

MATERIAL SAFETY DATA SHEET

Date Printed: 10/08/2004

Date Updated: 04/02/2004

Version 1.3

Section 1 - Product and Company Information

Product Name VANILLIN, 99%
Product Number V1104
Brand ALDRICH

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS MO 63103 US
Technical Phone: 314 771 5765
Emergency Phone: 414 273 3850 Ext. 5996
Fax: 800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313 No
VANILLIN	121-33-5	No

Formula C₈H₈O₃
Synonyms m-Anisaldehyde, 4-hydroxy- * Benzaldehyde,
4-hydroxy-3-methoxy- *
p-Hydroxy-m-methoxybenzaldehyde *
4-Hydroxy-3-methoxybenzaldehyde * Lioxin *
3-Methoxy-4-hydroxybenzaldehyde *
Methylprotocatechuic aldehyde *
Protocatechualdehyde, methyl- * Vanilla *
Vanillaldehyde * Vanillic aldehyde * p-Vanillin *
Vanilline * Zimco

RTECS Number: YW5775000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Harmful.
Harmful if swallowed.
Caution: Avoid contact and inhalation.

HMIS RATING

HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 1

NFPA RATING

HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 1

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is

conscious. Call a physician.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT

N/A

AUTOIGNITION TEMP

N/A

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed.

SPECIAL REQUIREMENTS

Air, light, and moisture sensitive.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Mechanical exhaust required.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Solid Color: Faintly yellow	
Property	Value	At Temperature or Pressure
Molecular Weight	152.15 AMU	
pH	N/A	
BP/BP Range	170 °C	15 mmHg
MP/MP Range	81 °C	
Freezing Point	N/A	
Vapor Pressure	> 0.01 mmHg	25 °C
Vapor Density	5.3 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	N/A	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Refractive Index	N/A	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solvent: 0.1 g/ml MeOH Clear	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Conditions of Instability: May discolor on exposure to light.

Conditions to Avoid: Air sensitive. Sensitive to moisture.

Materials to Avoid: Strong oxidizing agents, Strong bases, Strong reducing agents, Perchloric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: Harmful if swallowed.

SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

TOXICITY DATA

Oral

Rat

1580 mg/kg

LD50

Remarks: Behavioral:Coma.

Intraperitoneal

Rat

1160 MG/KG

LD50

Subcutaneous

Rat

1500 MG/KG

LD50

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Miosis (pupillary constriction). Behavioral:Muscle weakness. Lungs, Thorax, or Respiration:Respiratory stimulation.

Oral

Mouse

3925 mg/kg

LD50

Remarks: Behavioral:Somnolence (general depressed activity). Behavioral:Coma.

Intraperitoneal

Mouse

475 MG/KG

LD50

Skin

Rabbit

> 5010 mg/kg

LD50

Remarks: Behavioral:Somnolence (general depressed activity). Behavioral:Food intake (animal). Gastrointestinal:Peritonitis.

Oral

Guinea pig

1400 mg/kg

LD50

Remarks: Behavioral:Somnolence (general depressed activity).

CHRONIC EXPOSURE - MUTAGEN

Species: Human
Dose: 4 MMOL/L
Cell Type: lymphocyte
Mutation test: Cytogenetic analysis

Species: Human
Dose: 750 UMOL/L
Cell Type: lymphocyte
Mutation test: Sister chromatid exchange

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 20 MG/KG
Route of Application: Subcutaneous
Exposure Time: (4D PRE)
Result: Maternal Effects: Ovaries, fallopian tubes. Maternal
Effects: Uterus, cervix, vagina.

