

UTG 96 (unleaded test gasoline)

Version 3.3

Revision Date 2021-06-14

SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product information**

Product Name : UTG 96 (unleaded test gasoline)
Material : 1021671, 1032452, 1021667, 1021669, 1021670, 1021668

Use : Reference Fuel

Company : Chevron Phillips Chemical Company LP
10001 Six Pines Drive
The Woodlands, TX 77380

Local : See Company Address

Emergency telephone:**Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

Transport:

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Mexico CHEMTREC 01-800-681-9531 (24 hours)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Argentina: +(54)-1159839431

Responsible Department : Product Safety and Toxicology Group
E-mail address : SDS@CPChem.com
Website : www.CPChem.com

SECTION 2: Hazards identification**Classification of the substance or mixture****GHS Classification and labelling according to JIS Z 7252-2019 and JIS Z 7253-2019 (GHS 2015)****Classification**

: Flammable liquids, Category 1
Acute toxicity, Category 4, Inhalation
Skin corrosion/irritation, Category 2
Serious eye damage/eye irritation, Category 2
Carcinogenicity, Category 1A
Reproductive toxicity, Category 2

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Effects on or via lactation
 Specific target organ toxicity - single exposure, Category 1, Central nervous system
 Specific target organ toxicity - single exposure, Category 3, Respiratory tract irritation, Narcotic effects
 Specific target organ toxicity - repeated exposure, Category 1, Central nervous system, Kidney, Nervous system
 Specific target organ toxicity - repeated exposure, Category 2, Inhalation, Auditory organs, color vision
 Aspiration hazard, Category 1
 Short-term (acute) aquatic hazard, Category 1
 Long-term (chronic) aquatic hazard, Category 1

Labeling

Symbol(s)



Signal Word

: Danger

Hazard Statements

: H224: Extremely flammable liquid and vapor.
 H304: May be fatal if swallowed and enters airways.
 H315: Causes skin irritation.
 H319: Causes serious eye irritation.
 H332: Harmful if inhaled.
 H335: May cause respiratory irritation.
 H336: May cause drowsiness or dizziness.
 H350: May cause cancer.
 H361: Suspected of damaging fertility or the unborn child.
 H362: May cause harm to breast-fed children.
 H370: Causes damage to organs (Central nervous system).
 H372: Causes damage to organs (Central nervous system, Kidney, Nervous system) through prolonged or repeated exposure.
 H373: May cause damage to organs (Auditory organs, color vision) through prolonged or repeated exposure if inhaled.
 H410: Very toxic to aquatic life with long lasting effects.

Precautionary Statements

: **Prevention:**
 P201: Obtain special instructions before use.
 P202: Do not handle until all safety precautions have been read and understood.
 P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P233: Keep container tightly closed.
 P240: Ground and bond container and receiving equipment.
 P241: Use explosion-proof electrical/ ventilating/ lighting/ equipment.
 P242: Use non-sparking tools.
 P243: Take action to prevent static discharges.
 P260: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
 P263: Avoid contact during pregnancy and while nursing.
 P264: Wash skin thoroughly after handling.
 P270: Do not eat, drink or smoke when using this product.
 P273: Avoid release to the environment.
 P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

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Response:

P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P311: IF exposed or concerned: Call a POISON CENTER/ doctor.

P331: Do NOT induce vomiting.

P332 + P313: If skin irritation occurs: Get medical advice/ attention.

P337 + P313: If eye irritation persists: Get medical advice/ attention.

P362 + P364: Take off contaminated clothing and wash it before reuse.

P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P391: Collect spillage.

Storage:

P403 + P235: Store in a well-ventilated place. Keep cool.

Disposal:

P501: Dispose of contents/ container to an approved waste disposal plant.

SECTION 3: Composition/information on ingredients

Synonyms : Unleaded Test Gasoline-96 RON

Molecular formula : Mixture

Chemical name	CAS-No.	Concentration	ENCS/ISHL number
Naphtha, Petroleum, Heavy Catalytic Cracked	64741-54-4	0 % - 100%	(9)-1689
Naphtha (petroleum), light catalytic reformed	64741-63-5	0 % - 100%	(9)-1702
Hydrocarbons, C3-11, catalytic cracker distillates	68476-46-0	0 % - 100%	(9)-1702
Naphtha (petroleum), light alkylate	64741-66-8	0 % - 60%	(9)-1704
Toluene	108-88-3	0 % - 60%	3-2 3-60
Isopentane	78-78-4	0 % - 40%	2-5
3,3-Dimethylpentane	562-49-2	0 % - 60%	2-7
2,2,4-Trimethylpentane (Isooctane)	540-84-1	0 % - 30%	2-8
Xylenes	1330-20-7	0 % - 25%	3-3 3-60
C9-C11 Isoalkanes	68551-16-6	0 % - 20%	(9)-1699 2-10 2-9
Isoalkanes C7-8	70024-92-9	0 % - 20%	(2)-7 & (2)-8

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Heptane, branched, cyclic and linear	426260-76-6	0 % - 20%	(9)-1694
Cyclopentane	287-92-3	0 % - 20%	3-4166
n-Heptane	142-82-5	0 % - 20%	2-7 2-7
n-Butane	106-97-8	0 % - 20%	2-4
n-hexane	110-54-3	0 % - 20%	2-6 2-6
1-Hexene	592-41-6	0 % - 10%	2-31 2-22
Ethylbenzene	100-41-4	0 % - 10%	3-28 3-60
1,2,4-Trimethylbenzene	95-63-6	0 % - 10%	3-7 3-3427
2,2-Dimethylbutane	75-83-2	0 % - 10%	2-6
2-Methylpentane	107-83-5	0 % - 10%	2-6
Naphthalene	91-20-3	0 % - 10%	4-311
Benzene	71-43-2	0 % - 5%	3-1
3-Methylpentane	96-14-0	0 % - 5%	2-6
2-Methylhexane	591-76-4	0 % - 5%	2-7
Methylcyclopentane	96-37-7	0 % - 5%	
3-Methylhexane	589-34-4	0 % - 5%	2-7
2-methyl-2-butene	513-35-9	0 % - 5%	2-19
Cyclohexane	110-82-7	0 % - 5%	3-2233
2,3-Dimethylbutane	79-29-8	0 % - 5%	2-6
2,3-Dimethylpentane	565-59-3	0 % - 5%	2-7
2,4-Dimethylpentane	108-08-7	0 % - 5%	2-7
n-Pentane	109-66-0	0 % - 5%	2-5 2-5
Methylcyclohexane	108-87-2	0 % - 5%	3-2230
2,3,4-Trimethylpentane	565-75-3	0 % - 5%	2-8
Hydrogen Sulfide	7783-06-4	0 % - 1%	1-434
Isoprene	78-79-5	0 % - 1%	2-20

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a

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- serious, potentially fatal pneumonia if swallowed or vomited.
- If inhaled : Consult a physician after significant exposure. If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
- In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

- Flash point : -37°C (-35°F)
Method: PMCC
- Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide (CO₂). Dry chemical.
- Unsuitable extinguishing media : High volume water jet.
- Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
- Fire and explosion protection : Do not spray on a naked flame or any incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

SECTION 6: Accidental release measures

- Personal precautions : Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
- Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers

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and lakes or drains inform respective authorities.

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7: Handling and storage**Handling**

Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

Use : Reference Fuel

SECTION 8: Exposure controls/personal protection**Ingredients with workplace control parameters****Chevron Phillips Chemical Company LP**

Components	Basis	Value	Control parameters	Note
C9-C11 Isoalkanes	Manufacturer	TWA	1,200 mg/m ³	RCP,
Isoalkanes C7-8	Manufacturer	TWA	300 ppm,	

JP

Components	Basis	Value	Control parameters	Note
Toluene	JP OEL ISHL	ACL	20 ppm,	
	JP OEL JSOH	OEL-M	50 ppm, 188 mg/m ³	1, S,
n-Heptane	JP OEL JSOH	OEL-M	200 ppm, 820 mg/m ³	
Xylenes	JP OEL JSOH	OEL-M	50 ppm, 217 mg/m ³	
	JP OEL ISHL	ACL	50 ppm,	
	JP OEL JSOH	OEL-M	50 ppm, 217 mg/m ³	2,
n-Butane	JP OEL JSOH	OEL-M	500 ppm, 1,200 mg/m ³	
Naphthalene	JP OEL ISHL	ACL	10 ppm,	
Benzene	JP OEL ISHL	ACL	1 ppm,	
	JP OEL JSOH	REF-Carc	1 ppm,	S, 1,
	JP OEL JSOH	REF-Carc	0.1 ppm,	S, 1,
n-hexane	JP OEL ISHL	ACL	40 ppm,	
	JP OEL JSOH	OEL-M	40 ppm, 140 mg/m ³	S,

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1,2,4-Trimethylbenzene	JP OEL JSOH	OEL-M	25 ppm, 120 mg/m3	
Ethylbenzene	JP OEL JSOH	OEL-M	50 ppm, 217 mg/m3	2, 2B,
	JP OEL ISHL	ACL	20 ppm,	
n-Pentane	JP OEL JSOH	OEL-M	300 ppm, 880 mg/m3	
n-Octane	JP OEL JSOH	OEL-M	300 ppm, 1,400 mg/m3	
Methylcyclohexane	JP OEL JSOH	OEL-M	400 ppm, 1,600 mg/m3	
Cyclohexane	JP OEL JSOH	OEL-M	150 ppm, 520 mg/m3	
Isobutane	JP OEL JSOH	OEL-M	500 ppm, 1,200 mg/m3	

- 1 Group 1: carcinogenic to humans
 2 Group 2: Substances presumed to cause reproductive toxicity in humans
 2B Group 2B: possibly carcinogenic to humans
 S Skin absorption

