



## Safety Data Sheet

### 1. Identification of the substance/mixture and of the company/undertaking

Product identifier:

Product name: Orsat solution III

SDS No. : E0140E-1

Details of the supplier of the safety data sheet

Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.

Address: 3-1, Honmachibashi, Chuo-ku,Osaka ,JAPAN

Division: Safety Management Dept. of Chemicals

Telephone number: +81-6-6946-8061

FAX: +81-6-6946-1607

e-mail address: kagakuhinanzenkanri@kishida.co.jp

### 2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

**PHYSICAL AND CHEMICAL HAZARDS**

Corrosive to metals: Category 1

**HEALTH HAZARDS**

Acute toxicity (Oral): Category 4

Skin corrosion/irritation: Category 1

Serious eye damage/eye irritation: Category 1

Skin sensitization: Category 1

Specific target organ toxicity – single exposure: Category 1(CNS; respiratory organs)

Specific target organ toxicity – single exposure: Category 2(nervous system)

Specific target organ toxicity – repeated exposure: Category 1(systemic toxicity)

Specific target organ toxicity – repeated exposure: Category 2(blood system)

**ENVIRONMENT HAZARDS**

Hazardous to the aquatic environment (Acute): Category 1

Hazardous to the aquatic environment (Long-term): Category 2

(Note) GHS classification without description: Not classified/Classification not possible

Label elements



Signal word: Danger

**HAZARD STATEMENT**

May be corrosive to metals

Harmful if swallowed

Causes severe skin burns and eye damage

Causes serious eye damage

May cause an allergic skin reaction

Causes damage to organs after single exposure(CNS; respiratory organs)

May cause damage to organs after single exposure(nervous system)

Causes damage to organs through prolonged or repeated exposure(systemic toxicity)

May cause damage to organs through prolonged or repeated exposure(blood system)

Very toxic to aquatic life

Toxic to aquatic life with long lasting effects

**PRECAUTIONARY STATEMENT****Prevention**

- Avoid release to the environment.
- Keep only in original container.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Wash contaminated parts thoroughly after handling.
- Contaminated work clothing should not be allowed out of the workplace.
- Wear protective gloves, protective clothing or face protection.
- Wear eye protection/face protection.
- Do not eat, drink or smoke when using this product.

**Response**

- Absorb spillage to prevent material damage.
- Collect spillage.
- Get medical advice/attention if you feel unwell.
- IF exposed or concerned: Call a POISON CENTER or doctor/physician.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF ON SKIN: Wash with plenty of soap and water.
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- If skin irritation or rash occurs: Get medical advice/attention.
- Wash contaminated clothing before reuse.
- Take off contaminated clothing and wash it before reuse.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

**Disposal**

- Dispose of contents/container in accordance with local/national regulation.

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**3. Composition/information on ingredients****Mixture/Substance selection:****Mixture**

Ingredient name:Ammonium chloride

Content (%):17

Chemical formula:NH<sub>4</sub>Cl

Chemicals No, Japan:1-218

CAS No.:12125-02-9

MW:53.49

ECNO:235-186-4

Ingredient name:Copper(I) chloride

Content (%):14

Chemical formula:ClCu

Chemicals No, Japan:1-210

CAS No.:7758-89-6

MW:99.00

ECNO:231-842-9

Ingredient name:Ammonia

Content (%):5.7

Chemical formula:NH<sub>3</sub>

Chemicals No, Japan:1-391

CAS No.:7664-41-7



MW:17.03  
ECNO:231-635-3

Ingredient name:Water  
Content (%):64  
Chemical formula:H<sub>2</sub>O  
CAS No.:7732-18-5  
MW:18.02  
ECNO:231-791-2

Note : The figures shown above are not the specifications of the product.  
Note : Ammonia solution (CAS No. 1336-21-6, ECNO. 215-647-6)

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#### 4. First-aid measures

##### Descriptions of first-aid measures

###### General measures

Get medical attention/advice if you feel unwell.

###### IF INHALED

Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER or doctor/physician if you feel unwell.

###### IF ON SKIN (or hair)

Take off immediately all contaminated clothing. Rinse skin with water/shower.

Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical advice/attention.

###### IF IN EYES

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

###### IF SWALLOWED

Rinse mouth. Do NOT induce vomiting.

Call a POISON CENTER or doctor/physician if you feel unwell.

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#### 5. Fire-fighting measures

##### Extinguishing media

###### Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.

Unsuitable extinguishing media data is not available.

##### Specific hazards arising from the substance or mixture

Containers may explode when heated.

Fire may produce irritating, corrosive and/or toxic gases.

##### Advice for firefighters

###### Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

###### Special protective equipment and precautions for fire-fighters

Wear fire/flare resistant/retardant clothing.

Wear protective gloves/protective clothing/eye protection/face protection.

Firefighters should wear self-contained breathing apparatus with full face piece operated positive pressure mode.



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## 6. Accidental release measures

### Personnel precautions, protective equipment and emergency procedures

Ventilate area until material pick up is complete.

