

Material Safety Data Sheet

Choline chloride 19.9% + (+)-Abscisic acid 0.1% SL

1. PRODUCT IDENTIFICATION

Product Name: Choline chloride 19.9% + (+)-Abscisic acid 0.1% SL
 Common Name: Choline chloride; (+)-Abscisic acid
 Chemical Family: Onium compounds (Choline chloride);
 Ketenes ((+)-Abscisic acid)
 Chemical Formula: C₅H₁₄ClNO (Choline chloride);
 C₁₅H₂₀O₄ ((+)-Abscisic acid);
 Chemical Name: ethanaminium, 2-hydroxy-N,N,N-trimethyl-, chloride (Choline chloride);
 (2Z,4E)-5-[(1S)-1-Hydroxy-2,6,6-trimethyl-4-oxocyclohex-2-en-1-yl]-3-methylpenta-2,4-dienoic acid ((+)-Abscisic acid);
 CAS No.: 67-48-1 (Choline chloride);
 21293-29-8 ((+)-Abscisic acid);
 Product Use: Plant growth regulator

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredient Name</u>	<u>CAS Registry Number</u>	<u>Typical Wt. % w/w</u>
Choline chloride	67-48-1	19.9%
(+)-Abscisic acid	21293-29-8	0.1%
Inert	-	to 100 %

3. HAZARDS IDENTIFICATION

Emergency Overview

Light yellow liquid.

CAUTION!

KEEP OUT OF REACH OF CHILDREN

MAY CAUSE EYE AND SKIN IRRITATION

MAY CAUSE ALLERGIC SKIN REACTION.

4. FIRST AID MEASURES

If swallowed: If swallowed, rinse mouth with water. Never give anything by mouth

to an unconscious person. The patient should be sent to the hospital for symptomatic treatment with this label immediately.

If in eye: Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

If on skin: Remove contaminated clothing immediately and rinse contaminated skin with plenty of water. Rinse with soap and then rinse with water. If the skin is inflamed, consult a doctor.

If Inhaled: Keep patient calm, remove to fresh air, and seek medical attention.

Notes to Physician: No special antidotes. Treat them according to their symptoms.

5. FIRE FIGHTING MEASURES

Fire and explosive Properties

Auto-Ignition Temperature	Not available
Flash Point	Not applicable

Extinguishing Media

Water fog, Carbon Dioxide, Dry Chemical, Foam.

Fire Fighting Instructions

The product is not flammable. But if firing, fire fighters and others who may be exposed to products of combustion should wear full firefighting turn out gear and self-contained breathing apparatus. Firefighting equipment should be thoroughly decontaminated after use. Person who may have been exposed to contaminated smoke should be immediately examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Stop the leak, if possible. Ventilated the space involved. Absorb, sweep up, place in container for disposal. Shut off or remove all ignition sources. Prevent waterway contamination. Construct a dike to prevent spreading. Protect works with water spray. Collect run-off water and transfer to drums or tanks for later disposal.

7. HANDLING AND STORAGE

Handling

Harmful if swallowed, inhaled, or absorbed through the skin. Causes eye irritation. Do not breathe gas or allow to get in eyes, on skin, or on clothing. Wash hands, arm and face thoroughly with soap and warm water after use and before eating or smoking. Wash all contaminated clothing with soap and hot water before reuse. Do not contaminate feed or food items. Keep out of reach of children.

Storage

Store in a cool, dry, ventilated, rain-proof place. Keep container sealed. Keep away from fire and heat. Keep out of the reach of children and unrelated persons and locked. The storage area shall be provided with suitable materials for leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye/Face Protection

Goggles and full-face shield should be used when needed to prevent liquid from face and getting into the eyes.

Skin Protection

Avoid skin contact. Use chemical-resistant gloves, and wear long sleeves and trousers to prevent dermal exposure.

