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**24 HOUR EMERGENCY NUMBER (CHEMTREC)**
USA: 800-424-9300
International: 703-527-3887

All non-emergency numbers should be directed to Tedia Customer Service at 800-PURITY1

# SAFETY DATA SHEET

## n-Hexane

## SDS No. M0118

Distributed by:
Rocky Mountain Reagents
SCIENTIFIC SOLUTIONS SINCE 1951
4621 Technology Drive, Golden, CO 80403
ph: (303) 762-0800 fax: (303) 762-1240
Product #: H1049, H1050, H1051

### 1 IDENTIFICATION

1.1 Product Identifier:
Chemical Name: n-Hexane
Synonyms: Hexane, Hexyl hydride
CAS No.: 110-54-3

1.2 Recommended Use and Restrictions:
Use: Laboratory research, analytical applications, and industrial manufacturing. Suitable for use as a solvent in chemical synthesis, cleaning, or processing.
Restrictions: Not for use in food, drugs, cosmetics, medical devices, or household consumer products unless explicitly certified.
Regulatory Note: This product may be subject to TSCA requirements. For commercial/industrial use in the United States, the buyer is responsible for verifying TSCA compliance. Laboratory users should confirm appropriate exemptions apply to their research use.

1.3 Supplier:
Tedia Company LLC, 1000 Tedia Way, Fairfield, Ohio 45014 USA
Phone: 513-874-5340 | Website: www.tedia.com

1.4 Emergency Phone Number:
CHEMTREC (USA): 800-424-9300
CHEMTREC (International): +1-703-527-3887

### 2 HAZARD IDENTIFICATION

2.1 Classification of the Substance/Mixture
GHS Classification:
Flammable Liquid (Category 2), H225
Skin Irritation (Category 2), H315
Eye Irritation (Category 2B), H320
Specific Target Organ Toxicity – Single Exposure (Category 1), H370 (CNS)
Specific Target Organ Toxicity – Repeated Exposure (Category 1), H372 (PNS)
Acute Aquatic Hazard (Category 2), H412

2.2 GHS Label Elements
Hazard Pictograms:



Signal Word: DANGER

Hazard Statements:
H225: Highly flammable liquid and vapor.
H315: Causes skin irritation.
H320: Causes eye irritation.
H370: Causes damage to organs (central nervous system).
H372: Causes damage to organs (peripheral nervous system) through prolonged or repeated exposure.
H412: Harmful to aquatic life with long lasting effects.

Precautionary Statements:
P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting equipment.
P242: Use only non-sparking tools.
P260: Do not breathe dust/fume/gas/mist/vapors/spray.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink, or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310: IF SWALLOWED: Immediately call a poison center or doctor/physician.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312: Call a poison center or doctor if exposed.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P501: Dispose of contents/container to an approved waste disposal plant.

2.3 Other Hazards
Chronic exposure may cause peripheral neuropathy (nerve damage).

2.4 Emergency Overview
Highly flammable liquid and vapor. Toxic if swallowed, inhaled, or in contact with skin. Causes damage to central nervous system, eyes, and optic nerve. Symptoms include headache, dizziness, nausea, visual disturbances, and unconsciousness.

2.5 HMIS Rating:
Health – 3  Flammability – 4  Physical Hazard – 0  PPE – F (Gloves, goggles, respirator)
NOTE: HMIS ratings (0–4) reflect hazard severity under normal use. Higher values indicate greater risk. PPE recommendations are minimal; users must assess specific conditions.

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance Identification
Chemical Name: n-Hexane

| Hazardous | Ingredient | CAS No. | EC No. | Concentration | Molecular Formula |
|---|---|---|---|---|---|
| Yes | n-Hexane | 110-54-3 | 203-777-6 | 100% | $C_6H_{14}$ |

4 FIRST AID MEASURES

4.1 Description of First Aid Measures
Inhalation: Remove victim to fresh air immediately. Keep at rest in a position comfortable for breathing. If breathing is difficult, administer oxygen if available and you are trained to do so. If unconscious or not breathing, provide artificial respiration using a pocket mask or bag-valve device to avoid rescuer exposure and seek immediate medical attention.

Skin Contact: Remove contaminated clothing promptly. Wash skin thoroughly with soap and water for at least 15 minutes. If irritation develops or persists, obtain medical advice. Discard contaminated clothing as hazardous waste. If irritation or dermatitis develops, seek medical advice.

