Safety Data Sheet

Westlake Chemical

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

Product identifier

Product Name **Raw Pyrolysis Gas**

Synonyms Py Gas, Pyrolysis Gasoline, C5s/C5+, Aromatic Concentrate

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s) Fuel, chemical reclamation

Details of the supplier of the safety data sheet

Manufacturer

Westlake Chemical OpCo LP
900 Highway 108
Sulphur, LA 70665
United States
www.westlake.com

Telephone (General) 270-395-3151

Emergency telephone number

800-424-9300 – CHEMTREC

Section 2: Hazards Identification

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012

- Flammable Liquids 3 - H226
  Acute Toxicity Oral 4 - H302
  Aspiration 1 - H304
  Acute Toxicity Dermal 4 - H312
  Skin Irritation 2 - H315
  Eye Irritation 2 - H319
  Acute Toxicity Inhalation 4 - H332
  Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
  Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336
  Germ Cell Mutagenicity 1B - H340
  Carcinogenicity 1A - H350
  Reproductive Toxicity 2 - H361
  Specific Target Organ Toxicity Repeated Exposure 1 - H372

Label elements

OSHA HCS 2012

Hazard statements

- **DANGER**

Flammable liquid and vapor - H226
Harmful if swallowed - H302
May be fatal if swallowed and enters airways - H304

Harmful in contact with skin - H312
Causes skin irritation - H315
Causes serious eye irritation - H319
Harmful if inhaled - H332
May cause respiratory irritation - H335
May cause drowsiness or dizziness - H336
May cause genetic defects. - H340
May cause cancer. - H350
Suspected of damaging fertility or the unborn child. - H361
Causes damage to organs through prolonged or repeated exposure. - H372

Precautionary Statements

Prevention

- Obtain special instructions before use. - P201
- Do not handle until all safety precautions have been read and understood. - P202
- Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking. - P210
- Keep container tightly closed. - P233
- Ground and/or bond container and receiving equipment. - P240
- Use explosion-proof electrical/ventilating/lighting/equipment. - P241
- Use only non-sparking tools. - P242
- Take precautionary measures against static discharge. - P243
- Do not breathe mists, vapors, and/or spray. - P260
- Wash thoroughly after handling. - P264
- Do not eat, drink or smoke when using this product. - P270
- Use only outdoors or in a well-ventilated area. - P271
- Wear protective gloves, clothing , and eye/face protection. - P280

Response

- In case of fire: Use appropriate media for extinction. - P370+P378
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
- Call a POISON CENTER or doctor/physician if you feel unwell. - P312
- If on skin: Wash with plenty of water .
- Take off contaminated clothing and wash before reuse. - P362
- Specific treatment, see supplemental first aid information. - P321
- If skin irritation occurs: Get medical advice/attention. - P332+P313
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338
- If eye irritation persists: Get medical advice/attention. - P337+P313
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell. - P301+P312
- Rinse mouth. - P330
- Do NOT induce vomiting. - P331
- IF exposed or concerned: Get medical advice/attention. - P308+P313

Storage/ Disposal

- Store in a well-ventilated place. Keep container tightly closed. - P403+P233
- Keep cool. - P235
- Store locked up. - P405
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to: WHMIS

Classification of the substance or mixture

WHMIS

- Compressed Gas - A
  Flammable Liquids - B2
  Toxic - D1B
  Other Toxic Effects - D2A
  Other Toxic Effects - D2B

Label elements

WHMIS

- Flammable Liquids - B2
  Toxic - D1B
  Other Toxic Effects - D2A
  Other Toxic Effects - D2B

Other hazards

WHMIS

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

Substances

- Material does not meet the criteria of a substance.

