SAFETY DATA SHEET

Piano Mixture

Airgas
an Air Liquide company

Section 1. Identification

GHS product identifier : Piano Mixture

Other means of identification : Not available.

Product type : Liquid.

Product use : Synthetic/Analytical chemistry.

SDS # : 020059

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
SKIN SENSITIZATION - Category 1
GERM CELL MUTAGENICITY - Category 1B
CARCINOGENICITY - Category 1A
TOXIC TO REPRODUCTION (Fertility) - Category 2
TOXIC TO REPRODUCTION (Unborn child) - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : May form explosive mixtures with air.
Highly flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
May cause an allergic skin reaction.
May cause genetic defects.
May cause cancer.
Suspected of damaging fertility or the unborn child.
May be fatal if swallowed and enters airways.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.

Response : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

Product code : 020059

Ingredient name	%	CAS number
n-pentane	2.629	109-66-0
benzene	2.465	71-43-2
n-hexane	2.231	110-54-3
heptane	1.962	142-82-5
1-Hexene	1.808	592-41-6
ethylbenzene	1.718	100-41-4
cyclopentane	1.703	287-92-3
octane	1.69	111-65-9
cyclohexane	1.542	110-82-7
hept-1-ene	1.539	592-76-7
Nonane	1.426	111-84-2
methylcyclohexane	1.398	108-87-2
3-methylpentane	1.396	96-14-0
Oct-1-ene	1.365	111-66-0
toluene	1.34	108-88-3
n-decane	1.314	124-18-5
p-xylene	1.222	106-42-3
1-nonene	1.209	124-11-8
n-Undecane	1.205	1120-21-4
3-Heptene	1.183	7642-10-6
1-pentene	1.179	109-67-1
(Z)-hept-2-ene	1.163	6443-92-1
n-Dodecane	1.116	112-40-3
isopropylcyclohexane	1.099	696-29-7
3-methylheptane	1.071	589-81-1
dec-1-ene	1.028	872-05-9
propylbenzene	1.023	103-65-1
2,5-dimethyl heptane	0.984	2216-30-0

Section 3. Composition/information on ingredients

3-Methyl-1-octane	0.981	2216-33-3
tridecane	0.977	629-50-5
Isobutyl Cyclohexane	0.966	1678-98-4
methylcyclopentane	0.934	96-37-7
(Z)-hex-2-ene	0.924	7688-21-3
tert-butyl benzene	0.924	98-06-6
3-methylnonane	0.909	5911-04-6
tetradecane	0.896	629-59-4
isobutylbenzene	0.888	538-93-2
ethylcyclopentane	0.875	1640-89-7
2,2,3-trimethylbutane	0.873	464-06-2
2-methylheptane	0.859	592-27-8
1,1-dimethylcyclopentane	0.853	1638-26-2
2-methylpentane	0.849	107-83-5
2,4-dimethylpentane	0.82	108-08-7
pentylbenzene	0.813	538-68-1
4-methyl-1-pentene	0.811	691-37-2
cis,trans,trans-1,2,4-Trimethylcyclopentane	0.805	ND
cis-1,2-dimethylcyclohexane	0.798	2207-01-4
2-methylpent-2-ene	0.793	625-27-4
propylcyclopentane	0.788	2040-96-2
trans-1,4-dimethylcyclohexane	0.762	2207-04-7
1,3,5-triethylbenzene	0.757	102-25-0
trans-hept-2-ene	0.754	14686-13-6
isopropylcyclopentane	0.752	3875-51-2
hexylbenzene	0.746	1077-16-3
(E)-hept-3-ene	0.745	14686-14-7
2,5-dimethylhexane	0.729	592-13-2
isobutyl cyclopentane	0.71	3788-32-7
n-butyl cyclopentane	0.709	2040-95-1
Cyclohexane, 1,1,4-trimethyl-	0.701	7094-27-1
(Z)-oct-2-ene	0.696	7642-04-8
cis,trans,trans-1,2,4-Trimethylcyclohexane	0.692	7667-60-9
isoprene (stabilised)	0.691	78-79-5
isopentane	0.68	78-78-4
Cyclohexane, 1,3,5-trimethyl-(1α,3α,5α)	0.678	1795-27-3
Pentadecane	0.675	629-62-9
cis,trans,cis-1,2,4-Trimethylcyclohexane	0.674	7667-59-6
trans-1,3-dimethylcyclopentane	0.673	1759-58-6
2-Methyloctane	0.657	3221-61-2
1,1,2-trimethylcyclohexane	0.642	7094-26-0
(Z)-non-3-ene	0.633	20237-46-1
4-methylheptane	0.629	589-53-7
Octane, 2,3-dimethyl-	0.606	7146-60-3
2-methylnonane	0.586	871-83-0
Octane, 3-ethyl-	0.582	5881-17-4
m-xylene	0.576	108-38-3
o-xylene	0.574	95-47-6
1,2,4-trimethylbenzene	0.569	95-63-6
cis-2-pentene	0.566	627-20-3
3-methyl-1-butene	0.564	563-45-1
trans-1-Methyl-2-Propylcyclohexane	0.564	42806-77-9
trans-1-Methyl-2-(4-methylpentyl)cyclopentane	0.542	66553-50-2
2-methylhexane	0.526	591-76-4
trans-2-pentene	0.517	646-04-8
Octane, 2,2-dimethyl-	0.514	15869-87-1
2-ethyltoluene	0.505	611-14-3
octane,3,3-dimethyl-	0.501	4110-44-5
Cumene	0.499	98-82-8
3-ethyltoluene	0.494	620-14-4
4-ethyltoluene	0.487	622-96-8
2-ethyl-p-xylene	0.459	1758-88-9
4-ethyl-o-xylene	0.454	934-80-5

