

1. Identification

Product identifier	GASOLINE
Other means of identification	
SDS number	9672
Synonym(s)	APPLICABLE TO ALL OCTANE GRADES * BLUE PLANET® * CONVENTIONAL BLENDSTOCK * CONVENTIONAL BLENDSTOCK FOR OXYGENATE BLENDING (CBOB) * CONVENTIONAL GASOLINE * FINISHED GASOLINE * GASOHOL * MOTOR FUEL * NO LEAD GASOLINE * REFORMULATED GASOLINE (RFG) * REFORMULATED GASOLINE BLENDSTOCK * REFORMULATED BLENDSTOCK FOR OXYGENATE BLENDING (RBOB) * UNLEADED GASOLINE
Recommended use	Motor fuel
Recommended restrictions	Other uses are not recommended unless an assessment is completed, prior to commencement of that use, which demonstrates that the use will be controlled.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Flint Hills Resources Pine Bend, LLC
P.O. Box 64596
Pine Bend, MN
55164-0596
United States

Telephone numbers - 24 hour emergency assistance

Chemtrec	800-424-9300
Flint Hills Resources, LP	651-437-0676

Telephone numbers - general assistance

8-5 (M-F, CST)	651-437-0700
8-5 (M-F, CST) MSDS Assistance	316-828-7988
Email:	msdsrequest@fhr.com

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 2
Health hazards	Skin corrosion/irritation	Category 2
	Germ cell mutagenicity	Category 1B
	Carcinogenicity	Category 1B
	Reproductive toxicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Aspiration hazard	Category 1
OSHA defined hazards	Not classified.	
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 2

Label elements



Signal word

Danger

Hazard statement May cause genetic defects. May cause cancer. Suspected of damaging fertility. Highly flammable liquid and vapor. Causes skin irritation. May cause drowsiness or dizziness. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects.

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Avoid breathing mist or vapor. Use only outdoors or in a well-ventilated area. Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention.

If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting.

If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

Specific treatment (see first aid instructions on this label). Wash contaminated clothing before reuse. If exposed or concerned: Get medical advice/attention. In case of fire: Use water spray, dry chemical, carbon dioxide or fire-fighting foam to extinguish. Collect spillage.

Storage Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) Static accumulating flammable liquids Classified

Supplemental information

Hazard statement Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion. Contains benzene - cancer hazard.

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Ground/bond container and receiving equipment. These alone may be insufficient to remove static electricity.

Response Eliminate all ignition sources if safe to do so.

3. Composition/information on ingredients

Components	Common name and synonyms	CAS number	%
GASOLINE		Mixture	100 %

Additional components

Chemical name	CAS number	%
XYLENE	1330-20-7	1 - 15
TOLUENE	108-88-3	1 - 15
ETHYL ALCOHOL	64-17-5	0 - 10
n-HEXANE	110-54-3	0 - 7
1,2,4-TRIMETHYLBENZENE	95-63-6	0 - 3
BENZENE	71-43-2	0 - 2.3
ETHYLBENZENE	100-41-4	0 - 2
CYCLOHEXANE	110-82-7	0 - 1
NAPHTHALENE	91-20-3	0 - 1
CUMENE	98-82-8	0 - 1

Composition comments Values do not reflect absolute minimums and maximums; these values are typical which may vary from time to time.

This Safety Data Sheet is intended to communicate potential health hazards and potential physical hazards associated with the product(s) covered by this sheet, and is not intended to communicate product specification information. For product specification information, contact your Flint Hills Resources, LP representative.

4. First-aid measures

Inhalation

Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear and give oxygen. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR).

Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Skin contact

Immediately wash skin with plenty of soap and water after removing contaminated clothing and shoes. Get medical attention if irritation develops or persists.

Place contaminated clothing in closed container for storage until laundered or discarded. If clothing is to be laundered, inform person performing operation of contaminant's hazardous properties. Discard contaminated leather goods.

Eye contact

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. GET IMMEDIATE MEDICAL ATTENTION.

Ingestion

Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips to prevent aspiration and monitor for breathing difficulty.

Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Most important symptoms/effects, acute and delayed

INHALATION:

May cause central nervous system depression or effects. Symptoms may include headache, excitation, euphoria, dizziness, incoordination, drowsiness, light-headedness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death, depending on the concentration and duration of exposure.

Breathing high concentrations of this material, for example, in a confined space or by intentional abuse, can cause irregular heartbeats which can cause death.

SKIN:

Contact may cause reddening, itching and inflammation. Prolonged skin contact may defat the skin and cause drying, cracking and/or dermatitis.

EYES:

May cause slight to mild eye irritation with tearing, redness, or a stinging or burning sensation. May cause temporary swelling of the eyes with blurred vision. Effects may become more serious with repeated or prolonged contact.

INGESTION:

May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea.

Aspiration into lungs may cause chemical pneumonia and lung damage.

Exposure may also cause central nervous system symptoms similar to those listed under "Inhalation" (see Inhalation section).

Indication of immediate medical attention and special treatment needed

INHALATION: This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.

INGESTION: If ingested this material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

5. Fire-fighting measures

Suitable extinguishing media

Use water spray, dry chemical, carbon dioxide or fire-fighting foam for Class B fires to extinguish fire.

