



SAFETY DATA SHEET

REVISION DATE DECEMBER 2016

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

### 1.1. Product Identifier

Mosi-guard Natural® Spray

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

This is a ready to use insect repellent containing Citriondiol® as the active ingredient.

### 1.3. Details of the supplier of the safety data sheet

Citrefine International Limited  
Moorfield Road  
Yeadon  
Leeds  
LS19 7BN  
UK

Tel: +44 (0)113 238 7900  
Fax: +44 (0)113 202 9900  
enquiries@citrefine.com  
<http://www.citrefine.com>

### 1.4. Emergency telephone number


Tel: +44 (0)113 238 7900 Mon-Fri 9am-5pm GMT

## 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

|   |
|---|
| EC Regulation 1272/2008   |
| Hazard Classes and Categories:<br>Serious eye damage/serious eye irritation category 2<br>Flammable liquid category 3 |
| Hazard Statements:<br>H319 - Causes serious eye irritation<br>H226 - Flammable liquid and vapour                      |

### 2.2 Label Elements

|                                    |   |
|------------------------------------|---|
| Product Identifier                 | Mosi-guard® Natural Spray Extra   |
| GHS Pictogram                      |    |
| Signal Word                        | Warning   |
| Hazard Statement                   | Causes serious eye irritation (H319)<br>Flammable liquid and vapour (H226)<br>Contains citronellal, citronellol, eucalyptol, limonene, and linalool. May produce an allergic reaction (EUH208)                                      |
| Precautionary Statement Prevention | Keep out of reach of children (P102)<br>Use only outdoors or in a well-ventilated area (P271)<br>Keep away from open flames – No smoking (P210)   |
| Precautionary Statement Response   | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305 + P351 + P338)<br>IF SWALLOWED: Get medical advice/attention if you feel unwell. (P301+P314) |

### 2.3 Other Hazards

**No data available**

For full text of all codes see Section 16

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1 Components of Mosi-guard Natural® Spray:

| Component   | REACH Reg. No.        | EC No.    | CAS No.*     | Classification According to Regulation (EC)1272/2008          | Concentration in mixture |
|---|-----------------------|-----------|--------------|---|--------------------------|
| Eucalyptus citriodora oil, hydrated, cyclized (Citriodiol®) | n/a                   |           | 1245629-80-4 | Eye Irrit. 2: H319  | 30% w/w                  |
| Ethanol   | 01-2119457610-43-XXXX | 200-578-6 | 64-17-5      | Flam. Liq. 2: H225,   | 20-40% w/w               |
| Propan-2-ol   | 01-2119457558-25-xxxx | 200-661-7 | 67-63-0      | Flam. Liq. 2: H225,<br>Eye Irrit. 2: H319,<br>STOT SE 3: H336 | 10-20% w/w               |

### 4. FIRST AID MEASURES

#### 4.1 Description of first aid measures

|              |   |
|--------------|---|
| General      | In case of accident or if you feel unwell, seek medical advice and show the label if possible.  |
| Inhalation   | May cause nausea, headache, dizziness and intoxication. Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.  |
| Ingestion    | May cause discomfort if swallowed. May cause nausea, headache, dizziness and intoxication. Rinse mouth thoroughly. Do not induce vomiting. Seek medical attention if symptoms persist.  |
| Skin contact | Wash skin thoroughly with soap and water. Get medical attention if any discomfort continues.  |
| Eye contact  | May irritate eyes. Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water or eye wash solution while lifting the eye lids. Continue to rinse for at least 15 minutes. Contact physician if irritation persists. |

#### 4.2 Most important symptoms and effects, both acute and delayed

In cases of ingestion, central nervous system depression. Danger of serious eye irritation. Temporary skin irritation after direct contact on sensitive people.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

No specific symptoms associated with exposure to this mixture.

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### **5. FIRE FIGHTING MEASURES**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Dry powder, alcohol resistant foam, carbon dioxide

##### **Unsuitable extinguishing media**

Water Jet (Mosi-guard Natural® Spray is insoluble in water)

#### **5.2 Special hazards arising from the substance or mixture**

As a mixture of organic compounds, combustion of Mosi-guard Natural® Spray can produce oxides of carbon.