Section 3. Composition/information on ingredients

sec-butylbenzene	0.453	135-98-8
2-propyltoluene	0.451	1074-17-5
1-methyl-4-n-propylbenzene	0.447	1074-55-1
butylbenzene	0.444	104-51-8
5-ethyl-m-xylene	0.442	934-74-7
3-ethyl-o-xylene	0.44	933-98-2
2-Nonene, (Z)-	0.432	6434-77-1
1-methyl-3-propylbenzene	0.425	1074-43-7
3,3-dimethylpentane	0.415	562-49-2
Trans-2-Hexene	0.414	4050-45-7
2-methyl-1-butene	0.41	563-46-2
2,2-dimethylpentane	0.397	590-35-2
2,3-dimethylpentane	0.397	565-59-3
p-tert-butylethylbenzene	0.372	7364-19-4
trans-1,2-dimethylcyclopentane	0.359	822-50-4
Benzene,1-(1,1-dimethylethyl)-3,5-dimethyl-	0.359	98-19-1
(1α,2β,4α)-1,2,4-trimethylcyclopentane	0.358	16883-48-0
trans-1,2-dimethylcyclohexane	0.358	6876-23-9
3-methylhexane	0.357	589-34-4
trans-oct-2-ene	0.35	13389-42-9
3,4-dimethyl heptane	0.344	922-28-1
Cyclopentane, 1,2,3- trimethyl-, (1α,2β,3α)-	0.34	19374-46-0
2,2,3-trimethylpentane	0.339	564-02-3
2,4-dimethylhexane	0.324	589-43-5
2,3-dimethylhexane	0.317	584-94-1
3,4-dimethyl heptane	0.299	922-28-1
3,3-dimethyl heptane	0.294	4032-86-4
3-nonene	0.292	20063-92-7
3,3-DIETHYLPENTANE	0.275	1067-20-5
2,3-dimethyl heptane	0.26	3074-71-3
2,2-dimethylhexane	0.258	590-73-8
1,3,5-Trimethylbenzene	0.253	108-67-8
1-Ethyl-1-Methylcyclopentane	0.23	16747-50-5
2-ethyl-m-xylene	0.23	2870-04-4
o-cymene	0.227	527-84-4
m-cymene	0.223	535-77-3
1,2-diethylbenzene	0.22	135-01-3
1-Methyl-4-isopropylbenzene	0.215	99-87-6
Benzene, (2-methylbutyl)-	0.208	3968-85-2
1,2,4-triethylbenzene	0.185	877-44-1
Cyclopentane, 1,2,3- trimethyl-, (1α,2α,3α)-	0.173	2613-69-6
(E)-non-2-ene	0.157	6434-78-2
cis-1,3-dimethylcyclopentane	0.148	2532-58-3
3-ethylhexane	0.14	619-99-8
Benzene, 1-(1,1-dimethylethyl)-2-methyl-	0.14	1074-92-6
3,5-dimethyl heptane	0.133	926-82-9
2,3-dimethylbutane	0.117	79-29-8
3-ethylpentane	0.117	617-78-7
1,2,4,5-Tetramethylbenzene	0.048	95-93-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : Adverse symptoms may include the following:, respiratory tract irritation, coughing, nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness, reduced fetal weight, increase in fetal deaths, skeletal malformations

Skin contact : Adverse symptoms may include the following:, irritation, redness, reduced fetal weight, increase in fetal deaths, skeletal malformations

Ingestion : Adverse symptoms may include the following:, nausea or vomiting, reduced fetal weight, increase in fetal deaths, skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Avoid release to the environment. Empty containers retain product residue and can be hazardous. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not breathe vapor or mist. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid exposure during pregnancy. Do not swallow.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Store locked up. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
n-pentane	**ACGIH TLV (United States, 3/2017).** TWA: 1000 ppm 8 hours. **NIOSH REL (United States, 10/2016).** CEIL: 1800 mg/m³ 15 minutes. CEIL: 610 ppm 15 minutes. TWA: 350 mg/m³ 10 hours. TWA: 120 ppm 10 hours. **OSHA PEL (United States, 6/2016).** TWA: 2950 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 2250 mg/m³ 15 minutes. STEL: 750 ppm 15 minutes. TWA: 1800 mg/m³ 8 hours. TWA: 600 ppm 8 hours.
benzene	**ACGIH TLV (United States, 3/2017).** **Absorbed through skin.** STEL: 8 mg/m³ 15 minutes. STEL: 2.5 ppm 15 minutes. TWA: 1.6 mg/m³ 8 hours. TWA: 0.5 ppm 8 hours. **NIOSH REL (United States, 10/2016).** STEL: 1 ppm 15 minutes. TWA: 0.1 ppm 10 hours. **OSHA PEL (United States, 6/2016).**

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	STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. **OSHA PEL Z2 (United States, 2/2013).** AMP: 50 ppm 10 minutes. CEIL: 25 ppm TWA: 10 ppm 8 hours.
n-hexane	**ACGIH TLV (United States, 3/2017).** **Absorbed through skin.** TWA: 50 ppm 8 hours. **NIOSH REL (United States, 10/2016).** TWA: 180 mg/m³ 10 hours. TWA: 50 ppm 10 hours. **OSHA PEL (United States, 6/2016).** TWA: 1800 mg/m³ 8 hours. TWA: 500 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 180 mg/m³ 8 hours. TWA: 50 ppm 8 hours.
heptane	**ACGIH TLV (United States, 3/2017).** STEL: 2050 mg/m³ 15 minutes. STEL: 500 ppm 15 minutes. TWA: 1640 mg/m³ 8 hours. TWA: 400 ppm 8 hours. **NIOSH REL (United States, 10/2016).** CEIL: 1800 mg/m³ 15 minutes. CEIL: 440 ppm 15 minutes. TWA: 350 mg/m³ 10 hours. TWA: 85 ppm 10 hours. **OSHA PEL (United States, 6/2016).** TWA: 2000 mg/m³ 8 hours. TWA: 500 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 2000 mg/m³ 15 minutes. STEL: 500 ppm 15 minutes. TWA: 1600 mg/m³ 8 hours. TWA: 400 ppm 8 hours.
1-Hexene	**ACGIH TLV (United States, 3/2017).** TWA: 50 ppm 8 hours.
ethylbenzene	**ACGIH TLV (United States, 3/2017).** TWA: 20 ppm 8 hours. **NIOSH REL (United States, 10/2016).** STEL: 545 mg/m³ 15 minutes. STEL: 125 ppm 15 minutes. TWA: 435 mg/m³ 10 hours. TWA: 100 ppm 10 hours. **OSHA PEL (United States, 6/2016).** TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 545 mg/m³ 15 minutes. STEL: 125 ppm 15 minutes. TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours.
cyclopentane	**ACGIH TLV (United States, 3/2017).** TWA: 1720 mg/m³ 8 hours. TWA: 600 ppm 8 hours. **NIOSH REL (United States, 10/2016).** TWA: 1720 mg/m³ 10 hours.

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	TWA: 600 ppm 10 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1720 mg/m³ 8 hours. TWA: 600 ppm 8 hours.
octane	**OSHA PEL 1989 (United States, 3/1989).** TWA: 300 ppm 8 hours. TWA: 1450 mg/m³ 8 hours. STEL: 375 ppm 15 minutes. STEL: 1800 mg/m³ 15 minutes. **NIOSH REL (United States, 10/2016).** TWA: 75 ppm 10 hours. TWA: 350 mg/m³ 10 hours. CEIL: 385 ppm 15 minutes. CEIL: 1800 mg/m³ 15 minutes. **ACGIH TLV (United States, 3/2017).** TWA: 300 ppm 8 hours. **OSHA PEL (United States, 6/2016).** TWA: 500 ppm 8 hours. TWA: 2350 mg/m³ 8 hours.
cyclohexane	**ACGIH TLV (United States, 3/2017).** TWA: 100 ppm 8 hours. **NIOSH REL (United States, 10/2016).** TWA: 1050 mg/m³ 10 hours. TWA: 300 ppm 10 hours. **OSHA PEL (United States, 6/2016).** TWA: 1050 mg/m³ 8 hours. TWA: 300 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1050 mg/m³ 8 hours. TWA: 300 ppm 8 hours.
hept-1-ene	None.
Nonane	**ACGIH TLV (United States, 3/2017).** TWA: 1050 mg/m³ 8 hours. TWA: 200 ppm 8 hours. **NIOSH REL (United States, 10/2016).** TWA: 1050 mg/m³ 10 hours. TWA: 200 ppm 10 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1050 mg/m³ 8 hours. TWA: 200 ppm 8 hours.
methylcyclohexane	**ACGIH TLV (United States, 3/2017).** TWA: 1610 mg/m³ 8 hours. TWA: 400 ppm 8 hours. **NIOSH REL (United States, 10/2016).** TWA: 1600 mg/m³ 10 hours. TWA: 400 ppm 10 hours. **OSHA PEL (United States, 6/2016).** TWA: 2000 mg/m³ 8 hours. TWA: 500 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1600 mg/m³ 8 hours. TWA: 400 ppm 8 hours.
3-methylpentane	**ACGIH TLV (United States, 3/2017).** TWA: 500 ppm 8 hours. TWA: 1760 mg/m³ 8 hours. STEL: 1000 ppm 15 minutes. STEL: 3500 mg/m³ 15 minutes. **OSHA PEL 1989 (United States, 3/1989).** TWA: 500 ppm 8 hours. TWA: 1800 mg/m³ 8 hours. STEL: 1000 ppm 15 minutes.

