1. IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY

1.1 Product identifier

Trade name
Retribute

1.2 Relevant identified uses of the mixture and uses advised against

1.2.1 Relevant identified uses
For professional use only as an agricultural herbicide.
1.2.2 Uses advised against
Do not use for any other purpose.

1.3 Details of the supplier of the safety data sheet

Agform Ltd., Maidenstone Heath, Blundell Lane, Bursledon, Southampton. SO31 1AA. United Kingdom

Telephone:	023 8040 7831
Fax:	023 8040 7198
Email:	msds@agform.com
Web:	www.agform.com

1.4 Emergency telephone number

For advice on medical emergencies, fires or major spills:	023 8040 7831
Available	24hr
Time Zone	GMT
Language(s) of phone service	English
UK National Poisons Information Service:	+44 (0)121 507 4123 (For health professionals only)
Available	24h
Time Zone	GMT
Language(s) of phone service	English

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance

Classification according to Regulation (EC) no. 1272/2008 [CLP/GHS]
Aquatic Chronic 4;
H413 - May cause long lasting harmful effects to aquatic life
Classification according to Directive 67/548/EEC or 1999/45/EC
R53: May cause long-term adverse effects in the aquatic environment.
Additional information
For abbreviations, refer to Section 16.

2.2 Label elements

Labelling according to Regulation (EC) no. 1272/2008 [CLP/GHS]
Pictograms
None
Signal Word:
None
Hazard statements:
H413 - May cause long lasting harmful effects to aquatic life
Precautionary statements:
P273: Avoid release to the environment
P501: Dispose of contents / container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste
EUH401: To avoid risks to human health and the environment comply with the instructions for use

2.3 Other hazards

None known

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.2 Mixtures

Description of the mixture:
Suspension concentrate (SC) based on clomazone

Chemical Name	CAS-No.	EC-No.	Index No.	Concentration (% W/W)	67/548/EEC Classification	CLP (Reg. 1278/2008) Classification
Clomazone	81777-89-1	-	-	< 35	Xn; R20/22 N, R50/53	Acute Tox. 4 (oral), H302 Acute Tox. 4 (inhalation: dust/mist), H332 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Sodium nitrate	7631-99-4	231-554-3	-	5	O; R8 Xn; R22 Xi; R36/37/38	Ox. Sol. 1, H271 Acute Tox. 4 (oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335
Calcium chloride	10043-52-4	233-140-8	017-013-00-2	5	Xi; R36	Eye Irrit. 2, H319

Additional information
For full text of R-phrases, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General notes:
If symptoms occur after exposure to this product, seek medical attention immediately and show the product label or this SDS. Remove to fresh air and keep at rest. Do not allow smoking or eating. Take off all contaminated clothing and footwear.
Following inhalation:
Move the affected person to the fresh air. In the event of coughing and slight breathlessness: Call a doctor.
Following skin contact:
Remove all contaminated clothing and footwear
Wash with soapy water.
Following eye contact:
Rinse immediately with plenty of water. Consult an ophthalmologist if irritation persists.
Following ingestion:
Rinse mouth out with water. If the person is fully conscious, make him/her drink plenty of water. Never give an unconscious person anything to drink. Ask for medical advice
Self-protection of first aider:
Personal protective equipment for first aid responders is recommended according to potential for exposure (refer to Section 8).
Notes for the doctor:
No specific antidote. Treat symptomatically (decontamination, vital functions). Call a Poison Centre immediately for treatment advice. In case of ingestion gastric lavage may be necessary (with proper laryngeal control). Before emptying the stomach, assess the potential danger arising from lung aspiration against the product toxicity. Report to Agform Limited any unusual symptoms occurring after exposure by any route.

4.2 Most important symptoms and effects, both acute and delayed

Clomazone: Symptoms observed in laboratory animals: Nose bleeding. Lacrimation, loss of coordination.

4.3 Indication of immediate medical attention and special treatment needed

No specific antidote. Treat according to symptoms.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media:
Powder, Foam, Carbon dioxide (CO2) or Water.
Unsuitable extinguishing media:
See above for suitable media.

5.2 Special hazards arising from the mixture
Hazardous combustion products
During combustion: Toxic vapours may be released.

