

MSDS HEXANES

1. PRODUCT IDENTIFICATION

CAS No.: 110-54-3

Synonym: Hexane

Chemical Formula: $(C_6H_{14})_n$

2. COMPOSITION/INFORMATION ON INGREDIENT

Name: n-Hexane

Hexane is primarily n-Hexane with Hexane isomers Methylcyclopentane, 2-Methylpentane, 3-Methylpentane.

3. HAZARDS IDENTIFICATION

Emergency Overview

DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR.
HARMFUL IF INHALED OR SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CAUSES DAMAGE TO THE FOLLOWING ORGANS: PERIPHERAL NERVOUS SYSTEM, RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA. VAPOR MAY CAUSE FLASH FIRE.

Do not ingest. Avoid contact with skin and clothing. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Physical state: Liquid.

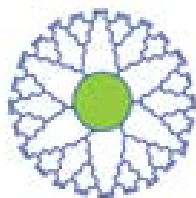
Odor : Characteristic

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

Potential health Effects

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Eyes: Irritating to eyes.

Ingestion: Toxic if swallowed.

Skin: Irritating to skin.

Inhalation: Toxic by inhalation. Irritating to respiratory system.

Carcinogenic effects: No known significant effects or critical hazards.

Mutagenic effects: No known significant effects or critical hazards.

Teratogenicity/Reproductive toxicity: No known significant effects or critical hazards.

Medical conditions aggravated by overexposure: Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to the substance can produce target organs damage.

4. FIRST AID MEASURES

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

Skin contact: Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation: Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. 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. 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.

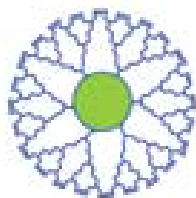
Ingestion: Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. 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

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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.

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.

5. FIRE FIGHTING MEASURES

Flammability of the product: Extremely flammable liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Products of combustion: These products are carbon oxides (CO, CO₂).

Extinguishing media:

Suitable: Use dry chemical, CO₂, water spray (fog) or foam.

Not suitable: Do not use water jet.

Special exposure hazards : Not available.

Special remarks on firehazards: Vapor may travel a considerable distance to source of ignition and flash back.

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.

6. ACCIDENTAL RELEASE MEASURES

Person-related safety precautions: Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment. Do not touch or walk through spilled material.

Measures for environmental protection: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Measures for cleaning/collecting: If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a nonsparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

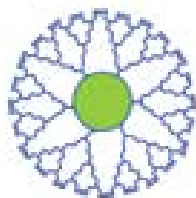
7. HANDLING AND STORAGE

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Information for safe handling: Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.

Information about safe storage: Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Additional information about design of technical systems: Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

General protective and hygienic 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. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands: Impervious gloves

Eye protection: splash goggles

Body protection: Protective work clothing (i.e. lab coat).

9. PHYSICAL AND CHEMICAL PROPERTIES:

Form: Liquid form. Crystalline powder, dissolved in a solvent

Color: Clear/Yellow – Red/Brown

Odor: Odor dependent upon solvent used. Crystalline powder is odorless

Melting point/Melting range: ~400°C to bulk melting point of CdSe crystals. The solvent is liquid and melting point depends on the chemical composition of the solvent.

Boiling point/Boiling range: Determined by solvent used

Sublimation temperature / start: approx. 1150 °C

Flash point: Dependent upon solvent used

Ignition temperature: Dependent upon solvent used

Decomposition temperature: Not determined

Danger of explosion: Dependent upon solvent used. Crystalline powder does not present an explosion hazard.

Explosion limits: Currently unknown for nanocrystals

Vapor pressure: Dependent upon solvent used

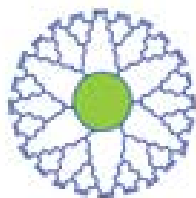
Density: 5.81 g/cm³ (crystal at 20 °C) for the nanocrystal powder if isolated

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Solubility in / Miscibility with Polar Solvents: Soluble when hydrophilic ligands are present
Solubility in / Miscibility with Non-Polar Solvents: Soluble when hydrophobic ligands are present

10. STABILITY AND REACTIVITY

Thermal decomposition / conditions to be avoided: Not determined, but temperature should not be higher than 50°C to maintain their optical properties.

Materials to be avoided: Acids, Bases, Oxidants, Redutants, and Ligands to the nanocrystals should be used with caution.

Dangerous reactions: No dangerous reactions known

11. TOXICOLOGICAL INFORMATION

Skin: Irritant to skin and mucous membranes.

Eye: Irritating effect.

Sensitization: No sensitizing effects known.

Additional toxicological information: Danger through skin absorption.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

Target Organs: Lungs, Liver, Kidneys

EPA-B1: Probable human carcinogen, limited evidence of carcinogenicity from epidemiologic studies.

IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.

NTP-2: Reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals. Carcinogen as defined by OSHA.

ACGIH A2: Suspected human carcinogen: Agent is carcinogenic in experimental animals at dose levels, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. Available epidemiologic studies are conflicting or insufficient to confirm an increased risk of cancer in exposed humans.

WARNING: Many of the toxic effects of CdSe nanocrystals are still being researched and are currently unknown at this point. Use at own risk.

12. ECOLOGICAL INFORMATION:

Do not allow material to be released to the environment without proper governmental permits.

13. DISPOSAL CONSIDERATIONS

Consult local or national regulations for proper disposal.

14. TRANSPORT INFORMATION

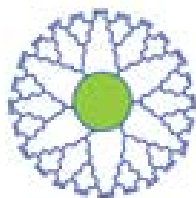
U.S. DOT 49 CFR 172.101

ID Number: UN1294

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Hazard class: 3

Packing Group: II

Labeling Requirements: Flammable Liquid (Unnecessary when Water is the solvent)

Canadian Transportation of Dangerous Goods: UN1294, Class 3

Land Transport ADR/RID: UN1294, Class 3, Class Code F1, Pack group II

Air Transport IATA/ICAO: UN1294, Class or Division 3, Pack group II

Exceptions: 49 CFR 173.4

15. REGULATIONS

Hazard symbols: Xn Harmful

Risk phrases: 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

Safety phrases: 22 Do not breathe dust or vapors.

National regulations: All components of this product are listed in the U.S. Environmental Protection Agency Toxic

Substances Control Act Chemical Substance Inventory.

Information about limitation of use: For use only by technically qualified individuals.

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