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: Xn
Indication of Danger: Harmful.
R: 22
Risk Statements: Harmful if swallowed.
S: 22 24/25
Safety Statements: Do not breathe dust. Avoid contact with skin and eyes.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Harmful.
Risk Statements: Harmful if swallowed.
US Statements: Caution: Avoid contact and inhalation.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

MATERIAL SAFETY DATA SHEET

Date Printed: 10/08/2004

Date Updated: 03/07/2004

Version 1.3

Section 1 - Product and Company Information

Product Name	P-ACETOPHENETIDIDE, 97%
Product Number	235830
Brand	ALDRICH
Company	Sigma-Aldrich
Street Address	3050 Spruce Street
City, State, Zip, Country	SAINT LOUIS MO 63103 US
Technical Phone:	314 771 5765
Emergency Phone:	414 273 3850 Ext. 5996
Fax:	800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
ACETOPHENETIDIN	62-44-2	No

Formula	C10H13NO2
Synonyms	Acetamide, N-(4-ethoxyphenyl)- (9CI) * 1-Acetamido-4-ethoxybenzene * Acetanilide, 4'-ethoxy- * Aceto-para-phenalide * p-Acetophenetide * Aceto-para-phenetidide * para-Acetophenetidide * Acetophenetidin * Acetophenetidine * p-Acetophenetidine * Aceto-4-phenetidine * Acetophenetin * Acet-p-phenalide * Acetphenetidin * p-Acetphenetidin * Acet-p-phenetidin * Acetylphenetidin * N-Acetyl-p-phenetidine * Achrocidin * Anapac * Bromo seltzer * Buff-A-Comp * Citra-fort * Clistanol * Codempiral * Commotional * Contradol * Contradouleur * Coricidin * Coriforte * Coryban-D * Daprisal * Darvon compound * Dasikon * Dasin * Dasin CH * Dolostop * Edrisal * Empiral * Emprazil * Emprazil-C * Epragen * p-Ethoxyacetanilide * 4'-Ethoxyacetanilide * p-Ethoxyanilid kyseliny octove (Czech) * N-para-Ethoxyphenylacetamide * N-(4-Ethoxyphenyl)acetamide * Fenacetin (Czech) * Fenacetina * Fenidina * Fenia * Fenina * Fiorinal * Fortacyl * Gelonida * Gewodin * Helvagit * Hjorton's powder * Hocophen * KAFA * Kalmin * Malex * Melabon * Melaforte * Norgesic * Pamprin

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Toxic.

May cause cancer. Harmful if swallowed.

Target organ(s): Blood. Kidneys.

HMIS RATING

HEALTH: 1*

FLAMMABILITY: 0
REACTIVITY: 0

NFPA RATING

HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

DERMAL EXPOSURE

In case of contact, immediately wash skin with soap and copious amounts of water.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT

N/A

AUTOIGNITION TEMP

N/A

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.

METHODS FOR CLEANING UP

Decomposition Temp.	N/A
Flash Point	N/A
Explosion Limits	N/A
Flammability	N/A
Autoignition Temp	N/A
Refractive Index	N/A
Optical Rotation	N/A
Miscellaneous Data	N/A
Solubility	N/A

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents, Strong acids, Strong bases, Strong reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Nitrogen oxides.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: Harmful if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Blood. Kidneys. Liver.

SIGNS AND SYMPTOMS OF EXPOSURE

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

TOXICITY DATA

Oral

Rat

1650 mg/kg

LD50

Remarks: Behavioral:Somnolence (general depressed activity).

Cardiac:Pulse rate. Nutritional and Gross Metabolic:Changes in:Body temperature decrease.

Intraperitoneal

Rat

634 MG/KG

LD50

Oral

Mouse

866 mg/kg

LD50

Inhalation
Mouse
33,900 mg/m³
LC50

Intraperitoneal
Mouse
540 MG/KG
LD50

Subcutaneous
Mouse
1625 MG/KG
LD50

Oral
Rabbit
2500 mg/kg
LD50

Subcutaneous
Rabbit
1 GM/KG
LD50

Remarks: Behavioral:Convulsions or effect on seizure threshold.

Oral
Guinea pig
1870 mg/kg
LD50

Remarks: Lungs, Thorax, or Respiration:Respiratory depression.

Oral
Hamster
1690 mg/kg
LD50

Remarks: Behavioral:Ataxia. Behavioral:Coma. Cardiac:Pulse rate increased without fall in BP.

CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Species: Woman
Route of Application: Oral
Dose: 80 GM/KG
Exposure Time: 63Y
Frequency: I
Result: Tumorigenic:Carcinogenic by RTECS criteria. Kidney, Ureter, Bladder:Kidney tumors.

Species: Man
Route of Application: Oral
Dose: 57 GM/KG
Exposure Time: 47Y
Frequency: I
Result: Tumorigenic:Carcinogenic by RTECS criteria. Kidney, Ureter, Bladder:Kidney tumors.

Species: Human
Route of Application: Oral
Dose: 7300 MG/KG
Exposure Time: Y
Frequency: C
Result: Tumorigenic:Carcinogenic by RTECS criteria. Kidney,
Ureter, Bladder:Kidney tumors.

Species: Rat
Route of Application: Oral
Dose: 572 GM/KG
Exposure Time: 60W
Frequency: C
Result: Tumorigenic:Carcinogenic by RTECS criteria. Sense Organs
and Special Senses (Nose, Eye, Ear, and Taste):Olfaction:Tumors.
Kidney, Ureter, Bladder:Tumors.

Species: Mouse
Route of Application: Oral
Dose: 1008 GM/KG
Exposure Time: 96W
Frequency: C
Result: Tumorigenic:Carcinogenic by RTECS criteria. Kidney,
Ureter, Bladder:Tumors. Kidney, Ureter, Bladder:Kidney tumors.

Species: Mouse
Route of Application: Subcutaneous
Dose: 19200 MG/KG
Exposure Time: 24W
Frequency: I
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS
criteria. Lungs, Thorax, or Respiration:Tumors.

Species: Mouse
Route of Application: Oral
Dose: 484 GM/KG
Exposure Time: 96W
Frequency: C
Result: Tumorigenic:Neoplastic by RTECS criteria. Kidney,
Ureter, Bladder:Kidney tumors.

Species: Man
Route of Application: Oral
Dose: 27 GM/KG
Exposure Time: 10Y
Frequency: I
Result: Tumorigenic:Carcinogenic by RTECS criteria. Kidney,
Ureter, Bladder:Kidney tumors.

Species: Rat
Route of Application: Oral
Dose: 9450 MG/KG
Exposure Time: 45W
Frequency: C
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS
criteria. Liver:Tumors.

Species: Rat
Route of Application: Oral
Dose: 206 GM/KG
Exposure Time: 2Y
Frequency: C

Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Sense Organs and Special Senses (Nose, Eye, Ear, and Taste): Ear: Tumors. Skin and Appendages: Other: Tumors.

Species: Human
Route of Application: Oral
Dose: 28 GM/KG
Exposure Time: 28Y
Frequency: I
Result: Tumorigenic: Carcinogenic by RTECS criteria. Kidney, Ureter, Bladder: Tumors.

Species: Man
Route of Application: Oral
Dose: 126 GM/KG
Exposure Time: 25Y
Frequency: I
Result: Tumorigenic: Carcinogenic by RTECS criteria. Kidney, Ureter, Bladder: Tumors.

Species: Woman
Route of Application: Oral
Dose: 140 GM/KG
Exposure Time: 13Y
Frequency: I
Result: Tumorigenic: Carcinogenic by RTECS criteria. Kidney, Ureter, Bladder: Kidney tumors.

IARC CARCINOGEN LIST

Rating: Group 2A

NTP CARCINOGEN LIST

Rating: Anticipated to be a carcinogen.

CHRONIC EXPOSURE - TERATOGEN

Species: Rat
Dose: 6 GM/KG
Route of Application: Oral
Exposure Time: (1-20D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

CHRONIC EXPOSURE - MUTAGEN

Species: Human
Dose: 1500 MG/L (+S9)
Cell Type: lymphocyte
Mutation test: Mutation in microorganisms

Species: Rat
Route: Oral
Dose: 2 GM/KG
Exposure Time: 2D
Mutation test: Micronucleus test

Species: Rat
Route: Intraperitoneal
Dose: 165 MG/KG
Mutation test: DNA damage

Species: Rat
Route: Oral
Dose: 82500 UG/KG
Mutation test: DNA damage

Species: Rat
Dose: 800 MG/KG
Cell Type: S. typhimurium
Mutation test: Body fluid assay