Biological exposure indices**JP**

Substance name	CAS-No.	Control parameters	Sampling time	Update
Toluene	108-88-3	Toluene: 0.6 mg/l (Blood)	Within 2 h prior to end of shift at end of work week	2011-05-18
		Toluene: 0.06 mg/l (Urine)	Within 2 h prior to end of shift at end of work week	2011-05-18
Xylenes	1330-20-7	total (o-, m-, p-)methylhippuric acid: 800 mg/l (Urine)	End of shift at end of workweek	2018-09-20
n-hexane	110-54-3	2,5-Hexanedione - after acid hydrolysis: 3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
		2,5-Hexanedione - after acid hydrolysis: 0.3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
		2,5-Hexanedione - after acid hydrolysis: 3 mg/g Creatinine (Urine)	End of shift at weekend	2018-09-20
		2,5-Hexanedione - without acid hydrolysis: 0.3 mg/g Creatinine (Urine)	End of shift at weekend	2018-09-20
2,2-Dimethylbutane	75-83-2	2,5-Hexanedione - after acid hydrolysis: 3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
		2,5-Hexanedione - after acid hydrolysis: 0.3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
2-Methylpentane	107-83-5	2,5-Hexanedione - after acid hydrolysis: 3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
		2,5-Hexanedione - after acid hydrolysis: 0.3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
3-Methylpentane	96-14-0	2,5-Hexanedione - after acid hydrolysis: 3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
		2,5-Hexanedione - after acid hydrolysis: 0.3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
Methylcyclopentane	96-37-7	2,5-Hexanedione - after acid hydrolysis: 3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
		2,5-Hexanedione - after acid hydrolysis: 0.3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
2,3-Dimethylbutane	79-29-8	2,5-Hexanedione - after acid hydrolysis: 3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18
		2,5-Hexanedione - after acid hydrolysis: 0.3 mg/g Creatinine (Urine)	End of shift at weekend	2011-05-18

Engineering measures

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits.

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Consider the potential hazards of this material (see Section 2), 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.

Personal protective equipment

- Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
- Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
- Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.
- Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties**Information on basic physical and chemical properties****Appearance**

- Form : liquid
 Physical state : liquid
 Color : Yellow, pale
 Odor : Mild

Safety data

- Flash point : -37°C (-35°F)
 Method: PMCC
- Lower explosion limit : No data available

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Upper explosion limit	: No data available
Molecular formula	: Mixture
Molecular weight	: Not applicable
pH	: Not applicable
Pour point	: No data available
Boiling point/boiling range	: 33.8-204°C (92.8-399°F)
Vapor pressure	: 9.00 PSI at 38°C (100°F)
Relative density	: 0.74 at 16 °C (61 °F)
Water solubility	: negligible
Partition coefficient: n-octanol/water	: No data available
Viscosity, kinematic	: No data available
Relative vapor density	: 3.8 (Air = 1.0)
Evaporation rate	: No data available

SECTION 10: Stability and reactivity

Reactivity	: Stable under recommended storage conditions.
Chemical stability	: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Possibility of hazardous reactions	
Hazardous reactions	: Hazardous reactions: Vapors may form explosive mixture with air.
Conditions to avoid	: Heat, flames and sparks.
Other data	: No decomposition if stored and applied as directed.

SECTION 11: Toxicological information**UTG 96 (unleaded test gasoline)**

Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg

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Method: Calculation method

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Acute inhalation toxicity : Acute toxicity estimate: > 40 mg/l
 Exposure time: 4 h
 Test atmosphere: vapor
 Method: Calculation method

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Acute dermal toxicity : Acute toxicity estimate: > 2,000 mg/kg
 Method: Calculation method

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Skin irritation : Skin irritation
 largely based on animal evidence.

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Eye irritation : Vapors may cause irritation to the eyes, respiratory system
 and the skin.

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Sensitization : Not a skin sensitizer.
 largely based on animal evidence.

Repeated dose toxicity

Naphtha, Petroleum, Heavy Catalytic Cracked : Species: Rat, male
 Sex: male
 Application Route: oral gavage
 Dose: 0, 500, 2000 mg/kg
 Exposure time: 28 d
 Number of exposures: once daily, 5 d/wk
 Lowest observable effect level: 500 mg/kg

Species: Rabbit, male and female
 Sex: male and female
 Application Route: Dermal
 Dose: 200, 1000, 2000 mg/kg
 Exposure time: 28 d
 Number of exposures: 3 times/wk
 NOEL: > 2,000 mg/kg
 Method: OECD Test Guideline 410

Species: Rat, male and female
 Sex: male and female
 Application Route: Inhalation
 Dose: 2000, 10000, 20000 mg/m³
 Exposure time: 90 d
 Number of exposures: 6h/d 5d/wk
 NOEL: > 20000 mg/m³
 Method: OECD Test Guideline 413

Naphtha (petroleum), light
 catalytic reformed

Species: Rat
 Application Route: Inhalation
 Dose: 0, 2.00, 5.85, 20.3 mg/l
 Exposure time: 21 day
 Number of exposures: 6 h/d, 5 d/wk

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	<p>NOEL: 20.3 mg/l</p> <p>Species: Rabbit Application Route: Dermal Dose: 0, 200, 1000, 2000 mg/l Exposure time: 28 day Number of exposures: 3 times/wk Lowest observable effect level: 1000 mg/l</p>
Naphtha (petroleum), light alkylate	<p>Species: Rat, male Sex: male Application Route: oral gavage Dose: 500, 2000 mg/kg Exposure time: 4 wk Number of exposures: once daily, 5 d/wk Target Organs: Kidney Information given is based on data obtained from similar substances.</p> <p>Species: Rabbit, male and female Sex: male and female Application Route: Dermal Dose: 0, 200, 1000, 2000 mg/kg Exposure time: 4 wk Number of exposures: 3 times/wk NOEL: 1,000 mg/kg Lowest observable effect level: 2,000 mg/kg Method: OECD Test Guideline 410 Target Organs: Skin Information given is based on data obtained from similar substances.</p> <p>Species: Rat, male and female Sex: male and female Application Route: Inhalation Dose: 322, 1402, 9869 mg/m³ Exposure time: 107 - 109 wk Number of exposures: 6 h/d 5 d/wk NOEL: 1402 mg/m³ Method: OECD Test Guideline 453 Information given is based on data obtained from similar substances.</p> <p>Species: Mouse, male and female Sex: male and female Application Route: Inhalation Dose: 322, 1402, 9869 mg/m³ Exposure time: 107- 113 wk Number of exposures: 6 h/d 5 d/wk NOEL: 1402 mg/m³ Method: OECD Test Guideline 453 Information given is based on data obtained from similar substances.</p>
Toluene	<p>Species: Rat Application Route: Inhalation Dose: 0, 100, 625, 1250, 3000 ppm Exposure time: 15 wk Number of exposures: 6.5 h/d, 5 d/wk NOEL: 625 ppm</p>

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	<p>Species: Mouse Application Route: Inhalation Dose: 0, 100, 625, 1250, 3000 ppm Exposure time: 14 wk Number of exposures: 6.5 h/d, 5 d/wk NOEL: 100 ppm</p>
Isopentane	<p>Species: Rat, male and female Sex: male and female Application Route: Inhalation Dose: 668, 2220, 6646 ppm Exposure time: 13 wk Number of exposures: 6 h/d, 5 d/wk NOEL: > 2220 ppm Lowest observable effect level: > = 6646 ppm Method: OECD Guideline 413 Target Organs: Kidney Information given is based on data obtained from similar substances.</p>
2,2,4-Trimethylpentane (Isooctane)	<p>Species: Rat, Male and female Sex: Male and female Application Route: Inhalation Dose: 0, 668, 2220, 6646 ppm Exposure time: 13 weeks Number of exposures: 6 hr/day 5 d/wk NOEL: 8.117 mg/l 2220 ppm Method: OECD Guideline 413 Information given is based on data obtained from similar substances.</p>
Xylenes	<p>Species: Rat Application Route: oral gavage Dose: 0, 62.5, 125, 250, 500, 100... Exposure time: 13 wk Number of exposures: daily, 5 d/wk NOEL: 1,000 mg/kg</p> <p>Species: Rat Application Route: Inhalation Dose: 0, 180, 460, 810 ppm Exposure time: 13 wk Number of exposures: 6 h/d, 5 d/wk NOEL: > 810 ppm</p> <p>Species: Rat Application Route: Inhalation Dose: 0, 450, 900, 1800 ppm Exposure time: 13 wk Number of exposures: 6 h/d, 6 d/wk Lowest observable effect level: 900 ppm</p>
C9-C11 Isoalkanes	<p>Species: Rat, male and female Sex: male and female Application Route: Inhalation Dose: 0, 2600, 5200, 10400 mg/3 Exposure time: 13 wk Number of exposures: 6 h/d, 5 d/wk NOEL: > 10,400 mg/m3</p>

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	<p>Method: OECD Test Guideline 413 No significant adverse effects were reported Information given is based on data obtained from similar substances.</p>
Isoalkanes C7-8	<p>Species: Rat, male and female Sex: male and female Application Route: Inhalation Dose: 0, 400, 1200 ppm Exposure time: 12 wk Number of exposures: 6 hr/d, 5 d/wk NOEL: 1200 ppm Method: OECD Test Guideline 413 Target Organs: Kidney Information given is based on data obtained from similar substances.</p>
Cyclopentane	<p>Species: Rat, males Sex: males Dose: 0, 0.22, 1.12, 5.29 mg/l Exposure time: 28 DAYS Number of exposures: 6 h/d NOEL: 1.12 mg/l Lowest observable effect level: 5.29 mg/l</p> <p>Species: Rat, females Sex: females Dose: 0, 0.22, 1.12, 5.29 mg/l Exposure time: 28 DAYS Number of exposures: 6 h/d NOEL: 5.29 mg/l Lowest observable effect level: > 5.29 mg/l</p>
n-Heptane	<p>Species: Rat, male Sex: male Application Route: Inhalation Dose: 12.47 mg/l Exposure time: 16 wk Number of exposures: 12 h/d, 7 d/wk NOEL: 12.47 mg/l No adverse effect has been observed in chronic toxicity tests.</p> <p>Species: Rat, Male and female Sex: Male and female Application Route: Inhalation Dose: 12.35 mg/l Exposure time: 26 wk Number of exposures: 6 h/d, 5 d/wk Method: OECD Test Guideline 413 No adverse effect has been observed in chronic toxicity tests.</p>
n-Butane	<p>Species: Rat, Male and female Sex: Male and female Application Route: Inhalation Dose: 0, 1017, 4489 ppm Exposure time: 90 day Number of exposures: 6 hr/d, 5 d/wk NOEL: 4489 ppm</p>
n-hexane	<p>Species: Rat, male</p>