#### **5.3 Advice for firefighters**

Wear self-contained breathing apparatus and a chemical protective suit. Fight fire from a safe distance and stay upwind. Do not allow extinguishing water to reach ground water or sewage system.

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### **6. ACCIDENTAL RELEASE MEASURES**

#### **6.1 Personal Precautions, protective equipment and emergency procedures**

Use personal protective equipment if required.

#### **6.2 Environmental Procedures**

Do not allow product to enter drains or ground water.

#### **6.3 Methods and material for containment and cleaning up**

Extinguish all ignition sources. Avoid sparks, flames, heat & smoking. Ventilate. Stop leak if possible without risk. Absorb with sand or other inert absorbent. Collect in containers and seal securely. Containers with collected spillage must be properly labelled with correct contents and hazard symbol.

## 6.4 Reference to other sections

For disposal see section 13.

## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Avoid contact with eyes. Handle in accordance with good industrial hygiene and safety practices. Wash hands after use.

### 7.2 Conditions for safe storage, including any incompatibilities

Store in tightly closed original container in a dry, cool and well ventilated place. Keep away from heat, sparks and open flames.

### 7.3 Specific end uses

Mosi-guard Natural® Spray is a ready to use insect repellent.

## 8. EXPOSURE CONTROL / PERSONAL PROTECTION

### 8.1 Control Parameters

| Name        | Std | LT – ppm | LT – mg/m <sup>3</sup> | ST – ppm | ST – mg/m <sup>3</sup> |
|-------------|-----|----------|------------------------|----------|------------------------|
| ETHANOL     | WEL | 1000 ppm | 1920 mg/m <sup>3</sup> | N/A      | N/A                    |
| PROPAN-2-OL | WEL | 400 ppm  | 999 mg/m <sup>3</sup>  | 500 ppm  | 1250 mg/m <sup>3</sup> |

WEL = Workplace Exposure Limits

### 8.2 Exposure Controls

#### Appropriate engineering controls

Provide adequate ventilation to minimise the risk of inhalation of vapours.

#### Eye/face protection

Use safety glasses or eye protection tested and approved under appropriate government standards, for example EN 166. If handling large amounts a face shield may be more suitable.

#### Respiratory Equipment

Under normal usage conditions respiratory protection will not be necessary. Protection may be required under exceptional circumstances, for example when excessive air contamination exists.

## Hand Protection

Wear suitable protective gloves. Gloves selected should meet the standards set out in EN 374. Suitable material would be nitrile rubber.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

|   |   |
|---|---|
| a) Appearance                                   | Form: Clear liquid<br>Colour: Pale yellow   |
| b) Odour  | Characteristic, citrus  |
| c) Odour Threshold                              | No data available   |
| d) pH   | 6.5-9   |
| e) Melting point/freezing point                 | No data available   |
| f) Initial boiling point and boiling range      | No data available   |
| g) Flash point                                  | 26°C  |
| h) Evaporation rate                             | No data available   |
| i) Flammability (solid,gas)                     | No data available   |
| j) Upper/lower flammability or explosive limits | No data available   |
| k) Vapour pressure                              | No data available   |
| l) Vapour density                               | No data available   |
| m) Relative density                             | 0.89-0.93 g/mL at 20°C  |
| n) Solubilities                                 | No data available   |
| o) Partition coefficient: n-octanol/water       | No data available   |
| p) Autoignition temperature                     | No data available   |
| q) Decomposition temperature                    | No data available   |
| r) Viscosity                                    | No data available   |
| s) Explosive properties                         | None of the components of Mosi-guard Natural® spray contain functional groups that confer explosive properties. |
| t) Oxidising properties                         | None of the components of Mosi-guard Natural® spray have the ability to act as an oxidant or reductant.         |

### 9.2 Other information

No data available

## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

No data available. Product is not expected to react under normal storage conditions.

