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

1.1 Product identifiers
- Product name: Yeast Nitrogen Base Without Amino Acids
- Product Number: Y0626
- Brand: Sigma

1.2 Relevant identified uses of the substance or mixture and uses advised against
- Identified uses: Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet
- Company: Sigma-Aldrich Inc.
  3050 SPRUCE ST
  ST. LOUIS MO  63103
  UNITED STATES
- Telephone: +1 314 771-5765
- Fax: +1 800 325-5052

1.4 Emergency telephone
- Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
- GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
  - Short-term (acute) aquatic hazard (Category 3), H402

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements
- Pictogram: none
- Signal Word: none
- Hazard statement(s): H402
  - Harmful to aquatic life.
- Precautionary statement(s): P273
  - Avoid release to the environment.
P501
  - Dispose of contents/ container to an approved waste disposal plant.
2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.2 Mixtures

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>ammonium sulphate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS-No. 7783-20-2</td>
<td></td>
<td>Aquatic Acute 3; H402</td>
</tr>
<tr>
<td>EC-No. 231-984-1</td>
<td></td>
<td>&gt;= 70 - &lt; 90 %</td>
</tr>
<tr>
<td>Registration number 01-2119455044-46-XXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>calcium chloride</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS-No. 10043-52-4</td>
<td></td>
<td>Eye Irrit. 2A; H319</td>
</tr>
<tr>
<td>EC-No. 233-140-8</td>
<td></td>
<td>&gt;= 1 - &lt; 5 %</td>
</tr>
<tr>
<td>Index-No. 01-2119494219-28-XXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper(II) sulphate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS-No. 7758-98-7</td>
<td></td>
<td>Acute Tox. 4; Eye Dam. 1; Aquatic Acute 1; Aquatic Chronic 1; H302, H318, H400, H410 M-Factor - Aquatic Acute: 10 - Aquatic Chronic: 1</td>
</tr>
<tr>
<td>EC-No. 231-847-6</td>
<td></td>
<td>&lt; 0.1 %</td>
</tr>
<tr>
<td>Index-No. 029-023-00-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration number 01-2119520566-40-XXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc sulphate monohydrate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS-No. 7446-19-7</td>
<td></td>
<td>Acute Tox. 4; Eye Dam. 1; Aquatic Acute 1; Aquatic Chronic 1; H302, H318, H400, H410 M-Factor - Aquatic Acute: 10 M-Factor - Aquatic Chronic: 1</td>
</tr>
<tr>
<td>EC-No. 231-793-3</td>
<td></td>
<td>&lt; 0.1 %</td>
</tr>
<tr>
<td>Index-No. 030-006-00-9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration number 01-2119474684-27-XXXX</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

If inhaled
After inhalation: fresh air.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact
After eye contact: rinse out with plenty of water. Remove contact lenses.
If swallowed
After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

4.2 Most important symptoms and effects, both acute and delayed
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
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Nitrogen oxides (NOx)
Sulfur oxides
Oxides of phosphorus
Hydrogen chloride gas
Potassium oxides
Sodium oxides
Magnesium oxide
Calcium oxide
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters
In the event of fire, wear self-contained breathing apparatus.

5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid inhalation of dusts. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.
6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Dry.

Storage class
Storage class (TRGS 510): 13: Non Combustible Solids

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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper(II) sulphate</td>
<td>7758-98-7</td>
<td>TWA</td>
<td>1 mg/m3</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL</td>
<td>1 mg/m3</td>
<td>California permissible exposure limits for chemical contaminants (Title 8, Article 107)</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Change contaminated clothing. Wash hands after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)
data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

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

a) Appearance
Form: solid
b) Odor
No data available
c) Odor Threshold
No data available
d) pH
4.9 - 5.9 at 25 °C (77 °F)
e) Melting point/freezing point
No data available
f) Initial boiling point and boiling range
No data available
g) Flash point
() No data available
h) Evaporation rate
No data available
i) Flammability (solid, gas)
The product is not flammable.
j) Upper/lower flammability or explosive limits
No data available
k) Vapor pressure
No data available
l) Vapor density
No data available
m) Density
No data available
Relative density
No data available
n) Water solubility
No data available
9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No information available

10.5 Incompatible materials
Zinc, Strong bases, Strong oxidizing agents, Strong acids, Borane/boron oxides, Methyl vinyl ether, Calcium oxide, Calcium chloride is attacked by bromine trifluoride

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Mixture

Acute toxicity
Oral: No data available
Acute toxicity estimate Oral - 4,259 mg/kg
(Calculation method)

Inhalation: No data available

Dermal: No data available

Acute toxicity estimate Dermal - 2,778 mg/kg
(Calculation method)
No data available
**Skin corrosion/irritation**
Remarks: No data available

**Serious eye damage/eye irritation**
Remarks: No data available

**Respiratory or skin sensitization**
No data available

**Germ cell mutagenicity**
No data available

**Carcinogenicity**
  - **IARC:** No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
  - **NTP:** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
  - **OSHA:** No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

**Reproductive toxicity**
No data available
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

### 11.2 Additional Information
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Hazardous properties cannot be excluded but are unlikely when the product is handled appropriately.

