SAFETY DATA SHEET

LICOWAX E FL

Substance key: SXR021435
Revision Date: 03/02/2016
Version: 2 - 1 / USA
Date of printing: 01/28/2019

SECTION 1. IDENTIFICATION

<table>
<thead>
<tr>
<th>Identification of the company:</th>
<th>Clariant Plastics &amp; Coating USA LLC</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>4000 Monroe Road</td>
</tr>
<tr>
<td></td>
<td>Charlotte, NC, 28205</td>
</tr>
<tr>
<td>Telephone No.:</td>
<td>+1 704 331 7000</td>
</tr>
</tbody>
</table>

Information of the substance/preparation:
Product Stewardship, +1-704-331-7710
Emergency tel. number: +1 800-424-9300 CHEMTREC

Trade name: LICOWAX E FL
Material number: 105198
CAS number: 73138-45-1
Synonyms: Fatty acids, montan wax, ethylene esters
Primary product use: Industrial uses are not restricted by REACH legislation.
Chemical family: ester of montanic acids (an acid mixture approx. C24-C34)

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification
Not a hazardous substance or mixture.

GHS label elements
Not a hazardous substance or mixture.

Other hazards
According to the present state of knowledge, provided that this product is handled correctly, there is no known danger to humans.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
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<tbody>
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<td>Substance name</td>
<td>ester of montanic acids (an acid mixture approx. C24-C34)</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>73138-45-1</td>
</tr>
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Hazardous components
This material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). None under Title III of SARA

SECTION 4. FIRST AID MEASURES

General advice: Get medical advice/attention if you feel unwell.

If inhaled: Move the victim to fresh air.
Give oxygen or artificial respiration if needed.
Get immediate medical advice/attention. Never give anything by mouth to an unconscious person.

In case of skin contact: Wash thoroughly with soap and water for 15 minutes. If skin irritation occurs, seek medical attention.

In case of eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention immediately if irritation develops and persists.

If swallowed: If swallowed, DO NOT induce vomiting. Do not give anything to drink. Call a physician immediately.

Most important symptoms and effects, both acute and delayed: The possible symptoms known are those derived from the labelling (see section 2). No additional symptoms are known.

Notes to physician: None known.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media: Dry powder
Foam
Carbon dioxide (CO2)
Water mist

Unsuitable extinguishing media: High volume water jet

Specific hazards during firefighting: Take measures to prevent the build up of electrostatic charge.

Further information: Exercise caution when fighting any chemical fire. Use NIOSH approved self-contained breathing apparatus and full protective clothing.

Special protective equipment for firefighters: Self-contained breathing apparatus
Impervious clothing
Protective helmets

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Wear suitable protective equipment. Collect into suitable container. Electrical grounding of equipment is required when handling powder to prevent possible dust explosion.
Environmental precautions : The product should not be allowed to enter drains, water courses or the soil.

Methods and materials for containment and cleaning up : Take up mechanically

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Take measures to prevent the build up of electrostatic charge. Combustible material Risk of dust explosion.

Advice on safe handling : Avoid dust formation. Keep away from sources of ignition. Lead off electrostatic charges. Avoid inhalation, ingestion and contact with skin and eyes. Wash thoroughly after handling.

Technical measures/Precautions : Store in original container. Keep container tightly closed. Store in a cool, dry, well-ventilated area.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Engineering measures : Local ventilation recommended - mechanical ventilation may be used.

Personal protective equipment

Respiratory protection : Use NIOSH/MSHA approved respirators following manufacturer's recommendations where dust or fume may be generated.

Hand protection Remarks : Butyl Rubber, PVC Or Neoprene.

Eye protection : Safety glasses or chemical splash goggles.

Skin and body protection : Wear suitable protective equipment.

Protective measures : When working with hot material, avoid contact with skin.

Hygiene measures : Wash hands before breaks and at the end of workday. When using do not eat, drink or smoke. Use protective skin cream before handling the product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : flakes, granular
Colour  :  white yellowish

Odour  :  not specified

Odour Threshold  :  cannot be determined

pH  :  approx. 7  

(20 °C)  
saturated aqueous solution

Melting point  :  approx. 77 °C  

Method: DSC

Drop point  :  approximately 81 °C  

Method: DIN/ISO 2176

Boiling point  :  Decomposes below the boiling point.