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical	<p>Combustion may produce CO_x, reactive hydrocarbons, irritating vapors, and other decomposition products in the case of incomplete combustion.</p> <p>Extremely flammable. Vapors form flammable or explosive mixtures with air at room temperature. Vapor or gas may spread to distant ignition sources and flash back.</p> <p>Static accumulator (nonconductive) flammable or combustible material may form ignitable vapor-air mixtures in storage tanks. Bonding and grounding may be insufficient to eliminate the hazard from static accumulation.</p>
Special protective equipment and precautions for firefighters	<p>Explosion hazard if exposed to extreme heat.</p> <p>Shut off source of flow, if possible.</p> <p>Evacuate area and fight fire from a safe distance.</p> <p>If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor, cool adjacent structures, and to protect personnel attempting to stop a leak.</p> <p>Containers can build up pressure if exposed to heat (fire). Stay away from storage tank ends. Withdraw immediately in case of rising sound from venting safety device or any discoloration of storage tank due to fire. Always stay away from tanks engulfed in flame.</p> <p>Firefighters must wear NIOSH approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.</p>

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	<p>Eliminate and/or shut off ignition sources and keep ignition sources out of the area. Keep unnecessary people away; isolate hazard area and deny entry. For spills in confined areas, ensure adequate ventilation. For spills outdoors, stay upwind. IF TANK, RAILCAR OR TANK TRUCK IS INVOLVED IN A FIRE, isolate for 800 meters (1/2 mile) in all directions. Evacuate area endangered by release as required. Wear appropriate personal protective equipment. See Exposure Controls/Personal Protection (Section 8).</p>
Methods and materials for containment and cleaning up	<p>Keep unnecessary people away. Isolate area for at least 50 meters (164 feet) in all directions to preserve public safety. For large spills, if downwind consider initial evacuation for at least 300 meters (1000 feet).</p> <p>Keep ignition sources out of area and shut off all ignition sources. Use non-sparking tools and grounded equipment for clean-up. Small Spills: Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Large Spills: Dike far ahead of liquid spill for later disposal.</p> <p>Use vapor suppressing foam to reduce vapors. Avoid clean up procedures that may result in water pollution. Do not touch or walk through spilled material. Stop leak when safe to do so.</p>
Environmental precautions	<p>See Exposure Controls/Personal Protection (Section 8).</p> <p>Prevent entry into water ways, sewers, basements or confined areas. Notify local authorities and National Response Center, if required.</p>

7. Handling and storage

Precautions for safe handling

Electrostatic charge may accumulate and create a hazardous condition when handling this material.

Static accumulator (nonconductive) flammable or combustible material may form ignitable vapor-air mixtures in storage tanks. Bond and ground lines and equipment (tank, transfer lines, pump, floats, etc.) used during transfer to reduce the possibility of static spark-initiated fire or explosion.

Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (such as tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate procedures to mitigate the hazard.

Bonding and grounding may be insufficient to eliminate the hazard from static accumulation. Additional precautions should be considered consistent with the current NFPA 77, Recommended Practice on Static Electricity, the current API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents and OSHA Standard 29 CFR 1910.106, Flammable and Combustible Liquids.

Use non-sparking tools. Do not cut, grind, drill, weld (or introduce any other ignition source) on empty containers. Do not reuse containers unless adequate precautions are taken. Do not use electronic devices while handling, unless the device is certified as intrinsically safe as they could present ignition sources.

Avoid contact with strong oxidizers. Prevent small spills to minimize slip hazard or release to the environment.

Avoid personal contact with this material. Always observe good personal hygiene measures, such as removing contaminated clothing and protective equipment, washing after handling the material and before entering public areas. Restrict eating, drinking and smoking to designated areas to prevent personal chemical contamination. Routinely wash work clothing and protective equipment to remove contaminants. Do not breathe mist or vapor.

Conditions for safe storage, including any incompatibilities

Store in tightly closed containers in a cool, dry, isolated, well-ventilated area away from heat, sources of ignition and incompatibles. Ground/bond container and equipment. Avoid contact with strong oxidizers. Empty containers may contain material residue. Do not reuse without adequate precautions.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Additional components	Type	Value
BENZENE (CAS 71-43-2)	STEL	5 ppm
	TWA	1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Additional components	Type	Value
NAPHTHALENE (CAS 91-20-3)	PEL	10 ppm
CUMENE (CAS 98-82-8)	TWA	50 ppm
n-HEXANE (CAS 110-54-3)	TWA	500 ppm
ETHYL ALCOHOL (CAS 64-17-5)	PEL	1000 ppm
XYLENE (CAS 1330-20-7)	TWA	100 ppm
CYCLOHEXANE (CAS 110-82-7)	PEL	300 ppm
ETHYLBENZENE (CAS 100-41-4)	PEL	100 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Additional components	Type	Value
TOLUENE (CAS 108-88-3)	Ceiling	300 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Additional components	Type	Value
BENZENE (CAS 71-43-2)	TWA	200 ppm
	TWA	1 ppm

U.S. - Minnesota (MNOSHA)