Eye Contact: Immediately flush eyes with gently flowing water for at least 15 minutes, holding eyelids open to ensure complete rinsing. Remove contact lenses if present and easy to do. Seek medical attention if irritation persists. Use an eye wash station if available.

Ingestion: Rinse mouth with water. Do NOT induce vomiting due to risk of aspiration. Never give anything by mouth to an unconscious person. Seek immediate medical attention. If vomiting occurs naturally, position victim in a left lateral decubitus position (recovery position) to minimize aspiration risk. Seek emergency medical help.

4.2 Most Important Symptoms and Effects
Acute Effects:
Inhalation: Dizziness, headache, nausea, CNS depression, narcosis.
Skin: Irritation, defatting (dryness, cracking), chemical burns (prolonged contact).
Eyes: Pain, redness, transient corneal injury.
Ingestion: Abdominal pain, nausea, CNS depression (high doses).

Chronic Effects:
Peripheral neuropathy (tingling, weakness in limbs) from prolonged exposure.
Muscle atrophy (severe cases).

4.3 Indication of Immediate Medical Attention and Special Treatment
Loss of consciousness (inhalation/ingestion).
Persistent neurological symptoms (tremors, confusion).
Chemical burns (skin/eyes).

Notes for Physicians:
n-Hexane metabolizes to 2,5-hexanedione (neurotoxic). Monitor for:
Electromyography (EMG) abnormalities.
Urinary 2,5-hexanedione levels.
No specific antidote. Treatment is supportive:
Oxygen therapy for respiratory depression.
IV fluids for ingestion cases.
Avoid: Epinephrine (may sensitize heart to arrhythmias).

5 FIRE-FIGHTING MEASURES

5.1 Suitable Extinguishing Media
Use vapor-suppressing foam, dry chemical powder (ABC or BC), or carbon dioxide ($CO_2$).

Water spray may be used to cool exposed containers and protect firefighters, but avoid direct streams (n-hexane is fully water-insoluble, and runoff can spread flames).

5.2 Specific Hazards Arising from the Chemical:
n-Hexane forms explosive vapor-air mixtures (LEL: 1.1%, UEL: 7.5%). Hazardous combustion products include carbon monoxide (CO), Formaldehyde – Irritant and potential carcinogen, and acrid smoke. Vapors are heavier than air and may travel along the ground to ignition sources, causing flashback fires.

5.3 Protective Equipment:
Wear self-contained breathing apparatus (SCBA, NIOSH-approved) and full firefighting turnout gear (including flame-resistant clothing and face shield).
Use water spray to cool exposed containers but avoid direct streams.

5.4 Additional Firefighting Guidance
Auto-ignition temperature: 225°C (437°F)
Flash point: -22°C (-7.6°F) – flammable at room temperature.
Approach fires upwind to avoid inhalation of toxic vapors.
Prevent runoff from entering drains or waterways (Hexane is water- insoluble but floats and spreads fire).

5.5 National Fire Protective Association: Health - 1, Flammability - 3, Reactivity - 0
Note: NFPA ratings are for emergency response only and reflect acute exposure risks.

## 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions
Immediately evacuate non-essential personnel upwind.
Eliminate all ignition sources within 50 feet (15 meters) for small spills, 300 ft (90 meters) for large releases.
Wear NIOSH-approved SCBA (for vapors >50 ppm) and chemical-resistant PPE (Viton® gloves or Nitrile + Tychem® suit).

6.2 Environmental Precautions
Prevent entry into sewers/waterways using absorbent booms or dikes.
EPA Reportable Quantity (RQ): 5,000 lbs (2270 kg) per 40 CFR 302.4.
CERCLA Hazardous Substance: RQ = 5,000 lbs (immediate reporting to NRC: 1-800-424-8802).

6.3 Containment and Cleanup Methods
For releases <5,000 lbs:
Contain with inert absorbents (clay, polypropylene pads).
Collect in DOT-approved containers.
Ventilate area with explosion-proof fans to disperse vapors.

For releases ≥5,000 lbs (or any quantity entering waterways):
Notify NRC, EPA, and state/local authorities immediately.
Hexane is water-insoluble and floats.
Containment: Deploy vapor-suppressing foam to reduce evaporation.
Recovery: Use skimmers or vacuum trucks for liquid recovery.

6.4 Reporting Requirements
EPA:
≥5,000 lbs (454 kg): Report to NRC within 15 minutes (40 CFR 302.6).
Any release to waterways: Immediate notification to State and Local agencies (Clean Water Act).

