

MATERIAL SAFETY DATA SHEET

Date Printed: 03/31/2008

Date Updated: 02/01/2006

Version 1.3

Section 1 - Product and Company Information

Product Name EUGENOL, 99%
Product Number E51791
Brand ALDRICH

Company Sigma-Aldrich
Address 3050 Spruce Street
SAINT LOUIS MO 63103 US

Technical Phone: 800-325-5832
Fax: 800-325-5052
Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313 No
EUGENOL	97-53-0	No

Formula C10H12O2
Synonyms 4-Allylcatechol-2-methyl ether * p-Allylguaiacol
* 4-Allylguaiacol *
4-Allyl-1-hydroxy-2-methoxybenzene *
4-Allyl-2-methoxyphenol * Caryophyllic acid *
Eugenic acid * Eugenol * p-Eugenol *
1,3,4-Eugenol * FA 100 * FEMA No. 2467 *
1-Hydroxy-2-methoxy-4-allylbenzene *
4-Hydroxy-3-methoxyallylbenzene *
1-Hydroxy-2-methoxy-4-prop-2-enylbenzene *
2-Methoxy-4-allylphenol *
2-Methoxy-1-hydroxy-4-allylbenzene *
2-Methoxy-4-prop-2-enylphenol *
2-Methoxy-4-(2-propenyl)phenol *
2-Metoksy-4-allilofenol (Polish) * NCI-C50453 *
Phenol, 2-methoxy-4-(2-propenyl)- * Synthetic
eugenol

RTECS Number: SJ4375000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Harmful.

Harmful if swallowed. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact.

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

HMIS RATING

HEALTH: 3

FLAMMABILITY: 1

REACTIVITY: 1

NFPA RATING

HEALTH: 3

FLAMMABILITY: 1

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 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

233.6 °F 112 °C Method: closed cup

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

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

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

STORAGE

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

SPECIAL REQUIREMENTS

Store under inert gas. Air sensitive.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Mechanical exhaust required.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air 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: Clear liquid Color: Very faintly yellow	
Property	Value	At Temperature or Pressure
Molecular Weight	164.2 AMU	
pH	N/A	
BP/BP Range	253 °C	
MP/MP Range	- 12.0 - -10. °C	
Freezing Point	N/A	
Vapor Pressure	< 0.1 mmHg	25 °C
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	1.066 g/cm3	
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	Log Kow: 2.7	
Decomposition Temp.	N/A	
Flash Point	233.6 °F 112 °C	Method: closed cup
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Refractive Index	1.541	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Conditions to Avoid: Air.

Materials to Avoid: Strong oxidizing agents.

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: Causes skin irritation.

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

Eye Contact: Causes eye irritation.

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

Ingestion: Harmful if swallowed.

SENSITIZATION

Sensitization: May cause allergic respiratory and skin reactions

TARGET ORGAN(S) OR SYSTEM(S)

Lungs. G.I. System. Central nervous system. Kidneys.

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

1930 mg/kg

LD50

Remarks: Behavioral:Altered sleep time (including change in righting reflex). Behavioral:Coma. Lungs, Thorax, or Respiration:Dyspnea.

Intratracheal

Rat

11 MG/KG

LD50

Remarks: Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi. Lungs, Thorax, or Respiration:Acute pulmonary edema. Lungs, Thorax, or Respiration:Chronic pulmonary edema.

Oral

Mouse

3000 mg/kg

LD50

Remarks: Behavioral:Somnolence (general depressed activity).

Intraperitoneal

Mouse

500 MG/KG
LD50

Intravenous
Mouse
72 MG/KG
LD50

Remarks: Behavioral:Convulsions or effect on seizure threshold.
Lungs, Thorax, or Respiration:Dyspnea. Lungs, Thorax, or
Respiration:Respiratory stimulation.

Oral
Guinea pig
2130 mg/kg
LD50

Remarks: Behavioral:Somnolence (general depressed activity).

Intratracheal
Hamster
17 MG/KG
LD50

Remarks: Lungs, Thorax, or Respiration:Structural or functional
change in trachea or bronchi. Lungs, Thorax, or
Respiration:Acute pulmonary edema. Lungs, Thorax, or
Respiration:Chronic pulmonary edema.

IRRITATION DATA

Skin
Human
40 mg
48H

Remarks: Mild irritation effect

Skin
Man
16 mg
48H

Remarks: Moderate irritation effect

Skin
Rabbit
100 mg
24H

Remarks: Severe irritation effect

Skin
Pig
50 mg
48H

Remarks: Mild irritation effect

Skin
Guinea pig
100 mg
24H

Remarks: Moderate irritation effect

CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that is not
classifiable as to its carcinogenicity based on its IARC, ACGIH,
NTP, or EPA classification.

Species: Mouse
Route of Application: Oral
Dose: 37080 MG/KG
Exposure Time: 2Y
Frequency: I
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS
criteria. Liver: Tumors.

IARC CARCINOGEN LIST

Rating: Group 3

NTP CARCINOGEN LIST

Rating: Equivocal evidence.
Species: Mouse
Route: Feed

CHRONIC EXPOSURE - MUTAGEN

Species: Rat
Dose: 50 UMOL/L
Cell Type: liver
Mutation test: DNA damage

Species: Mouse
Route: Intraperitoneal
Dose: 296 MG/KG
Exposure Time: 24H
Mutation test: Micronucleus test

Species: Mouse
Route: Oral
Dose: 29589 MG/KG
Exposure Time: 24H
Mutation test: Micronucleus test

Species: Mouse
Dose: 21300 UG/L
Cell Type: lymphocyte
Mutation test: Mutation in mammalian somatic cells.

Species: Hamster
Dose: 3 PPM
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Hamster
Dose: 1 PPM
Cell Type: Embryo
Mutation test: Unscheduled DNA synthesis

Species: Hamster
Dose: 400 MG/L
Cell Type: ovary
Mutation test: Other mutation test systems

Species: Hamster
Dose: 125 MG/L
Cell Type: fibroblast
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 300 MG/L
Cell Type: ovary
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 75 MG/L
Cell Type: ovary
Mutation test: Sister chromatid exchange

Species: Hamster
Dose: 300 PPB
Cell Type: Embryo
Mutation test: Sister chromatid exchange

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: 22-36/37/38-42/43
Risk Statements: Harmful if swallowed. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact.
S: 26-36
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Harmful.
Risk Statements: Harmful if swallowed. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact.
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

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

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 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.