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	STEL: 3600 mg/m³ 15 minutes. **NIOSH REL (United States, 10/2016).** TWA: 100 ppm 10 hours. TWA: 350 mg/m³ 10 hours. CEIL: 510 ppm 15 minutes. CEIL: 1800 mg/m³ 15 minutes.
Oct-1-ene	**AIHA WEEL (United States, 10/2011).** TWA: 75 ppm 8 hours.
toluene	**ACGIH TLV (United States, 3/2017).** TWA: 20 ppm 8 hours. **NIOSH REL (United States, 10/2016).** STEL: 560 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m³ 10 hours. TWA: 100 ppm 10 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 560 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **OSHA PEL Z2 (United States, 2/2013).** AMP: 500 ppm 10 minutes. CEIL: 300 ppm TWA: 200 ppm 8 hours.
n-decane	None.
p-xylene	**NIOSH REL (United States, 10/2016).** STEL: 655 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 435 mg/m³ 10 hours. TWA: 100 ppm 10 hours. **OSHA PEL (United States, 6/2016).** TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 655 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **ACGIH TLV (United States, 3/2017).** TWA: 100 ppm 8 hours. TWA: 434 mg/m³ 8 hours. STEL: 150 ppm 15 minutes. STEL: 651 mg/m³ 15 minutes.
1-nonene	None.
n-Undecane	None.
3-Heptene	None.
1-pentene	None.
(Z)-hept-2-ene	None.
n-Dodecane	None.
isopropylcyclohexane	None.
3-methylheptane	**ACGIH TLV (United States, 3/2017).** TWA: 300 ppm 8 hours.
dec-1-ene	**AIHA WEEL (United States, 10/2011).** TWA: 100 ppm 8 hours.
propylbenzene	None.
2,5-dimethyl heptane	None.
3-Methyl-1-octane	None.
tridecane	None.
Isobutyl Cyclohexane	None.
methylcyclopentane	None.
(Z)-hex-2-ene	None.

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tert-butyl benzene	None.
3-methylnonane	None.
tetradecane	None.
isobutylbenzene	None.
ethylcyclopentane	None.
2,2,3-trimethylbutane	**ACGIH TLV (United States, 3/2017).** TWA: 400 ppm 8 hours. TWA: 1640 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 2050 mg/m³ 15 minutes.
2-methylheptane	**ACGIH TLV (United States, 3/2017).** TWA: 300 ppm 8 hours.
1,1-dimethylcyclopentane	None.
2-methylpentane	**ACGIH TLV (United States, 3/2017).** TWA: 500 ppm 8 hours. TWA: 1760 mg/m³ 8 hours. STEL: 1000 ppm 15 minutes. STEL: 3500 mg/m³ 15 minutes. **OSHA PEL 1989 (United States, 3/1989).** TWA: 500 ppm 8 hours. TWA: 1800 mg/m³ 8 hours. STEL: 1000 ppm 15 minutes. STEL: 3600 mg/m³ 15 minutes. **NIOSH REL (United States, 10/2016).** TWA: 100 ppm 10 hours. TWA: 350 mg/m³ 10 hours. CEIL: 510 ppm 15 minutes. CEIL: 1800 mg/m³ 15 minutes.
2,4-dimethylpentane	**ACGIH TLV (United States, 3/2017).** TWA: 400 ppm 8 hours. TWA: 1640 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 2050 mg/m³ 15 minutes.
pentylbenzene	None.
4-methyl-1-pentene	None.
cis,trans,trans-1,2,4-Trimethylcyclopentane	None.
cis-1,2-dimethylcyclohexane	None.
2-methylpent-2-ene	None.
propylcyclopentane	None.
trans-1,4-dimethylcyclohexane	None.
1,3,5-triethylbenzene	None.
trans-hept-2-ene	None.
isopropylcyclopentane	None.
hexylbenzene	None.
(E)-hept-3-ene	None.
2,5-dimethylhexane	**ACGIH TLV (United States, 3/2017).** TWA: 300 ppm 8 hours.
isobutyl cyclopentane	None.
n-butyl cyclopentane	None.
Cyclohexane, 1,1,4-trimethyl-	None.
(Z)-oct-2-ene	None.
cis,trans,trans-1,2,4-Trimethylcyclohexane	None.
isoprene (stabilised)	**AIHA WEEL (United States, 10/2011).** TWA: 2 ppm 8 hours.
isopentane	**ACGIH TLV (United States, 3/2017).** TWA: 1000 ppm 8 hours.
Cyclohexane, 1,3,5-trimethyl-(1α,3α,5α)	None.
Pentadecane	None.
cis,trans,cis-1,2,4-Trimethylcyclohexane	None.
trans-1,3-dimethylcyclopentane	None.
2-Methyloctane	None.
1,1,2-trimethylcyclohexane	None.

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(Z)-non-3-ene	None.
4-methylheptane	**ACGIH TLV (United States, 3/2017).** TWA: 300 ppm 8 hours.
Octane, 2,3-dimethyl-	None.
2-methylnonane	None.
Octane, 3-ethyl-	None.
m-xylene	**NIOSH REL (United States, 10/2016).** STEL: 655 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 435 mg/m³ 10 hours. TWA: 100 ppm 10 hours. **OSHA PEL (United States, 6/2016).** TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 655 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **ACGIH TLV (United States, 3/2017).** TWA: 100 ppm 8 hours. TWA: 434 mg/m³ 8 hours. STEL: 150 ppm 15 minutes. STEL: 651 mg/m³ 15 minutes.
o-xylene	**NIOSH REL (United States, 10/2016).** STEL: 655 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 435 mg/m³ 10 hours. TWA: 100 ppm 10 hours. **OSHA PEL (United States, 6/2016).** TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 655 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **ACGIH TLV (United States, 3/2017).** TWA: 100 ppm 8 hours. TWA: 434 mg/m³ 8 hours. STEL: 150 ppm 15 minutes. STEL: 651 mg/m³ 15 minutes.
1,2,4-trimethylbenzene	**ACGIH TLV (United States, 3/2017).** TWA: 123 mg/m³ 8 hours. TWA: 25 ppm 8 hours. **NIOSH REL (United States, 10/2016).** TWA: 125 mg/m³ 10 hours. TWA: 25 ppm 10 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 125 mg/m³ 8 hours. TWA: 25 ppm 8 hours.
cis-2-pentene	None.
3-methyl-1-butene	None.
trans-1-Methyl-2-Propylcyclohexane	None.
trans-1-Methyl-2-(4-methylpentyl)cyclopentane	None.
2-methylhexane	**ACGIH TLV (United States, 3/2017).** TWA: 400 ppm 8 hours. TWA: 1640 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 2050 mg/m³ 15 minutes.
trans-2-pentene	None.