Flash point  :  Not applicable

Evaporation rate  :  Not applicable

Flammability (solid, gas)  :  The product is not flammable.  

Method: 92/69/EC (L383) A.10 * flammability (solids)  

GLP: yes

Upper explosion limit  :  not tested.

Lower explosion limit  :  not tested.

Combustion number  :  BZ1  

Does not catch fire  

Method: VDI 2263, ESCIS, Vol. 1  

GLP: no

Vapour pressure  :  0.043 mPa (25 °C)  


GLP: yes

Relative vapour density  :  Not applicable

Relative density  :  1.02 (20 °C)  

Method: ISO 1183

Density  :  1.02 g/cm³ (20 °C)  

Method: ISO 1183

Solubility(ies)  :  24 mg/l (20 °C)  

pH: 7  

Method: OECD Test Guideline 105

Solubility in other solvents  :  not tested.

Partition coefficient: n-  :  log Pow: 0.9 (20 °C)
octanol/water  
Method: other (calculated)

pH: 7

Auto-ignition temperature : Not applicable

Decomposition temperature : > 180 °C
Method: DSC

Viscosity
- Viscosity, dynamic : approx. 20 mPa.s (100 °C)  
  Method: DIN 53019

- Viscosity, kinematic : Not applicable

Explosive properties : There are no chemical groups associated with explosive properties present in the molecule.

Oxidizing properties : The substance or mixture is not classified as oxidizing. There are no chemical groups associated with oxidising properties present in the molecule. not oxidizing

Surface tension : Based on chemical structure, no surface activity is expected or can be predicted.

Sublimation point : Not applicable

Minimum ignition energy : not tested.

Particle size : not tested.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Potential dust explosion hazard. The substance or mixture does not emit flammable gases in contact with water. Not corrosive to metals

Conditions to avoid : Keep away from heat. Keep away from flames and sparks.

Incompatible materials : Strong oxidizing agents

Hazardous decomposition products : When handled and stored appropriately, no dangerous decomposition products are known.
SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Skin contact
Inhalation

Acute toxicity

Product:
Acute oral toxicity: LD50 (Rat, male and female): > 2,000 mg/kg
  Method: OECD Test Guideline 401
  GLP: yes

Acute inhalation toxicity: Remarks: not required

Acute dermal toxicity: LD50 (Rat, male and female): > 2,000 mg/kg
  Method: OECD Test Guideline 402
  GLP: yes

Skin corrosion/irritation

Product:
Species: Rabbit
Exposure time: 4 h
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: yes

Serious eye damage/eye irritation

Product:
Species: rabbit eye
Result: No eye irritation
Exposure time: 24 h
Method: OECD Test Guideline 405
GLP: yes

Respiratory or skin sensitisation

Product:
Test Type: Mouse local lymphnode assay
Exposure routes: Dermal
Species: Mouse
Method: OECD Test Guideline 429
Result: non-sensitizing
GLP: yes

Germ cell mutagenicity

Product:
Genotoxicity in vitro: Test Type: Ames test
Species: Salmonella typhimurium  
Concentration: 4 - 10000 µg/plate  
Metabolic activation: with and without  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes  

Test Type: Ames test  
Species: Escherichia coli  
Concentration: 4 - 10000 µg/plate  
Metabolic activation: with and without  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes  
Remarks: By analogy with a product of similar composition  

Test Type: Chromosome Aberration Test  
Species: V79 cells (embryonic lung fibroblasts) of the Chinese hamster  
Concentration: 0.3 - 35 µg/ml  
Metabolic activation: with and without  
Method: OECD Test Guideline 473  
Result: negative  
GLP: yes  
Remarks: By analogy with a product of similar composition  

Test Type: HGPRT assay  
Species: V79 cells (embryonic lung fibroblasts) of the Chinese hamster  
Concentration: 4.4 - 560 µl/ml  
Metabolic activation: with and without  
Method: OECD Test Guideline 476  
Result: negative  
GLP: yes  
Remarks: By analogy with a product of similar composition  

Germ cell mutagenicity - Assessment  
It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.  

