SAFETY DATA SHEET

Date Prepared : 08/12/2010
MSDS No : CYC
Date-Revised : 01/12/2016
Revision No : 5

CYCLOHEXANONE

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: CYCLOHEXANONE

MANUFACTURER

Distributed by Tarr, LLC
P.O. Box 12570
Portland, OR 97212
Product Stewardship: 503-288-5294

Distributed by Tarr Acquisition, LLC
4115 W. Turney Ave.
Phoenix, AZ 85019
Product Stewardship: 602-233-2000

24 HR. EMERGENCY TELEPHONE NUMBERS

CHEMTREC (US Transportation) :(800) 424 - 9300
CANUTEC (Canadian Transportation) :(613) 996 - 6666

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Health:

Acute Toxicity (Oral), Category 4
Acute Toxicity (Inhalation), Category 4
Acute Toxicity (Dermal), Category 4
Skin Irritation, Category 2
Serious Eye Damage, Category 1

Physical:

Flammable Liquids, Category 3

GHS LABEL


Flame


Corrosion


Exclamation mark

SIGNAL WORD: WARNING

HAZARD STATEMENTS

H226: Flammable liquid and vapour.
H335: May cause respiratory irritation.
H315: Causes skin irritation.

CYCLOHEXANONE

H302 + H312 + H332: Harmful if swallowed, in contact with skin or if inhaled.
H318: Causes serious eye damage.

PRECAUTIONARY STATEMENT(S)

Prevention:

P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P270: Do not eat, drink or smoke when using this product.
P102: Keep out of reach of children.
P273: Avoid release to the environment.
P233: Keep container tightly closed.
P240: Ground and bond container and receiving equipment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P341: IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P309+P311: IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

Storage:

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

Disposal:

4160WT6Y: Dispose of contents/container to an approved waste disposal plant.

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS: WARNING! Flammable liquid and vapor. Harmful if swallowed, inhaled or absorbed through skin. Affects central nervous system, liver and kidneys. Causes irritation to skin, eyes and respiratory tract.

POTENTIAL HEALTH EFFECTS

EYES: Vapors may cause irritation. Contact may cause corneal injury.

SKIN: Causes irritation to skin. Symptoms include redness, itching, and pain. May be absorbed through the skin with possible systemic effects.

SKIN ABSORPTION: Harmful if absorbed through the skin.

INGESTION: May produce abdominal pain, nausea. Aspiration into lungs can produce severe lung damage and is a medical emergency. Other symptoms expected to parallel inhalation.

INHALATION: Causes irritaion to mucous membranes and the upper respiratory tract. Symptoms may include coughing and shortness of breath. Additional symptoms may include dizziness, headache, nausea and mental confusion. High concentrations have narcotic effect. Irritation effects normally prevent exposures high enough to cause systemic effects.

MEDICAL CONDITIONS AGGRAVATED: Persons with pre-existing skin, eye, or central nervous system disorders, or impaired liver, kidney, or pulmonary function may be more susceptible to the effects of this substance.

COMMENTS HEALTH: Guinea pigs exposed to 4,000 ppm of Cyclohexanone for a 6-hour period showed signs

of CNS depression, lacrimation, salivation, depression of the body temperature and respiratory heart rate, and opacity of the cornea. Mice, guinea pigs, and cats exposed to 3,800 ppm exhibited the same effects. Based on animal studies, overexposure could lead to liver and/or kidney damage.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS
Cyclohexanone	99 - 100	108-94-1

4. FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get immediate medical attention.

SKIN: In the case of skin contact, flood the splashed surface with large quantities of soap and running water for at least 15 minutes. Removed and launder contaminated clothing before reuse. Get medical attention.

INGESTION: If the chemical has been confined to the mouth, give large quantites of water as a mouthwash. Ensure that the mouthwash is not swallowed. If the chemical has been swallowed, give large amounts of water to dilute it in the stomach. Never give fluids if the victim is unconscious or having convulsions. Get medical attention.

INHALATION: Remove from exposure to fresh air. If not breathing or if breathing is difficult, oxygen should be administered by qualified personnel. Consult doctor.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

ACUTE EFFECTS: This material is an irritant. Eye contact with the liquid may result in moderate to severe irritation and reversible cornel injury. Vapors are mildly irritating to the eyes. The liquid is a moderate skin irritant and repeated or prolonged contact can cause irritation or dermatitis.

CHRONIC EFFECTS: Prolonged or repeated exposure may cause skin rash or dermatitis. Damage to the liver and kidneys may occur. Based on animal studies, overexposure could lead to liver and/or kidney damage.

NOTES TO PHYSICIAN: In small ingestion the major concern is aspiration and gastrointestinal decontamination is not recommended. With larger ingestion there is potential for systemic toxicity from gastrointestinal absorption and decontamination is suggested, keeping in mind that aspiration is still a concern.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Dry chemical, foam, carbon dioxide or other dry chemical extinguishing media. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

EXPLOSION HAZARDS: Above the flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to ignition sources and flash back. Contact with strong oxidizers may cause fire. Sealed containers may rupture when heated. Sensitive to static discharge.

FIRE FIGHTING EQUIPMENT: In the event of a fire, wear a full protective clothing and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

GENERAL PROCEDURES: Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective clothing as specified in the Personal Protection Section. Isolate hazard area. Keep unnecessary

and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e.g., vermiculite, dry sand, eart), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to swer! IF a leak or spill has not ignited, use water spray to disperse vapors, to protect personnel attempting to stp leak, and to flush spills away from exposures.