Species: Rat
Route: Oral
Dose: 263 GM/KG
Exposure Time: 17W
Mutation test: Cytogenetic analysis

Species: Rat
Dose: 200 UG/KG
Cell Type: S. typhimurium
Mutation test: Host-mediated assay

Species: Mouse
Route: Intraperitoneal
Dose: 2 MG/KG
Mutation test: Micronucleus test

Species: Mouse
Route: Oral
Dose: 600 MG/KG
Mutation test: Micronucleus test

Species: Mouse
Dose: 500 MG/L (+S9)
Cell Type: lymphocyte
Mutation test: Mutation in microorganisms

Species: Mouse
Dose: 500 MG/L
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Mouse
Route: Intraperitoneal
Dose: 400 MG/KG
Mutation test: DNA damage

Species: Mouse
Route: Intraperitoneal
Dose: 20 GM/KG
Mutation test: DNA inhibition

Species: Mouse
Dose: 50 MG/L
Cell Type: Other cell types
Mutation test: DNA inhibition

Species: Mouse
Dose: 1 MMOL/L
Cell Type: fibroblast
Mutation test: DNA inhibition

Species: Mouse
Route: Intraperitoneal
Dose: 165 MG/KG
Mutation test: Sister chromatid exchange

Species: Hamster
Dose: 1 MMOL/L (+S9)
Cell Type: lung
Mutation test: Mutation in microorganisms

Species: Hamster
Dose: 3 MMOL/L
Cell Type: lung
Mutation test: DNA inhibition

Species: Hamster
Dose: 1600 MG/KG
Cell Type: S. typhimurium
Mutation test: Body fluid assay

Species: Hamster
Dose: 800 MG/L
Exposure Time: 48H
Cell Type: fibroblast
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 800 MG/L
Exposure Time: 27H
Cell Type: lung
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 100 MG/L
Cell Type: lung
Mutation test: Sister chromatid exchange

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 50336 MG/KG
Route of Application: Oral
Exposure Time: (17W MALE)
Result: Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Species: Rat
Dose: 24 GM/KG
Route of Application: Oral
Exposure Time: (1-20D PREG)
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat
Dose: 62920 MG/KG
Route of Application: Oral
Exposure Time: (22W MALE)
Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Rat
Dose: 57200 MG/KG
Route of Application: Oral
Exposure Time: (20W MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: T
Indication of Danger: Toxic.
R: 45 22
Risk Statements: May cause cancer. Harmful if swallowed.
S: 53 45
Safety Statements: Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Toxic.
Risk Statements: May cause cancer. Harmful if swallowed.
Safety Statements: Avoid exposure - obtain special instructions before use. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
US Statements: Target organ(s): Blood. Kidneys.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No
TSCA INVENTORY ITEM: Yes

UNITED STATES - STATE REGULATORY INFORMATION

CALIFORNIA PROP - 65

California Prop - 65: This product is or contains chemical(s) known to the state of California to cause cancer.

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in

accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

MATERIAL SAFETY DATA SHEET

Date Printed: 10/08/2004

Date Updated: 04/07/2004

Version 1.2

Section 1 - Product and Company Information

Product Name CAFFEINE, USP ANHYDROUS
Product Number C7731
Brand SIGMA

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS MO 63103 US
Technical Phone: 314 771 5765
Emergency Phone: 414 273 3850 Ext. 5996
Fax: 800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313 No
CAFFEINE USP	58-08-2	No

Formula C8H10N4O2
Synonyms Anhydrous caffeine * Caffein * Caffeina (Italian) * Coffein (German) * Coffeine * Coffeinum * 3,7-Dihydro-1,3,7-trimethyl-1H-purine-2,6-dione * Eldiatric C * Guaranine * Kofein (Czech) * Koffein (German) * Methyltheobromide * NCI-C02733 * NO-Doz * Organex * 1H-Purine-2,6-dione, 3,7-dihydro-1,3,7-trimethyl- * Thein * Theine * Theobromine, 1-methyl- * Theophylline, 7-methyl * 1,3,7-Trimethyl-2,6-dioxopurine * 1,3,7-Trimethylxanthine * Xanthine, 1,3,7-trimethyl

RTECS Number: EV6475000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Toxic.