Mixtures

Composition				
Chemical Name	**Identifiers (CAS)**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**
Benzene	71-43-2	38% TO 50%	Skin-Rabbit LD50 • >9400 µg/kg Ingestion/Oral-Rat LD50 • 930 mg/kg Inhalation-Rat LC50 • 10000 ppm 7 Hour(s)	**OSHA HCS 2012:** Flam. Liq. 2; Eye Irrit. 2; Skin Irrit. 2; Muta. 1B; Carc. 1A; Asp. Tox. 1; STOT RE 1 (Blood and Bone marrow); Repr. 2; STOT SE 3: Narc.; Acute Tox. 4 (orl)
4,7-Methanoindene, 3a,4,7,7a-tetrahydro-	77-73-6	< 15%	NDA	**OSHA HCS 2012:** Flam. Liq. 3; Skin Irrit, 2; Eye Irrit. 2; Acute Tox. 4 (orl); Acute Tox. 3 (inhl); STOT SE 3: Resp. Irrit.;
Toluene	108-88-3	8% TO 12%	Ingestion/Oral-Rat LD50 • 636 mg/kg Inhalation-Rat LC50 • 49 g/m³ 4 Hour(s) Skin-Rabbit LD50 • 14100 µL/kg	**OSHA HCS 2012:** Flam. Liq. 2; Acute Tox. 4 (orl); Skin Irrit. 2; Eye Irrit. 2; Muta. 1B; Repr. 2; STOT SE 3: Narc.; STOT RE 1 (CNS, Inhl); Asp. Tox. 1
1,3-Cyclopentadiene	542-92-7	0% TO 8%	NDA	**OSHA HCS 2012:** Flam. Liq. 3; Acute Tox. 3 (skn); Acute Tox. 3 (orl);
Isoprene	78-79-5	< 5%	Inhalation-Rat LC50 • 180 g/m³ 4 Hour(s)	**OSHA HCS 2012:** Flam. Liq. 1; Carc. 2; Muta. 2; Repr. 2; STOT SE 3: Resp. Irrit. & Narc.;
Ethenylbenzene	100-42-5	< 5%	Ingestion/Oral-Rat LD50 • 2650 mg/kg Inhalation-Rat LC50 • 11800 mg/m³ 4 Hour(s)	**OSHA HCS 2012:** Flam. Liq. 3; Acute Tox. 4 (inhl); Skin Irrit. 2; Eye Irrit. 2; Muta. 2 (Inhl); Carc. 2 (Inhl); Repr. 2 (Inhl); STOT SE 3: Narc.; STOT SE 3: Resp. Irrit. (Inhl); Asp. Tox. 1
Cyclopentene	142-29-0	< 5%	Skin-Rabbit LD50 • 1.59 mL/kg Ingestion/Oral-Rat LD50 • 2.14 mL/kg	**OSHA HCS 2012:** Flam. Liq. 2; Acute Tox. 4 (orl, skn)
Naphthalene	91-20-3	< 2%	Skin-Rabbit LD50 • >20 g/kg Ingestion/Oral-Rat LD50 • 490 mg/kg	**OSHA HCS 2012:** Flam. Sol. 2; Acute Tox. 4 (orl); Skin Irrit. 2; Muta. 2; Carc. 2; Repr. 2; STOT SE 3: Narc.; STOT RE 1 (Blood, Eyes, Orl, Inhl)
Methanol	67-56-1	< 2%	Inhalation-Rat LC50 • 64000 ppm 4 Hour(s) Skin-Rabbit LD50 • 15800 mg/kg Ingestion/Oral-Rat LD50 • 5600 mg/kg	**OSHA HCS 2012:** Flam. Liq. 2; Acute Tox. 3; Skin Irrit. 2; Eye Irrit. 2; Muta. 2; STOT SE 3: Narc.
1-Pentene	109-67-1	< 2%	Inhalation-Rat LC50 • 175000 mg/m³ 4 Hour(s)	**OSHA HCS 2012:** Flam. Liq. 1; STOT SE 3: Narc.

1,3-Pentadiene	504-60-9	< 2%	NDA	**OSHA HCS 2012:** Flam. Liq. 2; Asp. Tox. 1
1,3-Butadiene	106-99-0	< 2%	Inhalation-Rat LC50 • 128000 ppm 4 Hour(s) Ingestion/Oral-Rat LD50 • 5480 mg/kg	**OSHA HCS 2012:** Flam. Gas 1; Press. Gas - Liq.; Carc. 1A; Muta. 1B;
Ethylbenzene	100-41-4	< 1%	Ingestion/Oral-Rat LD50 • 3500 mg/kg Inhalation-Rat LC50 • 55000 mg/m³ 2 Hour(s) Skin-Rabbit LD50 • >5000 mg/kg	**OSHA HCS 2012:** Flam. Liq. 2; Eye Irrit. 2; Repr. 2.; Carc 2; STOT SE 3: Narc.; STOT SE 3: Resp. Irrit.;

Section 4 - First Aid Measures

Description of first aid measures

Inhalation
- Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. Get medical attention.

Skin
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin. Wash the contaminated area of body with soap and fresh water. Remove and isolate contaminated clothing. If irritation develops and persists, get medical attention.

Eye
- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. If eye irritation persists: Get medical advice/attention.

Ingestion
- Do NOT induce vomiting. Get medical attention immediately.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Notes to Physician
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

Extinguishing media

Suitable Extinguishing Media
- Use ABC dry chemical, foam or carbon dioxide.

Unsuitable Extinguishing Media
- Water may be ineffective but water should be used to keep fire exposed containers cool.

