SAFETY DATA SHEET
ADAMA LUFENURON

Version 1
Revision Date: 25.06.2019 Publish Date: 25.06.2019

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

1.1 Product identifier

Product name : **ADAMA LUFENURON**

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

Use : Insecticide

1.3 Details of the supplier of the safety data sheet

Company : ADAMA South Africa (Pty) Ltd
Ground Floor, Simeka House,
The Vineyard Office Estate
99 Jip de Jager Drive
Bellville 7530

Telephone : +27 (0) 21 982 1460

E-mail address : sds@adama.com

1.4 Emergency telephone number

Emergency telephone number : +27 (0) 82 446 8946
+27 (0) 861 555 777
+27 (0) 982 1460

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EU) 1272/2008

Flammable liquids	Category 3	H226
Aspiration hazard	Category 1	H304
Skin irritation	Category 2	H315
Skin sensitisation	Sub-category 1B	H317
Serious eye damage	Category 1	H318
Specific target organ toxicity - single exposure	Category 3	H336
Acute aquatic toxicity	Category 1	H400
Chronic aquatic toxicity	Category 1	H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xn, Harmful
N, Dangerous for the environment
R10: Flammable.
R38: Irritating to skin.
R41: Risk of serious damage to eyes.
R43: May cause sensitisation by skin contact.
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65: Harmful: may cause lung damage if swallowed.
R67: Vapours may cause drowsiness and dizziness.

2.2 Label elements

Labelling: Regulation (EC) No. 1272/2008

Hazard pictograms

Signal word	:	Danger	
Hazard statements	:	H226	Flammable liquid and vapour.
		H304	May be fatal if swallowed and enters airways.
		H315	Causes skin irritation.
		H317	May cause an allergic skin reaction.
		H318	Causes serious eye damage.
		H336	May cause drowsiness or dizziness.
		H410	Very toxic to aquatic life with long lasting effects.
Precautionary statements	:	P102	Keep out of reach of children.
		P210	Keep away from heat.
		P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
		P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
		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.
		P331	Do NOT induce vomiting.
		P363	Wash contaminated clothing before reuse.
		P391	Collect spillage.
		P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental information	:	EUH401	To avoid risks to human health and the environment, comply with the instructions for use.

Hazardous components which must be listed on the label:

- lufenuron
- solvent naphtha (petroleum), heavy arom.
- cyclohexanone

Labelling: EU Directives 67/548/EEC or 1999/45/EC

Symbol(s)

Harmful

Dangerous for the environment

R-phrase(s)	:	R10	Flammable.
		R38	Irritating to skin.
		R41	Risk of serious damage to eyes.
		R43	May cause sensitisation by skin contact.
		R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
		R65	Harmful: may cause lung damage if swallowed.
		R67	Vapours may cause drowsiness and dizziness.
S-phrase(s)	:	S 2	Keep out of the reach of children.
		S13	Keep away from food, drink and animal feedingstuffs.
		S20/21	When using do not eat, drink or smoke.
		S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
		S35	This material and its container must be disposed of in a safe way.
		S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
		S57	Use appropriate container to avoid environmental contamination.
		S62	If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Additional Labelling : To avoid risks to man and the environment, comply with the instructions for use.

Hazardous components which must be listed on the label:
- lufenuron
- solvent naphtha (petroleum), heavy arom.
- cyclohexanone

2.3 Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixtures

Hazardous components

Chemical Name	CAS-No. EC-No. Registration number	Classification (67/548/EEC)	Classification (REGULATION (EC) No 1272/2008)	Concentration
solvent naphtha (petroleum), heavy arom.	64742-94-5 265-198-5 01-2119463583-34-0000	Xn, N R65 R66 R67 R51/53	Asp. Tox.1; H304 Aquatic Chronic2; H411 STOT SE3; H336	60 - 80 % W/W
cyclohexanone	108-94-1 203-631-1 01-2119453616-35-0005	Xn R10 R20/21/22 R38 R41	Flam. Liq.3; H226 Eye Dam.1; H318 Acute Tox.4; H302 Acute Tox.4; H312 Acute Tox.4; H332 Skin Irrit.2; H315	20 - 30 % W/W
lufenuron	103055-07-8	N, Xi R43 R50/53	Skin Sens.1; H317 Aquatic Acute1; H400 Aquatic Chronic1; H410	5 % W/W
calcium bis(dodecylbenzenesulphonate), branched	70528-83-5 68953-96-8 26264-06-2 11117-11-6 274-654-2 273-234-6 234-360-7	Xi, N R38 R41 R51/53	Eye Dam.1; H318 Skin Irrit.2; H315 Aquatic Chronic2; H411	1 - 5 % W/W
2-methylpropan-1-ol	78-83-1 201-148-0 01-2119484609-23-0012	Xi R10 R37/38 R41 R67	Flam. Liq.3; H226 STOT SE3; H335 Skin Irrit.2; H315 Eye Dam.1; H318 STOT SE3; H336	1 - 5 % W/W