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Octane, 2,2-dimethyl-	None.
2-ethyltoluene	None.
octane,3,3-dimethyl-	None.
Cumene	**ACGIH TLV (United States, 3/2017).** TWA: 50 ppm 8 hours. **NIOSH REL (United States, 10/2016).** **Absorbed through skin.** TWA: 245 mg/m³ 10 hours. TWA: 50 ppm 10 hours. **OSHA PEL (United States, 6/2016).** **Absorbed through skin.** TWA: 245 mg/m³ 8 hours. TWA: 50 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** **Absorbed through skin.** TWA: 245 mg/m³ 8 hours. TWA: 50 ppm 8 hours.
3-ethyltoluene	None.
4-ethyltoluene	None.
2-ethyl-p-xylene	None.
4-ethyl-o-xylene	None.
sec-butylbenzene	None.
2-propyltoluene	None.
1-methyl-4-n-propylbenzene	None.
butylbenzene	None.
5-ethyl-m-xylene	None.
3-ethyl-o-xylene	None.
2-Nonene, (Z)-	None.
1-methyl-3-propylbenzene	None.
3,3-dimethylpentane	**ACGIH TLV (United States, 3/2017).** TWA: 400 ppm 8 hours. TWA: 1640 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 2050 mg/m³ 15 minutes.
Trans-2-Hexene	None.
2-methyl-1-butene	None.
2,2-dimethylpentane	**ACGIH TLV (United States, 3/2017).** TWA: 400 ppm 8 hours. TWA: 1640 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 2050 mg/m³ 15 minutes.
2,3-dimethylpentane	**ACGIH TLV (United States, 3/2017).** TWA: 400 ppm 8 hours. TWA: 1640 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 2050 mg/m³ 15 minutes.
p-tert-butylethylbenzene	None.
trans-1,2-dimethylcyclopentane	None.
Benzene,1-(1,1-dimethylethyl)-3,5-dimethyl-	None.
(1α,2β,4α)-1,2,4-trimethylcyclopentane	None.
trans-1,2-dimethylcyclohexane	None.
3-methylhexane	**ACGIH TLV (United States, 3/2017).** TWA: 400 ppm 8 hours. TWA: 1640 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 2050 mg/m³ 15 minutes.
trans-oct-2-ene	None.
3,4-dimethyl heptane	None.
Cyclopentane, 1,2,3- trimethyl-, (1α,2β,3α)-	None.
2,2,3-trimethylpentane	**ACGIH TLV (United States, 3/2017).** TWA: 300 ppm 8 hours.
2,4-dimethylhexane	**ACGIH TLV (United States, 3/2017).**

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	TWA: 300 ppm 8 hours.
2,3-dimethylhexane	**ACGIH TLV (United States, 3/2017).** TWA: 300 ppm 8 hours.
3,4-dimethyl heptane	None.
3,3-dimethyl heptane	None.
3-nonene	None.
3,3-DIETHYLPENTANE	None.
2,3-dimethyl heptane	None.
2,2-dimethylhexane	**ACGIH TLV (United States, 3/2017).** TWA: 300 ppm 8 hours.
1,3,5-Trimethylbenzene	**ACGIH TLV (United States, 3/2017).** TWA: 25 ppm 8 hours. TWA: 123 mg/m³ 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 25 ppm 8 hours. TWA: 125 mg/m³ 8 hours. **NIOSH REL (United States, 10/2016).** TWA: 25 ppm 10 hours. TWA: 125 mg/m³ 10 hours.
1-Ethyl-1-Methylcyclopentane	None.
2-ethyl-m-xylene	None.
o-cymene	None.
m-cymene	None.
1,2-diethylbenzene	None.
1-Methyl-4-isopropylbenzene	None.
Benzene, (2-methylbutyl)-	None.
1,2,4-triethylbenzene	None.
Cyclopentane, 1,2,3- trimethyl-, (1α,2α,3α)-	None.
(E)-non-2-ene	None.
cis-1,3-dimethylcyclopentane	None.
3-ethylhexane	**ACGIH TLV (United States, 3/2017).** TWA: 300 ppm 8 hours.
Benzene, 1-(1,1-dimethylethyl)-2-methyl-	None.
3,5-dimethyl heptane	None.
2,3-dimethylbutane	**ACGIH TLV (United States, 3/2017).** STEL: 3500 mg/m³ 15 minutes. STEL: 1000 ppm 15 minutes. TWA: 1760 mg/m³ 8 hours. TWA: 500 ppm 8 hours. **NIOSH REL (United States, 10/2016).** CEIL: 1800 mg/m³ 15 minutes. CEIL: 510 ppm 15 minutes. TWA: 350 mg/m³ 10 hours. TWA: 100 ppm 10 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 3600 mg/m³ 15 minutes. STEL: 1000 ppm 15 minutes. TWA: 1800 mg/m³ 8 hours. TWA: 500 ppm 8 hours.
3-ethylpentane	**ACGIH TLV (United States, 3/2017).** TWA: 400 ppm 8 hours. TWA: 1640 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 2050 mg/m³ 15 minutes.
1,2,4,5-Tetramethylbenzene	None.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Not available.

Odor : Not available.

Odor threshold : Not available.

pH : Not available.

Melting point : May start to solidify at the following temperature: 13.2°C (55.8°F) This is based on data for the following ingredient: p-xylene. Weighted average: -69°C (-92.2°F)

Boiling point : Lowest known value: 29.9°C (85.8°F) (pent-1-ene). Weighted average: 106.6°C (223.9°F)

Critical temperature : Lowest known value: 191.65°C (377°F) (pent-1-ene).

Flash point : Not available.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Highest known value: 5.4 (Air = 1) (undecane). Weighted average: 3.4 (Air = 1)

Section 9. Physical and chemical properties

Gas Density (lb/ft ^{3}) : Weighted average: 0.62

Relative density : Not available.

