MATERIAL SAFETY DATA SHEET

NFPA	HMIS	Personal Protective Equipment
		

See Section 8.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product code:	H2279
Product Name:	HEXANAL
Chemical Name:	No information available
Synonyms:	1-Hexanal Caproaldehyde Caproic aldehyde Capronaldehyde Hexanal, technical Hexanaldehyde Hexylaldehyde n-Caproylaldehyde
Recommended use:	In organic synthesis. Used in making plasticizers, rubber chemicals, dyes, synthetic resins, insecticides.
CAS #:	66-25-1
Formula:	C6-H12-O
RTECS #	MN7175000
CI#:	Not available
Supplier:	Spectrum Chemicals and Laboratory Products, Inc. 14422 South San Pedro St. Gardena, CA 90248 (310) 516-8000
Emergency Telephone Number:	CHEMTREC: 1-800-424-9300
Contact Person:	Martin LaBenz (West Coast)
Contact Person:	Chris Terpak (East Coast)

2. HAZARDS IDENTIFICATION

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING FLAMMABLE!. May cause skin and eye irritation. May cause irritation of respiratory tract.

Odor:	**Physical state:**	**Appearance:**	**Color:**
Sharp Strong Unpleasant Aldehyde-like Green grass odor	Liquid.	No information available	Clear. Colorless.

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

POTENTIAL HEALTH EFFECTS

Principal Routes of Exposure:
Ingestion. Skin. Eyes. Inhalation.

Acute Potential Health Effects:

Skin Contact:
Contact causes skin irritation.

Eye Contact:
Irritating, but will not permanently injure eye tissue.

Inhalation:
May cause irritation of respiratory tract. Vapors irritating to eyes and respiratory tract.

Ingestion:
May cause central nervous system effects.

Chronic Potential Health Effects:

Target Organs: Central nervous system.

Carcinogen Status: No information available

Mutagenic Effects: May affect genetic material
Mutagenic effects on mammalian somatic cells

Teratogenic Effects: No information available

Aggravated Medical Conditions: No information available

See Section 11 for additional Toxicological Information

POTENTIAL ENVIRONMENTAL EFFECTS

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Hexanal	66-25-1	100

4. FIRST AID MEASURES

General Advice: Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eye with water for 15 minutes. Get medical attention.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Notes to Physician: Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flammable Properties

Flashpoint (°C/°F):	32 °C/90 °F

Tested according to: Open cup

Lower Explosion Limit (%):	No information available
Upper Explosion Limit (%):	No information available

Autoignition Temperature (°C/°F):	204-220 °C/399-428 °F

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Hazardous Combustion Products: Carbon oxides

Specific hazards: Flammable. May be ignited by heat, sparks or flames. Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Container explosion may occur under fire conditions or when heated.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

Specific Methods: Water mist may be used to cool closed containers. For fires involving tanks or car/trailer load, cool containers with flooding quantities of water until well after the fire is out.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental Precautions:
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for Cleaning Up:
Absorb spill with inert material (e.g. vermiculite, dry sand or earth), then place in a suitable chemical waste container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice:
Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Storage

Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Keep away from heat and sources of ignition. Store in a segrated and approved area. Store away from incompatible materials.

Incompatible Products:
Oxidizing agents. Reducing agents. Bases. Acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure: Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Personal Protective Equipment

Eye protection: Goggles. Safety glasses with side-shields.

Skin and body protection: Chemical resistant apron. Long sleeved clothing. Gloves.

Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

National occupational exposure limits

United States
U.S Occupational Exposure Limits: Not determined

Canada
Canada Occupational Exposure Limits: Not determined

Australia and Mexico
Occupational Exposure Limits for Australia and Mexico: Not determined

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:
Liquid.

Appearance:
No information available

Color:
Clear. Colorless.

Odor:
Sharp. Strong. Unpleasant. Aldehyde-like. Green grass odor.

Taste
Fruity. Apple.

Molecular weight:
100.16

Flash point (°C) :
32

Lower Explosion Limit (%):
No information available

Upper Explosion Limit (%):
No information available

Autoignition Temperature (°C/°F):
204-220 °C/399-428 °F

pH:
No information available

Boiling point/range(°C/°F):
131 °C/267.8 °F

Melting point/range(°C/°F):
-56 °C/-68.8 °F

Decomposition temperature(°C/°F):
No information available

Specific gravity:
0.8335 @ 20 °C

Density (g/cm3):
0.815-0.83 @ 20 °C

Bulk density:
No information available

Vapor pressure @ 20°C (kPa):
1.4

Vapor density:
3.45

Evaporation rate:
No information available

VOC content (g/L):
No information available

Odor threshold (ppm):
No information available

Partition coefficient (n-octanol/water):
1.78

Miscibility:
No information available

Solubility:
Slightly soluble in water
Solubility in Water: 0.6% (6000 ml/L) at 20 °C
Soluble in Acetone
Very soluble in Ethanol
Very soluble in Ether

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions

Conditions to avoid: Heat. Ignition sources.

