



Rooted in Science

SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

1.1 Product Identifier

Trade Name Knife Plus 12-0-0 + 6Fe

SDS Date August 13, 2015

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Product Use: Foliar Nutrient

Uses Advised Against: To be used only where there is a recognized need. Do not exceed the appropriate dose rates.

1.3 Details of the Supplier of the Substance or Mixture

Manufacturer: Floratine Products Group, Inc.
355 East South Street
Collierville, TN 38017
+1 901-853-2898

1.4 Emergency Telephone Number

Emergency Spill Information 1(800) 424-9300 for US and Canada (CHEMTREC)
+1(703) 527-3887 for International Calls (call CHEMTREC collect)

Other Product Information: cs@floratine.com

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

CLP/GHS Classification (1272/2008):

Acute Toxicity Category 4 (H302)
Eye Damage Category 1
Skin Irritation Category 2
Specific Target Organ Toxicity – Repeat Exposure Category 2

2.2 Label Elements

Danger!



Contains Manganese Compound, Zinc Compound

Hazard Phrases

H302 Harmful if swallowed.
H315 Causes skin irritation
H318 Causes serious eye damage.
H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary Phrases:

- P264 Wash thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P280 Wear protective gloves, eye protection and face protection.
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER.
- P330 Rinse mouth.
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P332 + P313 If skin irritation occurs: Get medical attention.
- P362 + P364 Take off contaminated clothing and wash it before reuse.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313 If eye irritation persists: Get medical attention.
- P260 Do not breathe mist, vapors or spray.
- P314 Get medical /attention if you feel unwell.
- P405 Store locked up.
- P501 Dispose of contents and container in accordance with local and national regulations.

2.3 Other Hazards: None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number / EINECS Number / REACH Reg. Number	% (w/w)	CLP/GHS Classification (1272/2008)
Iron Compound	7720-78-7 / 231-753-5	20-40%	Met. Corr. 1 (H290) Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319)
Urea	57-13-6 / 200-315-5	10-30%	Not hazardous
Manganese compound	7785-87-7 / 232-089-9	<6%	Eye Dam. 1 (H318) STOT RE 2 (H373)
Zinc compound	7733-02-0 / 231-793-3	<3%	Acute Tox. 4 (H302) Eye Dam. 1 (H318)
Copper salt	7758-98-7 / 231-847-6	<1%	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Irrit.2 (H319)
Sodium Molybdate	7631-95-0 / 7631-95-0	<1%	Not hazardous

See Section 16 for full text of GHS and EU Classifications.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

First Aid

Eye contact: In case of contact with eyes, flush immediately with water for at least 15 minutes while lifting the upper and lower lids. Get immediate medical attention.

Skin contact: Wash with soap and water. Get medical attention if irritation develops or persists.

Inhalation: Remove victim to fresh air. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. If the person is alert, have them rinse their mouth with water and sip one glass of water. Call a poison center or physician for advice. Never give anything by mouth to an unconscious or drowsy person.

See Section 11 for more detailed information on health effects.

4.2 Most Important symptoms and effects, both acute and delayed: Causes severe eye irritation or damage. May cause skin irritation. Swallowing may cause nausea and diarrhea. Overexposure to zinc compound has been shown to cause headaches, nausea, vomiting, loss of appetite, abdominal cramps and effects to the heart, liver and kidneys. Prolonged overexposure to manganese compounds may cause headache, apathy, muscle weakness and neurological effects such as euphoria, impulsiveness and insomnia.

4.3 Indication of any immediate medical attention and special treatment needed: If eye contact occurs, get immediate medical attention.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing Media: Use media appropriate for the surrounding fire. Cool fire exposed containers with water.

5.2 Special Hazards Arising from the Substance or Mixture

Unusual Fire and Explosion Hazards: None

Combustion Products: Oxides of carbon, sulfur, manganese, zinc, iron, copper and molybdate.

5.3 Advice for Fire-Fighters: Self-contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures:

Wear appropriate protective equipment. Avoid direct contact with spilled material.

6.2 Environmental Precautions:

Prevent entry in storm sewers and waterways. Report spill as required by local and national regulations.

6.3 Methods and Material for Containment and Cleaning Up:

Collect with an inert absorbent material and place in an appropriate container for disposal. Wash spill site with water. Contain large spills and collect as much liquid as possible into containers for use.

6.4 Reference to Other Sections:

Refer to Section 8 for personal protective equipment and Section 13 for disposal information.

SECTION 7: HANDLING and STORAGE

7.1 Precautions for Safe Handling:

Prevent contact with eyes. Avoid contact with skin and clothing. Use with adequate ventilation. Use reasonable care in handling. Do not eat, drink or smoke while using product. Wash thoroughly with soap and water after handling.