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Containers may explode when heated.
- Vapor explosion hazard indoors, outdoors or in sewers.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- Many liquids are lighter than water.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Runoff to sewer may create fire or explosion hazard.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products
- No data available

Advice for firefighters

- Structural firefighters' protective clothing will only provide limited protection.
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Move containers from fire area if you can do it without risk.
- LARGE FIRES: Cool containers with flooding quantities of water until well after fire is out.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures

Personal Precautions

- CAUTION: Victim may be a source of contamination. Do not walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear appropriate personal protective equipment, avoid direct contact.

Emergency Procedures

- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet) ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.
- A vapor suppressing foam may be used to reduce vapors.
- All equipment used when handling the product must be grounded.
- LARGE SPILLS: Dike far ahead of liquid spill for later disposal.
- LARGE SPILLS: Water spray may reduce vapor; but may not prevent ignition in closed spaces.

Section 7 - Handling and Storage

Precautions for safe handling

Handling

- Use only with adequate ventilation.
- Keep away from heat, sparks, and flame.
- All equipment used when handling the product must be grounded.
- Take precautionary measures against static charges.
- Wear appropriate personal protective equipment, avoid direct contact.
- Do not breathe mist, vapours and/or spray.
- Avoid contact with skin, eyes, and clothing.
- Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

Conditions for safe storage, including any incompatibilities

Storage

- Keep container closed when not in use.
- Store away from oxidizing materials.
- Store in a cool/low-temperature, well-ventilated place away from heat and ignition sources.
- Do not cut, puncture or weld on or near the container.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines					
	Result	**ACGIH**	**Canada Manitoba**	**NIOSH**	**OSHA**
1,3-Cyclopentadiene (542-92-7)	TWAs	75 ppm TWA	Not established	75 ppm TWA; 200 mg/m3 TWA	75 ppm TWA; 200 mg/m3 TWA
Ethylbenzene (100-41-4)	TWAs	20 ppm TWA	Not established	100 ppm TWA; 435 mg/m3 TWA	100 ppm TWA; 435 mg/m3 TWA
	STELs	Not established	Not established	125 ppm STEL; 545 mg/m3 STEL	Not established
1,3-Butadiene (106-99-0)	Designated Substances	Not established	Present	Not established	Not established
	STELs	Not established	Not established	Not established	5 ppm STEL (see 29 CFR 1910.1051)
	TWAs	2 ppm TWA	Not established	Not established	1 ppm TWA (listed under Butadiene)
Naphthalene (91-20-3)	TWAs	10 ppm TWA	Not established	10 ppm TWA; 50 mg/m3 TWA	10 ppm TWA; 50 mg/m3 TWA
	STELs	15 ppm STEL	Not established	15 ppm STEL; 75 mg/m3 STEL	Not established
Methanol (67-56-1)	TWAs	200 ppm TWA	Not established	200 ppm TWA; 260 mg/m3 TWA	200 ppm TWA; 260 mg/m3 TWA
	STELs	250 ppm STEL	Not established	250 ppm STEL; 325 mg/m3 STEL	Not established
Ethenylbenzene (100-42-5)	Ceilings	Not established	Not established	Not established	200 ppm Ceiling
	TWAs	20 ppm TWA	Not established	50 ppm TWA; 215 mg/m3 TWA	100 ppm TWA
	STELs	40 ppm STEL	Not established	100 ppm STEL; 425 mg/m3 STEL	Not established
Toluene (108-88-3)	Ceilings	Not established	Not established	Not established	300 ppm Ceiling
	TWAs	20 ppm TWA	Not established	100 ppm TWA; 375 mg/m3 TWA	200 ppm TWA
	STELs	Not established	Not established	150 ppm STEL; 560 mg/m3 STEL	Not established
4,7-Methanoindene, 3a,4,7,7a-tetrahydro- (77-73-6)	TWAs	5 ppm TWA	Not established	5 ppm TWA; 30 mg/m3 TWA	Not established
Benzene (71-43-2)	Designated Substances	Not established	Present	Not established	Not established
	Ceilings	Not established	Not established	Not established	25 ppm Ceiling
	STELs	2.5 ppm STEL	Not established	1 ppm STEL	5 ppm STEL (see 29 CFR 1910.1028)
	TWAs	0.5 ppm TWA	Not established	0.1 ppm TWA	10 ppm TWA (applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028); 1 ppm TWA

Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.

If exposure limits have not been established, maintain airborne levels to an acceptable level. Use only appropriately classified electrical equipment.

Personal Protective Equipment

Respiratory
- In case of insufficient ventilation, wear suitable respiratory equipment. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face
- Wear safety goggles.