5.3 Advice for fire-fighters
Firefighting instructions: Isolate fire area. Evacuate downwind. Contain the extinguishing fluids by bunding (the product is hazardous for the environment). Do not breathe fumes.
Protection during firefighting: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

5.4 Additional information
Provide storage and work areas with suitable fire extinguishers.
Call the Fire Brigade at once to deal with all fires involving pesticides unless the fire is small and immediately controllable. Spray unopened containers with a mist spray to keep cool. If without risk, remove intact containers from exposure to fire. Contain fire-fighting water, bunding if necessary with sand or earth. Do not allow contamination of public drains or surface or ground waters.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
6.1.1 For non-emergency personnel
Protective equipment: Remove immediately any contaminated clothing. Wear prescribed personal protective equipment to prevent contact with eyes and skin. A Self-Contained Breathing Apparatus (SCBA) may be required if there is an elevated risk for exposure.
Emergency procedures: Call the emergency services if the release is not immediately controllable. If the release is localized and immediately controllable, provide sufficient ventilation and control the release at its source.
6.1.2 For emergency responders
Clothing conforming to EN469.

6.2 Environmental precautions
Use appropriate containment to avoid environmental contamination. Control the release at its source. Contain the spill to prevent it from spreading, contaminating soil or entering sewage and drainage systems or any body of water. Inform the local water company if the release enters drains and the Environment Agency (England and Wales), the Scottish Environmental Protection Agency (Scotland) or the Environment and Heritage Service (Northern Ireland) if it enters surface or ground waters.

6.3 Methods and material for containment and cleaning up
For containment
If a liquid (e.g. spray dilution) contain spill by diking with sand, earth, vermiculite.
Carefully neutralize the remainder, using: a 20 % solution of potassium hydroxide in methanol Cover the treated area with plastic and let stand for 24 h. Remove the covering and place in a drum and arrange for disposal according to Section 13.
For cleaning up
Wash with plenty of water and detergent Dispose of contaminated material according to Section 13
Other information
Not Applicable

6.4 Reference to other sections
Refer to Section 8 for personal protective equipment and to Section 13 for disposal instructions.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Provide suitable exhaust ventilation especially where dust is formed. Avoid all contact by mouth, with eyes and skin. Wear personal protective equipment as specified in Section 8. When using, do not eat, drink or smoke. Wash hands and exposed skin before meals and after work. Wash all protective clothing thoroughly after use, especially the insides of gloves.

7.2 Conditions for safe storage, including any incompatibilities
Keep in original container, tightly closed, in a dry, cool and safe place. Store in a locked, suitable pesticide store. Keep out of the reach of children and unauthorised personnel. Keep away from food, drink and animal feeding stuffs. Keep away from heat and sources of ignition. The material is stable under normal ambient conditions.

7.3 Specific end use(s)
Herbicide for professional use as directed by the product label, every other use is hazardous.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Control Parameters
Occupational Exposure limit values
No additional information available.

Information on monitoring procedures
None available.

8.2 Exposure controls
8.2.1 Appropriate engineering controls
Engineering controls and appropriate work processes must be used to eliminate or reduce worker and environmental exposure in the areas where the substance is handled, transported, loaded, unloaded, stored and used. These measures must be adequate for the extent of the actual risk. Provide adequate local exhaust ventilation. Use specialized transfer systems if available.
8.2.2 Personal protection equipment
For normal use/handling refer to the product label. In all other cases the following apply:
Eye and face protection:
Avoid contact with eyes. If there is a significant potential for contact, wear suitable eye protection (EN 166).
Skin protection:
Hand protection: Wear suitable protective gloves against chemicals (EN 374 part 1, 2, 3). Nitrile rubber min. 0.5mm thick and 300mm long gloves are the ones proven to be the most suitable according to tests on pesticide products. Wash the gloves thoroughly after each use, especially the insides. Replace gloves if damaged and before exceeding the breakthrough time.
Body protection: Avoid contact with skin. If there is a significant potential for contact, wear suitable coveralls (ISO 13982-1, Type 5, EN 13034, Type 6).
Other skin protection: None specified.
Respiratory protection:
If a risk assessment shows that engineering controls do not provide adequate respiratory protection to exposure to spray particles, wear particle filtering half mask (EN 149) or half mask connected to particle filter (EN 140 + 143).
8.2.3 Environmental exposure controls
Implement all applicable local and community environmental protection legislation. Refer to Section 15. Use appropriate containment to avoid environmental contamination. Do not empty into drains. Do not contaminate water with the product or used container. Do not clean application equipment near surface water. Avoid contamination via drains from farmyards and roads. Refer to Section 12 and 13.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	*Appearance:*	Liquid
	Colour:	Light beige
b)	*Odour:*	Mildly aromatic
c)	*Odour threshold:*	Not data available – not required under all applicable pesticide legislation.
d)	*pH:*	8.87 (1% aqueous dispersion)
e)	*Melting point/freezing point:*	Not determined - not required under all applicable pesticide legislation.
f)	*Initial boiling point and boiling range:*	Not determined - not required under all applicable pesticide legislation.
g)	*Flash point:*	>79 ºC
h)	*Evaporation rate:*	Not determined - not required under all applicable pesticide legislation.
i)	*Flammability (solid, gas):*	Not determined
j)	*Upper/lower flammability or explosive limits:*	Not determined - not required under all applicable pesticide legislation.
k)	*Vapour pressure:*	Not determined - not required under all applicable pesticide legislation.
l)	*Vapour density:*	Not determined - not required under all applicable pesticide legislation.
m)	*Density:*	1.1712 (20 ºC)
n)	*Solubility(ies)*	Water: Dispersible
	Solubility (water):	

