Chlormequat chloride (50%)

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Date of compilation	:	September 21, 2012
File Name	:	0636Sa Ghs00 Div.03 sds Chlormequat chloride (50%)
Revision Number	:	00
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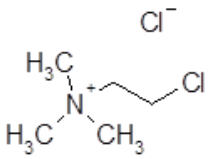
SECTION 1: IDENTIFICATION OF THE SUBSTANCE/ MIXTURE AND OF THE COMPANY/ UNDERTAKING

1.1. Identification

PRODUCT NAME	:	Chlormequat Chloride (50 %)
CAS RN	:	999-81-5
EC#	:	213-666-4
SYNONYMS	:	Ammonium, (2-chloroethyl) trimethyl-, chloride; Chlormequat chloride
MOLECULAR FORMULA	:	C5H13Cl2N
STRUCTURAL FORMULA	:	



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

1.2.1. Relevant identified uses

It is used as a Plant Growth Regulator (PGR). It is used to increase yields in wheat, rye, oats, and triticale; to promote lateral branching and flowering in azaleas, fuchsias, begonias, poinsettias, geraniums, pelargoniums, and other ornamental plants; to promote flower formation and improve fruit setting in pears, almonds, vines, olives, and tomatoes; to prevent premature fruit drop in pears, apricots, and plums. Also used on cotton, vegetables, tobacco, sugar cane, mangoes, and other crops.

Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Ingrevia Limited

FACTORY OFFICE: Jubilant Ingrevia Limited., Block 133, Village Samlaya, Taluka Savli , District Vadodra,Gujrat-391520,India
Tel: +91 2667- 251281, 251306, 251326, Fax: +91 2667-251305.

HEAD OFFICE: Jubilant Ingrevia Limited., Plot 1-A, Sector 16-A, Institutional Area, Noida, Uttar Pradesh, 201301 – India
T +91-120-4361000 - F +91-120-4234881 / 84 / 85 / 87 / 95 / 96 support@jubl.com-www.jubilantingrevia.com

1.4. Emergency telephone number

For Chemical Emergency ONLY (in the case of fire, leak, spill, exposure or accident) Call
Chemtrec: 1-800-424-9300 (US), 1-703-527-3887 (Outside U.S.)
Chemtrec (India) : 000-800-100-7141

SECTION 2: HAZARD(S) IDENTIFICATION

2.1. Classification of the substance or mixture

GHS Classification

Acute Toxicity Oral: Category 4	H302
Acute Toxicity Dermal: Category 4	H312

2.2. Label Elements

Hazard Pictogram: Hazard Pictogram: GHS 07
Signal Word: Warning!

HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS

- H302: Harmful if swallowed.
- H312: Harmful in contact with skin.

PRECAUTIONARY STATEMENTS

- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P280: Wear protective gloves/protective clothing/eye protection/face protection
- P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P330: Rinse mouth.
- P312: Call a POISON CENTER or doctor/physician if you feel unwell.
- P363: Wash contaminated clothing before reuse.
- P302+352: IF ON SKIN: Wash with soap and water.
- P501: Dispose of contents/container to local/regional/national/international regulations.

SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical	CAS #	EC Number	% Composition	GHS Classification
Chlormequat Chloride	999-81-5	213-666-4	50%	Toxicity Oral: Category 4 Acute Toxicity Dermal: Category 4
Water	7732-18-5	231-791-2	43- 48 %.	Not classified
Choline Chloride	67-48-1	200-655-4	NMT 2 %	Not classified

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

- **General advice**
  Consult a physician. Show this safety data sheet to the doctor in attendance.
- **If inhaled**
  If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
- **In case of skin contact**
  Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
- **In case of eye contact**
  Flush eyes with water as a precaution.
- **If swallowed**
  Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

Acute Toxicity

- It is harmful if swallowed and in contact with skin.(Adaptation to technical progress, ATP19)
- Contact can cause skin and eye irritation.
- The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3. Indication of any immediate medical attention and special treatment needed

- Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

- Appropriate extinguishing media: Dry chemical powder, carbon dioxide, and alcohol resistant foam. Water spray may also be used. Water can be effective in cooling down the fire-exposed containers and knocking down the vapours. Water jets may be used to flush spills away and dilute the same.