Skin/Body
- Wear appropriate gloves.

Environmental Exposure Controls
- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
STEL = Short Term Exposure Limits are based on 15 minute exposures
TWA = Time Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	**Appearance/Description**	Amber liquid with a solvent type odor.
Color	Amber	**Odor**	Solvent
Odor Threshold	NDA		
General Properties			
Boiling Point	114 F(45.6 C)	**Melting Point**	NDA
Decomposition Temperature	NDA	**pH**	NDA
Specific Gravity/Relative Density	0.82 to 0.86 Water=1	**Water Solubility**	0.7 % @ 72 F(22 C)
Viscosity	NDA		
Volatility			
Vapor Pressure	75 mmHg (torr) @ 68 F(20 C)	**Vapor Density**	2.7 Air=1 Benzene
Evaporation Rate	2.8 Ether = 1	**Volatiles (Wt.)**	99 % @ 360F (182C)
Volatiles (Vol.)	99 % @ 360F (182C)		
Flammability			
Flash Point	80 F(26.7 C)	**UEL**	11 %
LEL	2.2 %	**Autoignition**	1076 F(580 C)
Flammability (solid, gas)	NDA		
Environmental			
Octanol/Water Partition coefficient	NDA		

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal temperatures and pressures.

Possibility of hazardous reactions

- Hazardous polymerization will not occur.

Conditions to avoid

- Heat, sparks, open flame.

Incompatible materials

- Reacts with chlorine, ozone, perchloryl fluoride, liquid oxygen and other strong oxidizing agents such as hydrogen peroxide, permanganates and perchlorates. Depending upon the amount and specific materials involved, contact can result in intense heat, boiling, flame development, explosion or toxic gas generation. Spontaneous combustion may occur in contact with sodium peroxide or potassium peroxide.

Hazardous decomposition products

- Carbon monoxide, carbon dioxide and small amounts of aromatic and aliphatic hydrocarbons.

Section 11 - Toxicological Information

Information on toxicological effects

Component Name	CAS	Data
Butane (< 5%)	106-97-8	**Acute Toxicity:** Inhalation-Rat LC50 • 658 g/m³ 4 Hour(s)
Benzene (38% TO 50%)	71-43-2	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 1800 mg/kg; Inhalation-Rat LC50 • 10000 ppm 7 Hour(s); **Irritation:** Eye-Rabbit • 2 mg 24 Hour(s) • Severe irritation; Skin-Rabbit • 15 mg 24 Hour(s)-Open • Mild irritation; **Mutagen:** Sister chromatid exchange • Inhalation-Mouse • 10 ppm 6 Hour(s); **Reproductive:** Inhalation-Rat TCLo • 50 ppm 24 Hour(s)(7-14D preg); *Reproductive Effects:Effects on Embryo or Fetus*:**Extra embryonic structures**; *Reproductive Effects:Effects on Embryo or Fetus*:**Fetotoxicity (except death, e.g., stunted fetus)**; **Tumorigen / Carcinogen:** Ingestion/Oral-Rat TDLo • 52 g/kg 52 Week(s)-Intermittent; *Tumorigenic*:**Carcinogenic by RTECS criteria**; *Endocrine*:**Tumors**; *Blood*:**Leukemia**
Toluene (8% TO 12%)	108-88-3	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 636 mg/kg; Inhalation-Rat LC50 • 49 g/m³ 4 Hour(s); Inhalation-Human TCLo • 1500 mg/m³ 8 Hour(s); *Sense Organs and Special Senses:Eye*:**Lacrimation**; *Sense Organs and Special Senses:Eye*:**Conjunctive irritation**; *Behavioral*:**Ataxia**; Inhalation-Human TCLo • 200 ppm; *Brain and Coverings*:**Recordings from specific areas of CNS**; *Behavioral*:**Antipsychotic**; *Blood*:**Changes in bone marrow not included above**; Inhalation-Man TCLo • 50 ppm; *Kidney, Ureter, and Bladder*:**Other changes in urine composition**; Skin-Rabbit LD50 • 14100 µL/kg; **Irritation:** Eye-Rabbit • 2 mg 24 Hour(s) • Severe irritation; Skin-Rabbit • 20 mg 24 Hour(s) • Moderate irritation; **Multi-dose Toxicity:** Inhalation-Mouse TCLo • 250 ppm 4 Day(s)-Continuous; *Behavioral*:**Convulsions or effect on seizure threshold**; *Behavioral*:**Abuse**; Inhalation-Mouse TCLo • 50 ppm 12 Week(s)-Intermittent; *Brain and Coverings*:**Other degenerative changes**; Inhalation-Rat TCLo • 10 ppm 6 Hour(s) 13 Week(s)-Intermittent; *Brain and Coverings*:**Other degenerative changes**; *Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels*:**Multiple enzyme effects**; **Mutagen:** Micronucleus test • Ingestion/Oral-Mouse • 200 mg/kg; Sister chromatid exchange • Inhalation-Human • 252 µg/L 19 Year(s); Cytogenetic analysis • Inhalation-Rat • 5400 µg/m³ 16 Week(s)-Intermittent; **Reproductive:** Inhalation-Mouse TCLo • 500 mg/m³ 24 Hour(s)(6-13D preg); *Reproductive Effects:Effects on Embryo or Fetus*:**Fetotoxicity (except death, e.g., stunted fetus)**; Inhalation-Mouse TCLo • 200 ppm 7 Hour(s)(7-16D preg); *Reproductive Effects:Specific Developmental Abnormalities*:**Urogenital system**
Ethenylbenzene (< 5%)	100-42-5	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 2650 mg/kg; *Behavioral*:**Somnolence (general depressed activity)**; *Liver*:**Other changes**; Inhalation-Rat LC50 • 11800 mg/m³ 4 Hour(s); **Irritation:** Eye-Rabbit • 100 mg • Severe irritation; Skin-Rabbit • 100 % • Moderate irritation; **Multi-dose Toxicity:** Inhalation-Rat TCLo • 300 ppm 6 Hour(s) 2 Week(s)-Intermittent; *Lungs, Thorax, or Respiration*:**Structural or functional change in trachea or bronchi**; *Lungs, Thorax, or Respiration*:**Other changes**; *Liver*:**Other changes**; **Mutagen:** DNA adduct • Inhalation-Human • 107.4 µg/L 4 Year(s)-Intermittent; Sister chromatid exchange • Inhalation-Human • 1204 mg/m³ 5 Year(s)-Intermittent; Sister chromatid exchange • Inhalation-Mouse • 125 ppm 4 Day(s)-Intermittent; Micronucleus test • Inhalation-Mouse • 1500 mg/m³ 7 Day(s)-Intermittent; DNA adduct • Inhalation-Mouse • 600 µg/L 10 Day(s)-Intermittent; **Reproductive:** Inhalation-Rat TCLo • 1500 µg/m³ 24 Hour(s)(1-22D preg); *Reproductive Effects:Effects on Embryo or Fetus*:**Fetotoxicity (except death, e.g., stunted fetus)**; *Reproductive Effects:Effects on*