o)	*Partition coefficient: n-octanol/water:*	Clomazone log Pow = 2.54 (23 °C, neutral pH) purity 97.5%
p)	*Auto-ignition temperature:*	392 °C
	Minimum Ignition Temperature:	Not available
	Minimum Ignition Energy:	Not available
q)	*Decomposition temperature:*	Not available
r)	*Viscosity:*	Dynamic 115 – 746 mPa.s. (20 °C)
s)	*Explosive properties:*	Not explosive
t)	*Oxidising properties:*	Non oxidising

9.2 Other information

Surface tension: 46.7 mN/m (25 °C) - 44.2 mN/m (40 °C)

10. STABILITY AND REACTIVITY

10.1 Reactivity

To our knowledge, the product does not present any particular risk.

10.2 Chemical stability

Stable when stored in original container under normal conditions of storage and use.

10.3 Possibility of hazardous reactions

None known.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

None known.

10.6 Hazardous decomposition products

On thermal decomposition (pyrolysis), releases: Nitrogen oxides, Hydrochloric acid, Chlorine, Carbon oxides (CO, CO2).

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

11.1.1 Substances

Not Applicable

11.1.2 Mixtures

All data in this section are derived from the formulation unless otherwise indicated:

a)	**Acute toxicity:**	
	LD_{50} oral, rat:	> 5000 mg/ kg bw
	LD_{50} dermal, rabbit:	> 5000 mg/ kg bw
	LC_{50} inhalation, rat:	> 5.21 mg/l/4h (max. attainable concentration – zero mortality)
b)	**Skin corrosion/irritation:**	Not classified (Based on available data, the classification criteria are not met)
c)	**Serious eye damage/irritation:**	Not classified (Based on available data, the classification criteria are not met)
d)	**Respiratory or skin sensitization:**	Not classified (Based on available data, the classification criteria are not met)
e)	**Germ cell mutagenicity:**	Not classified as mutagenic on the basis of mixture components information. Clomazone - no mutagenic effects were noted
f)	**Carcinogenicity:**	Not classified as carcinogenic on the basis of mixture components information. Clomazone - no carcinogenic effects were noted
g)	**Reproductive toxicity:**	Not classified as teratogenic on the basis of mixture components information. Clomazone: Fertility and development toxicity tests did not reveal any effect on reproduction
h)	**STOT-single exposure:**	Not classified on the basis of mixture components information
i)	**STOT-repeated exposure:**	Not classified on the basis of mixture components information.
j)	**Aspiration hazard:**	Not classified on the basis of mixture components information

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Acute Toxicity *(data for the formulation)*

LC_{50} fish *(96h)*:	592.7 mg/l (*Oncorhynchus mykiss*)
EC_{50} aquatic invertebrates, *Daphnia magna* (48h):	491.3 mg/l
EbC_{50} algae, (96h):	160.85 mg/l