Solubility : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Flow time (ISO 2431) : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
n-pentane	LC50 Inhalation Vapor	Rat	364 g/m³	4 hours
benzene	LC50 Inhalation Gas.	Rat	10000 ppm	7 hours
	LD50 Oral	Rat	930 mg/kg	-
n-hexane	LC50 Inhalation Gas.	Rat	48000 ppm	4 hours
	LC50 Inhalation Vapor	Rat	96000 ppm	1 hours
	LD50 Oral	Rat	15840 mg/kg	-
heptane	LC50 Inhalation Gas.	Rat	48000 ppm	4 hours
	LC50 Inhalation Vapor	Rat	50242 ppm	1 hours
	LC50 Inhalation Vapor	Rat	103 g/m³	4 hours
1-Hexene	LC50 Inhalation Gas.	Rat	32000 ppm	4 hours
ethylbenzene	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
cyclopentane	LD50 Oral	Rat	11400 mg/kg	-
octane	LC50 Inhalation Gas.	Rat	25260 ppm	4 hours
	LC50 Inhalation Vapor	Rat	118 g/m³	4 hours
cyclohexane	LD50 Oral	Rat	6240 mg/kg	-
Nonane	LC50 Inhalation Gas.	Rat	3200 ppm	4 hours
	LC50 Inhalation Vapor	Rat	17000 mg/m³	4 hours
methylcyclohexane	LC50 Inhalation Vapor	Mouse	20750 ppm	4 hours

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	LC50 Inhalation Vapor	Rabbit	7613.5 ppm	4 hours
Oct-1-ene	LC50 Inhalation Vapor	Rat	8050 ppm	4 hours
	LD50 Oral	Rabbit	2000 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
toluene	LC50 Inhalation Vapor	Rat	28830 ppm	1 hours
	LC50 Inhalation Vapor	Rat	49 g/m³	4 hours
p-xylene	LC50 Inhalation Gas.	Rat	9100 ppm	1 hours
	LC50 Inhalation Gas.	Rat	4550 ppm	4 hours
	LD50 Oral	Rat	3910 mg/kg	-
1-pentene	LC50 Inhalation Vapor	Rat	175000 mg/m³	4 hours
propylbenzene	LC50 Inhalation Vapor	Rat	91910 ppm	1 hours
	LD50 Oral	Rat	6040 mg/kg	-
tert-butyl benzene	LD50 Oral	Rat	3045 mg/kg	-
2,2,3-trimethylbutane	LC50 Inhalation Vapor	Rat	50242 ppm	1 hours
2-methylpent-2-ene	LC50 Inhalation Vapor	Rat	87000 mg/m³	4 hours
isoprene (stabilised)	LC50 Inhalation Gas.	Rat	127080 ppm	1 hours
	LC50 Inhalation Vapor	Rat	129000 mg/m³	4 hours
isopentane	LC50 Inhalation Vapor	Rat	280000 mg/m³	4 hours
m-xylene	LD50 Oral	Rat	4988 mg/kg	-
o-xylene	LC50 Inhalation Gas.	Mouse	8736 ppm	1 hours
	LC50 Inhalation Gas.	Rat	13400 ppm	1 hours
	LD50 Oral	Rat	3567 mg/kg	-
1,2,4-trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
Cumene	LC50 Inhalation Gas.	Rat	16000 ppm	1 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours
	LD50 Oral	Rat	1400 mg/kg	-
4-ethyltoluene	LD50 Oral	Rat	4850 mg/kg	-
sec-butylbenzene	LD50 Oral	Rat	6300 mg/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
o-cymene	LD50 Oral	Rat	1370 mg/kg	-
m-cymene	LD50 Oral	Rat	2374 mg/kg	-
1-Methyl-4-isopropylbenzene	LD50 Dermal	Rabbit	10545 mg/kg	-
	LD50 Oral	Rat	1400 mg/kg	-
1,2,4,5-Tetramethylbenzene	LD50 Oral	Rat	6700 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
benzene	Eyes - Moderate irritant	Rabbit	-	88 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
n-hexane	Eyes - Mild irritant	Rabbit	-	10 milligrams	-
ethylbenzene	Eyes - Severe irritant	Rabbit	-	500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
Nonane	Skin - Mild irritant	Pig	-	24 hours 250 microliters	-
	Skin - Moderate irritant	Rat	-	96 hours 300 microliters	-
methylcyclohexane	Eyes - Mild irritant	Rabbit	-	24 hours 100 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-
toluene	Eyes - Mild irritant	Rabbit	-	0.5 minutes 100	-

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				milligrams	
	Eyes - Mild irritant	Rabbit	-	870 Micrograms	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Pig	-	24 hours 250 microliters	-
	Skin - Mild irritant	Rabbit	-	435 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Moderate irritant	Rabbit	-	500 milligrams	-
n-decane	Skin - Mild irritant	Pig	-	96 hours 1200 microliters Intermittent	-
n-Undecane	Skin - Mild irritant	Pig	-	96 hours 1200 microliters Intermittent	-
n-Dodecane	Skin - Mild irritant	Pig	-	96 hours 1200 microliters Intermittent	-
	Skin - Moderate irritant	Rat	-	96 hours 300 microliters	-
	Skin - Moderate irritant	Rabbit	-	24 hours 0.05 Mililiters	-
tridecane	Skin - Mild irritant	Pig	-	24 hours 300 microliters	-
	Skin - Moderate irritant	Pig	-	96 hours 1200 microliters Intermittent	-
	Skin - Severe irritant	Rabbit	-	24 hours 0.05 Mililiters	-
tetradecane	Skin - Mild irritant	Pig	-	24 hours 300 microliters	-
	Skin - Moderate irritant	Pig	-	96 hours 1200 microliters Intermittent	-
	Skin - Severe irritant	Rat	-	96 hours 300 microliters	-
	Skin - Moderate irritant	Rabbit	-	24 hours 0.05 Mililiters	-
Pentadecane	Skin - Mild irritant	Pig	-	24 hours 300 microliters	-
	Skin - Moderate irritant	Pig	-	96 hours 1200 microliters Intermittent	-
m-xylene	Eyes - Severe irritant	Rabbit	-	24 hours 5 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Severe irritant	Rabbit	-	24 hours 10 Micrograms	-
Cumene	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	86 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 10 milligrams	-

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	Skin - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
sec-butylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
1,3,5-Trimethylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
1-Methyl-4-isopropylbenzene	Skin - Moderate irritant	Rabbit	-	24 hours 500 milligrams	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
benzene	+	1	Known to be a human carcinogen.
ethylbenzene	-	2B	-
toluene	-	3	-
p-xylene	-	3	-
isoprene (stabilised)	-	2B	Reasonably anticipated to be a human carcinogen.
m-xylene	-	3	-
o-xylene	-	3	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Piano Mixture	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
n-pentane	Category 3	Not applicable.	Narcotic effects
n-hexane	Category 3	Not applicable.	Narcotic effects
heptane	Category 3	Not applicable.	Narcotic effects
octane	Category 3	Not applicable.	Narcotic effects
cyclohexane	Category 3	Not applicable.	Narcotic effects
methylcyclohexane	Category 3	Not applicable.	Narcotic effects
3-methylpentane	Category 3	Not applicable.	Narcotic effects
toluene	Category 3	Not applicable.	Narcotic effects
1-nonene	Category 3	Not applicable.	Narcotic effects
(Z)-hept-2-ene	Category 3	Not applicable.	Respiratory tract irritation
propylbenzene	Category 3	Not applicable.	Respiratory tract irritation
3-Methyl-1-octane	Category 3	Not applicable.	Respiratory tract irritation
tert-butyl benzene	Category 2	Not determined	nervous system
isobutylbenzene	Category 3	Not applicable.	Respiratory tract irritation