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Sex: male
 Application Route: Inhalation
 Dose: 3,000 ppm
 Exposure time: 16 wks
 Number of exposures: 12 h/d
 Lowest observable effect level: 3,000 ppm
 Target Organs: Peripheral nervous system

Species: Mouse, female
 Sex: female
 Application Route: Inhalation
 Dose: 500, 1,000, 4,000, 10,000 ppm
 Exposure time: 13 wks
 Number of exposures: 6h or 22h (1,000 ppm)/ 5d/wk
 Lowest observable effect level: 500 ppm
 Target Organs: Nose

Species: Mouse, male
 Sex: male
 Application Route: Inhalation
 Dose: 500, 1,000, 4000, 10,000 ppm
 Exposure time: 13 wks
 Number of exposures: 6h or 22h (1,000 ppm)/d, 5d/wk
 NOEL: 500 ppm
 Lowest observable effect level: 1,000 ppm
 Target Organs: Nose

Species: Rat, male
 Sex: male
 Application Route: oral gavage
 Dose: 568, 1,135, 3,973 mg/kg bw/day
 Exposure time: 90 or 120 days
 Number of exposures: Daily or 5d/wk (120-d study)
 NOEL: 568 mg/kg bw/day
 Lowest observable effect level: 1135 mg/kg bw/day

1-Hexene

Species: Rat, male
 Sex: male
 Application Route: oral gavage
 Dose: 0, 10, 101, 1010, 3365 mg/kg
 Exposure time: 28 day
 Number of exposures: daily
 NOEL: 101 mg/kg
 Lowest observable effect level: 1,010 mg/kg
 Test substance: yes
 Method: OECD Test Guideline 407

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	<p>Species: Rat, female Sex: female Application Route: oral gavage Dose: 0, 10, 101, 1010, 3365 mg/kg Exposure time: 28 day Number of exposures: daily NOEL: 1,010 mg/kg Lowest observable effect level: 3,365 mg/kg Test substance: yes Method: OECD Test Guideline 407</p>
	<p>Species: Rat Application Route: Inhalation Dose: 0, 300, 1000, 3000 ppm Exposure time: 90 day Number of exposures: 6 h/d, 5 d/wk, 13 wk NOEL: 3000 ppm Test substance: yes</p>
Ethylbenzene	<p>Species: Rat, male Sex: male Application Route: Inhalation Dose: 200, 400, 600, 800 ppm Exposure time: 13 weeks Number of exposures: 6 hours/day, 6 days/week NOEL: 200 ppm Test substance: yes Target Organs: Ototoxicity</p>
Benzene	<p>Species: Rat, female Sex: female Application Route: oral gavage Dose: 0, 25, 50, 100 mg/kg Exposure time: 103 wk Number of exposures: 5 d/wk NOEL: < 25 mg/kg Lowest observable effect level: 25 mg/kg</p>
	<p>Species: Rat, male Sex: male Application Route: oral gavage Dose: 0, 50, 100, 200 mg/kg Exposure time: 103 wk Number of exposures: 5 d/wk NOEL: < 50 mg/kg Lowest observable effect level: 50 mg/kg</p>
	<p>Species: Mouse Application Route: oral gavage Dose: 0, 25, 50, 100 mg/kg Exposure time: 103 wk NOEL: < 25 mg/kg</p>
2-methyl-2-butene	<p>Species: Rat, Male and female Sex: Male and female Application Route: Inhalation Dose: 580, 2000, 7000 ppm Exposure time: 4 wk Number of exposures: 6 h/d, 7 d/wk NOEL: 580 ppm</p>

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	Method: OECD Guideline 422
Cyclohexane	<p>Species: Rat Application Route: Inhalation Dose: 0, 500, 2000, 7000 ppm Exposure time: 90 day Number of exposures: 6 h/d, 5 d/wk NOEL: 2000 ppm</p> <p>Species: Rat, Male and female Sex: Male and female Application Route: Inhalation Dose: 0, 500, 2,000, 7000 ppm Exposure time: 13-14 wk Number of exposures: 6 hr/d, 5 d/wk NOEL: 7000 ppm</p> <p>Species: Mouse, Male and female Sex: Male and female Application Route: Inhalation Dose: 0, 500, 2000, 7000 ppm Exposure time: 13-14 wk Number of exposures: 6 hr/d, 5 d/wk NOEL: 2000 ppm Target Organs: Blood</p>
2,3-Dimethylbutane	<p>Species: Rat Application Route: oral gavage Dose: 0, 500, 2000 mg/kg Exposure time: 4 wk Number of exposures: once a day, 5 d/wk Lowest observable effect level: 500 mg/kg Target Organs: Kidney</p>
n-Pentane	<p>Species: Rat, Male and female Sex: Male and female Application Route: inhalation (gas) Dose: 0, 5000, 10,000, 20,000 mg/m³ Exposure time: 13 wk Number of exposures: 6 h/d, 5 d/wk NOEL: 20,000 mg/m³ Method: OECD Test Guideline 413</p>
Methylcyclohexane	<p>Species: Rat, male Sex: male Application Route: oral gavage Dose: 62.5, 250, 1000 mg/kg Exposure time: 28 d Number of exposures: daily, 7d/wk NOEL: 250 mg/kg Lowest observable effect level: 1,000 mg/kg Method: OECD Guideline 422</p>

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Species: Rat, female
 Sex: female
 Application Route: oral gavage
 Dose: 62.5, 250, 1000 mg/kg
 Exposure time: 46 d
 Number of exposures: daily, 7 d/wk
 NOEL: 250 mg/kg
 Lowest observable effect level: 1,000 mg/kg
 Method: OECD Guideline 422

Isoprene

Species: Rat
 Application Route: Inhalation
 Dose: 0, 70, 220, 700, 2200, 7000...
 Exposure time: 13 wk
 Number of exposures: 6 h/d, 5 d/wk
 NOEL: 7000 ppm

Species: Mouse
 Application Route: Inhalation
 Dose: 0, 70, 220, 700, 2200, 7000...
 Exposure time: 13 wk
 Number of exposures: 6 h/d, 5 d/wk
 Lowest observable effect level: 70 ppm

Genotoxicity in vitro

Naphtha, Petroleum, Heavy Catalytic Cracked : Test Type: Mouse lymphoma assay
 Result: positive

Naphtha (petroleum), light catalytic reformed Test Type: Ames test
 Result: negative

Test Type: Cytogenetic assay
 Result: negative

Hydrocarbons, C3-11, catalytic cracker distillates Result: May cause genetic defects.
 Remarks: In vitro tests showed mutagenic effects

Naphtha (petroleum), light alkylate Test Type: Mouse lymphoma assay
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 476
 Result: negative
 Remarks: Information given is based on data obtained from similar substances.

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	<p>Test Type: Sister chromatid exchange Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 479 Result: negative Remarks: Information given is based on data obtained from similar substances.</p>
	<p>Test Type: Ames test Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Remarks: Information given is based on data obtained from similar substances.</p>
Toluene	<p>Test Type: Ames test Result: negative</p> <p>Test Type: Sister Chromatid Exchange Assay Result: negative</p> <p>Test Type: Mouse lymphoma assay Result: negative</p> <p>Test Type: Cytogenetic assay Result: negative</p>
Isopentane	<p>Test Type: Ames test Concentration: 1, 2, 5, 8, 10% Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative</p> <p>Test Type: Ames test Concentration: 1, 2, 5, 8, 10, 25, 50% Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Remarks: Information given is based on data obtained from similar substances.</p> <p>Test Type: Chromosome aberration test in vitro Metabolic activation: with and without metabolic activation Method: Mutagenicity (in vitro mammalian cytogenetic test) Result: negative Remarks: Information given is based on data obtained from similar substances.</p>
2,2,4-Trimethylpentane (Isooctane)	<p>Test Type: Ames test Method: Mutagenicity (Escherichia coli - reverse mutation assay) Result: negative</p>

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	<p>Test Type: Mouse lymphoma assay Method: OECD Guideline 476 Result: negative</p>
	<p>Test Type: Sister Chromatid Exchange Assay Result: negative</p>
	<p>Test Type: Unscheduled DNA synthesis assay Result: negative</p>
Xylenes	<p>Test Type: Ames test Result: negative</p>
	<p>Test Type: Mouse lymphoma assay Result: negative</p>
C9-C11 Isoalkanes	<p>Test Type: E. Coli bacterial reverse mutation assay Result: negative</p>
	<p>Test Type: Ames test Result: negative</p>
	<p>Test Type: Bacterial DNA repair test Result: negative</p>
Isoalkanes C7-8	<p>Test Type: Ames test Result: negative</p>
Cyclopentane	<p>Test Type: Modified Ames test Concentration: 1250 microgram/plate Metabolic activation: with and without metabolic activation Method: see user defined free text Result: negative Remarks: In vitro tests did not show mutagenic effects</p>
	<p>Test Type: Mouse lymphoma assay Concentration: 200 microgram/mililiter Metabolic activation: with and without metabolic activation Result: negative Remarks: In vitro tests did not show mutagenic effects</p>
n-Heptane	<p>Test Type: Ames test Method: Mutagenicity (Escherichia coli - reverse mutation assay) Result: negative</p>
	<p>Test Type: Mammalian cell gene mutation assay Method: OECD Guideline 476 Result: negative</p>
	<p>Test Type: Chromosome aberration test in vitro Method: OECD Guideline 473 Result: negative</p>
	<p>Test Type: Mitotic recombination Result: negative</p>
n-Butane	<p>Test Type: Ames test Result: negative</p>