		Embryo or Fetus:**Fetal death**; **Tumorigen / Carcinogen:** Inhalation-Rat TCLo • 100 ppm 4 Hour(s) 5 Day(s)-Intermittent; *Tumorigenic*:**Carcinogenic by RTECS criteria**; *Skin and Appendages:Other*:**Tumors**; *Blood*:**Leukemia**
4,7-Methanoindene, 3a,4,7,7a-tetrahydro- (< 15%)	77-73-6	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 353 mg/kg; *Behavioral*:**Convulsions or effect on seizure threshold**; *Behavioral*:**Muscle weakness**; Inhalation-Rat LC50 • 660 ppm 4 Hour(s); *Behavioral*:**Somnolence (general depressed activity)**; *Behavioral*:**Convulsions or effect on seizure threshold**; *Behavioral*:**Changes in motor activity (specific assay)**; Skin-Rabbit LD50 • 5080 mg/kg; *Behavioral*:**Convulsions or effect on seizure threshold**; *Behavioral*:**Muscle weakness**; **Irritation:** Skin-Rabbit • 9300 µg 24 Hour(s)-Open • Severe irritation; **Multi-dose Toxicity:** Ingestion/Oral-Rat TDLo • 1120 mg/kg 28 Day(s)-Intermittent; *Kidney, Ureter, and Bladder*:**Changes in bladder weight**; *Blood*:**Changes in serum composition (e.g., TP, bilirubin cholesterol)**; *Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels*:**Transaminases**
1,3-Butadiene (< 2%)	106-99-0	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 5480 mg/kg; Inhalation-Rat LC50 • 128000 ppm 4 Hour(s); **Multi-dose Toxicity:** Inhalation-Mouse TCLo • 1250 ppm 6 Hour(s) 6 Week(s)-Intermittent; *Blood*:**Normocytic anemia**; *Blood*:**Changes in bone marrow not included above**; *Blood*:**Changes in erythrocyte (RBC) count**; **Mutagen:** Inhalation-Mouse • 130 ppm 5 Day(s) 6 Hour(s)-Continuous; Heritable Translocation Test • Inhalation-Mouse • 500 ppm 6 Hour(s) 5 Day(s)-Continuous; Specific locus test • Inhalation-Mouse • 1250 ppm 2 Week(s)-Intermittent; Specific locus test • Inhalation-Mouse • 20 ppm 6 Hour(s) 4 Week(s); **Reproductive:** Inhalation-Mouse TCLo • 1000 ppm 6 Hour(s)(6-15D preg); *Reproductive Effects:Effects on Fertility*:**Post-implantation mortality**; *Reproductive Effects:Effects on Embryo or Fetus*:**Extra embryonic structures**; *Reproductive Effects:Effects on Embryo or Fetus*:**Fetotoxicity (except death, e.g., stunted fetus)**; **Tumorigen / Carcinogen:** Inhalation-Mouse TCLo • 540.75 mg/kg 103 Week(s)-Intermittent; *Tumorigenic*:**Carcinogenic by RTECS criteria**; *Liver*:**Tumors**; *Blood*:**Lymphoma, including Hodgkin's disease**
1-Pentene (< 2%)	109-67-1	**Acute Toxicity:** Inhalation-Rat LC50 • 175000 mg/m³ 4 Hour(s); **Multi-dose Toxicity:** Inhalation-Rabbit TCLo • 150 mg/m³ 7 Hour(s) 20 Day(s)-Intermittent; *Peripheral Nerve and Sensation*:**Paresthesis**; *Blood*:**Changes in leucocyte (WBC) count**
1,3-Cyclopentadiene (0% TO 8%)	542-92-7	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 113 mg/kg; Skin-Rabbit LD50 • 430 mg/kg; **Multi-dose Toxicity:** Inhalation-Rat TCLo • 350 mg/m³ 4 Hour(s) 26 Week(s)-Intermittent; *Blood*:**Normocytic anemia**; *Blood*:**Changes in erythrocyte (RBC) count**
Cyclopentene (< 5%)	142-29-0	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 2.14 mL/kg; Skin-Rabbit LD50 • 1.59 mL/kg
1,3-Pentadiene (< 2%)	504-60-9	**Acute Toxicity:** Inhalation-Rat LC50 • 97200 mg/m³ 4 Hour(s); *Behavioral*:**Somnolence (general depressed activity)**; *Behavioral*:**Ataxia**; *Lungs, Thorax, or Respiration*:**Dyspnea**
