Eugenol

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Description: Eugenol
Cat No. : A14332
Synonyms 4-Allyl-2-methoxyphenol
CAS No. 97-53-0
Molecular Formula C10 H12 O2
Supplier
Alfa Aesar
Avocado Research Chemicals, Ltd.
Shore Road
Port of Heysham Industrial Park
Heysham, Lancashire LA3 2XY
United Kingdom
Office Tel: +44 (0) 1524 850506
Office Fax: +44 (0) 1524 850608

Emergency Telephone Number
Call Carechem 24 at
+44 (0) 1865 407333 (English only);
+44 (0) 1235 239670 (Multi-language)

E-mail address
uktech@alfa.com
www.alfa.com
Product Safety Department

Recommended Use Laboratory chemicals.
Uses advised against No Information available

SECTION 2. HAZARD IDENTIFICATION

Physical State Liquid
Appearance Light yellow
Odor Characteristic

Emergency Overview
Harmful if swallowed. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Air sensitive.

Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Oral Toxicity</td>
<td>Category 4</td>
</tr>
<tr>
<td>Skin Corrosion/Irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious Eye Damage/Eye Irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Skin Sensitization</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Label Elements
**Signal Word**

**Warning**

**Hazard Statements**
H302 - Harmful if swallowed  
H315 - Causes skin irritation  
H317 - May cause an allergic skin reaction  
H319 - Causes serious eye irritation

**Precautionary Statements**

**Prevention**
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray  
P264 - Wash face, hands and any exposed skin thoroughly after handling  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P270 - Do not eat, drink or smoke when using this product  
P272 - Contaminated work clothing should not be allowed out of the workplace

**Response**
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell  
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P330 - Rinse mouth  
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention  
P337 + P313 - If eye irritation persists: Get medical advice/attention  
P362 + P364 - Take off contaminated clothing and wash it before reuse

**Storage**
P403 - Store in a well-ventilated place

**Disposal**
P501 - Dispose of contents/ container to an approved waste disposal plant

**Physical and Chemical Hazards**
None identified.

**Health Hazards**
Harmful if swallowed. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation.

**Environmental hazards**
Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants. Will likely be mobile in the environment due to its water solubility. The product is water soluble, and may spread in water systems.

**Other Hazards**
Toxic to terrestrial vertebrates.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eugenol</td>
<td>97-53-0</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>

### SECTION 4. FIRST AID MEASURES

**General Advice**
If symptoms persist, call a physician.

**Eye Contact**
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

**Skin Contact**
Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

**Inhalation**
Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

**Ingestion**
Clean mouth with water and drink afterwards plenty of water.

**Most important symptoms and effects**
None reasonably foreseeable. May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

**Self-Protection of the First Aider**
Use personal protective equipment as required.

**Notes to Physician**
Treat symptomatically.

**SECTION 5. FIRE-FIGHTING MEASURES**

**Suitable Extinguishing Media**
Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

**Extinguishing media which must not be used for safety reasons**
No information available.

**Specific Hazards Arising from the Chemical**
Thermal decomposition can lead to release of irritating gases and vapors.

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

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions**
Use personal protective equipment as required. Ensure adequate ventilation.

**Environmental Precautions**
Should not be released into the environment. Do not flush into surface water or sanitary sewer system.

**Methods for Containment and Clean Up**
Keep in suitable, closed containers for disposal. Soak up with inert absorbent material.

Refer to protective measures listed in Sections 8 and 13.

**SECTION 7. HANDLING AND STORAGE**

**Handling**
Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation.

**Storage**
Keep containers tightly closed in a dry, cool and well-ventilated place. Store under an inert atmosphere.
Specific Use(s)
Use in laboratories

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Exposure Controls

Engineering Measures
Ensure adequate ventilation, especially in confined areas. Ventilation systems. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

Personal protective equipment

Eye Protection
Wear safety glasses with side shields (or goggles) Goggles (European standard - EN 166)

Hand Protection
Protective gloves

<table>
<thead>
<tr>
<th>Glove material</th>
<th>Breakthrough time</th>
<th>Glove thickness</th>
<th>EU standard</th>
<th>Glove comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural rubber</td>
<td>See manufacturers</td>
<td>-</td>
<td>EN 374</td>
<td>(minimum requirement)</td>
</tr>
<tr>
<td>Nitrile rubber</td>
<td>recommendations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neoprene</td>
<td>PVC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PVC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

Skin and body protection
Long sleeved clothing

Respiratory Protection
No protective equipment is needed under normal use conditions.

