SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form: Mixture
Product name: ETHEPHON 2
Other means of identification: EPA Reg. No. 66330-262

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

Use of the substance/mixture: Herbicide

1.3. Details of the supplier of the safety data sheet

Arysta LifeScience North America LLC
15401 Weston Parkway, Suite 150
Cary, NC 27513 – USA

1.4. Emergency telephone number

Emergency number: Exposure Calls (PROSAR): +1-866-303-6952 or +1-651-603-3432 (international)
Spill Calls (CHEMTREC) (Contract # CCN1779): +1-800-424-9300 or +1-703-527-3887 (international)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

<table>
<thead>
<tr>
<th>Met. Corr. 1</th>
<th>H290</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox. 4 (Dermal)</td>
<td>H312</td>
</tr>
<tr>
<td>Skin Corr. 1C</td>
<td>H314</td>
</tr>
<tr>
<td>Eye Dam. 1</td>
<td>H318</td>
</tr>
<tr>
<td>Skin Sens. 1B</td>
<td>H317</td>
</tr>
<tr>
<td>STOT SE 3</td>
<td>H335</td>
</tr>
</tbody>
</table>

Full text of H statements: see section 16

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US): GHS05, GHS07

Signal word (GHS-US): Danger

Hazard statements (GHS-US): H290 - May be corrosive to metals
H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H335 - May cause respiratory irritation

Precautionary statements (GHS-US): P234 - Keep only in original container
P260 - Do not breathe mist, vapours
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray
P264 - Wash hands, forearms and face thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P272 - Contaminated work clothing must not be allowed out of the workplace
P280 - Wear eye protection, face protection, protective clothing, protective gloves
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P302+P352 - If on skin: Wash with plenty of water
P303+P361+P333 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P353 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a doctor
P312 - Call a poison center/doctor/… if you feel unwell
P321 - Specific treatment (see First aid measures on this label)
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P363 - Wash contaminated clothing before reuse
P390 - Absorb spillage to prevent material damage
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P406 - Store in corrosive resistant container with a resistant inner liner
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards
No additional information available

2.4. Unknown acute toxicity (GHS US)
Not applicable.

SECTION 3: Composition/information on ingredients

3.1. Substance
Not applicable

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>% (w/w)</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethephon</td>
<td>(CAS No) 16672-87-0</td>
<td>15 – 25</td>
<td>Acute Tox. 4 (Dermal), H312</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 4 (Inhalation:dust,mist), H332</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin Corr. 1C, H314</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 3, H412</td>
</tr>
</tbody>
</table>

*Chemical name, CAS number and/or exact concentration have been withheld as a trade secret

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after skin contact : For even minor contact, immediately remove contaminated clothing. Wash skin thoroughly with mild soap and water. Wash contaminated clothing before reuse. Get immediate medical advice/attention.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

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

Symptoms/injuries after inhalation : May cause respiratory irritation.

Symptoms/injuries after skin contact : Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction.

Symptoms/injuries after eye contact : Causes serious eye damage.

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

All treatments should be based on observed signs and symptoms of distress in the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Not flammable. Burning produces irritating, toxic and noxious fumes.

Reactivity : Thermal decomposition generates: Corrosive vapours.

5.3. Advice for firefighters

Firefighting instructions : Cool adjacent structures and containers with water spray to protect and prevent ignition. Do not allow run-off from fire fighting to enter drains or water courses. Exercise caution when fighting any chemical fire.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Use self-contained breathing apparatus.
**SECTION 6: Accidental release measures**

### 6.1. Personal precautions, protective equipment and emergency procedures

**General measures**: Avoid all eye and skin contact and do not breathe vapour and mist.

**6.1.1. For non-emergency personnel**
- **Protective equipment**: Chemical goggles or safety glasses. Wear suitable protective clothing and gloves.
- **Emergency procedures**: Keep upwind. Evacuate unnecessary personnel.

**6.1.2. For emergency responders**
- **Protective equipment**: Chemical goggles or safety glasses. Wear suitable protective clothing and gloves.
- **Emergency procedures**: Stop leak if safe to do so. Ventilate area. Keep upwind.

### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

**For containment**: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

**Methods for cleaning up**: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Sweep or shovel spills into appropriate container for disposal.

### 6.4. Reference to other sections

Section 13: disposal information. Section 7: safe handling. Section 8: personal protective equipment.

**SECTION 7: Handling and storage**

### 7.1. Precautions for safe handling

**Precautions for safe handling**: Do not breathe mist, vapours. Do not get in eyes, on skin, or on clothing. Use only outdoors or in a well-ventilated area.

**Hygiene measures**: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

### 7.2. Conditions for safe storage, including any incompatibilities

**Technical measures**: Comply with applicable regulations.

**Storage conditions**: Keep container tightly closed. Do not store near food, foodstuffs, drugs, or potable water supplies. Protect against frost.