Isoprene (< 5%)	78-79-5	**Acute Toxicity:** Inhalation-Rat LC50 • 129000 mg/m³ 4 Hour(s); Inhalation-Rabbit TCLo • 750 mg/m³ 40 Minute(s); *Lungs, Thorax, or Respiration*:**Dyspnea**; **Multi-dose Toxicity:** Inhalation-Rat TCLo • 0.3 g/m³ 61 Day(s)-Intermittent; *Liver*:**Liver function tests impaired**; **Mutagen:** Micronucleus test • Inhalation-Mouse • 438 ppm 6 Hour(s) 12 Day(s)-Continuous; Sister chromatid exchange • Inhalation-Mouse • 438 ppm 6 Hour(s) 12 Day(s)-Continuous; **Reproductive:** Inhalation-Mouse TCLo • 7000 ppm (6-17D preg); *Reproductive Effects:Specific Developmental Abnormalities*:**Craniofacial (including nose and tongue)**; *Reproductive Effects:Specific Developmental Abnormalities*:**Musculoskeletal system**; *Reproductive Effects:Specific Developmental Abnormalities*:**Urogenital system**; **Tumorigen / Carcinogen:** Inhalation-Mouse TCLo • 7000 ppm 6 Hour(s) 26 Week(s)-Intermittent; *Tumorigenic*:**Carcinogenic by RTECS criteria**; *Lungs, Thorax, or Respiration*:**Tumors**; *Liver*:**Tumors**
Naphthalene (< 2%)	91-20-3	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 490 mg/kg; Ingestion/Oral-Mouse TDLo • 158 mg/kg; *Brain and Coverings*:**Other degenerative changes**; *Liver*:**Other changes**; *Biochemical:Metabolism (intermediary)*:**Lipids, including transport**; Inhalation-Human TCLo • 250 mg/m³; *Sense Organs and Special Senses:Eye*:**Lacrimation**; *Behavioral*:**Headache**; Skin-Rabbit LD50 • >20 g/kg; **Irritation:** Skin-Rabbit • 0.05 mL 24 Hour(s) • Severe irritation; **Multi-dose Toxicity:** Ingestion/Oral-Rat TDLo • 500 mg/kg 10 Day(s)-Intermittent; *Behavioral*:**Sleep**; *Lungs, Thorax, or Respiration*:**Dyspnea**; Ingestion/Oral-Rat TDLo • 4500 mg/kg 10 Day(s)-Intermittent; *Brain and Coverings*:**Other degenerative changes**; **Mutagen:** Micronucleus test • Unreported Route-Human • Lymphocyte (Somatic cell) • 30 mg/L; **Reproductive:** Ingestion/Oral-Mouse TDLo • 2400 mg/kg (7-14D preg); *Reproductive Effects:Effects on Newborn*:**Live birth index**; *Reproductive Effects:Effects on Newborn*:**Viability index (e.g., # alive at day 4 per # born alive)**; Ingestion/Oral-Rat TDLo • 4500 mg/kg (6-15D preg); *Reproductive Effects:Effects on Embryo or Fetus*:**Fetotoxicity (except death, e.g., stunted fetus)**; *Reproductive Effects:Specific Developmental Abnormalities*:**Other developmental abnormalities**; **Tumorigen / Carcinogen:** Inhalation-Rat TCLo • 1575 mg/kg 105 Week(s)-Intermittent; *Tumorigenic*:**Carcinogenic by RTECS criteria**; *Sense Organs and Special Senses:Olfaction*:**Tumors**; Inhalation-Rat TCLo • 30 ppm 6 Hour(s) 105 Week(s)-Intermittent; *Tumorigenic*:**Equivocal tumorigenic agent by RTECS criteria**; *Sense Organs and Special Senses:Olfaction*:**Tumors**; Inhalation-Rat TCLo • 60 ppm 6 Hour(s) 105 Week(s)-Intermittent; *Tumorigenic*:**Carcinogenic by RTECS criteria**; *Sense Organs and Special Senses:Olfaction*:**Tumors**
Ethylbenzene (< 1%)	100-41-4	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 3500 mg/kg; Inhalation-Rat LC50 • 55000 mg/m³ 2 Hour(s); Skin-Rabbit LD50 • 17800 µL/kg;