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2-methylpentane	Category 3	Not applicable.	Narcotic effects
cis,trans,trans-1,2,4-Trimethylcyclopentane	Category 3	Not applicable.	Respiratory tract irritation
1,3,5-triethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
trans-hept-2-ene	Category 3	Not applicable.	Respiratory tract irritation
hexylbenzene	Category 3	Not applicable.	Respiratory tract irritation
2,5-dimethylhexane	Category 3	Not applicable.	Narcotic effects
isopentane	Category 3	Not applicable.	Narcotic effects
Pentadecane	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
trans-1,3-dimethylcyclopentane	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
2-Methyloctane	Category 3	Not applicable.	Respiratory tract irritation
(Z)-non-3-ene	Category 3	Not applicable.	Respiratory tract irritation
4-methylheptane	Category 3	Not applicable.	Narcotic effects
1,2,4-trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
cis-2-pentene	Category 3	Not applicable.	Respiratory tract irritation
3-methyl-1-butene	Category 3	Not applicable.	Narcotic effects
2-methylhexane	Category 3	Not applicable.	Narcotic effects
trans-2-pentene	Category 3	Not applicable.	Respiratory tract irritation
octane,3,3-dimethyl-	Category 3	Not applicable.	Respiratory tract irritation
3-ethyltoluene	Category 3	Not applicable.	Narcotic effects
4-ethyltoluene	Category 3	Not applicable.	Narcotic effects
4-ethyl-o-xylene	Category 3	Not applicable.	Respiratory tract irritation
3-ethyl-o-xylene	Category 3	Not applicable.	Respiratory tract irritation
2-Nonene, (Z)-	Category 3	Not applicable.	Respiratory tract irritation
3,3-dimethylpentane	Category 3	Not applicable.	Narcotic effects
Trans-2-Hexene	Category 3	Not applicable.	Respiratory tract irritation
2-methyl-1-butene	Category 3	Not applicable.	Narcotic effects
2,2-dimethylpentane	Category 3	Not applicable.	Narcotic effects
2,3-dimethylpentane	Category 3	Not applicable.	Narcotic effects
Benzene,1-(1,1-dimethylethyl)-3,5-dimethyl-	Category 3	Not applicable.	Respiratory tract irritation
(1α,2β,4α)-1,2,4-trimethylcyclopentane	Category 3	Not applicable.	Respiratory tract irritation
3,4-dimethyl heptane	Category 3	Not applicable.	Respiratory tract irritation
2,2,3-trimethylpentane	Category 3	Not applicable.	Narcotic effects
2,4-dimethylhexane	Category 3	Not applicable.	Narcotic effects
2,3-dimethylhexane	Category 3	Not applicable.	Narcotic effects
3,4-dimethyl heptane	Category 3	Not applicable.	Respiratory tract irritation
2,2-dimethylhexane	Category 3	Not applicable.	Narcotic effects
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,2-diethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
3-ethylhexane	Category 3	Not applicable.	Narcotic effects
Benzene, 1-(1,1-dimethylethyl)-2-methyl-	Category 3	Not applicable.	Respiratory tract

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3,5-dimethyl heptane	Category 3	Not applicable.	irritation Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Piano Mixture	Category 1	Not determined	Not determined
benzene	Category 1	Not determined	Not determined
n-hexane	Category 2	Not determined	Not determined
ethylbenzene	Category 2	Not determined	Not determined
toluene	Category 2	Not determined	Not determined
Cumene	Category 2	Inhalation	Not determined
4-ethyl-o-xylene	Category 1	Not determined	Not determined

Aspiration hazard

Name	Result
Piano Mixture	ASPIRATION HAZARD - Category 1
ethylbenzene	ASPIRATION HAZARD - Category 1
cyclohexane	ASPIRATION HAZARD - Category 1
Nonane	ASPIRATION HAZARD - Category 1
3-methylpentane	ASPIRATION HAZARD - Category 1
1-nonene	ASPIRATION HAZARD - Category 1
n-Undecane	ASPIRATION HAZARD - Category 1
isopropylcyclohexane	ASPIRATION HAZARD - Category 1
propylbenzene	ASPIRATION HAZARD - Category 1
2,5-dimethyl heptane	ASPIRATION HAZARD - Category 1
3-Methyl-1-octane	ASPIRATION HAZARD - Category 1
tridecane	ASPIRATION HAZARD - Category 1
4-methyl-1-pentene	ASPIRATION HAZARD - Category 1
cis,trans,trans-1,2,4-Trimethylcyclopentane	ASPIRATION HAZARD - Category 1
cis-1,2-dimethylcyclohexane	ASPIRATION HAZARD - Category 1
trans-hept-2-ene	ASPIRATION HAZARD - Category 1
2,5-dimethylhexane	ASPIRATION HAZARD - Category 1
trans-1,3-dimethylcyclopentane	ASPIRATION HAZARD - Category 1
2-Methyloctane	ASPIRATION HAZARD - Category 1
(Z)-non-3-ene	ASPIRATION HAZARD - Category 1
4-methylheptane	ASPIRATION HAZARD - Category 1
2-methylnonane	ASPIRATION HAZARD - Category 1
cis-2-pentene	ASPIRATION HAZARD - Category 1
2-methylhexane	ASPIRATION HAZARD - Category 1
trans-2-pentene	ASPIRATION HAZARD - Category 1
2-ethyltoluene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1
3-ethyltoluene	ASPIRATION HAZARD - Category 1
4-ethyltoluene	ASPIRATION HAZARD - Category 1
4-ethyl-o-xylene	ASPIRATION HAZARD - Category 1
sec-butylbenzene	ASPIRATION HAZARD - Category 1
butylbenzene	ASPIRATION HAZARD - Category 1
2-Nonene, (Z)-	ASPIRATION HAZARD - Category 1
3,3-dimethylpentane	ASPIRATION HAZARD - Category 1
Trans-2-Hexene	ASPIRATION HAZARD - Category 1
2-methyl-1-butene	ASPIRATION HAZARD - Category 1
2,2-dimethylpentane	ASPIRATION HAZARD - Category 1
2,3-dimethylpentane	ASPIRATION HAZARD - Category 1
(1α,2β,4α)-1,2,4-trimethylcyclopentane	ASPIRATION HAZARD - Category 1
trans-1,2-dimethylcyclohexane	ASPIRATION HAZARD - Category 1
3,4-dimethyl heptane	ASPIRATION HAZARD - Category 1
2,2,3-trimethylpentane	ASPIRATION HAZARD - Category 1
2,4-dimethylhexane	ASPIRATION HAZARD - Category 1
2,3-dimethylhexane	ASPIRATION HAZARD - Category 1
3,4-dimethyl heptane	ASPIRATION HAZARD - Category 1
3,3-dimethyl heptane	ASPIRATION HAZARD - Category 1

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2,3-dimethyl heptane	ASPIRATION HAZARD - Category 1
2,2-dimethylhexane	ASPIRATION HAZARD - Category 1
1,2-diethylbenzene	ASPIRATION HAZARD - Category 1
1-Methyl-4-isopropylbenzene	ASPIRATION HAZARD - Category 1
3-ethylhexane	ASPIRATION HAZARD - Category 1
Benzene, 1-(1,1-dimethylethyl)-2-methyl-	ASPIRATION HAZARD - Category 1
3,5-dimethyl heptane	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : Adverse symptoms may include the following:, respiratory tract irritation, coughing, nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness, reduced fetal weight, increase in fetal deaths, skeletal malformations

Skin contact : Adverse symptoms may include the following:, irritation, redness, reduced fetal weight, increase in fetal deaths, skeletal malformations

Ingestion : Adverse symptoms may include the following:, nausea or vomiting, reduced fetal weight, increase in fetal deaths, skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : May cause genetic defects.