7.2 Conditions for Safe Storage, Including any Incompatibilities:

Protect containers from physical damage. Keep from freezing. Keep containers closed. Empty containers retain product residues. Follow all SDS precautions in handling empty containers. Store away from food and feed.

7.3 Specific end use(s):

Industrial uses: None identified

Professional uses: Foliar Nutrient

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

Chemical Name	US OEL	EU IOEL	UK OEL	Biological Limit
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				Value
Urea	10 mg/m3 TWA AIHA WEEL	None Established	None Established	None Established
Iron Compound	None Established	None Established	None Established	None Established
Manganese Compound	0.2 mg/m3 TWA (as Mn) ACGIH TLV 5 mg/m3 Ceiling (as Mn) OSHA PEL	None Established	0.5 mg/m3 TWA (as Mn)	None Established
Zinc Compound	None Established	None Established	None Established	None Established
Copper salt	None Established	None Established	None Established	None Established
Sodium Molybdate (as molybdenum soluble compounds)	0.5 mg/m3 TWA (respirable) ACGIH TLV 5 mg/m3 OSHA PEL	None Established	5 mg/m3 TWA 10 mg/m3 STEL	None Established

8.2 Exposure Controls:

Recommended Monitoring Procedures: None established.

Appropriate Engineering Controls: Good outdoor ventilation should be adequate under normal conditions of use.

Personal Protective Measurers

Eye/face Protection: Chemical goggles recommended to prevent eye contact.

Skin Protection: Impervious clothing is recommended if needed to avoid skin contact.

Hands: Impervious gloves are recommended if needed to avoid skin contact.

Respiratory Protection: None needed under normal use conditions with adequate ventilation. If mists are excessive, an approved particulate respirator can be used. Use respirators in accordance with local and national regulations.

Other protection: Suitable washing facilities should be available in the work area.

SECTION 9: PHYSICAL and CHEMICAL PROPERTIES

9.1 Information on basic Physical and Chemical Properties

Appearance: Dark Green Liquid

Odor Threshold: Not available

Melting/Freezing Point: Not determined

Flash Point: Not flammable

Lower Flammability Limit: Not applicable

Upper Flammability Limit: Not applicable

Vapor Density(Air=1): Not applicable

Solubility: Complete

Autoignition Temperature: None

Viscosity: Not applicable

Oxidizing Properties: None

Molecular Formula: Mixture

Odor: Slight ammonia odor.

pH: 2.0-3.2

Boiling Point: 104-110°C

Evaporation Rate: Not applicable

Vapor Pressure: Greater than 1

Relative Density: 1.35

Octanol/Water Partition Coefficient: Not determined

Decomposition Temperature: Not determined

Explosive Properties: None

Specific Gravity (H₂O= 1): 1.35

Molecular Weight: Mixture

9.2 Other Information: None available

SECTION 10: STABILITY and REACTIVITY

10.1 Reactivity: Not reactive under normal conditions.

10.2 Chemical Stability: Stable.

10.3 Possibility of Hazardous Reactions: Contact with strong oxidizers may cause an exothermic reaction producing heat.

10.4 Conditions to Avoid: Avoid excessive heat and freezing.

10.5 Incompatible Materials: Incompatible with oxidizing agents.

10.6 Hazardous Decomposition Products: Decomposition may produce oxides of carbon, sulfur, manganese, zinc, iron, copper and molybdate.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:

Eye Contact: May cause irritation with redness, tearing and stinging. Eye damage may occur.

Skin contact: Skin contact may cause irritation.

Inhalation: Excessive inhalation of dust may cause upper respiratory tract irritation.

Ingestion: Swallowing may cause gastrointestinal effects including abdominal cramps, nausea and diarrhea. Overexposure to zinc compound may cause heart, liver and kidney effects.

Acute toxicity: No acute toxicity data available for the product. Calculated ATE for the mixture: Oral 984 mg/kg
 Manganese Compound: Oral rat LD50 2150 mg/kg, Inhalation rat LC50 >4.45 mg/L/4 hr,
 Zinc Compound: Oral rat LD50 1710 mg/kg; Dermal rat LD50 >2000 mg/kg
 Iron Compound: Oral rat LD50 319 mg/kg; Dermal rat LD50 >2000 mg/kg
 Urea: Oral rat LD50: 8471 mg/kg
 Copper salt: Oral rat LD50 480 mg/kg; Dermal rat LD50 >2000 mg/kg

Skin corrosion/irritation: Manganese compound is not irritating based on data from structurally similar chemicals. Zinc compound and Iron compound are irritating to rabbit skin. Urea is not irritating to rabbit skin.

Eye damage/irritation: Manganese compound has been shown to cause irreversible eye irritation in rabbit eyes. Zinc compound is highly irritating to rabbit eyes. Iron compound is not irritating to rabbit eyes. Urea is slightly irritating to rabbit eyes.