		Irritation: Skin-Rabbit • 15 mg 24 Hour(s)-Open • Mild irritation; **Reproductive:** Inhalation-Rat TCLo • 1000 ppm (6H/6-20D preg); *Reproductive Effects:Specific Developmental Abnormalities*:**Other developmental abnormalities**; *Reproductive Effects:Specific Developmental Abnormalities*:**Musculoskeletal system**; **Tumorigen / Carcinogen:** Inhalation-Rat TCLo • 750 ppm 1 Week(s)-Intermittent; *Tumorigenic*:**Equivocal tumorigenic agent by RTECS criteria**; *Kidney, Ureter, and Bladder*:**Kidney tumors**; *Tumorigenic*:**Increased incidence of tumors in susceptible strains**

GHS Properties	Classification
Acute toxicity	**OSHA HCS 2012**•Acute Toxicity - Dermal 4 - ATEmix (dermal) = 1565 mg/kg; Acute Toxicity - Inhalation 4 - ATEmix (inhl) = 3035 ppmV; Acute Toxicity - Oral 4 - ATEmix (oral) = 547 mg/kg
Aspiration Hazard	**OSHA HCS 2012**•Aspiration 1
Carcinogenicity	**OSHA HCS 2012**•Carcinogenicity 1A
Germ Cell Mutagenicity	**OSHA HCS 2012**•Germ Cell Mutagenicity 1B
Skin corrosion/Irritation	**OSHA HCS 2012**•Skin Irritation 2
Skin sensitization	**OSHA HCS 2012**•NDA
STOT-RE	**OSHA HCS 2012**•Specific Target Organ Toxicity Repeated Exposure 1
STOT-SE	**OSHA HCS 2012**•Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects; Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Toxicity for Reproduction	**OSHA HCS 2012**•Toxic to Reproduction 2
Respiratory sensitization	**OSHA HCS 2012**•NDA
Serious eye damage/Irritation	**OSHA HCS 2012**•Eye Irritation 2

Potential Health Effects

Inhalation

Acute (Immediate)
- Harmful if inhaled. May cause respiratory irritation. May affect the central nervous system. Symptoms may include dizziness, drowsiness, lethargy, coma and death.

Chronic (Delayed)
- NDA

Skin

Acute (Immediate)
- Harmful in contact with skin. Causes skin irritation.

Chronic (Delayed)
- NDA

Eye

Acute (Immediate)
- Causes serious eye irritation.

Chronic (Delayed)
- NDA

Ingestion

Acute (Immediate)
- Harmful if swallowed. Material may be aspirated into lungs during ingestion and/or subsequent vomiting. Aspiration of this material will cause severe lung injury, chemical pneumonitis, pulmonary edema or death.