Stomach - Irregularities - Based on Human Evidence

**Components**

ammonium sulphate

**Acute toxicity**
- **LD50 Oral - Rat - male and female:** 4,250 mg/kg
  - (OECD Test Guideline 401)
- **Inhalation:** No data available
- **LD50 Dermal - Rat - male and female:** > 2,000 mg/kg
  - (OECD Test Guideline 434)
  - No data available

**Skin corrosion/irritation**
- **Skin - Rabbit**
  - Result: No skin irritation - 20 h
  - Remarks: (ECHA)
**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: No eye irritation
Remarks: (ECHA)

**Respiratory or skin sensitization**
Maximization Test - Guinea pig
Result: negative
(US-EPA)

**Germ cell mutagenicity**
Test Type: Ames test
Test system: S. typhimurium
Result: negative
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Human lymphocytes
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster lung cells
Result: negative
Species: Mouse - male - Bone marrow
Remarks: (ECHA)

**Carcinogenicity**
No data available

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

**calcium chloride**

**Acute toxicity**
Oral: No data available
Symptoms: After uptake of large quantities:, Stomach/intestinal disorders, Nausea
Symptoms: Possible damages:, mucosal irritations
LD50 Dermal - Rabbit - male and female - > 5,000 mg/kg
Remarks: (ECHA)
No data available

**Skin corrosion/irritation**
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: Moderate eye irritation
(OECD Test Guideline 405)

**Respiratory or skin sensitization**
No data available
Germ cell mutagenicity
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster fibroblasts
Result: negative
Test Type: Ames test
Test system: S. typhimurium
Result: negative
Remarks: (Lit.)

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
Acute oral toxicity - After uptake of large quantities:; Stomach/intestinal disorders, Nausea
Acute inhalation toxicity - Possible damages:; mucosal irritations

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Copper(II) sulphate

Acute toxicity
LD50 Oral - Rat - male and female - 481 mg/kg
(OECD Test Guideline 401)
Inhalation: No data available
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Causes serious eye damage.
(OECD Test Guideline 405)

Respiratory or skin sensitization
Freund's complete adjuvant test - Guinea pig
Result: negative
(OECD Test Guideline 406)
The value is given in analogy to the following substances: Copper sulphate pentahydrate

Germ cell mutagenicity
Test Type: Ames test
Test system: Salmonella typhimurium
Result: negative
Method: OECD Test Guideline 486
Species: Rat - male - Liver cells
Result: negative
Method: Mutagenicity (micronucleus test)
Species: Mouse - male and female - Red blood cells (erythrocytes)
Result: negative

Carcinogenicity
No data available

Reproductive toxicity
Possible risk of congenital malformation in the fetus. Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Zinc sulphate monohydrate

Acute toxicity
LD50 Oral - Mouse - male - 926 mg/kg
(OECD Test Guideline 401)
Remarks: (anhydrous substance)
(in analogy to similar products)
The value is given in analogy to the following substances: Zinc sulphate
Inhalation: No data available
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)
Remarks: (anhydrous substance)
(in analogy to similar products)
The value is given in analogy to the following substances: Zinc sulphate

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)
Remarks: (anhydrous substance)
(in analogy to similar products)
The value is given in analogy to the following substances: Zinc sulphate

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Causes serious eye damage.
(OECD Test Guideline 405)
Remarks: (anhydrous substance)
(in analogy to similar products)
The value is given in analogy to the following substances: Zinc sulphate

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse
Result: negative
Remarks: (ECHA)
(anhydrous substance)
(in analogy to similar products)
The value is given in analogy to the following substances: Zinc sulphate

**Germ cell mutagenicity**
Test Type: Ames test
Test system: Salmonella typhimurium
Result: negative
Remarks: (ECHA)
(anhydrous substance)
(in analogy to similar products)
The value is given in analogy to the following substances: Zinc sulphate
Species: Mouse - male and female - Red blood cells (erythrocytes)
Result: negative
Remarks: (anhydrous substance)
(ECHA)
(in analogy to similar products)
The value is given in analogy to the following substances: Zinc sulphate

**Carcinogenicity**
No data available

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

---

**SECTION 12: Ecological information**

12.1 **Toxicity**

**Mixture**
No data available

12.2 **Persistence and degradability**
No data available

12.3 **Bioaccumulative potential**
No data available

12.4 **Mobility in soil**
No data available

12.5 **Results of PBT and vPvB assessment**
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 **Endocrine disrupting properties**
No data available