Components	Type	Value
GASOLINE (CAS Mixture)	STEL	500 ppm
	TWA	300 ppm

Additional components	Type	Value
NAPHTHALENE (CAS 91-20-3)	STEL	15 ppm
	TWA	10 ppm
CUMENE (CAS 98-82-8)	TWA	50 ppm
	TWA	50 ppm
n-HEXANE (CAS 110-54-3)	TWA	50 ppm
ETHYL ALCOHOL (CAS 64-17-5)	TWA	1000 ppm
XYLENE (CAS 1330-20-7)	STEL	150 ppm
	TWA	100 ppm
TOLUENE (CAS 108-88-3)	STEL	150 ppm
	TWA	100 ppm
1,2,4-TRIMETHYL BENZENE (CAS 95-63-6)	TWA	25 ppm
	TWA	25 ppm
BENZENE (CAS 71-43-2)	STEL	5 ppm
	TWA	1 ppm
CYCLOHEXANE (CAS 110-82-7)	TWA	300 ppm
	TWA	300 ppm
ETHYLBENZENE (CAS 100-41-4)	STEL	125 ppm
	TWA	100 ppm

ACGIH

Components	Type	Value
GASOLINE (CAS Mixture)	STEL	500 ppm
	TWA	300 ppm

US. ACGIH Threshold Limit Values

Additional components	Type	Value	Form
NAPHTHALENE (CAS 91-20-3)	TWA	10 ppm	Skin
	TWA	50 ppm	
CUMENE (CAS 98-82-8)	TWA	50 ppm	
	TWA	50 ppm	Skin
n-HEXANE (CAS 110-54-3)	TWA	50 ppm	
ETHYL ALCOHOL (CAS 64-17-5)	STEL	1000 ppm	
XYLENE (CAS 1330-20-7)	STEL	150 ppm	
	TWA	100 ppm	
TOLUENE (CAS 108-88-3)	TWA	20 ppm	
	TWA	20 ppm	
1,2,4-TRIMETHYL BENZENE (CAS 95-63-6)	TWA	25 ppm	
	TWA	25 ppm	
BENZENE (CAS 71-43-2)	STEL	2.5 ppm	Skin
	TWA	0.5 ppm	Skin

US. ACGIH Threshold Limit Values

Additional components	Type	Value	Form
CYCLOHEXANE (CAS 110-82-7)	TWA	100 ppm	
ETHYLBENZENE (CAS 100-41-4)	TWA	20 ppm	

US. NIOSH: Pocket Guide to Chemical Hazards

Additional components	Type	Value
NAPHTHALENE (CAS 91-20-3)	STEL	15 ppm
	TWA	10 ppm
CUMENE (CAS 98-82-8)	TWA	50 ppm
n-HEXANE (CAS 110-54-3)	TWA	50 ppm
ETHYL ALCOHOL (CAS 64-17-5)	TWA	1000 ppm
XYLENE (CAS 1330-20-7)	STEL	150 ppm
	TWA	100 ppm
TOLUENE (CAS 108-88-3)	STEL	150 ppm
	TWA	100 ppm
1,2,4-TRIMETHYL BENZENE (CAS 95-63-6)	TWA	25 ppm
BENZENE (CAS 71-43-2)	STEL	1 ppm
	TWA	0.1 ppm
CYCLOHEXANE (CAS 110-82-7)	TWA	300 ppm
ETHYLBENZENE (CAS 100-41-4)	STEL	125 ppm
	TWA	100 ppm

Biological limit values**ACGIH Biological Exposure Indices**

Additional components	Value	Determinant	Specimen	Sampling Time
n-HEXANE (CAS 110-54-3)	0.4 mg/l	2,5-Hexanedio n, without hydrolysis	Urine	*
XYLENE (CAS 1330-20-7)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*
TOLUENE (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*
	0.02 mg/l	Toluene	Blood	*
BENZENE (CAS 71-43-2)	25 µg/g	S-Phenylmercapturic acid	Creatinine in urine	*
ETHYLBENZENE (CAS 100-41-4)	0.15 g/g	Sum of mandelic acid and phenylglyoxylic acid	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines**US ACGIH Threshold Limit Values: Skin designation**

BENZENE (CAS 71-43-2)	Can be absorbed through the skin.
NAPHTHALENE (CAS 91-20-3)	Can be absorbed through the skin.
n-HEXANE (CAS 110-54-3)	Can be absorbed through the skin.

US OSHA Specifically Regulated Substances: Action level and Reference

BENZENE (CAS 71-43-2)	0.5 PPM
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US OSHA Table Z-1: Skin designation

CUMENE (CAS 98-82-8)	Can be absorbed through the skin.
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US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants

1,2,4-TRIMETHYLBENZENE (CAS 95-63-6)	125 MGM3 - 25 PPM
BENZENE (CAS 71-43-2)	1 PPM
CUMENE (CAS 98-82-8)	245 MGM3 - 50 PPM
CYCLOHEXANE (CAS 110-82-7)	1050 MGM3 - 300 PPM
ETHYL ALCOHOL (CAS 64-17-5)	1900 MGM3 - 1000 PPM
ETHYLBENZENE (CAS 100-41-4)	22 MGM3 - 5 PPM
NAPHTHALENE (CAS 91-20-3)	50 MGM3 - 10 PPM
n-HEXANE (CAS 110-54-3)	180 MGM3 - 50 PPM
TOLUENE (CAS 108-88-3)	37 MGM3 - 10 PPM
XYLENE (CAS 1330-20-7)	435 MGM3 - 100 PPM

Appropriate engineering controls Consider the following when employing engineering controls and selecting personal protective equipment: potential hazards of the material, applicable exposure limits, job activities, and other substances in the work place. Explosion-proof ventilation and other forms of engineering controls are the preferred means for controlling exposures below occupational exposure limits and guidelines.