**Incompatible products**: Strong oxidizers. Strong bases.

**Incompatible materials**: Metals.

**Prohibitions on mixed storage**: Keep away from incompatible materials.

**Storage area**: Store in dry, cool, well-ventilated area. Store out of frost (-10 °C). Store away from heat.

**Special rules on packaging**: Do not use metal containers.

### 7.3. Specific end use(s)

Herbicide.

**SECTION 8: Exposure controls/personal protection**

### 8.1. Control parameters

**ETHEPHON 2**
- ACGIH: Not applicable
- OSHA: Not applicable

**ethephon (16672-87-0)**
- ACGIH: Not applicable
- OSHA: Not applicable

### 8.2. Exposure controls

**Appropriate engineering controls**: Avoid splashing. Use only outdoors or in a well-ventilated area.

**Personal protective equipment**: Avoid all unnecessary exposure.

**Hand protection**: Wear suitable gloves resistant to chemical penetration. PVC. nitrile rubber gloves.

**Eye protection**: Chemical goggles or safety glasses. Face shield.

**Skin and body protection**: Wear suitable protective clothing. Long sleeved protective clothing. Rubber Apron. Foot protection.
ETHEPHON 2
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Respiratory protection</th>
<th>In case of inadequate ventilation wear respiratory protection. If needed, use an air-purifying respirator with organic vapor cartridges and a dust/mist prefilter.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental exposure controls</td>
<td>Prevent leakage or spillage.</td>
</tr>
<tr>
<td>Consumer exposure controls</td>
<td>Keep out of reach of children.</td>
</tr>
<tr>
<td>Other information</td>
<td>Do not eat, drink or smoke when using this product.</td>
</tr>
</tbody>
</table>

**SECTION 9: Physical and chemical properties**

9.1. Information on basic physical and chemical properties

- **Physical state**: Liquid
- **Appearance**: Clear liquid.
- **Colour**: Colourless
- **Odour**: odourless
- **Odour threshold**: No data available
- **pH**: 1.7
- **Melting point**: No data available
- **Boiling point**: <= -20 °C
- **Flash point**: No data available
- **Relative evaporation rate (butyl acetate=1)**: No data available
- **Flammability (solid, gas)**: No data available
- **Explosive limits**: No data available
- **Explosive properties**: No data available
- **Oxidising properties**: No data available
- **Vapour pressure**: 0.00006 mm Hg @ 20 °C
- **Relative density**: 1.1 g/ml
- **Relative vapour density at 20 °C**: No data available
- **Solubility**: Totally soluble in water in all proportions. Water: 100 %
- **Log Pow**: No data available
- **Log Kow**: No data available
- **Auto-ignition temperature**: No data available
- **Decomposition temperature**: No data available
- **Viscosity**: No data available
- **Viscosity, kinematic**: No data available
- **Viscosity, dynamic**: No data available

9.2. Other information

No additional information available

**SECTION 10: Stability and reactivity**

10.1. Reactivity

Thermal decomposition generates: Corrosive vapours.

10.2. Chemical stability

Unstable at extreme pH's and upon exposure to UV light.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur. Risk of ethylene emission with increasing pH.

10.4. Conditions to avoid

Avoid excessive heat or cold.

10.5. Incompatible materials


10.6. Hazardous decomposition products

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

**Likely routes of exposure**: Skin and eye contact; Inhalation

**Acute toxicity**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Oral LD50 (mg/kg)</th>
<th>Dermal LD50 (mg/kg)</th>
<th>LC50 Inhalation (mg/l)</th>
<th>ATE US (oral)</th>
<th>ATE US (dermal)</th>
<th>ATE US (vapours)</th>
<th>ATE US (dust, mist)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETHEPHON 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 oral rat</td>
<td>3200</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>LD50 dermal rat</td>
<td>1700</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50 inhalation rat</td>
<td></td>
<td></td>
<td>&gt; 4.9 mg/l/4h</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>3200.000 mg/kg bodyweight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>1700.000 mg/kg bodyweight</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ethephon (16672-87-0)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>LD50 oral rat</td>
<td>3030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
<td>1560</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50 inhalation rat</td>
<td>4.52</td>
<td></td>
<td>4.52 mg/l/4h</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>3030.000 mg/kg bodyweight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>1560.000 mg/kg bodyweight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (vapours)</td>
<td>4.520</td>
<td></td>
<td>4.520 mg/l/4h</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
<td>4.520</td>
<td></td>
<td>4.520 mg/l/4h</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation**: Causes severe skin burns and eye damage.