Wear proper protective equipment.

### Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

### Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.

### Preventive measures for secondary accident

Absorb spillage to prevent material damage.

Collect spillage.

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## 7. Handling and storage

### Precautions for safe handling

#### Preventive measures

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

#### Safety Measures

Wear protective gloves, protective clothing or face protection.

Wear eye protection/face protection.

When using do not eat, drink or smoke.

#### Any incompatibilities

See "10.Stability and Reactivity"

#### Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.

Do not eat, drink or smoke when using this product.

Contaminated work clothing should not be allowed out of the workplace.

Take off contaminated clothing and wash it before reuse.

### Storage

#### Conditions for safe storage

Keep container tightly closed.

Store in a cool, dry place. Do not store in direct sunlight.

(Incompatible storage condition)

The product may corrode metal. Do not keep in a metal container.

#### Container and packaging materials for safe handling

Keep only in original container.

Store in corrosion resistant/specified container with a resistant inner liner.

Glass

Polyethylene



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## 8. Exposure controls/personal protection

### Control parameters

#### Adopted value

(Ammonium chloride)

ACGIH(1970) TWA: 10mg/m<sup>3</sup>;

STEL: 20mg/m<sup>3</sup> (Eye & URT irr)

### Exposure controls

#### Appropriate engineering controls

Do not use in areas without adequate ventilation.

Eye wash station should be available.

Washing facilities should be available.

#### Individual protection measures

##### Respiratory protection

Wear respiratory protection.

##### Hand protection

Wear protective gloves.

##### Eye protection

Wear eye/face protection.

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## 9. Physical and Chemical Properties

### Information on basic physical and chemical properties

Physical state: Liquid

Color: Green

Odor: Irritant odor

Melting point/Freezing point data is not available.

Boiling point or initial boiling point data is not available.

Boiling range data is not available.

Flammability (gases, liquids and solids) data is not available.

Lower and upper explosion limit/flammability limit data is not available.

Flash point data is not available.

Auto-ignition temperature data is not available.

Decomposition temperature data is not available.

pH data is not available.

Kinematic viscosity data is not available.

Solubility:

Solubility in water: Soluble

n-Octanol/water partition coefficient data is not available.

Vapor pressure data is not available.

Density and/or relative density: 1.15

Relative vapor density (Air=1) data is not available.

No Particle characteristics data is not available.

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## 10. Stability and Reactivity

### Reactivity

Not available.

### Chemical stability

Stable under normal storage/handling conditions.

### Possibility of hazardous reactions

(Ammonium chloride)

Decomposes on heating. This produces toxic and irritating fumes (nitrogen oxides, ammonia and hydrogen chloride). The solution in water is a weak acid. Reacts violently with



ammonium nitrate and potassium chlorate. This generates fire and explosion hazard. Attacks copper and its compounds. (ICSC 1051)

(As Aqueous ammonia)

Reacts with many heavy metals and heavy metal salts. This produces explosive compounds. Attacks many metals. This produces flammable/explosive gas (hydrogen). It reacts violently with acids. This generates fire and explosion hazard. Decomposes on heating. This produces toxic and corrosive fumes including ammonia and nitrogen oxides. This generates toxic hazard. (ICSC 0215)

#### Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

#### Incompatible materials

Acids, Ammonium nitrate, Potassium chlorate, Heavy metal, Heavy metal salts, Metals

#### Hazardous decomposition products

Nitrogen oxides, Ammonia, Hydrogen chloride, Explosive compounds, Hydrogen

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## 11. Toxicological Information

### Information on toxicological effects

#### Acute toxicity

##### Acute toxicity (Oral)

[GHS Cat. Japan, base data]

(Ammonium chloride)

rat LD50=1410mg/kg (SIDS, 2009)

(Ammonia)

rat LD50=350mg/kg (SIDS, 2008)

#### Irritant properties

##### Skin corrosion/irritation

[GHS Cat. Japan, base data]

(Ammonia)

rabbit corrosive (SIDS, 2008)

##### Serious eye damage/irritation

[GHS Cat. Japan, base data]

(Ammonium chloride)

rabbit mild irritation (ACGIH 7th, 2001)

(Ammonia)

corrosive (SIDS, 2008)

#### Sensitization

##### Skin sensitization

[GHS Cat. Japan, base data]

(Copper(I) chloride)

cat. 1; JSOH

Mutagenic effects data is not available.

Carcinogenic effects data is not available.

Reproductive toxicity data is not available.

#### STOT

##### STOT-single exposure

[cat.1]

[GHS Cat. Japan, base data]

(Ammonia)

CNS; respiratory organs (HSDB, Access on Jun. 2014; ATSDR, 2004)

[cat.2]

[GHS Cat. Japan, base data]

(Ammonium chloride)



nervous system (SIDS, 2009)  
STOT-repeated exposure  
[cat.1]  
[GHS Cat. Japan, base data]  
(Ammonium chloride)  
systemic toxicity (SIDS, 2009)  
[cat.2]  
[GHS Cat. Japan, base data]  
(Copper(I) chloride)  
blood system (SIDS, 2006)  
Aspiration hazard data is not available.