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : Suspected of damaging fertility.

Numerical measures of toxicity

Acute toxicity estimates

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Route	ATE value
Oral	70203.2 mg/kg
Dermal	59952.7 mg/kg
Inhalation (gases)	113228 ppm
Inhalation (vapors)	230.3 mg/l

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Toxicity

Product/ingredient name	Result	Species	Exposure
benzene	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1600000 µg/l Fresh water	Algae - Selenastrum sp.	96 hours
	Acute EC50 9230 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 21 mg/l Marine water	Crustaceans - Artemia salina	48 hours
	Acute LC50 5.28 ul/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Chronic EC10 >1360 mg/l Fresh water	Algae - Scenedesmus subspicatus	96 hours
	Chronic NOEC 98 mg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 1.5 to 5.4 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks
n-hexane	Acute LC50 2500 µg/l Fresh water	Fish - Pimephales promelas	96 hours
heptane	Acute LC50 375000 µg/l Fresh water	Fish - Oreochromis mossambicus	96 hours
ethylbenzene	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 3600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 6530 µg/l Fresh water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 2930 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
cyclohexane	Acute LC50 4530 µg/l Fresh water	Fish - Pimephales promelas	96 hours
methylcyclohexane	Acute LC50 5800 µg/l Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
Oct-1-ene	Acute LC50 4.8 mg/l Fresh water	Fish - Danio rerio - Young	96 hours
toluene	Acute EC50 12500 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 11600 µg/l Fresh water	Crustaceans - Gammarus pseudolimnaeus - Adult	48 hours
	Acute EC50 6000 µg/l Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 5500 µg/l Fresh water	Fish - Oncorhynchus kisutch - Fry	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Daphnia - Daphnia magna	21 days
n-decane	Acute EC50 89 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute LC50 18000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 >500 ppm Marine water	Fish - Cyprinodon variegatus - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
p-xylene	Acute EC50 3200 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 4730 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 2 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	96 hours

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1-nonene	Acute EC50 3.2 to 10 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 10 mg/l Fresh water	Fish - Danio rerio - Young	96 hours
propylbenzene	Acute EC50 1800 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 1550 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
pentylbenzene	Acute LC50 1710 µg/l Fresh water	Fish - Pimephales promelas	96 hours
cis-1,2-dimethylcyclohexane	Acute EC50 3235 µg/l Fresh water	Daphnia - Daphnia pulex - Neonate	48 hours
	Acute LC50 7000 µg/l Fresh water	Fish - Oncorhynchus mykiss - Fry	96 hours
propylcyclopentane	Acute EC50 3113 µg/l Fresh water	Daphnia - Daphnia pulex - Neonate	48 hours
isoprene (stabilised)	Acute LC50 42540 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
m-xylene	Acute EC50 4900 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 5770 µg/l Fresh water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 3530 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 8400 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
o-xylene	Acute EC50 4700 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 10700 µg/l Fresh water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 1390 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 7600 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
1,2,4-trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus - Adult	48 hours
	Acute LC50 7720 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 7400 µg/l Fresh water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 10600 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
butylbenzene	Acute EC50 340 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
trans-1, 2-dimethylcyclohexane	Acute EC50 4867 µg/l Fresh water	Daphnia - Daphnia pulex - Neonate	48 hours
trans-oct-2-ene	Acute LC50 1.5 mg/l Marine water	Crustaceans - Chaetogammarus marinus - Young	48 hours
	Acute LC50 6 mg/l Marine water	Fish - Poecilia reticulata - Young	96 hours
1,3,5-Trimethylbenzene	Acute LC50 13000 µg/l Marine water	Crustaceans - Cancer magister - Zoea	48 hours
	Acute LC50 12520 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
1-Methyl-4-isopropylbenzene	Acute EC50 22000 µg/l Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 3.54 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 44 mg/l Fresh water	Fish - Lepomis macrochirus	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	$LogP_{ow}$	BCF	Potential
n-pentane	3.45	171	low
benzene	2.13	11	low
n-hexane	4	501.187	high
heptane	4.66	552	high
1-Hexene	3.87	2.59	low
ethylbenzene	3.6	-	low
cyclopentane	3	70.8	low
octane	5.18	198.7	low
cyclohexane	3.44	167	low
hept-1-ene	3.99	-	low
Nonane	5.65	105	low
methylcyclohexane	3.61	186.21	low
3-methylpentane	3.6	-	low
Oct-1-ene	4.47	3.1	low
toluene	2.73	90	low
n-decane	5.86	-	high
p-xylene	3.15	8.1 to 25.9	low
1-nonene	5.15	1479.11	high
n-Undecane	6.42	-	high
1-pentene	2.66	-	low
n-Dodecane	6.98	239.88	low
dec-1-ene	5.12	3.65	low
propylbenzene	3.69	-	low
tridecane	7.54	-	high
methylcyclopentane	3.37	-	low
tert-butyl benzene	4.11	-	high
tetradecane	8.11	-	high
isobutylbenzene	4.68	-	high
pentylbenzene	4.9	-	high
hexylbenzene	5.52	-	high
isoprene (stabilised)	2.58	19.95	low
isopentane	3	171	low
m-xylene	3.2	8.1 to 25.9	low
o-xylene	3.12	8.1 to 25.9	low
1,2,4-trimethylbenzene	3.63	243	low
2-ethyltoluene	3.53	-	low
Cumene	3.55	35.48	low
3-ethyltoluene	3.98	-	low
4-ethyltoluene	3.63	-	low
2-ethyl-p-xylene	4.43	-	high
4-ethyl-o-xylene	4.5	-	high
sec-butylbenzene	4.57	-	high
2-propyltoluene	4.5	-	high
1-methyl-4-n-propylbenzene	4.6	-	high
butylbenzene	4.38	-	high
5-ethyl-m-xylene	4.55	-	high
3-ethyl-o-xylene	4.34	-	high
1-methyl-3-propylbenzene	4.67	-	high
trans-oct-2-ene	4.51	-	high
1,3,5-Trimethylbenzene	3.42	161	low
2-ethyl-m-xylene	4.28	-	high
o-cymene	4.38	-	high
m-cymene	4.5	537.03	high
1,2-diethylbenzene	3.72	-	low
1-Methyl-4-isopropylbenzene	4.1	-	high
2,3-dimethylbutane	3.42	-	low
1,2,4,5-Tetramethylbenzene	4	-	high

