mice. Follow-up studies suggest that occurrence of the kidney tumors may be linked to alpha-2-u-globulin nephropathy, and most likely unique to the male rat. Epidemiology data collected from a study of more than 18,000 petroleum marketing and distribution workers showed no increased risk of leukemia, multiple myeloma, or kidney cancer from gasoline exposure. Unleaded gasoline has been identified as a possible carcinogen by IARC.

Because solvent extracts of gasoline exhaust particulates caused skin cancer in laboratory animals, IARC has categorized gasoline engine exhaust as a possible human cancer hazard.

**Target Organ(s):** A two year inhalation study of wholly vaporized unleaded gasoline produced nephropathy in male rats, characterized by the accumulation of alpha-2-u-globulin in epithelial cells of the proximal tubules, and necrosis and hyperplasia of surrounding cells. Follow-up studies have demonstrated that these changes are unique to the male rat.

Although prolonged exposure to n-hexane, a component of gasoline, has resulted in adverse male reproductive effects in experimental animal studies, no adverse male reproductive effects were found in studies conducted with gasoline.

**Developmental:** No evidence of developmental toxicity was found in pregnant laboratory animals (rats and mice) exposed to up to 9,000 ppm vapor of unleaded gasoline via inhalation.

### Toluene (CAS# 108-88-3)

**Target Organ(s):** Epidemiology studies suggest that chronic occupational overexposure to toluene may damage color vision. Subchronic and chronic inhalation studies with toluene produced kidney and liver damage, hearing loss and central nervous system (brain) damage in laboratory animals. Intentional misuse by deliberate inhalation of high concentrations of toluene has been shown to cause liver, kidney, and central nervous system damage, including hearing loss and visual disturbances.

**Developmental:** Exposure to toluene during pregnancy has demonstrated limited evidence of developmental toxicity in laboratory animals. The effects seen include decreased fetal body weight and increased skeletal variations in both inhalation and oral studies.

**Additional Information:** This product is highly flammable. Keep away from heat, open flames, and other sources of ignition. Keep the nozzle in contact with the container during filling.