Respiratory Protection

Under normal handling conditions no respiratory protection is needed. However, if needed to prevent respiratory irritation, either a respirator approved for dusts and mists, or one approved for pesticides

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Light yellow
Physical state:	Liquid
Odor:	No characteristic odor
Melting point	305 °C (decomposes) (Choline chloride); 160°C-162°C ((+)-Abscisic acid)
Vapor pressure:	6.57 × 10 ⁻⁵ mPa (20 °C) (Choline chloride) N/A ((+)-Abscisic acid)

Solubility in water and organic solvents: Easy to dissolve in water and alcohols, almost neutral in aqueous solution, insoluble in ether,

petroleum ether, benzene, and carbon disulfide.

(Choline chloride)

Solubility in water 3-5g/L (20 °C), insoluble in petroleum ether and benzene, easily soluble in methanol, ethanol, acetone, ethyl acetate, and chloroform ((+)-Abscisic acid)

Partition coefficient:

$K_{ow} \log P = -5.16$. (Choline chloride)

$K_{ow} \log P = 1.8$ (pH 7), 0.94 (ionized); ((+)-Abscisic acid)

10. STABILITY AND REACTIVITY

Stability

Stable under normal environmental conditions. Easily deliquescent and unstable in alkaline solutions. (Choline chloride)

Stable under normal environmental conditions. Sensitive to light, belonging to strong light decomposition compounds. ((+)-Abscisic acid)

Hazardous Polymerization

Does not occur.

Incompatibility

This product is not compatible with oxidizing agents.

Hazardous Decomposition Products

chloride, /sulfur oxides/, and /Nitrogen oxides/.

11. TOXICOLOGICAL INFORMATION

Acute oral LD ₅₀ :	Acute oral LD ₅₀ for rats 3400 mg/kg. (Choline chloride) Acute oral LD ₅₀ for rats >5000 mg/kg. ((+)-Abscisic acid)
Acute dermal LD ₅₀ :	N/A. (Choline chloride) Acute percutaneous LD ₅₀ for rats >5000 mg/kg. ((+)-Abscisic acid)
Irritation:	Eye and skin irritant (rabbits). (Choline chloride)
Sensitization:	Not a skin sensitizer (guinea pigs).
Long-term Studies:	Studies showed no evidence of carcinogenicity and mutagenicity to rats and rabbits.

12. ECOTOXICOLOGICAL INFORMATION

Toxicity to bees:

N/A. (Choline chloride)

LD₅₀ (48 h) oral >108 µg/bee, contact >100 µg/bee. ((+)-Abscisic acid)

Toxicity to fish and other aquatic organisms:

Temperate Freshwater Fish - *Oncorhynchus mykiss* Acute 96-hour LC₅₀ 100 mg/L.
(Choline chloride)

The acute LC₅₀ of rainbow trout > 121 mg/L. ((+)-Abscisic acid)

Toxicity to birds:

N/A. (Choline chloride)

The LC₅₀ of northern mountain quail > 2250 mg/kg. ((+)-Abscisic acid)

Toxicity to daphnia:

Temperate Freshwater Aquatic invertebrates - *Daphnia magna* Acute 48-hour EC₅₀ 349 mg/L. (Choline chloride)

EC₅₀ (48 h) > 116 mg/L ((+)-Abscisic acid)

Toxicity to algae:

Acute 72-hour EC₅₀, growth *Pseudokirchneriella subcapitata* 1000 mg/l. (Choline chloride)

N/A. ((+)-Abscisic acid)

13. DISPOSAL CONSIDERATIONS

Waste Disposal

For the packaging container, completely remove the residual agent from the material in the barrel. Landfill or incineration can be used if local authorities permit. Do not reuse empty containers. The residue should be disposed of in strict accordance with the label requirements.

14. TRANSPORT INFORMATION

UN number: Not dangerous goods.

Class and subsidiary risk: Not dangerous goods.

Packing group: Not dangerous goods.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

16. OTHER INFORMATION

The information contained herein relates only to the specific material identified. We believe that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, express or implied, is made as to the reliability or completeness of the information. Urge persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.