### 10.2 Chemical stability

Stable under ambient conditions

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

Heat, sparks and open flame

### 10.5 Incompatible materials

Strong oxidising agents

### 10.6 Hazardous decomposition products

No data available

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

| Endpoint                                   | Value  | Test method              |
|--|--|--------------------------|
| a) Acute Toxicity                          | <b>Citriodiol®</b>   |                          |
|  | Rat LD <sub>50</sub> oral: >2000 mg/kg   | OECD 401                 |
|  | Rat LD <sub>50</sub> dermal: >2000 mg/kg   | OECD 402                 |
|  | Rat LC <sub>50</sub> inhalation determined on 50% aerosol spray > 2.06 mg/L: equivalent to >1.03mg/L for Citriodiol® | EPA/FIFRA Guideline 81-3 |
|  | <b>Ethanol</b>   |                          |
|  | Rat LD <sub>50</sub> oral: >2000 mg/kg (literature)  | OECD 401                 |
|  | Mouse LC <sub>50</sub> inhalation: >20 mg/kg 4h (literature)   |                          |
| b) Skin corrosion/irritation               | Rabbit LD <sub>50</sub> dermal: >2000 mg/kg (literature)   | OECD 402                 |
|  | <b>Propan-2-ol</b>   |                          |
|  | Rabbit LD <sub>50</sub> dermal: >2000 mg/kg (literature)   |                          |
|  | Rat LD <sub>50</sub> oral: >2000 mg/kg (literature)  |                          |
|  | <b>Citriodiol®</b>   |                          |
|  | Skin – Mild irritant (not sufficient for classification)   | OECD 404                 |
|  | <b>Ethanol</b>   |                          |
| Rabbit: Skin – not irritating (literature) | OECD 404   |                          |
| <b>Propan-2-ol</b>                         |  |                          |
| Rabbit: Skin – not irritating (literature) |  |                          |

|                                      |  |                              |
|--------------------------------------|--|------------------------------|
|                                      | No corrosivity study conducted but no components are classified as corrosive and material has a pH between 6.5-9 |                              |
| c) Serious eye damage/irritation     | <b>Citriodiol®</b><br>Moderate irritant  | OECD 405                     |
|                                      | <b>Ethanol</b><br>Rabbit, Result: slightly irritating  | literature value             |
|                                      | <b>Propan-2-ol</b><br>rabbit, Result: irritating   | literature value             |
| d) Respiratory or skin sensitisation | <b>Citriodiol®</b><br>Non sensitiser   | OECD 406                     |
|                                      | <b>Ethanol</b><br>Guinea pig: not sensitising (literature)   | OECD 406                     |
|                                      | <b>Propan-2-ol</b><br>Guinea pig: not sensitising (literature)   | Buehler Test                 |
| e) Germ Cell Mutagenicity            | <b>Citriodiol®</b><br>Not genotoxic  | OECD 471, OECD 473, OECD 474 |
|                                      | <b>Ethanol</b><br>Ames Test: not mutagenic (literature)  |                              |
|                                      | <b>Propan-2-ol</b><br>Ames Test: not mutagenic (literature)  | OECD 471                     |
| f) Carcinogenicity                   | No study conducted. No carcinogenic potential identified in components for which data are available.             |                              |
| g) Toxicity for reproduction         | <b>Citriodiol®</b><br>No reproductive toxicity and no adverse systemic effects                                   | OPPTS 870.3800               |
| h) STOT-single exposure              | This mixture does not meet the criteria for classification as for STOT single exposure                           |                              |
| i) STOT- Repeated exposure           | This mixture does not meet the criteria for classification as for STOT repeated exposure                         |                              |
| j) Aspiration Hazard                 | This mixture does not meet the classification criteria for an aspiration hazard.                                 |                              |

## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

| Endpoint         | Value  | Test method |
|------------------|--|-------------|
| Toxicity to fish | <b>Citriodiol®</b><br><i>Danio rerio</i> EC <sub>50</sub> : >35mg/L –96 hours                        | OECD 203    |
|                  | <b>Ethanol</b><br><i>Leuciscus idus</i> LC <sub>50</sub> :>100mg/L – 48hr (literature)               | OECD 203    |
|                  | <b>Propan-2-ol</b><br><i>Leuciscus idus melatonus</i> LC <sub>50</sub> :>100mg/L – 48hr (literature) |             |



|                           |   |          |
|---------------------------|---|----------|
| Toxicity to invertebrates | <b>Citriodiol®</b>                                |          |
|                           | <i>Daphnia Magna</i> EC <sub>50</sub> : >26mg/L   | OECD 202 |
|                           | -48 hours   |          |
|                           | <b>Ethanol</b>                                    |          |
|                           | <i>Daphnia Magna</i> EC <sub>50</sub> : >100mg/L  | OECD 202 |
|                           | -24hr (literature)                                |          |
|                           | <b>Propan-2-ol</b>                                |          |
|                           | <i>Daphnia Magna</i> EC <sub>50</sub> : >100mg/L  |          |
|                           | -48hr (literature)                                |          |
| Toxicity to algae         | <b>Citriodiol®</b>                                |          |
|                           | <i>Pseudokirchneriella</i> EC <sub>50</sub> :     | OECD 201 |
|                           | >37mg/L –72 hours                                 |          |
|                           | <b>Ethanol</b>                                    |          |
|                           | <i>Chlorella pyrenoidosa</i> EC <sub>50</sub> :   | OECD 201 |
|                           | >100mg/L (literature)                             |          |
|                           | <b>Propan-2-ol</b>                                |          |
|                           | <i>Scenedesmus subspicatus</i> EC <sub>50</sub> : |          |
|                           | >100mg/L – 72hr (literature)                      |          |

## 12.2 Persistence and degradability

|   |           |
|---|-----------|
| Citriodiol® is readily biodegradable              | OECD 301F |
| Ethanol is readily biodegradable (literature)     | OECD 301D |
| Propan-2-ol is readily biodegradable (literature) |           |

## 12.3 Bioaccumulative potential

Bioconcentration/accumulation is unlikely as Citriodiol® is readily metabolised in the human body and by other higher organisms. Low estimated bioconcentration/accumulation tendencies predicted by QSAR for the major components of Eucalyptus citriodora oil, hydrated, cyclized are likely to be further offset by the amenability of those substances to biodegradation by microorganisms in the aquatic and terrestrial environments.

| <u>Component</u>    | <u>Bioconcentration factor (BCFWIN)</u> |
|---------------------|---|
| p-Menthane-3,8-diol | 11.47                                   |
| Isopulegol          | 79.13                                   |
| Citronellal         | 177.5                                   |
| Citronellol         | 204.5                                   |

Propan-2-ol is not considered to be persistent, bioaccumulating or toxic.  
Ethanol – no data available

## 12.4 Mobility in soil

No data available

## 12.5 Results of PBT and vPvB assessment

Citriodiol® does not meet the criteria for classification as PBT or vPvB. Propan-2-ol is not considered to be PBT or vPvB.

## 12.6 Other adverse effects

No data available

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

Dispose of in accordance with local authority regulations. Do not allow into drains or water courses.

Recommendation: Clarify the exact Waste Code with your disposer.

Suggested European Waste Code according to Commission Decision 2000/532/EC: 07 04 99 (wastes from the manufacture, formulation, supply and use of organic plant protection products (except 02 01 08 and 02 01 09), wood preserving agents (except 03 02) and other biocides).

Packaging Suggested European Waste Codes according to 2000/532/EC:  
Contaminated packaging: 15 01 10 (packaging containing residues of or contaminated by dangerous substances).  
Cleaned packaging: 15 01 02 (plastic packaging). Cleaned, not contaminated packaging can be recycled. Recommended cleaning agent: water and soap.