Individual protection measures, such as personal protective equipment

Eye/face protection Keep away from eyes. Eye contact can be avoided by using chemical safety glasses, goggles and/or face shield. Have eye washing facilities readily available where eye contact can occur.

Hand protection Avoid skin contact with this material. Use chemical resistant gloves when handling this material. Contact the glove manufacturer for specific advice on glove selection regarding permeability and breakthrough times for your use conditions. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Other Dermal exposure to this chemical may add to the overall exposure.

Avoid skin contact with this material. Additional protective clothing may be necessary.

Respiratory protection A NIOSH approved air purifying respirator with an appropriate cartridge or canister, such as an organic vapor cartridge, may be used in circumstances where airborne organic vapor concentrations may exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection. See OSHA 29 CFR 1910.134 for more information regarding respiratory protection and Assigned Protection Factors (APFs).

Thermal hazards No special precautions required.

9. Physical and chemical properties

Appearance

Physical state Liquid.
Form Not applicable
Color Clear, colorless to light colored

Odor Aromatic

Odor threshold Not available.

pH Essentially neutral

Melting point/freezing point -130 °F (-90 °C)

Initial boiling point and boiling range > 100 °F (> 37.8 °C) at 10% Evap. (D86) - Summer; >90 °F (32.22 °C) at 10% Evap. (D86) - Winter

Flash point -45 °F (-42.78 °C)

Evaporation rate Moderately fast

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) 1.2 %

Flammability limit - upper (%) 7.6 %

Explosive limit - lower (%) See flammability limit

Explosive limit - upper (%) See flammability limit

Vapor pressure 5.2 - 15 psi at 100 °F (38 °C)

Vapor density	3 - 4 (Air=1)
Relative density	0.69 - 0.77 at 60/60 °F (15.6/15.6 °C)
Solubility(ies)	Negligible
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	536 - 853 °F (280 - 456.11 °C)
Decomposition temperature	Not available.
Viscosity	Not available
Other information	
Chemical family	Hydrocarbon and Hydrocarbon/Alcohol Mixtures
Electrostatic properties	
Conductivity	< 50 pS/m (Gasoline without Ethanol) > 2000 pS/m (Gasoline with ≥ 10% Ethanol)
Molecular formula	Mixture
Percent volatile	100 %

10. Stability and reactivity

Reactivity	See statements below.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Not anticipated under normal conditions.
Conditions to avoid	Avoid unventilated areas, heat, open flames, sparks and ungrounded electrical equipment.
Incompatible materials	Incompatible with oxidizing agents. See precautions under Handling & Storage (Section 7).
Hazardous decomposition products	Not anticipated under normal conditions.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Likely route of exposure
Inhalation	Likely route of exposure
Skin contact	Likely route of exposure
Eye contact	Likely route of exposure

Symptoms related to the physical, chemical and toxicological characteristics

INHALATION:
May cause central nervous system depression or effects. Symptoms may include headache, excitation, euphoria, dizziness, incoordination, drowsiness, light-headedness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death, depending on the concentration and duration of exposure.

Breathing high concentrations of this material, for example, in a confined space or by intentional abuse, can cause irregular heartbeats which can cause death.

SKIN:

Contact may cause reddening, itching and inflammation. Prolonged skin contact may defat the skin and cause drying, cracking and/or dermatitis.

EYES:

May cause eye irritation with tearing, redness, or a stinging or burning sensation. May cause swelling of the eyes with blurred vision. Effects may become more serious with repeated or prolonged contact.

INGESTION:

May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea.

Aspiration into lungs may cause chemical pneumonia and lung damage.

Exposure may also cause central nervous system symptoms similar to those listed under "Inhalation" (see Inhalation section).

Information on toxicological effects**Acute toxicity** Not classified.

Components	Species	Test Results
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GASOLINE (CAS Mixture)

Acute*Dermal*

LD50 Rabbit > 2000 mg/kg

Inhalation

LC50 Rat > 5.2 mg/l

Oral

LD50 Rat > 5000 mg/kg

Skin corrosion/irritation Causes skin irritation.**Serious eye damage/eye irritation** Not classified.**Respiratory sensitization** Not classified.**Skin sensitization** Not classified.**Germ cell mutagenicity** May cause genetic defects.**Carcinogenicity** May cause cancer.**ACGIH Carcinogens**

BENZENE (CAS 71-43-2)

A1 Confirmed human carcinogen.

ETHYL ALCOHOL (CAS 64-17-5)

A3 Confirmed animal carcinogen with unknown relevance to humans.