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n-hexane	Test Type: Ames test Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative
	Test Type: Mouse lymphoma assay Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative
	Test Type: Mouse lymphoma assay Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: Positive results were obtained in some in vitro tests.
1-Hexene	Test Type: Ames test Metabolic activation: with and without metabolic activation Method: Mutagenicity (Escherichia coli - reverse mutation assay) Result: negative
	Test Type: Unscheduled DNA synthesis assay Result: negative
	Test Type: Mouse lymphoma assay Result: negative
	Test Type: Chromosome aberration test in vitro Method: OECD Guideline 473 Result: negative
Ethylbenzene	Test Type: Ames test Result: negative
	Test Type: Unscheduled DNA synthesis assay Result: negative
2,2-Dimethylbutane	Test Type: Ames test Result: negative
Naphthalene	Test Type: Ames test Result: negative
	Test Type: Sister Chromatid Exchange Assay Result: negative
	Test Type: Unscheduled DNA synthesis assay Result: negative
Benzene	Test Type: Ames test Result: negative

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	Test Type: Cytogenetic assay Result: positive
	Test Type: Mouse lymphoma assay Result: positive
	Test Type: Sister Chromatid Exchange Assay Result: negative
2-methyl-2-butene	Test Type: Ames test Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative
	Method: OECD Test Guideline 480 Result: negative
Cyclohexane	Test Type: Ames test Metabolic activation: with and without metabolic activation Method: Mutagenicity (Escherichia coli - reverse mutation assay) Result: negative
	Test Type: Mouse lymphoma assay Metabolic activation: with and without metabolic activation Result: negative
	Test Type: Mouse lymphoma assay Metabolic activation: with and without metabolic activation Method: OECD Guideline 476 Result: negative
2,3-Dimethylbutane	Test Type: Ames test Result: negative
n-Pentane	Test Type: Ames test Metabolic activation: with and without metabolic activation Result: negative
	Test Type: Chromosome aberration test in vitro Metabolic activation: with and without metabolic activation Result: Ambiguous
Isoprene	Test Type: Ames test Result: negative
	Test Type: Sister Chromatid Exchange Assay Result: positive
Genotoxicity in vivo	
Naphtha (petroleum), light catalytic reformed	: Test Type: Cytogenetic assay Result: negative
Hydrocarbons, C3-11, catalytic cracker distillates	Result: May cause genetic defects.
Naphtha (petroleum), light alkylate	Test Type: In vivo micronucleus test Species: Rat Cell type: Bone marrow

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	<p>Dose: 2000, 10,000, 20,000 mg/m³ Method: OECD Test Guideline 475 Result: negative Remarks: Information given is based on data obtained from similar substances.</p>
Toluene	<p>Test Type: Cytogenetic assay Result: negative</p> <p>Test Type: Mouse micronucleus assay Result: negative</p>
Isopentane	<p>Test Type: In vivo micronucleus test Species: Rat Cell type: Bone marrow Route of Application: inhalation (vapor) Method: Directive 67/548/EEC, Annex V, B.12. Remarks: Information given is based on data obtained from similar substances.</p>
2,2,4-Trimethylpentane (Isooctane)	<p>Test Type: Unscheduled DNA synthesis assay Species: Mouse Dose: 500 mg/kg Result: negative</p> <p>Test Type: Unscheduled DNA synthesis assay Species: Rat Dose: 500 mg/kg Result: negative</p>
Xylenes	<p>Test Type: Mouse micronucleus assay Result: negative</p>
C9-C11 Isoalkanes	<p>Test Type: Dominant lethal assay Result: negative</p> <p>Test Type: Mouse micronucleus assay Result: negative</p>
Cyclopentane	<p>Test Type: Micronucleus test Species: Mouse Dose: 28.7 mg/l Result: negative</p>
n-hexane	<p>Test Type: Dominant lethal assay Species: Mouse Dose: 100 and 400 ppm Result: negative</p> <p>Test Type: Cytogenetic assay Species: Rat Dose: 900, 3000, 9000 ppm Result: negative</p>
1-Hexene	<p>Test Type: Mouse micronucleus assay Species: Mouse Method: Mutagenicity (micronucleus test) Result: negative</p>
Ethylbenzene	<p>Test Type: Mouse micronucleus assay</p>

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	Species: Mouse Result: negative
Naphthalene	Test Type: Mouse micronucleus assay Result: negative
Benzene	Test Type: Mouse micronucleus assay Result: positive
2-methyl-2-butene	Test Type: Mouse micronucleus assay Species: Rat Cell type: Bone marrow Route of Application: Inhalation Exposure time: 6 h/d 2d Method: OECD Test Guideline 474 Result: positive
Cyclohexane	Test Type: Cytogenetic assay Species: Rat Cell type: Bone marrow Dose: 96.6, 307.2, 10141.6 ppm Result: negative
n-Pentane	Test Type: Micronucleus test Species: Rat Cell type: Bone marrow Result: negative
Isoprene	Result: negative
	Test Type: Micronucleus test Result: positive
Carcinogenicity	
Naphtha, Petroleum, Heavy Catalytic Cracked	: Species: Mouse Sex: male Dose: 0, 0.05 ml Exposure time: 2 yrs Number of exposures: 3 times/wk Print Date: OECD Test Guideline 451 Remarks: no increase incidence of tumors
Hydrocarbons, C3-11, catalytic cracker distillates	Species: Rat Exposure time: 2 years Print Date: OECD Test Guideline 451
Toluene	Species: Rat Dose: 0, 600, 1200 ppm Exposure time: 2 yrs Number of exposures: 6.5 h/d, 5 d/wk Remarks: No evidence of carcinogenicity

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	<p>Species: Mouse Dose: 0, 600, 1200 ppm Exposure time: 2 yrs Number of exposures: 6.5 h/d, 5 d/wk Remarks: No evidence of carcinogenicity</p>
Xylenes	<p>Species: Rat Dose: 0, 250, 500 mg/kg Exposure time: 103 wks Number of exposures: 5 d/wk Remarks: No evidence of carcinogenicity</p>
	<p>Species: Mouse Dose: 0, 500, 1000 mg/kg Exposure time: 103 wks Number of exposures: 5 d/wk Remarks: No evidence of carcinogenicity</p>
n-hexane	<p>Species: Rat Dose: 0.043, 900, 3,000, 9,016 ppm Exposure time: 2 yrs Number of exposures: 6 h/d, 5 d/wk Remarks: No evidence of carcinogenicity, Information given is based on data obtained from similar substances.</p>
	<p>Species: Mouse Sex: male and female Dose: 0.039, 900, 3,000, 9,018 ppm Exposure time: 2 yrs Number of exposures: 6 h/d, 5 d/wk Remarks: No evidence of carcinogenicity, Information given is based on data obtained from similar substances.</p>
Naphthalene	<p>Species: Mouse Sex: male Dose: 10, 30 ppm Exposure time: 105 weeks Number of exposures: 6 hours/day, 5 days/week Test substance: yes Print Date: No information available. Remarks: No evidence of carcinogenicity</p>

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Species: Mouse
Sex: female
Dose: 10, 30 ppm
Exposure time: 105 weeks
Number of exposures: 6 hours/day, 5 days/week
Test substance: yes
Print Date: No information available.
Remarks: increased incidence of alveolar/bronchiolar adenomas

Species: Rat
Sex: male and female
Dose: 10, 30, 60 ppm
Exposure time: 105 weeks
Number of exposures: 6 hours/day, 5 days/week
Test substance: yes
Print Date: No information available.
Remarks: nose respiratory epithelial adenoma, increased incidence of olfactory neuroblastomas

Benzene

Species: Rat
Sex: female
Dose: 0, 25, 50, 250 mg/kg
Exposure time: 103 wks
Number of exposures: daily, 5 days/week
Test substance: yes
Remarks: zymbal gland carcinomas, squamous cell papillomas

Species: Rat
Sex: male
Dose: 0, 50, 100, 200 mg/kg
Exposure time: 103 wks
Number of exposures: daily, 5 days/week
Test substance: yes
Remarks: zymbal gland carcinomas, squamous cell papillomas

Species: Mouse
Sex: male and female
Dose: 25, 50, 100 mg/kg
Exposure time: 103 wks
Number of exposures: daily, 5 days/week
Test substance: yes
Remarks: Clear evidence of multiple organ carcinogenicity.

Isoprene

Species: Rat
Dose: 0, 70, 220, 700, 220, 7000 ppm
Exposure time: 26 wks
Number of exposures: 6 h/d, 5 d/wk
Remarks: interstitial cell hyperplasia of testis at 7000 ppm

Species: Mouse
Dose: 0, 70, 220, 700, 220, 7000 ppm
Exposure time: 26 wks
Number of exposures: 6 h/d, 5 d/wk
Remarks: malignant neoplastic lesions in the liver, lung, fore stomach and Harderian gland at 700 ppm

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Reproductive toxicityHydrocarbons, C3-11,
catalytic cracker distillates

: Species: Rat
 Sex: male and female
 Application Route: inhalation (vapor)
 Dose: 0, 5000, 10000, 20000 mg/m³
 Method: OECD Test Guideline 416
 NOAEL Parent: > 20,000 mg/m³
 NOAEL F1: > 20,000 mg/m³

Naphtha (petroleum), light
alkylate

Species: Rat
 Sex: male and female
 Application Route: Inhalation
 Dose: 5,000, 10,000, 20,000 mg/L
 Number of exposures: 6 h/d, 7 d/wk
 Method: OECD Test Guideline 416
 NOAEL Parent: 24.7 mg/l
 NOAEL F1: 24.7 mg/l
 No adverse effects expected
 Information given is based on data obtained from similar
 substances.