Large scale/emergency use
Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

Small scale/Laboratory use
Maintain adequate ventilation

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls
Prevent product from entering drains.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Light yellow

Physical State
Liquid

Odor
Characteristic

Odor Threshold
No data available

pH
No information available
**Eugenol**

**Molecular Formula**: C10 H12 O2  
**Molecular Weight**: 164.2

**SECTION 10. STABILITY AND REACTIVITY**

**Stability**: Air sensitive.

**Hazardous Reactions**: None under normal processing.

**Hazardous Polymerization**: No information available.

**Conditions to Avoid**: Incompatible products. Excess heat. Exposure to air.

**Materials to avoid**: Strong oxidizing agents.

**Hazardous Decomposition Products**: Thermal decomposition can lead to release of irritating gases and vapors. Carbon monoxide (CO). Carbon dioxide (CO₂).

**SECTION 11. TOXICOLOGICAL INFORMATION**

**Eugenol**

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eugenol</td>
<td>LD50 = 1930 mg/kg (Rat)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) acute toxicity:

(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 2

(d) respiratory or skin sensitization;  
  Respiratory: No data available  
  Skin: Category 1
May cause sensitization by skin contact

(e) germ cell mutagenicity;
No data available
Mutagenic effects have occurred in humans

(f) carcinogenicity;
No data available
There are no known carcinogenic chemicals in this product

(g) reproductive toxicity;
No data available

(h) STOT-single exposure;
No data available

(i) STOT-repeated exposure;
No data available
Target Organs
No information available.

(j) aspiration hazard;
No data available

Other Adverse Effects
The toxicological properties have not been fully investigated.

Symptoms / effects, both acute and delayed
Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects
Do not empty into drains. Contains a substance which is: Harmful to aquatic organisms.
The product contains following substances which are hazardous for the environment.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Fish</th>
<th>Water Flea</th>
<th>Freshwater Algae</th>
<th>Microtox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eugenol</td>
<td>LC50: 60.8 mg/L/96h (Rainbouw trout)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence and Degradability

Persistence
Soluble in water, Persistence is unlikely, based on information available.

Degradation in sewage treatment plant
Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

Bioaccumulative Potential
Bioaccumulation is unlikely

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
<th>Bioconcentration factor (BCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eugenol</td>
<td>2.7</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Mobility in soil
The product is water soluble, and may spread in water systems. Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors

Persistent Organic Pollutant
This product does not contain any known or suspected substance

Ozone Depletion Potential
This product does not contain any known or suspected substance

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from Residues/Unused
Waste is classified as hazardous. Dispose of in accordance with the European Directives
**Eugenol**

**SECTION 14. TRANSPORT INFORMATION**

**Road and Rail Transport**
Not Regulated

**IMDG/IMO**
Not regulated

**IATA**
Not regulated

**Special Precautions for User**
No special precautions required

**SECTION 15. REGULATORY INFORMATION**

**International Inventories**
X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

<table>
<thead>
<tr>
<th>Component</th>
<th>The Inventory of Hazardous Chemicals (2015 Edition)</th>
<th>List of dangerous goods GB 12268 - 2012</th>
<th>TCSI</th>
<th>IECSC</th>
<th>EINECS</th>
<th>TSCA</th>
<th>DSL</th>
<th>PICCS</th>
<th>ENCS</th>
<th>ISHL</th>
<th>AICS</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eugenol</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>202-589-1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-23385</td>
</tr>
</tbody>
</table>

**National Regulations**

**SECTION 16. OTHER INFORMATION**

**Prepared By**
Health, Safety and Environmental Department

**Creation Date**
26-Sep-2009

**Revision Date**
18-Jan-2021

**Revision Summary**
Not applicable.

**Training Advice**
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

**Legend**
- **CAS** - Chemical Abstracts Service
- **EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
- **PICCS** - Philippines Inventory of Chemicals and Chemical Substances
- **IECSC** - Chinese Inventory of Existing Chemical Substances
- **KECL** - Korean Existing and Evaluated Chemical Substances
- **TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
- **DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
- **ENCS** - Japanese Existing and New Chemical Substances
- **AICS** - Australian Inventory of Chemical Substances
- **NZIoC** - New Zealand Inventory of Chemicals
Eugenol

Key literature references and sources for data
https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Disclaimer
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End of Safety Data Sheet