Materials to avoid: Strong oxidising agents. Reducing agents. Bases. Acids.

Hazardous decomposition products: Carbon monoxide. Carbon dioxide.

Possibility of Hazardous Reactions: No information available

Polymerization: Hazardous polymerisation does not occur

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

Hexanal - 66-25-1

LD50/oral/rat = 4890 mg/kg Oral LD50 Rat
LD50/oral/mouse = 8292
LD50/dermal/rabbit = Not determined
LD50/dermal/rat = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No infomaton available

Product Information

LC50/inhalation/rat = No information available
LC50/Inhalation/mouse = No information available
LD50/dermal/rabbit = No information available
LD50/dermal/rat = Not information available
LD50/oral/rat = 4890 mg/kg
LD50/oral/mouse = No information available

Local Effects

Skin irritation: May cause skin irritation. Mild skin irritation.

Eye irritation: May cause eye/skin irritation. Mild eye irritation.

Inhalation: May cause irritation of respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath. May cause headache. May cause conjunctivial irritaiton. May cause lacrimation. May cause bronchial constriction.

Ingestion: May affect respiration (difficult or labored breathing resulting on shortness of breath). May affect behavior/central nervous system (somnolence).

Sensitization: No information available

Chronic Toxicity

Chronic Toxicity Prolonged or repeated ingestion may affect the blood (changes in serum composition).

Carcinogenic effects: Not considered carcinogenic

Mutagenic Effects: May affect genetic material . Mutagenic effects on mammalian somatic cells.

Reproductive Effects: No information available

Teratogenic Effects: No information available

Target Organs: Central nervous system.

12. ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to terrestrial and aquatic plants and animals: Information given is based on data on the components and the ecotoxicology of similar products

Ecotoxicity effects: Aquatic environment

Aquatic toxicity:

Hexanal - 66-25-1
Freshwater Fish Species Data: 12-16.5 mg/L LC50 Pimephales promelas 96 h flow-through 1

Mobility: No information available

Persistence and degradability: No information available

Bioaccumulative potential: No information available

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Hexanal	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN1207
Proper Shipping Name: Hexaldehyde
Hazard Class: 3
Packing Group: III
Subsidiary Risk: Not applicable
Marine Pollutant: No data available
ERG No: 130
DOT RQ (lbs): No information available

TDG (Canada)

Proper Shipping Name: Hexaldehyde
UN-No: UN1207
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
Description: No information available

ADR

Proper Shipping Name: Hexaldehyde
UN-No: UN1207
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
Classification Code: No information available

Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG

Proper Shipping Name: No information available
UN-No: UN1207
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
Description: No information available
IMDG Page: No information available
Marine Pollutant: No information available
EMS: F-E
MFAG: No information available
Maximum Quantity: No information available

RID

Proper Shipping Name: Hexaldehyde
UN-No: UN1207
Hazard Class: 3
Packing Group: III
Subsidiary Risk: 3
Classification Code: No information available
Description: No information available

ICAO

UN-No: UN1207
Hazard Class: 3
Proper Shipping Name: Hexaldehyde
Packing Group: III
Subsidiary Risk: No information available
Description: No information available

IATA

Proper Shipping Name: Hexaldehyde
UN-No: UN1207
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
ERG Code: 3L
Description: No information available

15. REGULATORY INFORMATION

International Inventories

Components	U.S. TSCA	Philippines (PICCS)	KOREA KECL	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Hexanal	Present	Present	KE-18623	2-494	Present	Present	200-624-5

U.S. Regulations

Hexanal

Massachusetts RTK: Present
New Jersey RTK Hazard Substance: Present
Pennsylvania RTK: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcment Act of 1986.

Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Hexanal	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting *de minimis*
Hexanal	None	None	None	None	None

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Hexanal	Not Applicable	Not Applicable

Canada

WHMIS hazard class:
B2 Flammable liquid

Hexanal
B2

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

Components	Canada (DSL)	Canada (NDSL)
Hexanal	Present	Not Listed

EU Classification

R -phrase(s)
R10 - Flammable.
R36/37/38 - Irritating to eyes, respiratory system and skin.

S -phrase(s)
S16 - Keep away from sources of ignition - No smoking.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39 - Wear suitable gloves and eye/face protection.

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Xi - Irritant.

16. OTHER INFORMATION

The MSDS format complies with ANSI Z400.1-2004 standards.

Preparation Date 30-Aug-2010

Reason for revision: Not applicable

Prepared by: Sonia Owen

Literature reference: No information available

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. The physical properties reported in this MSDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.