## 14. TRANSPORT INFORMATION

### Symbol for transport



### 14.1 UN Number

|      |      |
|------|------|
| Road | 1987 |
| Sea  | 1987 |
| Air  | 1987 |

### 14.2 UN proper shipping name

Alcohols, N.O.S. (ETHANOL, PROPAN-2-OL)

### 14.3 Transport hazard class(es)

|           |                           |
|-----------|---------------------------|
| ADR Class | Class 3: Flammable liquid |
|-----------|---------------------------|

|                         |    |
|-------------------------|----|
| ADR Class No.           | 3  |
| ADR Classification code | F1 |
| RID Class no.           | 3  |
| IMDG Class no.          | 3  |
| IATA Class no.          | 3  |

#### 14.4 Packing Group

|                    |         |
|--------------------|---------|
| ADR Label No.      | 3       |
| Hazard No. (ADR)   | 30      |
| Hazchem code       | 3Y      |
| Transport Category | 3       |
| Tunnel Code        | D/E     |
| RID Packing Group  | III     |
| IMDG Packing Group | III     |
| EmS No.            | F-E,S-D |
| IATA Packing Group | III     |

#### 14.5 Environmental hazards

Not classified as environmentally hazardous

#### 14.6 Special precautions for user

No data available

#### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

Not classified as a marine pollutant and is not intended to be shipped in bulk.

### 15. REGULATORY INFORMATION

#### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Citriodiol® is an active substance for insect repellent products (PT19) currently under review according to the criteria of the Biocidal Products Regulation (EU) 528/2012, (last amended by (EU) No 334/2014).

REACH (Regulation (EC) No 1907/2006, last amended by (EU) 2016/1688)

CLP (Regulation (EC) No 1272/2008, last amended by (EU) 2016/1179)

List of Wastes (2000/532/EC, last amended by 2001/573/EC).

#### 15.2 Chemical safety assessment

No chemical safety assessment has been carried out for this mixture by the supplier.

## 16. OTHER INFORMATION

**Revision Date** 15/12/2016

**Rev. No.** 1.0

### Full text of Hazard Statements

H319 – Causes serious eye irritation

H225 – Highly flammable liquid and vapour

H226 – Flammable liquid and vapour

H336 – May cause drowsiness or dizziness

### Supplemental Hazard Information

EUH208 – Contains citronellal, citronellol, eucalyptol and limonene. May produce an allergic reaction

### Full text of Precautionary Statements

P102 – Keep out of reach of children

P210 - Keep away from open flames – No smoking

P271 – Use only outdoors or in a well-ventilated area

### Combined statements

P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P301+P314 – IF SWALLOWED: Get medical advice/ attention if you feel unwell.

### Product Identifier and CAS Number

Citriodiol®, previously defined as “a mixture of cis- and trans-p-menthane-3,8-diol/citriodiol” with the CAS No. 42822-86-6, has now been formally redefined as “Eucalyptus citriodora oil, hydrated, cyclized” with the CAS No. 1245629-80-4. This name change was triggered by ECHA and published in the Art. 95 list, date October 4, 2016 at p.105.

### Changes

Section 2 – Moved EUH208 warning into hazard statements, added linalool to statement, removed unnecessary statements, included product identifier.

Section 3 – Removed previous CAS number, updated naming of Citriodiol®

Section 11 – Updated LD<sub>50</sub> and section titles

Section 12 – Updated bioaccumulation statement

Section 15 – Updated regulations

Section 16 – Updated product identifier and CAS number, removed unnecessary statements. Updated revision number to new format, previous version v10

**Bibliography and sources of the data:**

For Citriodiol® reported endpoints refer to studies included as part of the dossier submitted under the criteria of Biocidal Products Directive (EU) 98/8/EC and Biocidal Products Regulation (EU) 528/2012.

Data for propan-2-ol and ethanol sourced from raw material suppliers MSDS.

This Safety Data Sheet has been produced in accordance with Regulation (EC) 895/2014 amending Regulation (EC) 1907/2006 REACH.

The information contained in this Safety Data Sheet is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. This document is designed only as guidance for the safe use, storage and handling of this material. This information relates only to the specific material designated and may not be valid when the material is used in combination with any other materials.