Toxic if swallowed. Irritating to eyes, respiratory system and skin. Limited evidence of a carcinogenic effect.

Target organ(s): Central nervous system. Heart.

HMIS RATING

HEALTH: 2

FLAMMABILITY: 0

REACTIVITY: 0

NFPA RATING

FLAMMABILITY: 0

REACTIVITY: 0

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Section 5 - Fire Fighting Measures

FLASH POINT

N/A

AUTOIGNITION TEMP

N/A

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Carbon dioxide.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed. Store in a cool dry place.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

PERSONAL PROTECTIVE EQUIPMENT

Other: Wear appropriate government approved respirator, chemical-resistant gloves, safety goggles, other protective clothing.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance

Color: White

Form: Powder

Property

Value

At Temperature or Pressure

Molecular Weight	194.19 AMU
pH	N/A
BP/BP Range	N/A
MP/MP Range	232 °C
Freezing Point	N/A
Vapor Pressure	N/A
Vapor Density	N/A
Saturated Vapor Conc.	N/A
SG/Density	N/A
Bulk Density	N/A
Odor Threshold	N/A
Volatile%	N/A
VOC Content	N/A
Water Content	N/A
Solvent Content	N/A
Evaporation Rate	N/A
Viscosity	N/A
Surface Tension	N/A
Partition Coefficient	N/A
Decomposition Temp.	N/A
Flash Point	N/A
Explosion Limits	N/A
Flammability	N/A
Autoignition Temp	N/A
Refractive Index	N/A
Optical Rotation	N/A
Miscellaneous Data	N/A
Solubility	N/A

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Thermal decomposition may produce carbon monoxide, carbon dioxide, and nitrogen oxides.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Absorption: May be harmful if absorbed through the skin.

Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion: Harmful if swallowed.

Multiple Routes: Causes eye and skin irritation.

TARGET ORGAN(S) OR SYSTEM(S)

Central nervous system. Heart.

SIGNS AND SYMPTOMS OF EXPOSURE

Overexposure by ingestion may result in nervousness, tremors, and insomnia. Headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness. Lethargy and convulsions. Nausea, vomiting,

diarrhea. Ataxia. CNS stimulation. Convulsions. Prolonged or repeated exposure can lead to habituation or addiction. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

TOXICITY DATA

Oral

Woman

400 mg/kg

LDLO

Remarks: Behavioral:Convulsions or effect on seizure threshold.
Cardiac:Other changes. Skin and Appendages: Other: Sweating.

Oral

Human

192 mg/kg

LDLO

Oral

Child

320 mg/kg

LDLO

Remarks: Behavioral:Convulsions or effect on seizure threshold.
Lungs, Thorax, or Respiration:Cyanosis.

Oral

Woman

1000 mg/kg

LDLO

Remarks: Gastrointestinal:Nausea or vomiting.

Intravenous

Woman

57 MG/KG

LDLO

Remarks: Behavioral:Convulsions or effect on seizure threshold.
Vascular:BP elevation not characterized in autonomic section.

Oral

Rat

192 mg/kg

LD50

Remarks: Brain and Coverings:Other degenerative changes.
Behavioral:Withdrawal. Kidney, Ureter, Bladder:Interstitial nephritis.

Intraperitoneal

Rat

240 MG/KG

LD50

Subcutaneous

Rat

170 MG/KG

LD50

Intravenous

Rat

105 MG/KG

LD50

Remarks: Lungs, Thorax, or Respiration:Acute pulmonary edema.

Kidney, Ureter, Bladder:Structural or functional changes in ureter.

Rectal
Rat
300 MG/KG
LD50

Oral
Mouse
127 mg/kg
LD50
Remarks: Gastrointestinal:Hypermotility, diarrhea.