Toluene

Species: Rat
 Application Route: Inhalation
 Dose: 0, 100, 500, 2000 ppm
 Test period: 95 d
 NOAEL Parent: 2000 ppm

Isopentane

Species: Rat
 Sex: male and female
 Application Route: inhalation (vapor)
 Dose: 0, 500, 2000, 7000 ppm
 Number of exposures: 6 h/d 5 d/wk
 Method: OECD Test Guideline 416
 NOAEL Parent: 7000 ppm
 NOAEL F1: 2000 ppm
 NOAEL F2: 2000 ppm
 Information given is based on data obtained from similar
 substances.

Species: Rat
 Sex: female
 Application Route: oral gavage
 Dose: 0, 100, 300, 1000 mg/kg/d
 Method: OECD Test Guideline 415
 NOAEL Parent: >= 1,000 mg/kg
 NOAEL F1: >= 1,000 mg/kg

Species: Rat
 Sex: male
 Application Route: oral gavage
 Dose: 0, 100, 300, 1000 mg/kg/d
 Method: OECD Test Guideline 415
 NOAEL Parent: >= 300 mg/kg

2,2,4-Trimethylpentane
(Isooctane)

Species: Rat
 Sex: male and female
 Application Route: Inhalation
 Dose: 0, 900, 3000, 9000 ppm
 Number of exposures: 6 h/d 5 d/wk

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	<p>Method: OECD Test Guideline 416 NOAEL Parent: 3000 ppm NOAEL F1: 3000 ppm NOAEL F2: 3000 ppm Information given is based on data obtained from similar substances.</p>
Isoalkanes C7-8	<p>Species: Rat Sex: male and female Application Route: inhalation (vapor) Number of exposures: 6 hr/d; 5 d/wk Method: OECD Test Guideline 416 NOAEL Parent: 10,560 mg/m³ NOAEL F1: 31,680 mg/m³ NOAEL F2: 31,680 mg/m³ Fertility and developmental toxicity tests did not reveal any effect on reproduction. Information given is based on data obtained from similar substances.</p>
Cyclopentane	<p>Species: Rat Sex: males Application Route: Inhalation Dose: 0, 500, 2000, 7000 ppm Number of exposures: 6 h/day NOAEL Parent: 2000 ppm NOAEL F1: 2000 ppm NOAEL F2: 2000 ppm</p>
n-Heptane	<p>Species: Rat Sex: male and female Application Route: Inhalation Dose: 0, 900, 3000, 9000 ppm Number of exposures: 6 hr/d, 5 d/wk Test period: 13 wk Method: OECD Test Guideline 416 NOAEL Parent: 9000 ppm NOAEL F1: 3000 ppm NOAEL F2: 3000 ppm Information given is based on data obtained from similar substances.</p>
n-hexane	<p>Species: Rat Sex: male Application Route: Inhalation Dose: 5,000 ppm Number of exposures: 16 hr/d, 6 d/wk Test period: 6 wks permanent testicular damage characterized by loss of germ-cell line</p>
1-Hexene	<p>Species: Rat Sex: males Application Route: oral gavage Dose: 0, 100, 500, 1000 mg/kg Number of exposures: daily Test period: 44 d Test substance: yes Method: OECD Guideline 421 NOAEL Parent: 1,000 mg/kg</p>

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	<p>NOAEL F1: 1,000 mg/kg</p> <p>Species: Rat Sex: females Application Route: oral gavage Dose: 0, 100, 500, 1000 mg/kg Number of exposures: daily Test period: 41-51 d Test substance: yes Method: OECD Guideline 421 NOAEL Parent: 1,000 mg/kg NOAEL F1: 1,000 mg/kg</p>
2-methyl-2-butene	<p>Species: Rat Sex: male and female Application Route: Inhalation Dose: 580, 2000, 7000 ppm Number of exposures: 6 h/d, 7 d/wk Test period: 4 wks Method: OECD Guideline 422 NOAEL Parent: 7000 ppm NOAEL F1: 7000 ppm no abnormalities observed</p>
Cyclohexane	<p>Species: Rat Application Route: Inhalation Dose: 0, 500, 2000, 7000 ppm Number of exposures: 6 hr/d, 5 d/wk Method: OECD Test Guideline 416 NOAEL Parent: 500 ppm NOAEL F1: 7000 ppm NOAEL F2: 7000 ppm</p>
n-Pentane	<p>Species: Rat Sex: male Application Route: Inhalation Dose: 0, 5, 10, 20 mg/l Exposure time: 13 wk Test period: 6hrs/day, 5 days/wk NOAEL Parent: 20 mg/l no abnormalities observed</p> <p>Species: Rat Sex: female Application Route: Inhalation Dose: 0, 5, 10, 20 mg/l Exposure time: 13 wk Test period: 6hrs/day, 5days/wk NOAEL Parent: 20 mg/l no abnormalities observed</p>
Methylcyclohexane	<p>Species: Rat Sex: male Application Route: oral gavage Dose: 62.5, 250, 1000 mg/kg Number of exposures: daily, 7 d/wk Test period: 28 Method: OECD Guideline 422 NOAEL Parent: 1,000 mg/kg NOAEL F1: 1,000 mg/kg</p>

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Species: Rat
 Sex: female
 Application Route: oral gavage
 Dose: 62.5, 250, 1000 mg/kg
 Number of exposures: daily, 7 d/wk
 Test period: 46
 Method: OECD Guideline 422
 NOAEL Parent: 1,000 mg/kg
 NOAEL F1: 1,000 mg/kg

Species: Rat
 Sex: male and female
 Application Route: inhalation (vapor)
 Dose: 500, 2000, 7000 ppm
 Number of exposures: daily, 7 d/wk
 Test period: 28
 Method: OECD Test Guideline 416
 NOAEL Parent: 500 ppm
 NOAEL F1: 500 ppm
 NOAEL F2: 2000 ppm
 Information given is based on data obtained from similar substances.

Developmental Toxicity

Hydrocarbons, C3-11,
 catalytic cracker distillates

: Species: Rat
 Exposure time: GD6-GD19
 Number of exposures: 6 h/d
 Test period: Day 20 of Gestation
 Method: OECD Guideline 414
 NOAEL Teratogenicity: 23900 mg/m³
 NOAEL Maternal: 23900 mg/m³

Naphtha (petroleum), light
 alkylate

Species: Rat
 Application Route: Dermal
 Dose: 30, 125, 500 mg/kg/d
 Exposure time: GD 0 - 19
 Number of exposures: Daily
 Test period: 19 d
 NOAEL Teratogenicity: 500 mg/kg
 NOAEL Maternal: 500 mg/kg
 Animal testing did not show any effects on fetal development.
 Information given is based on data obtained from similar substances.

Toluene

Species: Rat
 Application Route: Inhalation
 Dose: 0, 100, 500, 2000 ppm
 Test period: 95 d
 NOAEL Teratogenicity: 400-750 ppm

Isopentane

Species: Rat
 Application Route: oral gavage
 Dose: 0, 100, 500, 1000 mg/kg/d
 Exposure time: GD 6-15
 Number of exposures: daily
 Method: OECD Guideline 414
 NOAEL Teratogenicity: 1,000 mg/kg

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NOAEL Maternal: 1,000 mg/kg
Information given is based on data obtained from similar substances.

Species: Rat
Application Route: Inhalation
Dose: 0, 500, 2000, 7000 ppm
Exposure time: GD 6-15
Number of exposures: 5 d/wk
Method: OECD Guideline 414
NOAEL Teratogenicity: 7000 ppm
NOAEL Maternal: 500 - 2000 ppm
Information given is based on data obtained from similar substances.

Species: Rabbit
Application Route: Inhalation
Dose: 0, 500, 2000, 7000 ppm
Exposure time: GD 6-18
Method: OECD Guideline 414
NOAEL Teratogenicity: 7000 ppm
NOAEL Maternal: 7000 ppm
Information given is based on data obtained from similar substances.

2,2,4-Trimethylpentane
(Isooctane)

Species: Rat
Application Route: Inhalation
Dose: 0, 400, 1200 ppm
Number of exposures: 6h/d
Test period: GD6-15
NOAEL Teratogenicity: 1200 ppm
NOAEL Maternal: 1200 ppm
Information given is based on data obtained from similar substances.

Species: Rat
Application Route: Inhalation
Dose: 0, 900, 3000, 9000 ppm
Number of exposures: 6h/d
Test period: GD6-15
Method: OECD Guideline 414
NOAEL Teratogenicity: 9000 ppm
NOAEL Maternal: 3000 ppm
Information given is based on data obtained from similar substances.