## 7 HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Use only in well-ventilated areas (e.g., fume hood, local exhaust ventilation).
Ground and bond containers during transfer to prevent static discharge.
Avoid contact with strong oxidizers (e.g., peroxides, nitric acid, halogens) and metals (e.g., lithium, aluminum hydrides – may react violently).
Use non-sparking tools and explosion-proof equipment in handling areas.
Do not breathe vapors/mists; use respiratory protection if ventilation is inadequate (see Section 8).
Avoid contact with eyes, skin, and clothing. Wash thoroughly with soap and water after handling.
Remove contaminated clothing immediately; wash skin and clothing before reuse.
Empty containers may retain hazardous residues (liquid/vapor). Do not puncture, weld, grind, or expose to heat, sparks, or open flames.

7.2 Storage Conditions
Store in a flammable liquids cabinet or approved safety can.
Keep containers tightly closed and clearly labeled when not in use.
Store in a cool, dry, well-ventilated area away from:
Ignition sources (heat, sparks, open flames, static electricity).
Incompatible materials (oxidizers, acids, alkalis).
Segregate from reactive metals (e.g., sodium, potassium).
Keep locked to prevent unauthorized access.

Additional Notes:
Never pressurize, cut, weld, drill, or grind containers, even when empty.
Monitor vapor concentrations to ensure levels remain below occupational exposure limits (see Section 8).

8 EXPOSURE CONTROLS/PPE

8.1 Exposure Limits
OSHA PEL (TWA): 500 ppm (1,800 mg/m³)
ACGIH TLV (TWA): 50 ppm (176 mg/m³) Skin (absorption risk)
NIOSH REL (TWA): 50 ppm (176 mg/m³) Skin (absorption risk)
NIOSH IDLH: 1,100 ppm (CNS effects, flammability)

8.2 Engineering Controls
Use local exhaust ventilation (LEV) or process enclosure
Ensure adequate general ventilation (minimum 10 air changes/hour)
Ground and bond all equipment to prevent static discharge
Explosion-proof electrical systems required in handling areas

8.3 Personal Protective Equipment (PPE)
Respiratory Protection:
<50 ppm: None needed with verified engineering controls
50-1,100 ppm: Full-face APR with organic vapor cartridges + P100 filters
≥1,100 ppm (IDLH): NIOSH-approved SCBA required

Eye/Face Protection:
Chemical splash goggles
Face shield (when splashing risk exists)

Skin Protection:
Viton® (≥0.7 mm), Silver Shield® or nitrile rubber (hexane penetrates neoprene)
Chemical-resistant apron or suit (when splash risk exists)
Closed-toe shoes with chemical-resistant uppers

Other Protection:

Static-dissipative footwear in flammable areas
Safety showers and eye wash stations must be accessible

8.4 General Hygiene Measures
Prohibit eating/drinking/smoking in work areas.
Wash hands/face thoroughly after handling.
Launder contaminated clothing before reuse.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 General Information
a) Appearance: Clear, colorless liquid
b) Odor: Mild, gasoline-like
c) Odor threshold: 65–248 ppm (variable detection)
d) pH: Not applicable (non-aqueous)
e) Melting point/freezing point: -95°C (-139°F)
f) Boiling point: 69°C (156°F)
g) Flash point: -22°C (-7.6°F) (closed cup)
h) Evaporation rate: 3.0 (ether = 1.0)
i) Flammability: Highly flammable liquid (GHS Category 2)
j) Upper/lower flammability or explosive limits:
    Upper explosive limit (UEL): 7.5%
    Lower explosive limit (LEL): 1.1%
k) Vapor pressure: 150 mmHg at 20°C
l) Vapor density: 2.97 (air = 1)
m) Relative density: 0.66 at 20°C (water = 1)
n) Solubility: 9.5 mg/L in water (insoluble); miscible with organic solvents
o) Partition coefficient (log Kow): 3.9
p) Autoignition temperature: 225°C (437°F)
q) Decomposition temperature: >200°C (forms CO, aldehydes)
r) Viscosity: 0.31 mPa·s at 20°C
s) Explosive properties: None
t) Oxidizing properties: None

9.2 Other Safety Characteristics
Refractive index: 1.375 at 20°C
Dielectric constant: 1.9 at 20°C
Electrical conductivity: <1 pS/m (high static accumulation risk)