12.2 Persistence and degradability:	Clomazone - Half-life (whole system): 40.4 - 66.9 days. Half-life (in soil): 15 - 90 days.
12.3 Bioaccumulative potential:	Clomazone – BCF = 40, Log Pow = 2.54 (23 °). No significant potential for bioaccumulation
12.4 Mobility in soil:	Clomazone – Medium mobility in soil
12.5 Results of PBT and vPvB assessment:	No PBT or vPvB assessments have been carried out on the mixture; please refer to 12.1, 12.2 & 12.3.
12.6 Other adverse effects:	Not determined.
12.7 Additional Information:	None

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal of waste product, contaminated packaging materials and any excess diluted spray should be in accordance with The Hazardous Waste (England and Wales) Regulations 2005 and any other applicable local or national legislation (for guidance refer to the DEFRA "Pesticides: Code of Practice for Using Plant Protection Products").

For the handling and management of accidental release, follow the information given under Section 6 and 7.

This material and its container must be disposed of in a safe way. Empty container completely and dispose of safely. Do not re-use container for any purpose.

14. TRANSPORT INFORMATION

Land transport ADR/RID

14.1 UN number	UN 3082
14.2 UN Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains clomazone)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environmental hazards	Land transport ADR/RID - Environmentally Hazardous: Yes Maritime transport IMDG - Marine pollutant: Yes
14.6 Special Precautions for User	Land transport ADR/RID - Tunnel restriction code: E
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	The mixture can be transported in bulk.

15. REGULATORY INFORMATION

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

EU Regulations

REGULATION (EC) No 1107/2009 of The European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances

DIRECTIVE 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations.
REGULATION (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
REGULATION (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.
COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

National Regulations/legislation:
The Chemicals (Hazard Information & Packaging for Supply) Regulations 2009 (CHIP 4)
Health and Safety at Work etc. Act 1974, as amended, the Control of Substances Hazardous to Health Regulations 1999 (COSHH), as amended.

15.2 Chemical Safety Assessment
No Chemical Safety Assessment under Regulation (EC) 1907/2006 is required and has not been carried out.

16. OTHER INFORMATION

a) Indication of changes:
This is the 1st version of this safety data sheet issued for the UK in accordance with Commission Regulation (EC) 453/2010 (REACH regulation for safety data sheets) and Regulation EC 1272/2008 (CLP regulation).

b) Abbreviations and acronyms:
Xn: Harmful
Xi: Irritant
N: Dangerous for the environment
O: Oxidising

Ox. Sol. 1: Oxidising Solids, Category 1
Acute Tox. 4 (oral): Acute toxicity (oral), Category 4
Acute Tox. 4 (inhalation: dust/mist): Acute toxicity (inhalation: dust/mist) Category 4
Skin Irrit. 2: Skin corrosion/irritation, Category 2
Eye Irrit. 2: Serious eye damage/eye irritation, Category 2
STOT SE 3: Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
Aquatic Acute 1: Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1, Hazardous to the aquatic environment — Chronic Hazard, Category 1
Aquatic Chronic 4, Hazardous to the aquatic environment — Chronic Hazard, Category 4

c) Key literature references and sources for data:
ECHA Guidance on the compilation of safety data sheets (Version 2.1, February 2014)

d) Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]
Aquatic Chronic 4 – Expert judgement

e) Relevant R-phrases, H-statements and precautionary statements not written out in full under Sections 2 to 15:
R8: Contact with combustible material may cause fire
R20/22: Harmful by inhalation and if swallowed.
R22: Harmful if swallowed
R36: Irritating to eyes
R36/37/38: Irritating to eyes, respiratory system and skin.
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

H271: May cause fire or explosion; strong oxidiser
H302: Harmful if swallowed
H315:Causes skin irritation
H319: Causes serious eye irritation
H332: Harmful if inhaled

H335: May cause respiratory irritation
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.

f) Training advice:

General occupational hygiene training recommended.

g) Further information:

The toxicological data indicated in this SDS might not in some cases be entirely consistent with the classification of this mixture as it is compiled from a number of different sources.
The information and recommendations in this publication are, to the best of our knowledge, information and belief, accurate at the date of publication. Nothing herein is to be construed as a warranty, expressed or implied. In all cases it is the responsibility of the user to determine the applicability of such information or the suitability of any products for their own particular purpose.
This Safety Data Sheet was compiled by Agform Limited in compliance with Regulation (EC) 1907/2006 as amended by 453/2010.