Xylenes

Species: Rat
Application Route: Inhalation
Dose: 0, 805, 1610 ppm
Number of exposures: 6 h/d
Test period: GD 7-16
NOAEL Maternal: 1610 ppm

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	<p>Species: Mouse Application Route: oral gavage Dose: 0, 780, 1960, 2619 mg/kg Number of exposures: 3 times/d Test period: GD 6-15 NOAEL Teratogenicity: 780 mg/kg NOAEL Maternal: 780 mg/kg</p>
C9-C11 Isoalkanes	<p>Species: Rat Application Route: Inhalation Dose: 0, 291, 817 ppm Number of exposures: 6 h/d Test period: GD 6-15 NOAEL Teratogenicity: > 817 ppm NOAEL Maternal: > 817 ppm</p>
Isoalkanes C7-8	<p>Species: Rat Application Route: Inhalation Dose: 500, 2000, 7000 ppm Exposure time: 6 hr/d Test period: GD 6-15 Method: OECD Guideline 414 NOAEL Teratogenicity: > 21,000 mg/m³ NOAEL Maternal: > 21,000 mg/m³ Animal testing did not show any effects on fetal development. Information given is based on data obtained from similar substances.</p>
n-Heptane	<p>Species: Rat Application Route: Inhalation Dose: 0, 900, 3000, 9000 ppm Exposure time: GD6-15 Number of exposures: 6 hrs/d NOAEL Teratogenicity: 9000 ppm NOAEL Maternal: 3000 ppm</p>
n-hexane	<p>Species: Rat Application Route: Inhalation Dose: 200, 1,000, 5,000 ppm Number of exposures: 20 hr/d, daily Test period: GD 6-20 NOAEL Teratogenicity: 200 ppm NOAEL Maternal: 200 ppm</p>
	<p>Species: Mouse Application Route: Inhalation Dose: 200, 1,000, 5,000 ppm Number of exposures: 20 hr/d, daily Test period: GD 6-17 NOAEL Maternal: 1,000 ppm</p>
Naphthalene	<p>Species: Rabbit Application Route: oral gavage Dose: 40, 200, 400 mg/kg Test period: 29 d, GD 6-18 NOAEL Teratogenicity: 400 mg/kg</p>
2-methyl-2-butene	<p>Species: Rat Application Route: Inhalation Dose: 500, 2000, 8000 ppm</p>

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Exposure time: 6 h/d
 Test period: Days 5 -21
 Method: OECD Guideline 414
 NOAEL Teratogenicity: 8000 ppm
 NOAEL Maternal: 8000 ppm
 Information given is based on data obtained from similar substances.
 Animal testing did not show any effects on fetal development.

Cyclohexane

Species: Rat
 Application Route: Inhalation
 Dose: 0, 500, 2,000, 7,000 PPM
 Number of exposures: 6 hr/d
 Test period: GD 6-15
 Method: OECD Guideline 414
 NOAEL Teratogenicity: 7,000 ppm
 NOAEL Maternal: 500 ppm

Species: Rabbit
 Application Route: Inhalation
 Dose: 0, 500, 2,000, 7,000 PPM
 Number of exposures: 6 hr/d
 Test period: GD 6-18
 Method: OECD Guideline 414
 NOAEL Teratogenicity: 7,000 ppm
 NOAEL Maternal: 500 ppm

n-Pentane

Species: Rat
 Application Route: Inhalation
 Dose: 0, 1000, 3000, 10000 ppm
 Number of exposures: 6 h/d
 Test period: GD 6-15
 NOAEL Teratogenicity: 10,000 ppm

Methylcyclohexane

Species: Rat
 Application Route: Inhalation
 Dose: 500, 2000, 7000 ppm
 Number of exposures: 6 hr/d, 7 d/wk
 Test period: GD 7 - 16
 Method: OECD Guideline 414
 NOAEL Teratogenicity: 7000 ppm
 NOAEL Maternal: 500 ppm
 Information given is based on data obtained from similar substances.

Species: Rabbit
 Application Route: Inhalation
 Dose: 500, 2000, 7000 ppm
 Number of exposures: 6 hr/d, 7 d/wk
 Test period: GD 6 - 18
 Method: OECD Guideline 414
 NOAEL Teratogenicity: 7000 ppm
 NOAEL Maternal: 500 ppm
 Information given is based on data obtained from similar substances.

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Aspiration toxicity : May be fatal if swallowed and enters airways.

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CMR effects

Naphtha, Petroleum, Heavy Catalytic Cracked : Carcinogenicity: Possible human carcinogen
 Mutagenicity: In vivo tests showed mutagenic effects
 Reproductive toxicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Naphtha (petroleum), light catalytic reformed Carcinogenicity: Possible human carcinogen
 Mutagenicity: In vivo tests showed mutagenic effects
 Reproductive toxicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Hydrocarbons, C3-11, catalytic cracker distillates Carcinogenicity: Human carcinogen.
 Mutagenicity: In vivo tests showed mutagenic effects
 Teratogenicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.
 Reproductive toxicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Toluene Carcinogenicity: Not classifiable as a human carcinogen.
 Mutagenicity: Animal testing did not show any mutagenic effects.
 Teratogenicity: Some evidence of adverse effects on development, based on animal experiments.
 Reproductive toxicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Isopentane Carcinogenicity: Not available
 Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects., In vivo tests did not show mutagenic effects
 Teratogenicity: Animal testing did not show any effects on fetal development.
 Reproductive toxicity: Animal testing did not show any effects on fertility.

2,2,4-Trimethylpentane (Isooctane) Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
 Teratogenicity: Animal testing did not show any effects on fetal development.
 Reproductive toxicity: Animal testing did not show any effects on fertility.

Xylenes Carcinogenicity: Not classifiable as a human carcinogen.
 Mutagenicity: Did not show mutagenic effects in animal experiments.
 Teratogenicity: Damage to fetus not classifiable

Isoalkanes C7-8 Carcinogenicity: Not available
 Mutagenicity: In vitro tests did not show mutagenic effects
 Reproductive toxicity: No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

n-Heptane Mutagenicity: Tests on bacterial or mammalian cell cultures

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	<p>did not show mutagenic effects. Teratogenicity: Animal testing did not show any effects on fetal development. Reproductive toxicity: No toxicity to reproduction</p>
n-Butane	<p>Carcinogenicity: Weight of evidence does not support classification as a carcinogen Mutagenicity: Weight of evidence does not support classification as a germ cell mutagen. Teratogenicity: Not available Reproductive toxicity: Weight of evidence does not support classification for reproductive toxicity</p>
n-hexane	<p>Carcinogenicity: Not classifiable as a human carcinogen. Mutagenicity: Did not show mutagenic effects in animal experiments. Teratogenicity: Animal testing did not show any effects on fetal development. Reproductive toxicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.</p>
1-Hexene	<p>Carcinogenicity: Not available Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Teratogenicity: Animal testing did not show any effects on fetal development. Reproductive toxicity: Animal testing did not show any effects on fertility.</p>
Ethylbenzene	<p>Carcinogenicity: Weight of evidence does not support classification as a carcinogen Mutagenicity: In vivo tests did not show mutagenic effects Teratogenicity: Did not show teratogenic effects in animal experiments. Reproductive toxicity: No toxicity to reproduction</p>
Naphthalene	<p>Carcinogenicity: Limited evidence of carcinogenicity in animal studies</p>
Benzene	<p>Carcinogenicity: Human carcinogen. Mutagenicity: In vivo tests showed mutagenic effects Teratogenicity: Did not show teratogenic effects in animal experiments. Reproductive toxicity: Animal testing did not show any effects on fertility.</p>
2-methyl-2-butene	<p>Carcinogenicity: Limited evidence of carcinogenicity in animal studies Mutagenicity: In vitro tests showed mutagenic effects Teratogenicity: Animal testing did not show any effects on fetal development. Reproductive toxicity: Animal testing did not show any effects on fertility.</p>
Cyclohexane	<p>Carcinogenicity: Weight of evidence does not support classification as a carcinogen Mutagenicity: Did not show mutagenic effects in animal experiments. Teratogenicity: Did not show teratogenic effects in animal</p>

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	experiments. Reproductive toxicity: No toxicity to reproduction
Methylcyclohexane	Carcinogenicity: Not available Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Teratogenicity: Animal testing did not show any effects on fetal development. Reproductive toxicity: Animal testing did not show any effects on fertility.
Isoprene	Carcinogenicity: Possible human carcinogen Mutagenicity: In vitro tests showed mutagenic effects

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Further information : Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.

SECTION 12: Ecological information**Toxicity to fish**

Naphtha, Petroleum, Heavy Catalytic Cracked	: LL50: 10 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) semi-static test Method: OECD Test Guideline 203
Naphtha (petroleum), light catalytic reformed	LL50: 8.2 mg/l Exposure time: 96 h Species: Pimephales promelas (fathead minnow) semi-static test
Hydrocarbons, C3-11, catalytic cracker distillates	1 - 100 mg/l Toxic to fish.
Naphtha (petroleum), light alkylate	LL50: 8.2 mg/l Exposure time: 96 h Species: Pimephales promelas (fathead minnow) semi-static test
Toluene	LC50: 18 - 36 mg/l Exposure time: 96 h Species: Pimephales promelas (fathead minnow)
Isopentane	LC50: 4.26 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) semi-static test Method: OECD Test Guideline 203 Information given is based on data obtained from similar substances.
2,2,4-Trimethylpentane (Isooctane)	LC50: 0.11 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) semi-static test Method: OECD Test Guideline 203 Information given is based on data obtained from similar substances.