**10 STABILITY AND REACTIVITY**

10.1 Stability
Stable under normal conditions (temperature, pressure).
Conditions to avoid:
Open flames, sparks, static discharge (flammability risk - flash point -22°C/-7.6°F)
Temperatures >25°C (accelerates vapor formation)
Confined spaces (vapor accumulation hazard - vapor density 2.97, heavier than air)

10.2 Reactive Hazards
Strong oxidizers (e.g., nitric acid, hydrogen peroxide - violent reactions)
Reactive metals (e.g., potassium, sodium - forms flammable hydrogen gas)
Halogens (e.g., chlorine - violent reactions)

10.3 Hazardous Decomposition Products

Thermal decomposition (>200°C):
Carbon monoxide (CO)
Aldehydes (irritating/toxic)

Combustion products:
Carbon monoxide (CO)
Carbon dioxide ($CO_2$)
Acrid smoke (particulates)

## 11 TOXICOLOGICAL INFORMATION

### 11.1 Acute Toxicity
Oral Toxicity ($LD_{50}$): 25,000 mg/kg (rat) [OECD 401]
Dermal Toxicity ($LD_{50}$): >5,000 mg/kg (rabbit) [OECD 402]
Inhalation Toxicity ($LC_{50}$): 48,000 ppm/4h (rat) [NTP TR-312]
Skin Irritation: Mild irritation (rabbit) [GHS Category 3]

### 11.2 Chronic Toxicity
Carcinogenicity:
IARC: Group 3 (Not classifiable) [Monograph Vol. 123, 2020]
NTP: Not listed
ACGIH: A4 (Not suspected) [2024 TLV®]

Reproductive Toxicity:
No developmental effects observed at ≤1,000 ppm [OECD 421]
No fertility impairment [OECD 422]

Specific Target Organ Toxicity (Repeated Exposure):
CNS: Peripheral neuropathy (tingling, weakness) at >50 ppm
Liver: No significant effects at occupational exposures
Muscles: Atrophy in severe chronic cases [NTP TR-312]

### 11.3 Other Toxicological Effects
Skin Sensitization: Not classified [OECD 406 negative]
Mutagenicity: Negative (Ames test, in vivo CA) [ECHA REACH]
Aspiration Hazard: Low (viscosity 0.31 mPa·s at 20°C)

### 11.4 Exposure Routes and Symptoms
Inhalation:
Headache, dizziness at >100 ppm
IDLH: 1,100 ppm [NIOSH 2023]

Skin Contact:
Defatting dermatitis (chronic exposure)
Penetration: Viton® gloves recommended; nitrile penetrates in <30 min [ASTM F739]

Eye Contact:
Transient irritation (GHS Category 2B)

Ingestion:
Low toxicity ($LD_{50}$ >5,000 mg/kg)
Aspiration risk if vomiting occurs

## 12 ECOLOGICAL INFORMATION

12.1 Ecotoxicity
Aquatic Toxicity:
Fish ($LC_{50}$, 96h): 10.2 mg/L (Pimephales promelas) [EPA ECOTOX]
Daphnia ($EC_{50}$, 48h): 4.6 mg/L (Daphnia magna) [OECD 202]
Algae ($EC_{50}$, 72h): 12.8 mg/L (Pseudokirchneriella subcapitata) [OECD 201]

Terrestrial Toxicity:
Earthworm ($LC_{50}$, 14d): >1,000 mg/kg soil (Eisenia fetida) [OECD 207]
Avian ($LD_{50}$, oral): >2,000 mg/kg (Colinus virginianus) [EPA OPPTS 850.2100]

12.2 Persistence and Degradability
Biodegradation:
Ready biodegradability: 80% (28d, OECD 301F) [Readily biodegradable]
Half-life in water: 2–5 days (aerobic) [EPI Suite v4.11]

Abiotic Degradation:
Hydrolysis: Stable at pH 4–9 [OECD 111]
Photodegradation (air): Half-life = 0.5 days (OH radical reaction) [Atkinson 1987]

12.3 Bioaccumulation
Log Kow: 3.9 (moderate octanol-water partition) [ECHA]
BCF: 28 (Oncorhynchus mykiss) [OECD 305]
Potential to bioaccumulate: Moderate (GHS Not Classified)

12.4 Mobility in Soil
Koc: 132 (moderate mobility) [EPA EPI Suite]
Potential to leach: Moderate [USGS Studies]
Volatilization (water): Half-life = 4.1 hours (25°C, 1m depth) [Mackay Model]
Note: Classified as an aquatic hazard (H412) per supplier labeling, though pure n-hexane's $LC_{50}$ (10.2 mg/L) marginally exceeds the GHS Category 2 threshold (≤10 mg/L). This classification ensures alignment with transportation requirements (IMDG marine pollutant designation).