Substances for which there are Community workplace exposure limits.
For the full text of the R-phrases mentioned in this Section, see Section 16.
For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice : Have the product container, label or Material Safety Data Sheet with you when calling the ADAMA emergency number, a poison control center or physician, or going for treatment.

Inhalation : Move the victim to fresh air.
If breathing is irregular or stopped, administer artificial respiration.
Keep patient warm and at rest.
Call a physician or poison control centre immediately.

Skin contact : Take off all contaminated clothing immediately.
Wash off immediately with plenty of water.
If skin irritation persists, call a physician.
Wash contaminated clothing before re-use.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Remove contact lenses.
Immediate medical attention is required.

Ingestion : If swallowed, seek medical advice immediately and show this container or label.
Do not induce vomiting: contains petroleum distillates and/or aromatic solvents.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Aspiration may cause pulmonary oedema and pneumonitis.

4.3 Indication of any immediate medical attention and special treatment needed

Medical advice : There is no specific antidote available.
Treat symptomatically.
Do not induce vomiting: contains petroleum distillates and/or aromatic solvents.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Extinguishing media - small fires
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Extinguishing media - large fires
Alcohol-resistant foam

Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10).
Exposure to decomposition products may be a hazard to health.
Flash back possible over considerable distance.

5.3 Advice for firefighters

Wear full protective clothing and self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Refer to protective measures listed in sections 7 and 8.
Keep people away from and upwind of spill/leak.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Remove all sources of ignition.
Pay attention to flashback.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so.
Do not flush into surface water or sanitary sewer system.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

If the product contaminates rivers and lakes or drains inform respective authorities.

6.4 Reference to other sections

Refer to protective measures listed in sections 7 and 8.
Refer to disposal considerations listed in section 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes.
When using do not eat, drink or smoke.
Use only in an area containing flame proof equipment.
Take precautionary measures against static discharges.
For personal protection see section 8.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place.
Keep out of the reach of children.
Keep away from combustible material.
Keep in an area equipped with sprinklers.
Keep away from food, drink and animal feedingstuffs.
No smoking.

7.3 Specific end use(s)

Registered Crop Protection products: For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components	Exposure limit(s)	Type of exposure limit	Source
lufenuron	5 mg/m3	8 h TWA	SYNGENTA
cyclohexanone	100 mg/m3 200 mg/m3 80 mg/m3 100 mg/m3 700 ppm 10 ppm, 41 mg/m3 (Skin) 20 ppm, 82 mg/m3 (Skin) 10 ppm, 40.8 mg/m3 (Skin) 20 ppm, 81.6 mg/m3	8 h TWA 15 min STEL 8 h TWA 8 h TWA IDLH 8 h TWA 15 min STEL 8 h TWA 15 min STEL	SUVA SUVA DFG ACGIH NIOSH UK HSE UK HSE IOELV IOELV
solvent naphtha (petroleum), heavy arom.	100 mg/m3	8 h TWA	SUPPLIER
2-methylpropan-1-ol	1,600 ppm 50 ppm 100 ppm 50 ppm 100 ppm 50 ppm, 231 mg/m3	 8 h TWA 15 min STEL 8 h TWA 8 h TWA 8 h TWA	NIOSH SUVA SUVA ACGIH DFG UK HSE

The following recommendations for exposure controls/personal protection are intended for the manu- facture, formulation and packaging of the product.

8.2 Exposure controls

Engineering measures : Containment and/or segregation is the most reliable technical protection measure if exposure cannot be eliminated.
The extent of these protection measures depends on the actual risks in use.
If airborne mists or vapors are generated, use local exhaust ventilation controls.
Assess exposure and use any additional measures to keep airborne levels below any relevant exposure limit.
Where necessary, seek additional occupational hygiene advice.

Protective measures : The use of technical measures should always have priority over the use of personal protective equipment.
When selecting personal protective equipment, seek appropriate professional advice.
Personal protective equipment should be certified to appropriate standards.