Carcinogenicity  
Product:  
Carcinogenicity - Assessment  
Animal testing did not show any carcinogenic effects.  

IARC  
Not listed  

OSHA  
Not listed  

NTP  
Not listed  

Reproductive toxicity  
Product:  

Effects on fertility

Test Type: One generation study
Species: Rat
Sex: male and female
Dose: 10 - 100 - 1000 mg/kg
Frequency of Treatment: once daily
Sprague-Dawley
Application Route: oral (gavage)
Group: yes
NOAEL: 1,000 mg/kg,
F1: 1,000 mg/kg,
Method: OECD Test Guideline 421
GLP: yes

Effects on foetal development

Species: Rat
Application Route: oral (gavage)
Exposure time: females day 6-19 post coitum
Dose: 50 - 250 - 1000 mg/kg
Group: yes
1,000 mg/kg
1,000 mg/kg
Number of exposures: once daily
Method: OECD Test Guideline 414
GLP: yes

Reproductive toxicity - Assessment

No teratogenic effects to be expected.
No reproductive toxicity to be expected.

STOT - single exposure

Product: Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Product: Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Product:
Species: Rat, male and female
NOAEL: 1,000 mg/kg
Application Route: oral (gavage)
Exposure time: >70 d
Number of exposures: once daily
Dose: 10 - 100 -1 000 mg/kg
Group: yes
Method: OECD Test Guideline 422
GLP: yes
Remarks: By analogy with a product of similar composition

Application Route: Inhalation
Method: Repeated dose toxicity
Remarks: The study is not necessary from a scientific perspective.

Application Route: Dermal
Method: Repeated dose toxicity
Remarks: The study is not necessary from a scientific perspective.

Aspiration Toxicity

Product:
No aspiration toxicity classification

Experience with Human Exposure

Product:
General Information: The possible symptoms known are those derived from the labelling (see section 2).

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:
Toxicity to fish:
LC50 (Danio rerio (zebra fish)): > 10 g/l
Exposure time: 96 h
Test Type: static test
Analytical monitoring: no
Method: OECD Test Guideline 203
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

LC0 (Danio rerio (zebra fish)): 10 g/l
Exposure time: 96 h
Test Type: static test
Analytical monitoring: no
Method: OECD Test Guideline 203
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to daphnia and other aquatic invertebrates:
EC50 (Daphnia magna (Water flea)): > 10 g/l
Exposure time: 48 h
Test Type: static test
Analytical monitoring: no
Method: OECD Test Guideline 202
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.
NOEC (Daphnia magna (Water flea)): 10 g/l
Exposure time: 48 h
Test Type: static test
Analytical monitoring: no
Method: OECD Test Guideline 202
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to algae:

EC10 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 320 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

EC20 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 320 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 320 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

EC10 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 100 - 320 mg/l
End point: Biomass
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.
EC20 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 320 mg/l
End point: Biomass
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 320 mg/l
End point: Biomass
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to fish (Chronic toxicity): Remarks: not required

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):
NOEC (Daphnia magna (Water flea)): approx. 100 mg/l
End point: Reproduction rate
Exposure time: 21 d
Test Type: semi-static test
Analytical monitoring: no
Method: OECD Test Guideline 211
GLP: yes
Remarks: By analogy with a product of similar composition
The details of the toxic effect relate to the nominal concentration.

LOEC (Daphnia magna (Water flea)): approx. > 100 mg/l
End point: Reproduction rate
Exposure time: 21 d
Test Type: semi-static test
Analytical monitoring: no
Method: OECD Test Guideline 211
GLP: yes
Remarks: By analogy with a product of similar composition
The details of the toxic effect relate to the nominal concentration.