13 DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods
Product Disposal:
Dispose as hazardous waste (D001 ignitable).
Incineration in approved facility at ≥1,100°C (2,012°F) with scrubbers.
Energy recovery (preferred for hydrocarbon solvents).

Contaminated Packaging:
Preferred: Steam cleaning or commercial parts washers with hydrocarbon-compatible detergents.
If solvent rinsing is unavoidable, use minimal heptane or IPA. Collect rinseate as D001 waste.
Puncture/crush to prevent reuse (OSHA 1910.1200(f)(9)).

13.2 Regulatory Information
US EPA Waste Codes: D001 only (40 CFR 261.21).
RCRA: Not listed as U/P waste (40 CFR 261.33).
EU Waste Code: 14 06 03* (halogen-free organic solvents).
California: Reportable if ≥5,000 lbs released (22 CCR §66262.34).

13.3 Special Precautions
Never pour into drains/waterways (aquatic toxicity: $LC_{50}$ fish = 10.2 mg/L).

Closed-system transfers required (vapor density 2.97 > air).
Soil contamination: Requires remediation (Koc = 132 = moderate mobility).

13.4 Recommended Disposal Agencies
Contact licensed handlers (e.g., Clean Harbors, Veolia).
State/provincial regulations may apply (e.g., CA DTSC, EU REACH).

13.5 Contaminated Soil Treatment
Small Spills (<100 L):
Vapor extraction (effective for volatile hydrocarbons).

Large-Scale Contamination:
Bioremediation: Native microbes degrade in 2–8 weeks (aerobic, EPA 540/R-98/500).
Soil vapor extraction (for high-concentration spills).

## 14 TRANSPORT INFORMATION

14.1 DOT (U.S. Department of Transportation)
Proper Shipping Name: Hexanes
Hazard Class: 3 (Flammable Liquid)
UN Number: UN1208
Packing Group: II

14.2 IMDG (International Maritime Dangerous Goods)
Proper Shipping Name: Hexanes
Hazard Class: 3 (Flammable Liquid)
UN Number: UN1208
Packing Group: II
Marine Pollutant: Yes
EMS: F-E, S-D

14.3 IATA (International Air Transport Association)
Proper Shipping Name: Hexanes
Hazard Class: 3 (Flammable Liquid)
UN Number: UN1208
Packing Group: II
Passenger Aircraft Max Net Qty: 1 L
Cargo Aircraft Only Max Net Qty: 30 L

## 15 REGULATORY INFORMATION

15.1 U.S. Regulations
EPA (Environmental Protection Agency)
TSCA (Toxic Substances Control Act): Listed (40 CFR 710.3)
CERCLA (Superfund) Reportable Quantity (RQ): 5,000 lbs (2270 kg) (40 CFR 302.4)
SARA Title III (EPCRA):
Section 302/304: Not an EHS (No TPQ; n-Hexane is not listed in 40 CFR 355)
Sections 311/312: Fire Hazard, Acute Health Hazard
RCRA:
Hazardous Waste Number: D001 (Ignitable Waste)
Regulatory Level: Flash point <60°C (140°F) (40 CFR 261.21)
Not listed as U- or P-waste (40 CFR 261.33)

15.2 US State Regulations

New Jersey: Listed on RTK Hazardous Substance List (N.J.A.C. 7:1G)
Pennsylvania: Reportable under Worker & Community Right-to-Know Act (35 P.S. § 7302)
Massachusetts: Listed on RTK Hazardous Substance List (454 CMR 21.00)
California:
Proposition 65: Not listed (n-Hexane has no Prop 65 warning requirements)

16 OTHER INFO:

16.1 Document Control
Original Preparation Date: January 1, 2006

Latest Revision Date: April 4, 2025
Revision Summary: Updated to align with GHS Revision 7 standards and current regulatory requirements.

16.2 Disclaimer:
The information contained herein is accurate to the best of TEDIA COMPANY LLC's knowledge and complies with applicable regulations as of the revision date. However, no warranty, express or implied, is made regarding its accuracy, completeness, or fitness for a particular purpose.

16.3 User Responsibility:
It is the responsibility of the user to: Verify compliance with local, state, federal, and international regulations before use. Conduct independent assessments to ensure suitability for intended applications. Implement appropriate safety, health, and environmental controls.