Respiratory protection : A combination gas, vapor and particulate respirator may be necessary until effective technical measures are installed.
Protection provided by air-purifying respirators is limited.
Use a self-contained breathing apparatus in cases of emergency spills, when exposure levels are unknown, or under any circumstances where air-purifying respirators may not provide adequate protection.

Hand protection	:	Chemical resistant gloves should be used. Gloves should be certified to an appropriate standard. Gloves should have a minimum breakthrough time that is appropriate to the duration of exposure. The breakthrough time of gloves varies according to the thickness, material and manufacturer. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Suitable material Nitrile rubber
Eye protection	:	If eye contact is possible, use tight-fitting chemical safety goggles and a face shield.
Skin and body protection	:	Assess the exposure and select chemical resistant clothing based on the potential for contact and the permeation / penetration characteristics of the clothing material. Wash with soap and water after removing protective clothing. Decontaminate clothing before re-use, or use disposable equipment (suits, aprons, sleeves, boots, etc.) Wear as appropriate: impervious protective suit

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Form	:	liquid
Colour	:	light yellow to brownish
Odour	:	aromatic
Odour Threshold	:	no data available
pH	:	3 - 7 at 1 % w/v
Melting point/range	:	no data available
Boiling point/boiling range	:	no data available
Flash point	:	51 °C at 763 mmHg
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Density	:	0.934 g/cm3 at 20 °C
Solubility in other solvents	:	no data available
Partition coefficient n-octanol/water:	:	no data available
Auto-ignition temperature	:	440 °C
Thermal decomposition	:	no data available
Viscosity, dynamic	:	2.85 mPa.s at 20 °C
	:	1.96 mPa.s at 40 °C
Viscosity, kinematic	:	no data available
Explosive properties	:	Not explosive
Oxidizing properties	:	not oxidizing

9.2 Other information
Surface tension : 29.1 mN/m at 20 °C

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity

No information available.

10.2 Chemical stability

No information available.

10.3 Possibility of hazardous reactions

None known.
Hazardous polymerisation does not occur.

10.4 Conditions to avoid

No information available.

10.5 Incompatible materials

No information available.

10.6 Hazardous decomposition products

Combustion or thermal decomposition will evolve toxic and irritant vapors.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity : LD50 male and female rat, > 3,000 mg/kg
The toxicological data has been taken from products of similar composi- tion.

Acute inhalation toxicity : LC50 male and female rat, > 5.3 mg/l , 4 h
The toxicological data has been taken from products of similar composi- tion.

Acute dermal toxicity : LD50 male and female rat, > 4,000 mg/kg
The toxicological data has been taken from products of similar composi- tion.

Skin corrosion/irritation : rabbit: irritating
The toxicological data has been taken from products of similar composi- tion.

Serious eye damage/eye irritation : rabbit: Risk of serious damage to eyes.

Respiratory or skin sensitisation : Maximisation Test guinea pig: A skin sensitizer
The toxicological data has been taken from products of similar composition.

Germ cell mutagenicity

solvent naphtha (petroleum), heavy arom.	:	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects
cyclohexanone	:	Animal testing did not show any mutagenic effects.
lufenuron	:	Did not show mutagenic effects in animal experiments.
2-methylpropan-1-ol	:	Did not show mutagenic effects in animal experiments.

Carcinogenicity

cyclohexanone	:	Animal testing did not show any carcinogenic effects.
lufenuron	:	Did not show carcinogenic effects in animal experiments.
2-methylpropan-1-ol	:	Did not show carcinogenic effects in animal experiments.

Teratogenicity

lufenuron	:	Did not show teratogenic effects in animal experiments.

Reproductive toxicity

cyclohexanone	:	Animal testing did not show any effects on fertility.
lufenuron	:	Did not show reproductive toxicity effects in animal experiments.
2-methylpropan-1-ol	:	Did not show reproductive toxicity effects in animal experiments.

STOT - single exposure

solvent naphtha (petroleum), heavy arom.	:	May cause drowsiness or dizziness.
2-methylpropan-1-ol	:	May cause drowsiness or dizziness.

STOT - repeated exposure

lufenuron	:	No adverse effect has been observed in chronic toxicity tests.
2-methylpropan-1-ol	:	No adverse effect has been observed in chronic toxicity tests.