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## 12. Ecological Information

Ecotoxicity  
Aquatic toxicity  
Very toxic to aquatic life  
Toxic to aquatic life with long lasting effects  
Hazardous to the aquatic environment (Acute)  
[GHS Cat. Japan, base data]  
(Ammonium chloride)  
Fish (rainbow trout) LC50=0.696mg NH<sub>3</sub>/L/96hr=2.19mg NH<sub>4</sub>Cl/L/96hr (ECETOC TR91, 2003)  
(Ammonia)  
Crustacea (Mysidopsis bahia) LC50=2.81-98.9mg total NH<sub>3</sub>/L/96hr (SIDS, 2007)  
(Copper(I) chloride)  
Fish (rainbow trout) LC50=0.018mg/L/96hr (ECETOC TR91, 2003)  
Hazardous to the aquatic environment (Long-term)  
[GHS Cat. Japan, base data]  
(Ammonia)  
Crustacea (Mysidopsis bahia) NOEC=3.47mg total NH<sub>3</sub>/L/32days (SIDS, 2007)  
(Copper(I) chloride)  
Algae (Pseudokirchneriella subcapitata) NOEC=0.038mg/L/72hr (SIDS, 2011)  
Water solubility  
(Ammonium chloride)  
28.3 g/100 ml (25°C) (ICSC, 2000)  
(Ammonia)  
miscible (ICSC, 1995)  
Persistence and degradability  
Persistence and degradability data is not available.  
Bioaccumulative potential  
Bioaccumulative potential data is not available.  
Mobility in soil  
Mobility in soil data is not available.  
Other adverse effects  
Ozone depleting chemical data is not available.

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## 13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging  
Waste treatment methods  
Avoid release to the environment (- if this is not the intended use).  
Dispose of contents/container in accordance with local/national regulation.



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**14. Transport Information**

UN No.: 1760

Proper Shipping Name :

CORROSIVE LIQUID, N.O.S.

Class or division : 8

Packing group : III

ERG GUIDE No.: 154

Special provisions No.: 223; 274

**IMDG Code (International Maritime Dangerous Goods Regulations)**

UN No.: 1760

Proper Shipping Name :

CORROSIVE LIQUID, N.O.S.

Class or division : 8

Packing group : III

Special provisions No.: 223; 274

**IATA Dangerous Goods Regulations**

UN No.: 1760

Proper Shipping Name :

CORROSIVE LIQUID, N.O.S.

Class or division : 8

Hazard labels : Corrosive

Packing group : III

Special provisions No.: A3; A803

**Environmental hazards****MARPOL Annex III – Prevention of pollution by harmful substances**

Marine pollutants (yes/no) : yes

**MARPOL Annex V – Prevention of pollution by garbage discharge**

Specific target organ toxicity – repeated exposure: cat.1

Ammonium chloride

Hazardous to the aquatic environment – acute hazard: cat.1

Copper(I) chloride

Hazardous to the aquatic environment – long-term hazard: cat.1, 2

Ammonium chloride; Copper(I) chloride

**Transport in bulk according to Annex II of MARPOL73/78 and IBC Code**

Noxious Liquid ; Cat. Y

Ammonia

Noxious Liquid ; Cat. Z

Ammonium chloride

Non Noxious Liquid ; Cat. OS

Water

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**15. Regulatory Information**

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

**US Federal Regulations**

Chemicals listed in TSCA Inventory

Ammonia; Water; Copper(I) chloride; Ammonium chloride

**Other regulatory information**

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.





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**16. Other information****GHS classification and labelling**

Corr. Met. 1: H290 May be corrosive to metals  
Acute Tox. 4: H302 Harmful if swallowed  
Skin Corr. 1: H314 Causes severe skin burns and eye damage  
Eye Dam. 1: H318 Causes serious eye damage  
Skin Sens. 1: H317 May cause an allergic skin reaction  
STOT SE 1: H370 Causes damage to organs after single exposure  
STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure  
Aquatic Acute 1: H400 Very toxic to aquatic life  
Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects

**Reference Book**

Globally Harmonized System of classification and labelling of chemicals, (7th revised edition, 2017), UN  
Recommendations on the TRANSPORT OF DANGEROUS GOODS 20th edit., 2017 UN  
IMDG Code, 2018 Edition (Incorporating Amendment 39-18)  
IATA Dangerous Goods Regulations (61th Edition) 2020  
Classification, labelling and packaging of substances and mixtures (Table 3 ECNO6182012)  
2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)  
2020 TLVs and BEIs. (ACGIH)  
<http://monographs.iarc.fr/ENG/Classification/index.php>  
Supplier's data/information

**General Disclaimer**

Hazards were evaluated as ammonia solution.  
This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety.  
The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.  
The GHS classification data given here is based on current Japan official data (NITE published in 2019).