12.7 **Other adverse effects**
No data available
### Components

#### ammonium sulphate

**Toxicity to fish**
- LC50 - Oncorhynchus mykiss (rainbow trout) - 53 mg/l - 96 h  
Remarks: (ECHA)

**Toxicity to daphnia and other aquatic invertebrates**
- static test EC50 - Ceriodaphnia (water flea) - 121.7 mg/l - 48 h  
(US-EPA)

**Toxicity to algae**
- static test ErC50 - Chlorella vulgaris (Fresh water algae) - 2,700 mg/l - 18 Days  
Remarks: (ECHA)

**Toxicity to bacteria**
- static test EC50 - activated sludge - 1,618 mg/l - 30 min  
(OECD Test Guideline 209)

**Toxicity to fish (Chronic toxicity)**
- flow-through test EC10 - Lepomis macrochirus - 5.29 mg/l - 30 d  
Remarks: (ECHA)

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**
- semi-static test EC10 - Daphnia - 3.12 mg/l - 70 d  
(US-EPA)

#### calcium chloride

**Toxicity to fish**
- static test LC50 - Pimephales promelas (fathead minnow) - 4,630 mg/l - 96 h  
(US-EPA)

**Toxicity to daphnia and other aquatic invertebrates**
- static test EC50 - Daphnia magna (Water flea) - 2,400 mg/l - 48 h  
(OECD Test Guideline 202)

**Toxicity to algae**
- EC50 - Pseudokirchneriella subcapitata - 2,900 mg/l - 72 h  
(OECD Test Guideline 201)

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**
- EC50 - Daphnia magna (Water flea) - 610 mg/l - 21 d

#### Copper(II) sulphate

**Toxicity to fish**
- static test LC50 - Oncorhynchus mykiss (rainbow trout) - 0.032 mg/l - 96 h  
Remarks: (ECOTOX Database)

**Toxicity to daphnia and other aquatic invertebrates**
- static test EC50 - Daphnia magna (Water flea) - 0.092 mg/l - 48 h  
(OECD Test Guideline 202)  
Remarks: (anhydrous substance)
### Zinc sulphate monohydrate

#### Toxicity to fish

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Substance</th>
<th>EC Value</th>
<th>Exposure Period</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>static test LC50 - Pimephales promelas (fathead minnow)</td>
<td>0.330 mg/l</td>
<td>96 h</td>
<td>(anhydrous substance)</td>
<td>(in analogy to similar products)</td>
</tr>
</tbody>
</table>

#### Toxicity to daphnia and other aquatic invertebrates

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Substance</th>
<th>EC Value</th>
<th>Exposure Period</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>static test EC50 - Daphnia magna (Water flea)</td>
<td>1.4 mg/l</td>
<td>48 h</td>
<td></td>
<td>(OECD Test Guideline 202)</td>
</tr>
</tbody>
</table>

#### Toxicity to algae

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Substance</th>
<th>EC Value</th>
<th>Exposure Period</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>static test EC50 - activated sludge</td>
<td>5.2 mg/l</td>
<td>3 h</td>
<td>(OECD Test Guideline 209)</td>
<td></td>
</tr>
</tbody>
</table>

#### Toxicity to bacteria

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Substance</th>
<th>EC Value</th>
<th>Exposure Period</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>flow-through test NOEC - Salmo trutta</td>
<td>0.056 mg/l</td>
<td>116 d</td>
<td>(OECD Test Guideline 210)</td>
<td></td>
</tr>
</tbody>
</table>

#### Toxicity to fish (Chronic toxicity)

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Substance</th>
<th>EC Value</th>
<th>Exposure Period</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>semi-static test NOEC - Shrimp</td>
<td>0.0318 mg/l</td>
<td>7 d</td>
<td>(US-EPA)</td>
<td></td>
</tr>
</tbody>
</table>

#### Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Substance</th>
<th>EC Value</th>
<th>Exposure Period</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>semi-static test NOEC</td>
<td>0.318 mg/l</td>
<td>7 d</td>
<td></td>
<td>(in analogy to similar products)</td>
</tr>
</tbody>
</table>
SECTION 13: Disposal considerations

13.1 Waste treatment methods

**Product**
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

**DOT (US)**
Not dangerous goods

**IMDG**
Not dangerous goods

**IATA**
Not dangerous goods

**Further information**
Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

**SARA 302 Components**
This material does not contain any components with a section 302 EHS TPQ.

**SARA 313 Components**
The following components are subject to reporting levels established by SARA Title III, Section 313:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ammonium sulphate</td>
<td>7783-20-2</td>
<td>1993-04-24</td>
</tr>
</tbody>
</table>

**SARA 311/312 Hazards**
Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**
No components are subject to the Massachusetts Right to Know Act.

SECTION 16: Other information

**Further information**
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any