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Xylenes	LC50: 8.2 mg/l Exposure time: 96 h Species: <i>Salmo gairdneri</i> (Rainbow trout)
C9-C11 Isoalkanes	LL50: 3.6 mg/l Exposure time: 96 h Species: <i>Oncorhynchus mykiss</i> (rainbow trout) semi-static test Method: OECD Test Guideline 203 Information given is based on data obtained from similar substances.
Isoalkanes C7-8	LL50: 5.4 mg/l Exposure time: 96 h Species: <i>Oncorhynchus mykiss</i> (rainbow trout) Method: OECD Test Guideline 203 Information given is based on data obtained from similar substances.
Cyclopentane	NOEC: > 100 mg/l Exposure time: 24 h Species: <i>Oncorhynchus kisutch</i> (Marine, fresh water)
n-Heptane	LL50: 5.738 mg/l Exposure time: 96 h Species: <i>Oncorhynchus mykiss</i> (rainbow trout) Method: QSAR modeled data
n-hexane	LL50: 12.51 mg/l Exposure time: 96 h Species: <i>Oncorhynchus mykiss</i> (rainbow trout) Method: QSAR modeled data
1-Hexene	LC50: 5.6 mg/l Exposure time: 96 h Species: <i>Oncorhynchus mykiss</i> (rainbow trout) semi-static test Test substance: yes Method: OECD Test Guideline 203
Ethylbenzene	LC50: 4.3 mg/l Exposure time: 96 h Species: <i>Marone saxatilis</i> (striped bass)
Naphthalene	LC50: 3.2 mg/l Exposure time: 96 h Species: <i>Pimephales promelas</i> (fathead minnow)
Benzene	LC50: 5.3 mg/l Exposure time: 96 h Species: <i>Oncorhynchus mykiss</i> (rainbow trout) flow-through test Test substance: yes Method: OECD Test Guideline 203
3-Methylpentane	No data available
Methylcyclopentane	No data available
2-methyl-2-butene	LC50: 4.99 mg/l Exposure time: 96 h Species: <i>Oncorhynchus mykiss</i> (rainbow trout)

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	semi-static test Method: OECD Test Guideline 203
Cyclohexane	LC50: 4.53 mg/l Exposure time: 96 h Species: Pimephales promelas (fathead minnow) Method: OECD Test Guideline 203
2,3-Dimethylbutane	LC50: 6.68 mg/l Exposure time: 96 h Species: Fish Method: QSAR modeled data
n-Pentane	LC50: 4.3 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) semi-static test
Methylcyclohexane	LC50: 2.07 mg/l Exposure time: 96 h Species: Fish semi-static test
Isoprene	LC50: 7.43 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) semi-static test Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

Naphtha, Petroleum, Heavy Catalytic Cracked	: EL50: 4.5 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202
Hydrocarbons, C3-11, catalytic cracker distillates	1 - 100 mg/l Toxic effects on fish and plankton
Naphtha (petroleum), light alkylate	EL50: 4.5 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202
Toluene	EC50: 3.78 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)
Isopentane	EC50: 2.3 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202
2,2,4-Trimethylpentane (Isooctane)	EC50: 0.4 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Information given is based on data obtained from similar substances.
C9-C11 Isoalkanes	EL50: 22 - 46 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202

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	Information given is based on data obtained from similar substances.
Isoalkanes C7-8	EL50: 143 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202
Cyclopentane	EL50: 10.5 mg/l Exposure time: 24 h Species: Daphnia magna (Water flea)
n-Heptane	EC50: 1.5 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Toxic to aquatic organisms.
	LC50: 0.1 mg/l Exposure time: 96 h Species: Mysidopsis bahia (mysid shrimp) semi-static test Very toxic to aquatic organisms.
n-hexane	EL50: 21.85 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) Method: QSAR modeled data
1-Hexene	EC50: 4.4 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Test substance: no Method: OECD Test Guideline 202 Information given is based on data obtained from similar substances.
Ethylbenzene	LC50: 2.6 mg/l Exposure time: 96 h Species: Mysidopsis bahia (mysid shrimp)
	EC50: 2.2 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) Method: OECD Test Guideline 202
2-Methylpentane	3.649 mg/l Exposure time: 48 h Species: Daphnia Method: Value calculated using ECOSAR.
Naphthalene	LC50: 2.16 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)
Benzene	EC50: 10 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Test substance: yes Method: OECD Test Guideline 202
3-Methylpentane	No data available

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Methylcyclopentane	No data available
2-methyl-2-butene	EC50: 3.84 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202
Cyclohexane	EC50: 0.9 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) Method: OECD Test Guideline 202
2,3-Dimethylbutane	LC50: 4.21 mg/l Exposure time: 48 h Species: Daphnia Method: QSAR modeled data No data available
n-Pentane	EC50: 2.7 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test
Methylcyclohexane	EC50: 0.326 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) semi-static test
Hydrogen Sulfide	EC50: 0.12 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Analytical monitoring: yes Test substance: yes Method: OECD Test Guideline 202
Isoprene	EC50: 5.77 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)
Toxicity to algae	
Naphtha, Petroleum, Heavy Catalytic Cracked	: ErL50: 3.1 mg/l Exposure time: 96 h Species: Selenastrum capricornutum (green algae) static test Method: OECD Test Guideline 201
Hydrocarbons, C3-11, catalytic cracker distillates	1 - 100 mg/l Toxic to algae.
Naphtha (petroleum), light alkylate	EC50: 3.1 mg/l Exposure time: 96 h Species: Selenastrum capricornutum (algae) static test Method: OECD Test Guideline 201
Toluene	EC50: 134 mg/l Exposure time: 72 h Species: Chlamydomonas angulosa (Green algae)
Isopentane	EC50: 7.51 mg/l Exposure time: 72 h

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	Species: <i>Scenedesmus capricornutum</i> (fresh water algae) Growth inhibition Method: OECD Test Guideline 201 Information given is based on data obtained from similar substances.
2,2,4-Trimethylpentane (Isooctane)	EL50: 2.943 mg/l Exposure time: 72 h Method: QSAR modeled data
C9-C11 Isoalkanes	ErL50: > 1,000 mg/l Exposure time: 72 h Species: <i>Pseudokirchneriella subcapitata</i> (algae) static test Method: OECD Test Guideline 201 Information given is based on data obtained from similar substances.
Isoalkanes C7-8	EL50: 29.0 mg/l Exposure time: 72 h Species: <i>Pseudokirchneriella subcapitata</i> (green algae) Growth inhibition Method: OECD Test Guideline 201
n-Heptane	EL50: 4.338 mg/l Exposure time: 72 h Species: <i>Pseudokirchneriella subcapitata</i> (microalgae) Method: QSAR
n-hexane	EL50: 9.29 mg/l Exposure time: 72 h Species: <i>Pseudokirchneriella subcapitata</i> (green algae) Method: QSAR modeled data
1-Hexene	NOEC: 1.8 mg/l Exposure time: 96 h Species: <i>Pseudokirchneriella subcapitata</i> (green algae) Growth inhibition Method: OECD Test Guideline 201 Information given is based on data obtained from similar substances.
	EC50: > 5.5 mg/l Exposure time: 96 h Species: <i>Pseudokirchneriella subcapitata</i> (green algae) Growth inhibition Method: OECD Test Guideline 201 Information given is based on data obtained from similar substances.
Ethylbenzene	ErC50: 5.0 mg/l Exposure time: 96 h Species: <i>Selenastrum capricornutum</i> (algae)
	ErC50: 7.7 mg/l Exposure time: 72 h Species: <i>Skeletonema costatum</i> (Marine Algae)
2-Methylpentane	4.321 mg/l Exposure time: 96 h Species: green algae Method: Value calculated using ECOSAR.
Naphthalene	EC50: 2.96 mg/l Exposure time: 48 h

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	Species: <i>Selenastrum capricornutum</i> (algae)
Benzene	ErC50: 100 mg/l Exposure time: 72 h Species: <i>Pseudokirchneriella subcapitata</i> (green algae) Test substance: yes Method: OECD Test Guideline 201
2-methyl-2-butene	ErC50: 13.2 mg/l Exposure time: 72 h Species: <i>Pseudokirchneriella subcapitata</i> (green algae) static test Method: OECD Test Guideline 201
Cyclohexane	EbC50: 3.4 mg/l Exposure time: 72 h Species: <i>Selenastrum capricornutum</i> (algae)
	NOEC: 0.925 mg/l Exposure time: 72 h Species: <i>Pseudokirchneriella subcapitata</i> (microalgae) Method: OECD Test Guideline 201
n-Pentane	EbC50: 10.7 mg/l Exposure time: 72 h Species: <i>Pseudokirchneriella subcapitata</i> (green algae) static test
Methylcyclohexane	EC50: 0.134 mg/l Exposure time: 72 h Species: <i>Pseudokirchneriella subcapitata</i> (green algae) static test
Hydrogen Sulfide	EC50: 1.87 mg/l Exposure time: 24 h Species: <i>Selenastrum capricornutum</i> (algae) static test Test substance: yes
Isoprene	EC50: > 35.2 mg/l Exposure time: 96 h Species: <i>Pseudokirchneriella subcapitata</i> (green algae)
M-Factor cyclohexane	: M-Factor (Acute Aquat. Tox.) 1
M-Factor methylcyclohexane	M-Factor (Acute Aquat. Tox.) 1 M-Factor (Chron. Aquat. Tox.) 1
Toxicity to bacteria	
Methylcyclohexane	: IC50: 29 mg/l Exposure time: 15 h Growth inhibition

Toxicity to fish (Chronic toxicity)

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Hydrocarbons, C3-11, catalytic cracker distillates	: NOEL: 2.6 mg/l Toxic effects on fish and plankton
C9-C11 Isoalkanes	NOELR: 0.132 mg/l Species: Oncorhynchus mykiss (rainbow trout) Method: QSAR modeled data
Isoalkanes C7-8	NOELR: 0.778 mg/l Exposure time: 28 d Species: Oncorhynchus mykiss (rainbow trout) Method: QSAR modeled data
n-Heptane	NOELR: 1.284 mg/l Exposure time: 28 d Species: Oncorhynchus mykiss (rainbow trout) Method: QSAR modeled data

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

Naphtha, Petroleum, Heavy Catalytic Cracked	: NOELR: 2.6 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) semi-static test Method: OECD Test Guideline 211
Hydrocarbons, C3-11, catalytic cracker distillates	: NOEL: 2.6 mg/l Species: Daphnia sp. (Water flea) Toxic effects on fish and plankton
Naphtha (petroleum), light alkylate	: NOELR: 2.6 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) semi-static test Method: OECD Test Guideline 211
2,2,4-Trimethylpentane (Isooctane)	: NOEL: 0.17 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Method: OECD Test Guideline 211 Information given is based on data obtained from similar substances.
Isoalkanes C7-8	: NOELR: 1 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Method: OECD Test Guideline 211 Information given is based on data obtained from similar substances.
Ethylbenzene	: NOEC: 1 mg/l Exposure time: 7 d Species: Daphnia pulex (Water flea) semi-static test Analytical monitoring: yes
Biodegradability	: This material is not expected to be readily biodegradable. Expected to be inherently biodegradable.