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Section 12. Ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Benzene (I,T)	71-43-2	Listed	U019
Cyclohexane (I); Benzene, hexahydro- (I)	110-82-7	Listed	U056
Toluene; Benzene, methyl-	108-88-3	Listed	U220
Xylene	106-42-3	Listed	U239

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUIDS, N.O.S.	FLAMMABLE LIQUIDS, N.O.S.	FLAMMABLE LIQUIDS, N.O.S.	FLAMMABLE LIQUIDS, N.O.S.	FLAMMABLE LIQUIDS, N.O.S.
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	II	II	II	II	II
Environmental hazards	Yes.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a.
Quantity limitation Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.
Special provisions 144 - If transported as a residue in an underground storage tank (UST), as defined in 40 CFR
280.12, that has been cleaned and purged or rendered inert according to the American Petroleum Institute (API) Standard 1604 (IBR, see 171.7 of this subchapter), then the tank and
this material are not subject to any other requirements of this subchapter. However, sediments

Section 14. Transport information

remaining in the tank that meet the definition for a hazardous material are subject to the applicable regulations of this subchapter.
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite
(31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110
kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the
following: Degree of filling = 97 / 1 + a (tr - tf) Where: tr is the maximum mean bulk temperature
during transport, and tf is the temperature in degrees celsius of the liquid during filling.
TP8 - A portable tank having a minimum test pressure of 1.5 bar (150 kPa) may be used when
the flash point of the hazardous material transported is greater than 0 C (32 F).
TP28 - A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used
provided the calculated test pressure is 2.65 bar or less based on the MAWP of the hazardous
material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the
MAWP.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 4(a) final test rules**: nonane; 3-methyloctane; 2-methyloctane

TSCA 8(a) PAIR: N-Pentane; heptane; cyclopentane; nonane; methylcyclohexane; p-xylene

TSCA 8(a) CDR Exempt/Partial exemption: Not determined

TSCA 12(b) one-time export: nonane

Clean Water Act (CWA) 307: benzene; ethylbenzene; toluene

Clean Water Act (CWA) 311: benzene; ethylbenzene; cyclohexane; toluene; p-xylene; o-xylene; m-xylene; isoprene

Clean Air Act (CAA) 112 regulated flammable substances: N-Pentane; pent-1-ene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

Section 15. Regulatory information

DEA List II Chemicals (Essential Chemicals) : Listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	benzene n-hexane ethylbenzene cyclohexane toluene p-xylene isoprene	71-43-2 110-54-3 100-41-4 110-82-7 108-88-3 106-42-3 78-79-5	2.465 2.231 1.718 1.542 1.34 1.222 0.691
Supplier notification	benzene n-hexane ethylbenzene cyclohexane toluene p-xylene isoprene	71-43-2 110-54-3 100-41-4 110-82-7 108-88-3 106-42-3 78-79-5	2.465 2.231 1.718 1.542 1.34 1.222 0.691

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: PENTANE; BENZENE; HEXANE; N-HEXANE; HEPTANE; N-HEPTANE; 1-HEXENE; ETHYL BENZENE; ETHYLBENZENE; CYCLOPENTANE; OCTANE; CYCLOHEXANE; HEXAHYDROBENZENE; NONANE; METHYLCYCLOHEXANE; 3-METHYLPENTANE; 1-OCTENE; TOLUENE; METHYLBENZENE; P-XYLENE; P-DIMETHYBENZENE; 1-PENTENE; PROPYLBENZENE; N-PROPYLBENZENE

New York : The following components are listed: Benzene; Hexane; Ethylbenzene; Cyclohexane; Benzene, hexahydro-; Toluene; p-Xylene; Cumene; Benzene, 1-methylethyl-; Isoprene

New Jersey : The following components are listed: PENTANE; BENZENE; n-HEXANE; HEXANE; n-HEPTANE; HEPTANE; 1-HEXENE; ETHYL BENZENE; BENZENE, ETHYL-; CYCLOPENTANE; OCTANE; CYCLOHEXANE; NONANE; METHYLCYCLOHEXANE; CYCLOHEXANE, METHYL-; TOLUENE; BENZENE, METHYL-; DECANE; p-XYLENE; BENZENE, 1,4-DIMETHYL-; UNDECANE; HENDECANE; 1-PENTENE; PROPYL BENZENE; BENZENE, PROPYL-; CUMENE; BENZENE, (1-METHYLETHYL)-; ISOPRENE; 1,3-BUTADIENE, 2-METHYL-

Pennsylvania : The following components are listed: PENTANE; BENZENE; BENZOL DILUENT; HEXANE; HEPTANE; 1-HEXENE; BENZENE, ETHYL-; CYCLOPENTANE; OCTANE; CYCLOHEXANE; 1-HEPTENE; NONANE; CYCLOHEXANE, METHYL-; PENTANE, 3-METHYL-; 1-OCTENE; BENZENE, METHYL-; DECANE; BENZENE, 1,4-DIMETHYL-; 1-PENTENE; BENZENE, PROPYL-; BENZENE, (1-METHYLETHYL)-; 1,3-BUTADIENE, 2-METHYL-

California Prop. 65

⚠ **WARNING**: This product can expose you to Benzene, which is known to the State of California to cause cancer and birth defects or other reproductive harm. This product can expose you to chemicals including Ethylbenzene, Isoprene, Cumene, which are known to the State of California to cause cancer, and Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Section 15. Regulatory information

Ingredient name	No significant risk level	Maximum acceptable dosage level
Benzene	Yes.	Yes.
Ethylbenzene	Yes.	-
Toluene	-	Yes.
Isoprene	-	-
Cumene	-	-

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : Not determined.

Canada : Not determined.

China : Not determined.

Europe : Not determined.

Japan : **Japan inventory (ENCS)**: Not determined.
Japan inventory (ISHL): Not determined.

Malaysia : Not determined.

New Zealand : Not determined.

Philippines : Not determined.

Republic of Korea : Not determined.

Taiwan : Not determined.

Thailand : Not determined.

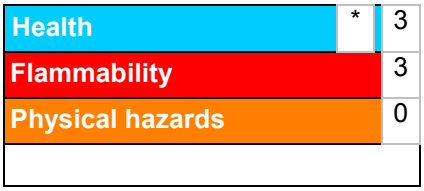
Turkey : Not determined.

United States : Not determined.

Viet Nam : Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

Section 16. Other information

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 2	Expert judgment
SKIN IRRITATION - Category 2	Expert judgment
EYE IRRITATION - Category 2A	Expert judgment
SKIN SENSITIZATION - Category 1	Expert judgment
GERM CELL MUTAGENICITY - Category 1B	Expert judgment
CARCINOGENICITY - Category 1A	Expert judgment
TOXIC TO REPRODUCTION (Fertility) - Category 2	Expert judgment
TOXIC TO REPRODUCTION (Unborn child) - Category 2	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1	Expert judgment
ASPIRATION HAZARD - Category 1	Expert judgment

History

Date of printing : 5/2/2018

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Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

Section 16. Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.