Intraperitoneal
Mouse
168 MG/KG
LD50
Remarks: Behavioral:Change in motor activity (specific assay). Behavioral:Aggression. Kidney, Ureter, Bladder:Urine volume increased.

Subcutaneous
Mouse
242 MG/KG
LD50

Intravenous
Mouse
62 MG/KG
LD50
Remarks: Behavioral:Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration:Dyspnea.

Oral
Dog
140 mg/kg
LD50

Subcutaneous
Dog
100 MG/KG
LD50

Oral
Rabbit
224 mg/kg
LD50
Remarks: Gastrointestinal:Hypermotility, diarrhea.

Intravenous
Rabbit
58 MG/KG
LD50

Oral
Guinea pig
230 mg/kg
LD50
Remarks: Behavioral:Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration:Respiratory depression.

Oral
Hamster
230 mg/kg
LD50
Remarks: Gastrointestinal:Hypermotility, diarrhea.

Oral
Bird (wild)
316 mg/kg
LD50

CHRONIC EXPOSURE - CARCINOGEN

Species: Mouse
Route of Application: Oral
Dose: 30800 MG/KG
Exposure Time: 44W
Frequency: C
Result: Tumorigenic:Carcinogenic by RTECS criteria. Skin and Appendages: Other: Tumors. Tumorigenic:Increased incidence of tumors in susceptible strains.

IARC CARCINOGEN LIST

Rating: Group 3

CHRONIC EXPOSURE - TERATOGEN

Species: Woman
Dose: 6750 MG/KG
Route of Application: Oral
Exposure Time: (1-39W PREG)
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat
Dose: 200 MG/KG
Route of Application: Oral
Exposure Time: (13-14D PREG)
Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat
Dose: 1750 MG/KG
Route of Application: Oral
Exposure Time: (15-21D PREG)
Result: Specific Developmental Abnormalities: Blood and lymphatic system (including spleen and marrow). Specific Developmental Abnormalities: Homeostasis

Species: Rat
Dose: 114 MG/KG
Route of Application: Oral
Exposure Time: (1-19D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat
Dose: 120 MG/KG
Route of Application: Oral

Exposure Time: (12D PREG)
Result: Effects on Embryo or Fetus: Maternal-fetal exchange.

Species: Rat
Dose: 75 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (12D PREG)
Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Eye, ear.

Species: Rat
Dose: 37500 UG/KG
Route of Application: Intravenous
Exposure Time: (11D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat
Dose: 25 MG/KG
Route of Application: Intravenous
Exposure Time: (6D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat
Dose: 113 MG/KG
Route of Application: Intravenous
Exposure Time: (11D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse
Dose: 350 MG/KG
Route of Application: Oral
Exposure Time: (8D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse
Dose: 1650 MG/KG
Route of Application: Oral
Exposure Time: (6-16D PREG)
Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse
Dose: 2691 MG/KG
Route of Application: Oral
Exposure Time: (5-18D PREG)
Result: Specific Developmental Abnormalities: Other developmental abnormalities.

Species: Mouse
Dose: 250 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (10D PREG)
Result: Effects on Embryo or Fetus: Fetal death.

Species: Mouse
Dose: 200 MG/KG

Route of Application: Intraperitoneal
Exposure Time: (12D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Other developmental abnormalities.

Species: Mouse
Dose: 150 MG/KG
Route of Application: Subcutaneous
Exposure Time: (13D PREG)
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Other developmental abnormalities.

Species: Mouse
Dose: 400 MG/KG
Route of Application: Subcutaneous
Exposure Time: (13D PREG)
Result: Specific Developmental Abnormalities: Gastrointestinal system.

Species: Mouse
Dose: 200 MG/KG
Route of Application: Intravenous
Exposure Time: (13D PREG)
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Other developmental abnormalities.

Species: Mouse
Dose: 408 MG/KG
Route of Application: Multiple
Exposure Time: (9W PRE/12D PREG)
Result: Specific Developmental Abnormalities: Skin and skin appendages.