5.2. Special hazards arising from the substance or mixture

- Toxic vapors may be released on thermal decomposition including Nitrogen Oxides, Carbon Monoxide and it may emits very toxic fumes of Hydrogen Chloride gas. High vapor concentration may result in an explosion hazard.
- When heated to decomposition, it emits highly toxic fumes of Hydrogen Chloride.
- Vapors are heavier than air. May travel considerable distance from source and flashback.

5.3. Advice for firefighters

- Evacuate the area and fight fires from a safe distance.
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions or as per locally valid procedures.
- Fire fighters must wear Self Contained Breathing Apparatus (SCBA) and full protective clothing. The chemical may harmful in contact with skin.
- Report any run-off of fire waters contaminated with this chemical as per local and federal procedures applicable.

5.4. Further information

- No data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Avoid breathing vapors and contact with skin and eyes.
- Shut off leak source if possible.
- Shut off all possible sources of ignition.
- Wipe up.
- Decontaminate all equipment.

6.2. Environmental precautions

- Clean up all spills immediately following relevant Standard Operating Procedures.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.
- Wipe up.
- Prevent, by any means available, spillage from entering drains or water and watercourses.
- Collect recoverable product into labeled containers for recycling, recovery or disposal.
- Contain spill with sand, earth or vermiculite.
- Spread area with lime or absorbent material, and leave for at least 1 hour before washing.

6.3. Methods and materials for containment and cleaning up

- Clean up all tools and equipment.
- Decontaminate all equipment.

6.4. Reference to other sections

- For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

- Do not breathe vapor or mist.
- Wear protective gloves/clothing and eye/face protection.
- Wash thoroughly after handling.
- Ground and secure containers when dispensing or pouring product.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Launder contaminated clothing before re-use.
- If on skin or hair, IMMEDIATELY remove all contaminated clothing and rinse/shower with plenty of water.
- Use in a well-ventilated place/Use protective clothing commensurate with exposure levels.
-

7.2 Conditions for safe storage, including any incompatibilities

- Store at ambient temperature in a well ventilated place.
- Keep container tightly closed.
- Store locked up.

7.3 Specific end use(s)

- Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

- **Exposure Limits Values**

Chemical name	STEL (ppm)	NIOSH	ACGIH	OSHA
Chlormequat Chloride	None listed	None listed	None listed	None listed

8.2 Exposure controls

Appropriate engineering controls

- General industrial hygiene practice.

Personal protective equipment

- Respiratory protection and have an effective respirator program in place.
- Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.
- Hands: Chemical-resistant gloves.
- Eyes: Safety goggles/ Chemical Safety glasses and Face shield.
- Clothing: Boots and clothing to prevent contact.
- Respirator: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

- For emergency situations, wear a positive pressure, pressure-demand, full-face piece self-contained breathing apparatus (SCBA) or pressure-demand supplied air respirator with escape SCBA and a fully-encapsulating, chemical resistant suit. (EPA,1998).

Additional Information

- Only use protective equipment in accordance with national/international regulations. Follow the national regulation about wearing personal protective equipment and the warranty given.
- Worker exposure is limited by enclosed systems, industrial hygiene controls and personal protective measures (protective gloves, safety glasses with side-shields, respiratory protection if ventilation is inadequate).

Control of environmental exposure

- Do not let product enter drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Sr.No.	Parameter	Typical value
1.	Appearance	Clear viscous liquid
2.	Odor	Fishy
3.	Odor Threshold	Not available
4.	pH	6.5 – 7.5
5.	Melting point/Freezing point	Not available
6.	Boiling Point	~100^0 C@760 mm Hg
7.	Flash point	Not available
8.	Evaporation rate (n-BuAc=1)	Not available
9.	Flammability	Non Flammable
10.	Upper/lower flammability or Explosive limits	Not available
11.	Vapor pressure	Not available
12.	Vapor density (air=1)	Not available
13.	Relative density	1.120 to 1.146 (at 20^0 C)
14.	Solubility	Soluble in water
15.	Partition coefficient : n-(Octonol / water)	-3.0 (Active)
16.	Auto-ignition temperature	Not available
17.	Decomposition temperature	Not available
18.	Viscosity	Not available
19.	Explosive property	No
20.	Oxidizing property	No

9.2 Other safety information

- No data available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

- None known, based on information available

10.2 Chemical stability

- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- **Hazardous Polymerization**: Not reported.