ETHYL BENZENE (CAS 100-41-4)

A3 Confirmed animal carcinogen with unknown relevance to humans.

NAPHTHALENE (CAS 91-20-3)

A3 Confirmed animal carcinogen with unknown relevance to humans.

TOLUENE (CAS 108-88-3)

A4 Not classifiable as a human carcinogen.

XYLENE (O, M AND P ISOMERS) (CAS 1330-20-7)

A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

BENZENE (CAS 71-43-2)

1 Carcinogenic to humans.

CUMENE (CAS 98-82-8)

2B Possibly carcinogenic to humans.

ETHYLBENZENE (CAS 100-41-4)

2B Possibly carcinogenic to humans.

NAPHTHALENE (CAS 91-20-3)

2B Possibly carcinogenic to humans.

TOLUENE (CAS 108-88-3)

3 Not classifiable as to carcinogenicity to humans.

XYLENE (CAS 1330-20-7)

3 Not classifiable as to carcinogenicity to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

BENZENE (CAS 71-43-2)

Known To Be Human Carcinogen.

CUMENE (CAS 98-82-8)

Reasonably Anticipated to be a Human Carcinogen.

NAPHTHALENE (CAS 91-20-3)

Reasonably Anticipated to be a Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

BENZENE (CAS 71-43-2)

Cancer

Reproductive toxicity Suspected of damaging fertility or the unborn child.**Specific target organ toxicity - single exposure** May cause drowsiness or dizziness.**Specific target organ toxicity - repeated exposure** Not classified.**Aspiration toxicity** May be fatal if swallowed and enters airways.

Toxicological data

1,2,4-TRIMETHYLBENZENE: The following information pertains to a mixture of C9 aromatic hydrocarbons, over 40% of which was composed of 1,2,4-trimethylbenzene. A developmental inhalation study was conducted in laboratory mice. Increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate were observed at the highest exposure level (1,500 ppm). This exposure level was extremely toxic to pregnant female mice (44% mortality). Reduced fetal body weights were also observed at 500 ppm. A multi-generation reproduction inhalation study was conducted in laboratory rats. Reductions in pup weights, pup weight gain, litter size, and pup survival were observed at 1,500 ppm, an exposure level at which significant maternal toxicity was observed. Reduced pup weight gain was also observed at 500 ppm. Embryotoxicity has been reported in studies of laboratory animals. Adverse effects included increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate.

BENZENE: Studies of workers exposed to benzene show clear evidence that overexposure can cause cancer of the blood forming organs (acute myelogenous leukemia) and aplastic anemia, an often fatal disease. Some studies suggest overexposure to benzene may also be associated with other blood disorders including myelodysplastic syndrome. Some studies of workers exposed to benzene have shown an association with increased rates of chromosome aberrations in circulating lymphocytes. One study of women workers exposed to benzene suggested a weak association with irregular menstruation. However, other studies of workers exposed to benzene have not demonstrated clear evidence of an effect on fertility or reproductive outcome in humans. Benzene can cross the placenta and affect the developing fetus. Cases of aplastic anemia have been reported in the offspring of persons severely overexposed to benzene. Animal studies indicate that prolonged, repeated exposure to high levels of benzene vapor can cause bone marrow suppression and cancer in multiple organ systems. Studies in laboratory animals also show evidence of adverse effects on male reproductive organs following high levels of exposure but no significant effects on reproduction have been observed. Embryotoxicity has been reported in studies of laboratory animals but effects were limited to reduced fetal weight and skeletal variations has been classified as a known human carcinogen by OSHA and a Group 1 (carcinogenic to Humans) material by IARC, the International Agency for Research on Cancer.

CUMENE: Overexposure to cumene may cause upper respiratory tract irritation and CNS depression. Studies in laboratory animals indicate evidence of respiratory tract hyperplasia, and adverse effects on the liver, kidney and adrenal glands following high level exposure. The relevance of these findings to humans is not clear at this time. Findings from lifetime inhalation studies in laboratory rodents were as follows: In rats, an increased incidence of renal carcinomas and adenomas, respiratory epithelial adenomas, and interstitial cell adenomas of the testes were observed. In mice, an increased incidence of carcinomas and adenomas of the bronchi and lung, liver neoplasms, hemangiosarcomas of the spleen, and adenomas of the thyroid were observed. IARC has classified cumene as "possibly carcinogenic to humans" (Group 2B) and NTP classified it as "reasonably anticipated to be a human carcinogen".

CYCLOHEXANE: Cyclohexane has been the focus of substantial testing in laboratory animals. Cyclohexane tested negative in various genotoxicity tests including unscheduled DNA synthesis, bacterial and mammalian cell mutation assays, and in vivo chromosomal aberration. An increase in chromosomal aberrations in bone marrow cells of rats exposed to cyclohexane was reported in the 1980's but a careful re-evaluation of slides from this study by the laboratory which conducted the study indicates these findings were in error, and that no significant chromosomal effects were observed in animals exposed to cyclohexane. Findings indicate long-term exposure to cyclohexane does not promote dermal tumorigenesis.