Toxicity to bacteria: EC10 (activated sludge, domestic): > 10 g/l
End point: Bacteria toxicity (respiration inhibition)
Exposure time: 3 h
Test Type: aquatic
Analytical monitoring: no
Method: OECD Test Guideline 209
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

EC50 (activated sludge, domestic): > 10 g/l
End point: Bacteria toxicity (respiration inhibition)
Exposure time: 3 h
Test Type: aquatic
Analytical monitoring: no
Method: OECD Test Guideline 209
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

NOEC (activated sludge, domestic): 10 g/l
End point: Bacteria toxicity (respiration inhibition)
Exposure time: 3 h
Test Type: aquatic
Analytical monitoring: no
Method: OECD Test Guideline 209
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to soil dwelling organisms:
Test Type: artificial soil
NOEC (Eisenia fetida (earthworms)): 1,000 mg/kg
Exposure time: 14 d
End point: mortality
Method: OECD Test Guideline 207
GLP: yes
Remarks: By analogy with a product of similar composition

Test Type: artificial soil
LOEC (Eisenia fetida (earthworms)): > 1,000 mg/kg
Exposure time: 14 d
End point: mortality
Method: OECD Test Guideline 207
GLP: yes
Remarks: By analogy with a product of similar composition

Remarks: The study is not necessary from a scientific perspective.

Plant toxicity: Remarks: The study is not necessary from a scientific perspective.

Sediment toxicity: Remarks: not tested.

Toxicity to terrestrial organisms:
Persistence and degradability

**Product:**

Biodegradability: Test Type: aerobic
Inoculum: activated sludge, domestic, non-adapted
Concentration: 4 mg/l
BOD in % of theoretical OD
Result: Not readily biodegradable.
Biodegradation: 54 % (BOD in % of theoretical OD)
Exposure time: 28 d
Method: OECD Test Guideline 301D
GLP: yes

Physico-chemical removability: Remarks: The product is not readily biodegradable according to OECD criteria but is inherently biodegradable.

Stability in water: Remarks: Not applicable

Bioaccumulative potential

**Product:**

Bioaccumulation: Remarks: Low potential for bioaccumulation (log Pow < 3).

Mobility in soil

**Product:**

Distribution among environmental compartments: Remarks: Not expected to adsorb on soil.

Other adverse effects

**Product:**

Environmental fate and pathways: Remarks: not available

Additional ecological information: The product should not be allowed to enter drains, water courses or the soil.

SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**


Waste from residues: Dispose of spilled or waste product, contaminated soil and other contaminated materials in licensed landfill or treatment facility in accordance with all local, state, and federal regulations.

Contaminated packaging: Packaging that cannot be cleaned should be disposed of as product waste.
SECTION 14. TRANSPORT INFORMATION

DOT not restricted
IATA not restricted
IMDG not restricted

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act
CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This product does not contain any toxic chemical listed under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986.

Clean Water Act
Contains no known priority pollutants at concentrations greater than 0.1%.

The components of this product are reported in the following inventories:
TSCA On TSCA Inventory

SECTION 16. OTHER INFORMATION

Full text of other abbreviations
AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO -
International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

**Further information**

On the basis of an extensive test program, which had to be submitted to the competent authority on the occasion of the Notification of the substance in the European Community, this product was found to be toxicologically not dangerous within the meaning of the EC Directives. Handle with care. Organic dusts have the potential to be explosive with static spark or flame initiation.

Revision Date: 03/02/2016

This information corresponds to the present state of our knowledge and is intended as a general description of our products and their possible applications. Clariant makes no warranties, express or implied, as to the information's accuracy, adequacy, sufficiency or freedom from defect and assumes no liability in connection with any use of this information. Any user of this product is responsible for determining the suitability of Clariant's products for its particular application. NO EXPRESS OR IMPLIED WARRANTY IS MADE OF THE MERCHANTABILITY, SUITABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE OF ANY PRODUCT OR SERVICE. Nothing included in this information waives any of Clariant's General Terms and Conditions of Sale, which control unless it agrees otherwise in writing. Any existing intellectual/industrial property rights must be observed. Due to possible changes in our products and applicable national and international regulations and laws, the status of our products could change. Material Safety Data Sheets providing safety precautions, that should be observed when handling or storing Clariant products, are available upon request and are provided in compliance with applicable law. You should obtain and review the applicable Material Safety Data Sheet information before handling any of these products. For additional information, please contact Clariant.