**Serious eye damage/irritation**: Causes serious eye damage.

**Respiratory or skin sensitisation**: May cause an allergic skin reaction.

(Positive)

**Germ cell mutagenicity**: Not classified

**Carcinogenicity**: Not classified

**Reproductive toxicity**: Not classified

**Specific target organ toxicity (single exposure)**: May cause respiratory irritation.

**Specific target organ toxicity (repeated exposure)**: Not classified

**Aspiration hazard**: Not classified

**Symptoms/injuries after inhalation**: May cause respiratory irritation.

**Symptoms/injuries after skin contact**: Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction.

**Symptoms/injuries after eye contact**: Causes serious eye damage.

### SECTION 12: Ecological information

#### 12.1. Toxicity

**Ecology - water**: Harmful to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Compound</th>
<th>LC50 fish</th>
<th>EC50 Daphnia</th>
<th>EC50 other aquatic organisms</th>
<th>LC50 fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethephon (16672-87-0)</td>
<td>254 mg/l O. ykiss</td>
<td>1000 mg/l 24-48 h</td>
<td>32 mg/l 48 h</td>
<td>222 mg/l Bluegill</td>
</tr>
</tbody>
</table>

#### 12.2. Persistence and degradability

**ETHEPHON 2**: May cause long-term adverse effects in the environment.

**ethephon (16672-87-0)**: Not expected to persist. Readily biodegradable.

#### 12.3. Bioaccumulative potential

No additional information available

#### 12.4. Mobility in soil

**ethephon (16672-87-0)**: Slightly mobile in soil.
12.5. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Waste treatment methods : Do not dispose in household garbage.
Sewage disposal recommendations : Do not dispose of waste into sewer.
Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.
Additional information : Do not attempt disposal by burning.
Ecology - waste materials : Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT
Transport document description : UN3265 Corrosive liquid, acidic, organic, n.o.s. (ethephon), 8, III
UN-No.(DOT) : UN3265
Proper Shipping Name (DOT) : Corrosive liquid, acidic, organic, n.o.s. (ethephon)
Transport hazard class(es) (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136
Hazard labels (DOT) : 8 - Corrosive
Packing group (DOT) : III - Minor Danger

Additional information
Other information : No supplementary information available.

ADR
Transport document description : UN 3265 CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (ethephon), 8, III, (E)
Packing group (ADR) : III
Class (ADR) : 8 - Corrosive substances
Hazard identification number (Kemler No.) : 80
Classification code (ADR) : C3
Danger labels (ADR) : 8 - Corrosive substances

Orange plates

Tunnel restriction code (ADR) : E
Limited quantities (ADR) : 5l
Excepted quantities (ADR) : E1

Transport by sea

IMDG
Transport hazard class(es) (IMDG) : 8
Danger labels (IMDG) : 8
UN-No. (IMDG) : 3265
ETHEPHON 2
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Proper Shipping Name (IMDG) : CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (ethephon)
Class (IMDG) : 8 - Corrosive substances
Packing group (IMDG) : III - substances presenting low danger
EmS-No. (Fire) : F-A
EmS-No. (Spillage) : S-B

Air transport
IATA
Transport hazard class(es) (IATA) : 8
Hazard labels (IATA) : 8
UN-No. (IATA) : 3265
Proper Shipping Name (IATA) : Corrosive liquid, acidic, organic, n.o.s. (ethephon)
Class (IATA) : 8 - Corrosives
Packing group (IATA) : III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations
ethephon (16672-87-0)
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations
CANADA
ethephon (16672-87-0)
Not listed on the Canadian DSL (Domestic Substances List) inventory

EU-Regulations
ethephon (16672-87-0)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations
ethephon (16672-87-0)
Not listed on the Canadian Non-Domestic Substances List (NDSL)

15.3. US State regulations
No additional information available

15.4. US EPA – FIFRA Regulations
This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

Signal word (FIFRA) : DANGER.
Hazard statements (FIFRA) : Causes irreversible eye damage and skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing. Avoid breathing spray mist. Avoid contamination of food.

Environmental hazards : Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

SECTION 16: Other information

Revision date : 02/25/2016
Data sources : ACGIH (American Conference of Governmental Industrial Hygienists).

02/25/2016 EN (English) SDS ID: ALS_1504005 7/8
ETHEPHON 2
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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Abbreviations and acronyms

ATE: Acute Toxicity Estimate.
CAS (Chemical Abstracts Service) number.
CLP: Classification, Labelling, Packaging.
EC50: Environmental Concentration associated with a response by 50% of the test population.
LD50: Lethal Dose for 50% of the test population.
GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).
NOEC: No Observable Effect Concentration.
OSHA: Occupational Safety & Health Administration.
TSCA: Toxic Substances Control Act.

Other information

None.

Full text of H-statements:

<table>
<thead>
<tr>
<th>Hx</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H290</td>
<td>May be corrosive to metals</td>
</tr>
<tr>
<td>H312</td>
<td>Harmful in contact with skin</td>
</tr>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
<tr>
<td>H412</td>
<td>Harmful to aquatic life with long lasting effects</td>
</tr>
</tbody>
</table>

NFPA health hazard

3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard

0 - Materials that will not burn.

NFPA reactivity

1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.

Indication of changes:
Transport information.

Redstone SDS US GHS for Arysta

SDS Prepared by: The Redstone Group, LLC.
6077 Frantz Rd
Suite 206
Dublin, Ohio, USA 43016
614.923.7472
www.redstonegrp.com

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.