ETHYL ALCOHOL: Repeated ingestion of ethanol can result in alcohol abuse, causing behavioral changes, memory loss, impaired judgement, decreased appetite, irregular heartbeats, and decreased fertility. Prolonged and repeated ingestion of ethanol has also been associated with cancers of the mouth, pharynx, esophagus and liver. Ethanol ingestion by pregnant women can cause miscarriage, low birth weight, premature birth and fetal alcohol syndrome. In males, acute and chronic alcohol ingestion may affect gonadal hormone levels. It may also affect the liver, kidney, brain, blood and cardiovascular system.

ETHYLBENZENE: Findings from a 2-year inhalation study in rodents conducted by NTP were as follows: Effects were observed only at the highest exposure level (750 ppm). At this level the incidence of renal tumors was elevated in male rats (tubular carcinomas) and female rats (tubular adenomas). The incidence of tumors was also elevated in male mice (alveolar and bronchiolar carcinomas) and female mice (hepatocellular carcinomas). IARC has classified ethyl benzene as "possibly carcinogenic to humans" (Group 2B). Studies in laboratory animals indicate some evidence of post-implantation deaths following high levels of maternal exposure. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals indicate limited evidence of renal malformations, resorptions, and developmental delays following high levels of maternal exposure. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals have demonstrated evidence of ototoxicity (hearing loss) following exposure levels as low as 300 ppm for 5 days. Studies in laboratory animals indicate some evidence of adverse effects on the liver, kidney, thyroid, and pituitary gland.

NAPHTHALENE: Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with Glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have also been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays were negative. A few studies have shown chromosomal effects (elevated levels of sister chromatid exchanges or chromosomal aberrations) in vitro. Naphthalene has been classified as possibly carcinogenic to humans (Group 2B) by IARC, the International Agency for Research on Cancer, based on findings from studies in laboratory animals.

N-HEXANE: Long-term or repeated exposure to n-hexane can cause peripheral nerve damage. Initial symptoms are numbness of the fingers and toes. Also, motor weakness can occur in the digits, 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.

TOLUENE: Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Abuse of toluene at high concentrations (e.g., glue sniffing and solvent abuse) has been associated with adverse effects on the liver, kidney and nervous system, and can cause CNS depression, cardiac arrhythmias, and death. Studies of workers indicate longterm exposure may be related to impaired color vision and hearing. Some studies of workers suggest longterm exposure may be related to neurobehavioral and cognitive changes. Some of these effects have been observed in laboratory animals following repeated exposure to high levels of toluene. Several studies of workers suggest longterm exposure may be related to small increases in spontaneous abortions and changes in some gonadotropic hormones. However, the weight of evidence does not indicate toluene is a reproductive hazard to humans. Studies in laboratory animals indicate some changes in reproductive organs following high levels of exposure, but no significant effects on mating performance or reproduction were observed. Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Findings in laboratory animals have been largely negative. Positive findings include small increases in minor skeletal and visceral malformations and developmental delays following very high levels of maternal exposure. Studies of workers indicate long-term exposure may be related to effects on the liver, kidney and blood, but these appear to be limited to changes in serum enzymes and decreased leukocyte counts. Adverse effects on the liver, kidney, thymus and nervous system were observed in animal studies following very high levels of exposure. The relevance of these findings to humans is not clear at this time.

XYLENES, ALL ISOMERS: Acute effects of xylene may be increased by the use of alcoholic beverages. Evidence of liver and kidney impairment were reported in workers recovering from a gross overexposure. Prolonged or repeated exposure to xylene was reported to cause impaired neurological function in workers exposed to solvents (including xylene). Studies in laboratory animals have shown evidence of impaired hearing following high levels of exposure. Studies in laboratory animals also suggest some changes in reproductive organs following high levels of exposure but no significant effects on reproduction were observed. Developmental toxicity studies in laboratory animals indicate skeletal and visceral malformations, developmental delays, and increased fetal resorptions following extremely high levels of maternal exposure. The relevance of these observations to humans is not clear at this time. In addition, adverse effects on the liver, kidney, bone marrow (changes in blood cell parameters) were observed in laboratory animals following high levels of exposure. The relevance of these observations to humans is not clear at this time.

GASOLINE: Wholly vaporized unleaded gasoline produced an increased incidence of liver cancers in female mice and kidney cancers in male rats following a two-year inhalation period. Subsequent investigations indicate that kidney damage, linked to kidney cancer, may be specific to the male rat. Neither result is considered by the U.S. EPA to be useful for assessing human health risk. Gasoline was negative in both in vitro and in vivo mutagenicity assays, and was negative in inhalation developmental and reproductive toxicity studies. IARC has determined that there is limited evidence for the carcinogenicity of unleaded gasoline in experimental animals and inadequate evidence in humans. (IARC Class-2B) Solvent extracts of gasoline exhaust particles produced skin cancer in laboratory animals leading IARC to categorize gasoline engine exhaust as a possible human cancer hazard. (IARC Class 2B).

NAPHTHAS: In a large epidemiological study on over 15,000 employees at several petroleum refineries and amongst residents located near these refineries, no increased risk of kidney cancer was observed in association with gasoline exposures (a similar material). In a similar study, no increased risk of kidney cancer was observed among petroleum refinery workers, but there was a slight trend in the incidence of kidney cancers among service station employees, especially after a 30-year latency period.