CHRONIC EXPOSURE - MUTAGEN

Species: Human
Dose: 750 UMOL/L
Cell Type: fibroblast
Mutation test: DNA repair

Species: Human
Dose: 1 MMOL/L
Cell Type: Other cell types
Mutation test: Unscheduled DNA synthesis

Species: Human
Dose: 1 MMOL/L
Cell Type: HeLa cell
Mutation test: DNA inhibition

Species: Human
Dose: 4 MMOL/L
Cell Type: Other cell types
Mutation test: DNA inhibition

Species: Human
Dose: 1 MMOL/L
Cell Type: lymphocyte

Mutation test: Other mutation test systems

Species: Human
Dose: 100 MG/L
Cell Type: leukocyte
Mutation test: Cytogenetic analysis

Species: Human
Dose: 2600 UMOL/L
Exposure Time: 24H
Cell Type: fibroblast
Mutation test: Cytogenetic analysis

Species: Human
Dose: 100 UG/L
Exposure Time: 24H
Cell Type: lymphocyte
Mutation test: Cytogenetic analysis

Species: Human
Dose: 50 PPM
Exposure Time: 24H
Cell Type: Embryo
Mutation test: Cytogenetic analysis

Species: Human
Dose: 500 MG/L
Cell Type: HeLa cell
Mutation test: Cytogenetic analysis

Species: Human
Dose: 1 MMOL/L
Cell Type: lymphocyte
Mutation test: Sister chromatid exchange

Species: Rat
Dose: 10 MMOL/L
Cell Type: kidney
Mutation test: Micronucleus test

Species: Rat
Dose: 320 UG/PLATE
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Rat
Dose: 200 UMOL/L
Cell Type: Other cell types
Mutation test: DNA inhibition

Species: Mouse
Dose: 7 MMOL/L
Cell Type: Embryo
Mutation test: Micronucleus test

Species: Mouse
Route: Oral
Dose: 100 MG/KG
Mutation test: Micronucleus test

Species: Mouse
Route: Intraperitoneal

Dose: 35 MG/KG
Mutation test: specific locus test

Species: Mouse
Route: Intraperitoneal
Dose: 100 MG/KG
Mutation test: DNA damage

Species: Mouse
Dose: 100 UMOL/L
Cell Type: leukocyte
Mutation test: DNA damage

Species: Mouse
Route: Intraperitoneal
Dose: 50 MG/KG
Mutation test: DNA inhibition

Species: Mouse
Route: Oral
Dose: 208 MG/KG
Exposure Time: 7D
Mutation test: DNA inhibition

Species: Mouse
Dose: 5 MMOL/L
Cell Type: lymphocyte
Mutation test: DNA inhibition

Species: Mouse
Dose: 5 MMOL/L
Cell Type: fibroblast
Mutation test: DNA inhibition

Species: Mouse
Route: Intraperitoneal
Dose: 50 MG/KG
Mutation test: Other mutation test systems

Species: Mouse
Route: Oral
Dose: 14 MG/KG
Exposure Time: 7D
Mutation test: Cytogenetic analysis

Species: Mouse
Route: Intravenous
Dose: 50 MG/KG
Mutation test: Cytogenetic analysis

Species: Mouse
Dose: 7700 UMOL/L
Cell Type: Ascites tumor
Mutation test: Cytogenetic analysis

Species: Mouse
Dose: 100 MG/L
Cell Type: lymphocyte
Mutation test: Cytogenetic analysis

Species: Mouse
Route: Intravenous

Dose: 50 MG/KG
Mutation test: Sister chromatid exchange

Species: Mouse
Route: Oral
Dose: 5 GM/KG
Exposure Time: 5D
Mutation test: Sister chromatid exchange

Species: Mouse
Dose: 100 UMOL/L
Cell Type: Other cell types
Mutation test: Sister chromatid exchange

Species: Mouse
Route: Oral
Dose: 2520 MG/KG
Exposure Time: W
Mutation test: Dominant lethal test

Species: Mouse
Dose: 500 MG/L
Cell Type: lymphocyte
Mutation test: Mutation in mammalian somatic cells.