Chronic (Delayed)
- NDA

Other

Chronic (Delayed)
- Chronic exposure to benzene results primarily in hematotoxicity, including aplastic anemia, pancytopenia, or any combination of anemia, leukopenia, and thrombocytopenia. Toluene causes CNS narcosis; mild, transient irritation of the upper respiratory tract; hilarity; nausea; nasal discharge; drowsiness; ataxia; dizziness; cerebellar ataxia; cognitive dysfunction; metallic taste; loss of appetite; weakness; and palpitations. High concentrations are associated with CNS encephalopathy, headache, depression, and lassitude. Naphthalene may cause damage to the eyes through prolonged or repeated exposure.

Mutagenic Effects

- Repeated and prolonged exposure may cause mutagenic effects.

Carcinogenic Effects

- Repeated and prolonged exposure may cause cancer.

Carcinogenic Effects				
	CAS	OSHA	IARC	NTP
Ethylbenzene	100-41-4	Not Listed	Group 2B-Possible Carcinogen	Not Listed
1,3-Butadiene	106-99-0	Specifically Regulated Carcinogen	Group 1-Carcinogenic	Known Human Carcinogen
Naphthalene	91-20-3	Not Listed	Group 2B-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen
Benzene	71-43-2	Specifically Regulated Carcinogen	Group 1-Carcinogenic	Known Human Carcinogen
Ethenylbenzene	100-42-5	Not Listed	Group 2B-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen
Isoprene	78-79-5	Not Listed	Group 2B-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen

Reproductive Effects

- Multiple physical deformities, with signs similar to fetal alcohol syndrome, microencephaly, CNS dysfunction, and variable growth deficiencies, have occurred in infants born to mothers who abused toluene during pregnancy.

Key to abbreviations

LD = Lethal Dose

LC = Lethal Concentration

TC = Toxic Concentration

TD = Toxic Dose

Section 12 - Ecological Information

Toxicity

- NDA

Persistence and degradability

- NDA

Bioaccumulative potential

- NDA

Mobility in Soil

- NDA

Other adverse effects

- NDA

Section 13 - Disposal Considerations

Waste treatment methods

Product waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN1993	Flammable liquids, n.o.s. (contains 46% Benzene, 11% Toluene)	3	III	NDA
TDG	UN1993	FLAMMABLE LIQUID, N.O.S. (contains 46% Benzene, 11% Toluene)	3	III	NDA
IMO/ IMDG	UN1993	FLAMMABLE LIQUID, N.O.S. (contains 46% Benzene, 11% Toluene)	3	III	NDA
IATA/ ICAO	UN1993	Flammable liquid, n.o.s. (contains 46% Benzene, 11% Toluene)	3	III	NDA

Special precautions for user
- None specified

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

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications
- Acute, Chronic, Fire

Inventories
- These products comply with the following inventories:

Canada DSL/NDSL **USA TSCA**

CERCLA
- In the event of a spill, the end user should verify whether reporting is required under local, state, and/or federal regulations.

WHIMS Classification
- The following components have classifications
  - 1,3-Butadiene (CAS 106-99-0) is classified as A, B1, D2A, F
  - Naphthalene (CAS 91-20-3) is classified as B4, D2A
  - Ethylbenzene (CAS 100-41-4) is classified as B2, D2A, D2B
  - Methanol (CAS 67-56-1) is classified as B2, D1B, D2A, D2B (including 28%)
  - Ethenylbenzene (CAS 100-42-5) is classified as B2, D2A
  - Toluene (CAS 108-88-3) is classified as B2, D2A, D2B
  - Benzene (CAS 71-43-2) is classified as B2, D2A, D2B
  - Cyclopentene (CAS 142-29-0) is classified as B2, D2B
  - 4,7-Methanoindene, 3a,4,7,7a-tetrahydro- (CAS 77-73-6) is classified as D1B, D2B
  - 1,3-Cyclopentadiene (CAS 542-92-7) is classified as F

Section 16 - Other Information

Last Revision Date 15/May/2015

Preparation Date 01/April/2015

Disclaimer/Statement of Liability

It is your responsibility to determine that our product is safe, lawful, and technically suitable for your intended uses. This safety data sheet cannot cover all possible situations which the user may experience during processing. Each aspect of the user's operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this safety data sheet should be provided to employees and/or customers. Westlake Chemical OpCo LP must rely on the user to use this information to develop appropriate work practice guidelines and employee instructional programs specific to the user's operation.

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The information in this sheet is valid for cited regulations published as of the date this document was prepared, as shown herein. Updates may be prepared as the regulations are amended or pending revised information about the product. It is the customer's responsibility to seek updated regulatory information on any specific product.

NDA = No data available