RELEASE NOTES: US regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reporting quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and ground for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquids); observe all warnings and precautions listed for the product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)				
	EXPOSURE LIMITS			
Chemical Name	**Type**		**ppm**	**mg/m³**
Cyclohexanone	**OSHA PEL**	**TWA**	50 [1]	200 [1]
	ACGIH TLV	**TWA**	20	50
	Supplier OEL	**TWA**	NL	NL
		STEL	NL	NL
OSHA TABLE COMMENTS: **1**. NL = Not Listed				

ENGINEERING CONTROLS: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred becasue it can control the emissions of the contaiminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Use chemical safety goggles and/or full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work areas.

RESPIRATORY: If the exposure limit is exceeded and engineering controls are not feasible, a half-face organic vapor respirator may be worn for up to ten times the exposure limit, or the maximum use concentration specified by the apporpriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the

exposure levels are not known, use a full-face piece positive pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-dificient atomospheres.

PROTECTIVE CLOTHING: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Acetone and peppermint.

APPEARANCE: Clear, colorless to slightly yellow, oily liquid.

PERCENT VOLATILE: 100

FLASHPOINT AND METHOD: 43.9°C (111°F) Closed Cup

FLAMMABLE LIMITS: 1.1 to 9.4

AUTOIGNITION TEMPERATURE: 420°C (788°F)

VAPOR PRESSURE: 5 mm Hg at 26°C (79°F)

VAPOR DENSITY: 3.4 (Air=1)

BOILING POINT: 155°C (311°F) to 155°C (311°F)

MELTING POINT: -31°C (-24°F) to -31°C (-24°F)

SOLUBILITY IN WATER: Slight

EVAPORATION RATE: 0.29 to 0.29 (n-Butyl Acetate=1)

SPECIFIC GRAVITY: 0.9 to 0.94 @ 25□C/4□C

MOLECULAR WEIGHT: 98.14

10. STABILITY AND REACTIVITY

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable under ordinary conditions of use and storage.

CONDITIONS TO AVOID: Avoid heat, flames, ignition sources and incompatibles.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide and unidentified organic compounds may be formed during combustion. There should be no decomposition if stored and applied as directed.

INCOMPATIBLE MATERIALS: Strong oxidizing agents. May cause spontaneous ignition and violent reactions. May attack plastics, resins, and rubber.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Chemical Name	ORAL LD_{50} (rat)	DERMAL LD_{50} (rabbit)	INHALATION LC_{50} (rat)
Cyclohexanone	1620 mg/kg (Rat)	1 mL/kg (Rabbit)	8000 ppm / 4 hours (rat)

CARCINOGENICITY

IARC: Category 3

CYCLOHEXANONE

NTP: Known: No Anticipated: No

GENERAL COMMENTS: Investigated as a tumorigen, mutagen, and reproductive effector.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material is expected to leach into ground water. When released into water, this material may evaporate to a moderate extent. When released into water, this material may biodegrade to a moderate extent. This material has an estimated bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.

AQUATIC TOXICITY (ACUTE)

96-HOUR LC_{50}: > 100 mg/l (fish)

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

EMPTY CONTAINER: KEEP OUT OF REACH OF CHILDREN! Empty containers retain product residue and can be dangerous. Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse. Do not pressurize, cut weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks static electricity, or other sources of ignition.

RCRA/EPA WASTE INFORMATION: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: (Cyclohexanone)

PRIMARY HAZARD CLASS/DIVISION: 3

UN/NA NUMBER: UN 1915

PACKING GROUP: III

LABEL: Flammable liquid

15. REGULATORY INFORMATION

UNITED STATES

DOT LABEL SYMBOL AND HAZARD CLASSIFICATION

CYCLOHEXANONE

Flammable Liquid

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: This product should be reported as an immediate (acute) health hazard, delayed (chronic) health hazard, and a fire hazard.

FIRE: Yes **PRESSURE GENERATING:** No **REACTIVITY:** No **ACUTE:** Yes **CHRONIC:** Yes

313 REPORTABLE INGREDIENTS: To the best of our knowledge, this product is not listed as a toxic chemical under Section 313 of SARA Title III.

302/304 EMERGENCY PLANNING

EMERGENCY PLAN: To the best of our knowledge, this product is not listed as an extremely hazardous substance.

RCRA STATUS: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

GENERAL COMMENTS: The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

16. OTHER INFORMATION

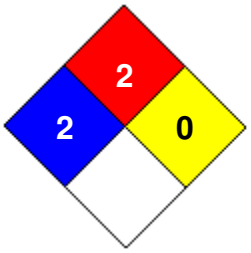
PREPARED BY: COMPLIANCE **Date-Revised:** 01/12/2016

REVISION SUMMARY: This MSDS replaces the 10/27/2015 MSDS.

HMIS RATING

HEALTH	2
FLAMMABILITY	2
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

NFPA CODES



NFPA STORAGE CLASSIFICATION: These ratings are part of a specific hazard communication program and should be disregarded where individuals are not trained in the use of this hazard rating system. You should be familiar with the hazard communication programs applicable to your workplace.

HMIS RATINGS NOTES: The HMIS rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in the SDS must be considered.

MANUFACTURER DISCLAIMER: The information contained herein is based on the data available to us and is believed to be accurate. However, Tarr Acquisition, LLC (Tarr, LLC) makes no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Tarr, LLC assumes no responsibility for injuries from the use of the product described herein.