Species: Mouse
Dose: 150 MG/KG
Cell Type: Ascites tumor
Mutation test: Host-mediated assay

Species: Hamster
Route: Oral
Dose: 300 MG/KG
Mutation test: Micronucleus test

Species: Hamster
Dose: 125 MG/L
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Hamster
Dose: 1 MMOL/L
Cell Type: lung
Mutation test: DNA inhibition

Species: Hamster
Dose: 2 MMOL/L
Cell Type: ovary
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 10 MMOL/L
Cell Type: lung
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 25 MMOL/L
Exposure Time: 2H
Cell Type: Other cell types
Mutation test: Cytogenetic analysis

Species: Hamster

Dose: 1 GM/L
Cell Type: fibroblast
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 4 MMOL/L
Cell Type: lung
Mutation test: Sister chromatid exchange

Species: Hamster
Route: Oral
Dose: 300 MG/KG
Mutation test: Sister chromatid exchange

Species: Chicken
Dose: 25 MMOL/L
Cell Type: fibroblast
Mutation test: Cytogenetic analysis

Species: Mammal
Dose: 100 MMOL/L
Cell Type: lymphocyte
Mutation test: DNA damage

Species: Mammal
Dose: 10 MMOL/L
Cell Type: lymphocyte
Mutation test: DNA inhibition

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Woman
Dose: 3276 MG/KG
Route of Application: Oral
Exposure Time: (1-39W PREG)
Result: Maternal Effects: Parturition. Effects on Newborn: Stillbirth.

Species: Woman
Dose: 1092 MG/KG
Route of Application: Oral
Exposure Time: (1-91D PREG)
Result: Effects on Fertility: Abortion.

Species: Rat
Dose: 627 MG/KG
Route of Application: Oral
Exposure Time: (1-22D PREG)
Result: Effects on Newborn: Biochemical and metabolic. Effects on Newborn: Other postnatal measures or effects.

Species: Rat
Dose: 85 MG/KG
Route of Application: Oral
Exposure Time: (3-19D PREG)
Result: Effects on Newborn: Behavioral. Effects on Newborn: Physical.

Species: Rat
Dose: 660 MG/KG
Route of Application: Oral
Exposure Time: (1-22D PREG)

Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated). Specific Developmental Abnormalities: Urogenital system. Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4).

Species: Rat

Dose: 420 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (1-21D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat

Dose: 200 MG/KG

Route of Application: Subcutaneous

Exposure Time: (4D MALE)

Result: Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive).

Species: Mouse

Dose: 1 GM/KG

Route of Application: Oral

Exposure Time: (8-12D PREG)

Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Mouse

Dose: 1650 MG/KG

Route of Application: Oral

Exposure Time: (6-16D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Mouse

Dose: 500 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (11-12D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Specific Developmental Abnormalities: Other developmental abnormalities.

Species: Mouse

Dose: 200 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (12D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Mouse

Dose: 200 MG/KG

Route of Application: Subcutaneous

Exposure Time: (12D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Mouse

Dose: 150 MG/KG

Route of Application: Subcutaneous

Exposure Time: (13D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).

Species: Hamster

Dose: 8160 MG/KG

Route of Application: Oral

Exposure Time: (60D MALE)

Result: Effects on Newborn: Sex ratio.

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Alkaloids, solid, n.o.s. [or]

Alkaloid salts, solid, n.o.s. [poisonous]

UN#: 1544

Class: 6.1

Packing Group: Packing Group III

Hazard Label: Keep away from food

PIH: Not PIH

IATA

Proper Shipping Name: Alkaloids, solid, n.o.s.

IATA UN Number: 1544

Hazard Class: 6.1

Packing Group: III

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: Xn

Indication of Danger: Harmful.

R: 22

Risk Statements: Harmful if swallowed.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Toxic.

Risk Statements: Toxic if swallowed. Irritating to eyes, respiratory system and skin. Limited evidence of a carcinogenic

effect.

Safety Statements: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Wear suitable protective clothing, gloves, and eye/face protection. Do not breathe dust.

US Statements: Target organ(s): Central nervous system. Heart.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D or manufacturing use. Not for household use.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.