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Elimination information (persistence and degradability)

Bioaccumulation

- Naphtha, Petroleum, Heavy Catalytic Cracked : The product may be accumulated in organisms.
- Naphtha (petroleum), light catalytic reformed : The product may be accumulated in organisms.
- Hydrocarbons, C3-11, catalytic cracker distillates : No data available
- Naphtha (petroleum), light alkylate : The product may be accumulated in organisms.
- Toluene : This material is not expected to bioaccumulate.
- Isopentane : Accumulation in aquatic organisms is unlikely.
- 2,2,4-Trimethylpentane (Isooctane) : Bioconcentration factor (BCF): 231
Method: QSAR modeled data
This material is not expected to bioaccumulate.
- Xylenes : This material is not expected to bioaccumulate.
- Isoalkanes C7-8 : This material is not expected to bioaccumulate.
- Cyclopentane : Accumulation in aquatic organisms is unlikely.
- n-Heptane : Bioconcentration factor (BCF): 552
Method: QSAR modeled data
This material is not expected to bioaccumulate.
- n-Butane : This material is not expected to bioaccumulate.
- n-hexane : Bioconcentration factor (BCF): 501
Does not significantly accumulate in organisms.
- 1-Hexene : This material is not expected to bioaccumulate.
- Ethylbenzene : Bioconcentration factor (BCF): 110
- 2,2-Dimethylbutane : Accumulation in aquatic organisms is unlikely.
- 2-Methylpentane : Does not significantly accumulate in organisms.
- Benzene : Bioconcentration factor (BCF): 13
- Cyclohexane : Bioconcentration factor (BCF): 167
This material is not expected to bioaccumulate.
- n-Pentane : Bioconcentration factor (BCF): 171
Method: QSAR modeled data
This material is not expected to bioaccumulate.
- Methylcyclohexane : Not classified due to data which are conclusive although insufficient for classification.
- Hydrogen Sulfide : This material is not expected to bioaccumulate.

Mobility

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Naphtha, Petroleum, Heavy Catalytic Cracked	: No data available
Naphtha (petroleum), light catalytic reformed	: No data available
Naphtha (petroleum), light alkylate	: This product may float or sink in water. After release, disperses into the air.
Toluene	: Not expected to adsorb on soil.
2,2,4-Trimethylpentane (Isooctane)	: Medium: Air Method: Calculation, Mackay Level I Fugacity Model After release, disperses into the air.
Isoalkanes C7-8	: Medium: Air Method: Calculation, Mackay Level III Fugacity Model
n-Heptane	: Medium: Air Method: Calculation, Mackay Level I Fugacity Model After release, disperses into the air.
n-Butane	: The product evaporates readily.
1-Hexene	: No data available
Ethylbenzene	: Method: Calculation, Mackay Level I Fugacity Model Disperses rapidly in air.
Benzene	: No data available
Cyclohexane	: Not expected to adsorb on soil.
n-Pentane	: After release, disperses into the air.
Hydrogen Sulfide	: No data available
Results of PBT assessment	
Naphtha, Petroleum, Heavy Catalytic Cracked	: Non-classified PBT substance, Non-classified vPvB substance
Toluene	: Non-classified vPvB substance, Non-classified PBT substance
Isopentane	: Non-classified PBT substance, Non-classified vPvB substance
2,2,4-Trimethylpentane (Isooctane)	: Non-classified PBT substance, Non-classified vPvB substance
Isoalkanes C7-8	: Non-classified PBT substance, Non-classified vPvB substance
n-Heptane	: Non-classified PBT substance, Non-classified vPvB substance
n-Butane	: This substance is not considered to be persistent, bioaccumulating and toxic (PBT),. This substance is not considered to be very persistent and very bioaccumulating (vPvB).
n-hexane	: Non-classified vPvB substance, Non-classified PBT substance
1-Hexene	: Non-classified PBT substance, Non-classified vPvB substance
Ethylbenzene	: Non-classified vPvB substance, Non-classified PBT substance

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Benzene	: This substance is not considered to be persistent, bioaccumulating and toxic (PBT)., This substance is not considered to be very persistent and very bioaccumulating (vPvB).
2-methyl-2-butene	: Non-classified PBT substance, Non-classified vPvB substance
Cyclohexane	: Non-classified PBT substance, Non-classified vPvB substance
Methylcyclohexane	: Non-classified PBT substance, Non-classified vPvB substance
Additional ecological information	: Very toxic to aquatic life with long lasting effects.
Ecotoxicology Assessment	
Short-term (acute) aquatic hazard	: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard	: Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

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.

Product	: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

UN1203, GASOLINE, 3, II, MARINE POLLUTANT, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE), N-HEPTANE)

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN1203, GASOLINE, 3, II, (-37°C), MARINE POLLUTANT, (NAPHTHA, PETROLEUM, HEAVY

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CATALYTIC CRACKED)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN1203, GASOLINE, 3, II

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))

UN1203, MOTOR SPIRIT, 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (NAPHTHA, PETROLEUM, HEAVY CATALYTIC CRACKED)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))

UN1203, GASOLINE, 3, II, ENVIRONMENTALLY HAZARDOUS, (NAPHTHA, PETROLEUM, HEAVY CATALYTIC CRACKED)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)

UN1203, GASOLINE, 3, II, ENVIRONMENTALLY HAZARDOUS, (NAPHTHA, PETROLEUM, HEAVY CATALYTIC CRACKED)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information**National legislation****Poisonous and Deleterious Substances Control Law**

: Not applicable

Industrial Safety and Health Law

Substances Subject to be : Naphtha (petroleum), light alkylate(330)
 Notified Names Article 57-2 (168)
 (Enforcement Order Table 9) (127)

toluene(407)

xylenes(136)

cyclopentane(238)

n-hexane(520)

hex-1-ene(521)

1,2,4-trimethylbenzene(404)

ethylbenzene(70)

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Benzene(174)
 (531)

 naphthalene(408)

 cyclohexane(232)

 methylcyclohexane(576)

 isoprene(42)

 Hydrocarbons, C3-11, catalytic cracker distillates(330)
 (127)

 2,2,4-trimethylpentane(115)

 3,3-dimethylpentane(526)

 2-methylbutane(543)

 n-Butane(482)

Enforcement Order of the Industrial Safety and Health Law - Attached table 1 (Dangerous Substances) : Inflammable Substance

Enforcement Order of the Industrial Safety and Health Law - Attached table 1 (Dangerous Substances) : Inflammable Substance

Harmful Substances Required Permission for Manufacture : Not applicable

Hazardous Substances Subject to Labeling Requirements Article 57 (Enforcement Order Article 18) : Naphtha (petroleum), light alkylate (330)
 (168)
 (127)
 toluene (407)
 xylenes (136)
 cyclopentane (238)
 n-hexane (520)
 hex-1-ene (521)
 1,2,4-trimethylbenzene (404)
 ethylbenzene (70)
 Benzene (174)
 (531)
 naphthalene (408)
 cyclohexane (232)
 methylcyclohexane (576)
 Hydrocarbons, C3-11, catalytic cracker distillates (330)
 (127)
 2,2,4-trimethylpentane (115)
 3,3-dimethylpentane (526)
 2-methylbutane (543)
 n-Butane (482)

Organic Solvents Class 2 Ordinance on Prevention of Lead Poisoning Harmful Substances :
 : Not applicable
 : Not applicable

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Prohibited from Manufacture
Ordinance on Prevention of
Hazards Due to Specified
Chemical Substances Group
2 Substance

: ethylbenzene(3.3)
Benzene(30)
naphthalene(23.2)

Ordinance on Prevention of
Tetraalkyl Lead Poisoning
Mutagens, Existing Chemicals

: Not applicable
: naphthalene, naphthalene (Molten), naphthalene (Refined or
crude), naphthalene (Refined), naphthalene (Crude)
: Not applicable

Substances Prevented From
Impairment of Health

: ethylbenzene

Chemical Substance Control Law

Priority Assessment Chemical
Substance

: toluene(46)
xylenes(125)
n-hexane(3)
1,2,4-trimethylbenzene(49)
ethylbenzene(50)
Benzene(45)
naphthalene(76)
cyclohexane(96)
isoprene(5)
cumene(126)

Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

Class I Designated Chemical
Substances

: toluene(300)
xylenes(80)
n-hexane(392)
1,2,4-trimethylbenzene(296)
ethylbenzene(53)
naphthalene(302)

Specified Class I Designated
Chemical Substances

: Benzene(400)

Other regulations

Fire Service Law

: Flammable liquids
Type 1 petroleum
Hazardous rank II

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High Pressure Gas Safety Act : Not applicable

Explosive Control Law : Not applicable

Vessel Safety Law : Flammable liquids (Article 2 and 3 of rules on shipping and storage of dangerous goods and its Attached Table 1)

Aviation Law : Flammable liquid (Article 194 of The Enforcement Rules of Aviation Law and its Attached Table 1)

Notification status

Europe REACH : Not in compliance with the inventory

Switzerland CH INV : Not in compliance with the inventory

United States of America (USA) TSCA : On or in compliance with the active portion of the TSCA inventory

Canada DSL : This product contains one or several components listed in the Canadian NDSL.

Other AIIIC : Not in compliance with the inventory

New Zealand NZIoC : Not in compliance with the inventory

Japan ENCS : Not in compliance with the inventory

Korea KECI : Not in compliance with the inventory

Philippines PICCS : Not in compliance with the inventory

Taiwan TCSI : Not in compliance with the inventory

China IECSC : Not in compliance with the inventory

SECTION 16: Other information**Further information**

Legacy SDS Number : 34840

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect

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			Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		