ISOPARAFFINS: Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, indepth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called "petrol sniffers encephalopathy"), delirium, seizures, and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas, and gasoline.

12. Ecological information

Ecotoxicity Toxic to aquatic life with long lasting effects.

Components	Species	Test Results
GASOLINE (CAS Mixture)		
<i>Acute</i>		
Crustacea	EC50	Daphnia magna 4.5 mg/l, 48 hr
Other	EC50	Pseudokirchnerella subcapitata 3.1 mg/l, 72 hr
<i>Chronic</i>		
Crustacea	NOEC	Daphnia magna 2.6 mg/l, 21 d
Fish	NOEC	Fish 2.6 - 6.4 mg/l, 21 d
Aquatic		
<i>Acute</i>		
Fish	LC50	Fathead minnow (Pimephales promelas) 8.2 mg/l, 96 hr

Persistence and degradability Not readily biodegradable. Inherently biodegradable.

The presence of ethanol in this product may impede the biodegradation of benzene, toluene, ethylbenzene and xylene in groundwater, resulting in elongated plumes of these constituents.

Bioaccumulative potential May bioaccumulate in aquatic organisms.

Mobility in soil May move through soil and reach groundwater. May partition into air, soil and water. This material evaporates readily.

Other adverse effects No other adverse effects expected.

13. Disposal considerations

Disposal instructions	This material, as supplied, when discarded or disposed of, may be a hazardous waste according to Federal regulations (40 CFR 261). The transportation, storage, treatment and disposal of waste material must be conducted in compliance with federal, state, and local regulations. Under RCRA it is the responsibility of the user of the material to determine, at the time of disposal, whether this material meets RCRA criteria for hazardous waste. For additional handling information and protection of employees, see Section 7 (Handling and Storage) and Section 8 (Exposure Controls/Personal Protection).
Hazardous waste code	The proper waste code must be evaluated at the time of disposal and should be determined by the user and waste disposal company.
Waste from residues / unused products	Dispose of this material in accordance with all applicable local and national regulations.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal in accordance with government regulations. Packaging may contain residue that can be hazardous.

14. Transport information

DOT	
UN number	UN1203
UN proper shipping name	Gasoline
Transport hazard class(es)	3
Subsidiary class(es)	Not available.
Packing group	II
Special precautions for user	Not available.
Labels required	Flammable Liquid
Placards required	Flammable Liquid, UN1203
ERG number	128
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not classified for MARPOL. Please contact the Transportation Compliance CSO if transportation mode is ship or vessel to determine the need for a MARPOL classification.
General information	This description may not cover shipping in all cases, please consult 49 CFR 100-185 for specific shipping information or Transport Compliance Specialist (CSO).

DOT



15. Regulatory information

US federal regulations	All ingredients are on the TSCA inventory, or are not required to be listed on the TSCA inventory. Consult OSHA's Benzene standard 29 CFR 1910.1028 for provisions on air monitoring, employee training, medical monitoring, etc. A release of this material, as supplied, may be exempt from reporting under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA - 40 CFR 302) by the petroleum exclusion. Releases may be reportable to the National Response Center (800-424-8802) under the Clean Water Act, 33 U.S.C. 1321(b)(3) and (5). This material contains toxic chemical(s) in excess of the applicable de minimis concentration that are subject to the annual toxic chemical release reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313 (40 CFR 372). This information must be included in all SDSs that are copied and distributed for this material. Check local, regional or state/provincial regulations for any additional requirements as these may be more restrictive than federal laws and regulations. Failure to comply may result in substantial civil and criminal penalties.
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US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

1,2,4-TRIMETHYLBENZENE (CAS 95-63-6)	1.0 %
BENZENE (CAS 71-43-2)	0.1 %
CUMENE (CAS 98-82-8)	1.0 %
CYCLOHEXANE (CAS 110-82-7)	1.0 %
ETHYLBENZENE (CAS 100-41-4)	0.1 %
NAPHTHALENE (CAS 91-20-3)	0.1 %
n-HEXANE (CAS 110-54-3)	1.0 %
TOLUENE (CAS 108-88-3)	1.0 %
XYLENE (CAS 1330-20-7)	1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

1,2,4-TRIMETHYLBENZENE (CAS 95-63-6)	Listed.
BENZENE (CAS 71-43-2)	Listed.
CUMENE (CAS 98-82-8)	Listed.
CYCLOHEXANE (CAS 110-82-7)	Listed.
ETHYLBENZENE (CAS 100-41-4)	Listed.
NAPHTHALENE (CAS 91-20-3)	Listed.
n-HEXANE (CAS 110-54-3)	Listed.
TOLUENE (CAS 108-88-3)	Listed.
XYLENE (CAS 1330-20-7)	Listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

BENZENE (CAS 71-43-2)	LISTED
CUMENE (CAS 98-82-8)	LISTED
CYCLOHEXANE (CAS 110-82-7)	LISTED
ETHYL ALCOHOL (CAS 64-17-5)	LISTED
ETHYLBENZENE (CAS 100-41-4)	LISTED
NAPHTHALENE (CAS 91-20-3)	LISTED
n-HEXANE (CAS 110-54-3)	LISTED
TOLUENE (CAS 108-88-3)	LISTED
XYLENE (CAS 1330-20-7)	LISTED

