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

1.1. Product Identifier

Citriodiol® 30% Spray

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

This is a ready to use insect repellent containing Citriodiol® 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: Serious eye damage/serious eye irritation category 2 Flammable liquid category 3
Hazard Statements: H319 - Causes serious eye irritation H226 - Flammable liquid and vapour

2.2 Label Elements

Product Identifier	Citriodiol 30% Spray
GHS Pictogram	
Signal Word	Warning
Hazard Statement	Causes serious eye irritation (H319) Flammable liquid and vapour (H226) Contains citronellal, citronellol, eucalyptol, limonene, and linalool. May produce an allergic reaction (EUH208)
Precautionary Statement Prevention	Keep out of reach of children (P102) Use only outdoors or in a well-ventilated area (P271) 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) 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 Citriodiol 30% 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, Eye Irrit. 2: H319,	20-40% w*/w*
Propan-2-ol	01-2119457558-25-xxxx	200-661-7	67-63-0	Flam. Liq. 2: H225, Eye Irrit. 2: H319, 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.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Dry powder, alcohol resistant foam, carbon dioxide

Unsuitable extinguishing media

Water Jet (Citriodiol 30% Spray is insoluble in water)

5.2 Special hazards arising from the substance or mixture

As a mixture of organic compounds, combustion of Citriodiol 30% 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.

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 afters 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

Citriodiol 30% Spray is a ready to use insect repellent.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

8.1 Control Parameters

Name	Std	LT – ppm	LT – mg/m3	ST – ppm	ST – mg/m3
ETHANOL	WEL	1000 ppm	1920 mg/m3	N/A	N/A
PROPAN-2-OL	WEL	400 ppm	999 mg/m3	500 ppm	1250 mg/m3

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 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 Citriodiol 30% Spray contain functional groups that confer explosive properties.
t)	Oxidising properties	None of the components of Citriodiol 30% 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	**Citriodiol®**	
		Rat LD_{50} oral: >2000 mg/kg	OECD 401
		Rat LD_{50} dermal: >2000 mg/kg	OECD 402
		Rat LC_{50} inhalation determined on 50% aerosol spray > 2.06 mg/L: equivalent to >1.03mg/L for Citriodiol®	EPA/FIFRA Guideline 81-3
		Ethanol	
		Rat LD_{50} oral: >2000 mg/kg (literature)	OECD 401
		Mouse LC_{50} inhalation: >20 mg/kg 4h (literature)	
		Rabbit LD_{50} dermal: >2000 mg/kg (literature)	OECD 402
		Propan-2-ol	
		Rabbit LD_{50} dermal: >2000 mg/kg (literature)	
		Rat LD_{50} oral: >2000 mg/kg (literature)	
b)	Skin corrosion/irritation	**Citriodiol®**	
		Skin – Mild irritant (not sufficient for classification)	OECD 404
		Ethanol	
		Rabbit: Skin – not irritating (literature)	OECD 404
		Propan-2-ol	
		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	**Citriodiol®**	
		Moderate irritant	OECD 405
		Ethanol	
		Rabbit, Result: irritating	literature value
		Propan-2-ol	
		rabbit, Result: irritating	literature value
d)	Respiratory or skin sensitisation	**Citriodiol®**	
		Non sensitiser	OECD 406
		Ethanol	
		Guinea pig: not sensitising (literature)	OECD 406
		Propan-2-ol	
		Guinea pig: not sensitising (literature)	Buehler Test
e)	Germ Cell Mutagenicity	**Citriodiol®**	
		Not genotoxic	OECD 471, OECD
		Ethanol	473, OECD 474
		Ames Test: not mutagenic (literature)	
		Propan-2-ol	OECD 471
		Ames Test: not mutagenic (literature)	
f)	Carcinogenicity	No study conducted. No carcinogenic potential identified in components for which data are available.	
g)	Toxicity for reproduction	**Citriodiol®**	OPPTS 870.3800
		No reproductive toxicity and no adverse systemic effects	
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	**Citriodiol®**	
	Danio rerio EC_{50}: >35mg/L –96 hours	OECD 203
	Ethanol	
	Leuciscus idus LC_{50}:>100mg/L – 48hr (literature)	OECD 203
	Propan-2-ol	
	Leuciscus idus melatonus LC_{50}:>100mg/L – 48hr (literature)	
Toxicity to invertebrates	**Citriodiol®**	

	Daphnia Magna EC_{50}: >26mg/L –48 hours	OECD 202
	Ethanol	
	Daphnia Magna EC_{50}: >100mg/L –24hr (literature)	OECD 202
	Propan-2-ol	
	Daphnia Magna EC_{50}: >100mg/L –48hr (literature)	
Toxicity to algae	**Citriodiol®**	
	Pseudokirchneriella EC_{50}: >37mg/L –72 hours	OECD 201
	Ethanol	
	Chlorella pyrenoidosa EC_{50}: >100mg/L (literature)	OECD 201
	Propan-2-ol	
	Scenedesmus subspicatus EC_{50}: >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.

Component	Bioconcentration factor (BCFWIN)
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 19/06/2017

Rev. No. 1.1

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 3 – Added eye irritancy classification to ethanol.
Section 11 – Removed slightly from ethanol eye testing

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.