Respiratory Irritation: No data available. Expected to cause only temporary irritation.

Respiratory Sensitization: No data available.

Skin Sensitization: Zinc compound and Iron compound were negative in a mouse local lymph node assay.

Germ Cell Mutagenicity: Manganese compound was negative in an in vitro mammalian chromosome aberration test with a structurally similar material. Iron compound was negative in an in vitro mammalian chromosome aberration test and in an in vivo chromosome aberration assay. Zinc compound was negative in an in vitro gene mutation assay, AMES test and in vivo chromosome aberration assay.

Carcinogenicity: No data available. None of the components of this product are listed as carcinogens by IARC

Reproductive Toxicity: Zinc compound was administered to mice at days 6-15 of gestation. No maternal or developmental toxicity was observed at the highest dosage. NOEL 30 mg/kg.

Specific Target Organ Toxicity:

Single Exposure: Overexposure to zinc compound has been shown to cause headaches, nausea, vomiting, loss of appetite, abdominal cramps and effects to the heart, liver and kidneys.

Repeat Exposure: Overexposure to manganese compounds have been shown to cause headache, apathy, muscle weakness and neurological effects such as euphoria, impulsiveness and insomnia.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity: No toxicity data available for the product.

Manganese Compound: 48 hr LC50 daphnia magna 6.8 mg/L, 72 hr LC50 desmodesmus subspicatus 61 mg/L

Zinc Compound: 96 hr LC50 pimephales promelas 330 ug/L; 48 hr LC50 daphnia magna 259 ug/L

Iron Compound: No toxicity data available

Urea: 24 hr EC50 daphnia magna 10000 mg/L

Copper salt: 96 hr LC50 Oncorhynchus kisutch (coho salmon) 286 ug/L

12.2 Persistence and degradability: Biodegradation is not applicable to inorganic substances such as zinc compound, copper salt, manganese compound and Iron compound.

12.3 Bioaccumulative Potential: No data available.

12.4 Mobility in Soil: In the soil, product follows natural cycle to provide plant nutrients.

12.5 Results of PVT and vPvB assessment: Not required.

12.6 Other Adverse Effects: No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:

Dispose in accordance with local/ and national regulations.

SECTION 14: TRANSPORTATION INFORMATION

	14.1 UN Number	14.2 UN Proper Shipping Name	14.3 Hazard Class(s)	14.4 Packing Group	14.5 Environmental Hazards
US DOT	None	Not Regulated			
IMDG	UN3077	Environmentally Hazardous Substance, n.o.s. (zinc compound, manganese compound)	9	III	Yes
IATA/ICAO	UN3077	Environmentally Hazardous Substance, n.o.s. (zinc compound, manganese compound)	9	III	Yes

14.6 Special Precautions for User: None

14.7 Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code: Not determined.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

US Regulations

CERCLA Section 103: The normal application of fertilizers is exempt from CERCLA reporting. If an accidental release occurs, contact Floratine Products Group for information.

SARA Hazard Category (311/312): Acute Health Hazard, Chronic Health Hazard

SARA 313: Products used in routine agricultural operations and fertilizers held for resale by retailers is excluded from SARA 313 reporting. Contact Floratine Products Group for additional information.

California Proposition 65: This product contains the following substances known to the State of California to cause cancer and/or reproductive harm (birth defects): Formaldehyde (50-00-0) 30 ppm (cancer)

International Chemical Inventories

US EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory or exempt.

SECTION 16: OTHER INFORMATION

CLP/GHS Classification and H Phrases for Reference (See Section 3)

Acute Tox. 4 Acute Toxicity Category 4

STOT RE 2 Specific Target Organ Toxicity – Repeat Exposure Category 2

Eye Dam 1 Eye Damage Category 1

Eye Irrit. 2 Eye Irritation Category 2

Skin Irrit. 2 Skin Irritation Category 2

Met. Corr. 1 Metal Corrosive Category 1

H290 May be corrosive to metals

H302 Harmful if swallowed

H315 Causes skin irritation

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H373 May cause damage to organs through prolonged or repeated exposure.

This safety data sheet provides health and safety information. The product is to be used in applications consistent with best farming practice. Individuals handling this product should be informed under COSHH of the recommended safety precautions and should have access to this information. The product information data sheet is to the best of Floratine's knowledge correct as at the date of publication. Neither the Floratine importer or local supplier accepts liability for any loss or damage resulting from reliance on this information. Further information on this product may be obtained from the supplier whose name, address and telephone number will be found on the product container. The information provided herein is offered solely for your consideration, investigation and verification. This information herein is provided by Floratine in good faith as accurate at the time of writing but without guarantee. This information includes information which has been generated by other parties and provided to Floratine and which Floratine has not independently verified. The information provided herein relates only to the specific product designated and may not be valid if the product is used in combination with any other materials or in any process.