US CERCLA Hazardous Substances: Reportable quantity

BENZENE (CAS 71-43-2)	10 LBS
CUMENE (CAS 98-82-8)	5000 LBS
CYCLOHEXANE (CAS 110-82-7)	1000 LBS
ETHYL ALCOHOL (CAS 64-17-5)	100 LBS
ETHYLBENZENE (CAS 100-41-4)	1000 LBS
NAPHTHALENE (CAS 91-20-3)	100 LBS
n-HEXANE (CAS 110-54-3)	5000 LBS
TOLUENE (CAS 108-88-3)	1000 LBS
XYLENE (CAS 1330-20-7)	100 LBS

US EPCRA (SARA Title III) Section 304 - Extremely Hazardous Spill: Reportable quantity

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

BENZENE (CAS 71-43-2)	Cancer
	Central nervous system
	Blood
	Aspiration
	Skin
	Eye
	respiratory tract irritation
	Flammability

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes
	Delayed Hazard - Yes
	Fire Hazard - Yes
	Pressure Hazard - No
	Reactivity Hazard - No

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

BENZENE (CAS 71-43-2)
CUMENE (CAS 98-82-8)
ETHYLBENZENE (CAS 100-41-4)
NAPHTHALENE (CAS 91-20-3)
n-HEXANE (CAS 110-54-3)

TOLUENE (CAS 108-88-3)

XYLENE (CAS 1330-20-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

US. California Proposition 65

WARNING: This product contains one or more chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Proposition 65, CAL. HSC. §25249.5.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

BENZENE (CAS 71-43-2)

Listed: February 27, 1987

CUMENE (CAS 98-82-8)

Listed: April 6, 2010

ETHYL ALCOHOL (CAS 64-17-5)

Listed: April 29, 2011

ETHYLBENZENE (CAS 100-41-4)

Listed: July 1, 1988

NAPHTHALENE (CAS 91-20-3)

Listed: June 11, 2004

Listed: April 19, 2002

US - California Proposition 65 - CRT: Listed date/Developmental toxin

BENZENE (CAS 71-43-2)

Listed: December 26, 1997

ETHYL ALCOHOL (CAS 64-17-5)

Listed: October 1, 1987

TOLUENE (CAS 108-88-3)

Listed: January 1, 1991

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

TOLUENE (CAS 108-88-3)

Listed: August 7, 2009

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

BENZENE (CAS 71-43-2)

Listed: December 26, 1997

16. Other information, including date of preparation or last revision

Issue date 12-03-2014

Revision date 12-03-2014

Version # 02

Further information WARNING -- WARNING: THIS PRODUCT, AS INDICATED, CONTAINS ETHANOL. ETHANOL, OR FUELS BLENDED WITH ETHANOL, MAY DAMAGE OR HARM FUEL STORAGE TANKS, PIPING, METERS, ENGINES AND/OR RELATED FUEL SYSTEMS (INCLUDING, BUT NOT LIMITED TO MARINE EQUIPMENT). IT IS IMPERATIVE THAT BEFORE YOU USE OR STORE THIS PRODUCT YOU CONDUCT AN ASSESSMENT TO DETERMINE WHETHER THIS FUEL IS COMPATIBLE WITH YOUR PARTICULAR EQUIPMENT/MACHINERY IN WHICH THIS FUEL MIGHT BE STORED, TRANSPORTED OR COMBUSTED.

DISCLAIMER OF ALL WARRANTIES: FLINT HILLS RESOURCES MAKES NO WARRANTY EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR WARRANTY FOR FITNESS FOR ANY PARTICULAR PURPOSE AND HEREBY DISCLAIMS ALL SUCH WARRANTIES REGARDING THIS PRODUCT.

HMIS® ratings Health: 2*
Flammability: 3
Physical hazard: 0
* Indicates chronic health hazard

NFPA ratings Health: 1
Flammability: 3
Instability: 0

Disclaimer THIS SDS HAS BEEN PREPARED TO COMPLY WITH FEDERAL REGULATIONS THAT ARE INTENDED TO QUICKLY PROVIDE USEFUL INFORMATION TO THE USER(S) OF THIS MATERIAL OR PRODUCT - IT IS NOT INTENDED TO SERVE AS A COMPREHENSIVE DISCUSSION OF ALL POSSIBLE RISKS OF HAZARDS, BUT RATHER PROVIDES INFORMATION GENERALLY ACCEPTED IN THE SCIENTIFIC COMMUNITY AS RELEVANT REGARDING THE POTENTIAL HAZARDS OF THIS PRODUCT. ADEQUATE TRAINING, INSTRUCTION, WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS. USERS SHOULD REVIEW THE INFORMATION IN THE SDS, AND SATISFY THEMSELVES AS TO ITS SUITABILITY AND COMPLETENESS, INCLUDING ENSURING THAT THIS IS THE MOST CURRENT SDS.

Revision Information First-aid measures: Most important symptoms/effects, acute and delayed
Physical & Chemical Properties: Multiple Properties

Completed by Flint Hills Resources, LP - Operations EH&S