Aspiration toxicity

solvent naphtha (petroleum), heavy arom.	:	May be fatal if swallowed and enters airways.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	:	LC50 Lepomis macrochirus (Bluegill sunfish), 20 mg/l , 96 h Based on test results obtained with similar product.
Toxicity to aquatic invertebrates	:	EC50 Daphnia magna (Water flea), 0.0072 mg/l , 48 h Based on test results obtained with similar product.
Toxicity to aquatic plants	:	ErC50 Pseudokirchneriella subcapitata (green algae), > 30.0 mg/l , 72 h Based on test results obtained with similar product.
	:	EbC50 Pseudokirchneriella subcapitata (green algae), 2.63 mg/l , 72 h Based on test results obtained with similar product.

12.2 Persistence and degradability

Biodegradability

lufenuron	:	Not biodegradable.

Stability in water

lufenuron : Degradation half life: 112 d
Not persistent in water.

Stability in soil

lufenuron : Degradation half life: 28 d
Not persistent in soil.

12.3 Bioaccumulative potential

lufenuron : Lufenuron bioaccumulates.

12.4 Mobility in soil

lufenuron : Lufenuron is immobile in soil.

12.5 Results of PBT and vPvB assessment

solvent naphtha (petroleum), heavy arom. : This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

cyclohexanone : This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

lufenuron : This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

12.6 Other adverse effects

Other information : Classification of the product is based on the summation of the concentrations of classified components.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product : Do not contaminate ponds, waterways or ditches with chemical or used container.
Do not dispose of waste into sewer.
Where possible recycling is preferred to disposal or incineration.
If recycling is not practicable, dispose of in compliance with local regulations.

Contaminated packaging : Empty remaining contents.
Triple rinse containers.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

Land transport (ADR/RID)

14.1 UN number:	UN 1224
14.2 UN proper shipping name:	KETONES, LIQUID, N.O.S. (ALKYL (C3-C5) BENZENES AND CYCLOHEXANONE AND LUFENURON)
14.3 Transport hazard class(es):	3
14.4 Packing group:	III
Labels:	3
14.5 Environmental hazards :	Environmentally hazardous

Sea transport(IMDG)

14.1 UN number:	UN 1224
14.2 UN proper shipping name:	KETONES, LIQUID, N.O.S. (ALKYL (C3-C5) BENZENES AND CYCLOHEXANONE AND LUFENURON)
14.3 Transport hazard class(es):	3
14.4 Packing group:	III
Labels:	3
14.5 Environmental hazards :	Marine pollutant

Air transport (IATA-DGR**)**

14.1 UN number:	UN 1224
14.2 UN proper shipping name:	KETONES, LIQUID, N.O.S. (ALKYL (C3-C5) BENZENES AND CYCLOHEXANONE AND LUFENURON)
14.3 Transport hazard class(es):	3
14.4 Packing group:	III
Labels:	3

14.6 Special precautions for user

none

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

not applicable

SECTION 15. REGULATORY INFORMATION

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

GHS-Labelling

Hazard pictograms

Signal word	:	Danger	
Hazard statements	:	H226	Flammable liquid and vapour.
		H304	May be fatal if swallowed and enters airways.
		H315	Causes skin irritation.
		H317	May cause an allergic skin reaction.
		H318	Causes serious eye damage.
		H336	May cause drowsiness or dizziness.
		H410	Very toxic to aquatic life with long lasting effects.
Precautionary statements	:	P102	Keep out of reach of children.
		P210	Keep away from heat.
		P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
		P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
		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.
		P331	Do NOT induce vomiting.
		P363	Wash contaminated clothing before reuse.
		P391	Collect spillage.
		P501	Dispose of contents/ container to an approved waste disposal plant.

Remarks

Classified using all GHS hazard classes and categories.
Where the GHS contains options, the most conservative option has been chosen.
Regional or national implementations of GHS may not implement all hazard classes and categories.

Hazardous components which must be listed on the label:

- lufenuron
- solvent naphtha (petroleum), heavy arom.
- cyclohexanone

15.2 Chemical Safety Assessment

A Chemical Safety Assessment is not required for this substance.

SECTION 16. OTHER INFORMATION

Further information

Full text of R-phrases referred to under sections 2 and 3:

R10	Flammable.
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R37/38	Irritating to respiratory system and skin.
R38	Irritating to skin.
R41	Risk of serious damage to eyes.
R43	May cause sensitisation by skin contact.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

Full text of H-Statements referred to under sections 2 and 3.

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.