10.4 Conditions to avoid

- Keep away from heat, sparks, flame, high temperature and incompatible chemicals,

10.5 Incompatible materials

- Strong oxidizing and reducing agents, Strong acids, Strong bases , chlorates, nitrates and metals.

10.6 Hazardous decomposition products

- **Other decomposition products -** Thermal decomposition may produce nitrogen oxides, carbon dioxide, carbon monoxide and toxic fumes of HCl gas.
- In the event of fire: see section 5

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

a) **Acute Toxicity:**

RTECS: BP5250000 (Chlormequat chloride)

LD50 (Chlormequat chloride):

Species:	**Rat**	**Rabbit**	**Rat**
Route:	Oral	Skin	Inhalation
Dosage:	600 mg/kg	232 mg/kg	>5200 mg/m^3/4H
End Point:	LD50	LD50	LC50
Reference:	Gigiena i Sanitariya 36(11),33,1971	World Review of Pest Control. Vol. 9, Pg. 119, 1970.	Pesticide Manual 9,149,1991

LD50 Oral (ATE) - 300-2000 mg/kg
LD50 Dermal (ATE) - >1000 mg/kg

b) ***Skin corrosion/irritation***

- Non-irritating to the skin

c) **Serious eye damage/irritation**

- Not an eye irritant.

d) **Respiratory or skin sensitization**

- No sensitization responses were observed

e) **Germ cell Mutagenicity**

- DNA inhibition was observed in the mouse. Mutations were seen in E. coli.
- Chlormequat Chloride was found to be negative when tested for mutagenicity using the Salmonella/microsome preincubation assay. This test procedure includes testing of the chemical using a wide range of doses in as many as 5 Salmonella typhimurium strains (TA1535, TA1537, TA97, TA98, and TA100) in the presence and absence of rat and hamster liver S-9. Chlormequat Chloride was tested at doses of 0.100, 0.333, 1.000, 3.333, and 10.000 mg/plate. The highest ineffective dose tested in any S.typhimurium strain was 10.000 mg/plate.

Reference: Mortelmans K et al; Environ Mutagen 8:1-119 (1986)

f) **Carcinogenicity**

- IARC Carcinogenicity Ratings for CAS 999-81-5 (IARC, 2004): Not Listed

National Toxicology Program Studies:

- A bioassay of (2-chloroethyl)trimethylammonium chloride for possible carcinogenicity was conducted by administering the test chemical in feed to F344 rats. Groups of 50 rats of each sex were administered either 1500 or 3000 ppm of the compound for 108 weeks. It was concluded that under the conditions of the bioassay, (2-chloroethyl)trimethylammonium chloride was not carcinogenic for F344 rats of either sex.
- A bioassay of (2-chloroethyl)trimethylammonium chloride for possible carcinogenicity was conducted by administering the test chemical in feed to B6C3Fl mice. Groups of 50 mice of each sex were administered 500 or 2000 ppm for 102 weeks. It was concluded that under the conditions of the bioassay, (2-chloroethyl)trimethylammonium chloride was not carcinogenic for B6C3Fl mice of either sex.

Reference: DHEW/NCI; Bioassay of (2-Chloroethyl) Trimethylammonium Chloride (CCC) for Possible Carcinogenicity p.v (1979) Technical Rpt Series No. 158 DHEW Pub No. (NIH)79- 1714

g) **Reproductive toxicity**

- According to the information presently available Chlormequat Chloride has not been tested for its ability to affect reproduction.

h) **STOT-single exposure**

- No data available.

i) **STOT- repeated exposure**

- No data available.

j) **Aspiration Hazards**

- No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Chlormequat chloride

- LC50 Trout = ~ 4500 mg/l/96 hr /400 g/l
- EC50 Daphnia magna = 16.9 mg/l
- Based on the values it is expected to be non-toxic to fish but may be harmful to other aquatic organisms.
- LC50 Fish (ATE)->100 mg/l

12.2 Persistence and degradability

- Chlormequat chloride is rapidly degraded in soil by enzyme activity and there is no influence on soil microflora or fauna.
- Readily biodegradable in aerobic conditions.

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12.3 Bio accumulative potential

Chlormequat chloride 50%	
Bio concentration factor	3.2
Log Kow	-3.0 (Active)

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12.4 Mobility in soil

Chlormequat chloride 50%	
Log koc	Not available.
Henry's Law constant	Not available
Log Kow	Not available

12.5 Other adverse effects

- **Environment Fate**
  Based on the environmental modeling, this material has a low potential to get absorbed in the organic matter of soil and is non-volatile from water bodies. Chlormequat Chloride is expected to exist in the water column in the ionic state and this prevents its removal by evaporation. It will exist as a cation in moist soils and the primary fate processes will be biodegradation and adsorption. It is rapidly degraded in soil by enzyme activity. Strong adsorption is expected in clays and soils with high organic or mineral content. It can exist in both the vapor and particulate phases in the ambient atmosphere. It will degrade slowly in the vapor phase by reaction with photochemically produced hydroxyl radicals with an estimated half-life of about 12 days. Since this is an estimated result it is recommended that the material should not be disposed into the environment. The material should never be disposed into the sewage.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

- Chlormequat Chloride melts at 245 deg C with decomp. Incineration is a highly effective disposal method. Heating the product with strong aqueous alkali would result in decomposition with the evolution of trimethylamine and other gaseous products. Recommendable method: Incineration. Peer review: Incinerate in a unit with effluent gas scrubbing. (Peer-review conclusions of an IRPTC expert consultation (May 1985))
- Dispose of this material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable federal, state or local laws. Note that disposal regulations may also apply to empty containers and equipment rinsates.

SECTION 14: TRANSPORT INFORMATION

ADR/ RID/ DOT	IMDG	IATA
14.1. UN number		
Not Hazardous substance	Not Hazardous substance	Not Hazardous substance
14.2. UN proper shipping name		
Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)		
Not applicable	Not applicable	Not applicable
14.4. Packing group		
Not applicable	Not applicable	Not applicable
14.5. Environmental hazards		
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No
No supplementary information available		

14.6 Special precautions for user

- No data available

SECTION 15: REGULATORY INFORMATION

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

- **European Union Information**
  Classification as per CLP Regulation 1272/2008:
- Hazards Class and Category: Acute Tox Oral/Dermal Cat 4
- Hazard Statements: H302, H312

US information

CAS# 999-81-5 is listed on the TSCA inventory.
CERCLA Reportable Quantities:
Releases of CERCLA hazardous substances are subject to the release reporting requirement of CERCLA section 103, codified at 40 CFR part 302, in addition to the requirements of 40 CFR part 355. Chlormequat chloride is an extremely hazardous substance (EHS) subject to reporting requirements when stored in amounts in excess of its threshold planning quantity (TPQ) of 100/10,000 lbs.
CANADA
CAS# 999-81-5 The substance is specified on the public Portion of the Domestic Substances List.
CAS# 999-81-5 . It is not listed on Canada's Ingredient Disclosure List.

SECTION 16: OTHER INFORMATION

a) Compilation information of safety data sheet

Date of compilation	:	September 21, 2012
Chemical	:	Chlormequat Chloride (50 %)
CAS #	:	999-81-5 (Active)
File Name	:	0636Sa Ghs00 Div.03 sds Chlormequat chloride (50%)
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b) A key or legend to aberrations and acronyms used in the safety data sheet

- SCBA= Self Contained Breathing Apparatus.
- NIOSH REL= National Institute for Occupational Safety and Health Recommended Exposure Limit.
- OSHA PEL=Occupational Safety and Health Administration Permissible Exposure Limit.
- RTECS= Registry of Toxic Effects of Chemical Substances.
- NTP=National Toxicology Program.
- IARC= International Agency for Research on Cancer.
- Classification, Labeling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonized System.
- ADR = Accord European relative au transport international de merchandises.
- US DOT = United States Department of Transportation.
- IMDG-Code = International Maritime Code for Dangerous Goods.
- ICAO = International Civil Aviation Organization.
- IATA/DGR= International Air Transport Association/Dangerous Goods Regulation

SDS EU (REACH Annex II)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

(End of Safety Data Sheet)