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

Date issued: 08.07.2014

1.1. Product identifier

Product name: NORDOX 75 WG
Chemical name: Cuprous Oxide
Synonyms: Copper (I) oxide
CAS no.: 1317-39-1
EC no.: 215-270-7
Formula: Cu2O

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

Use of the substance/preparation: Fungicide and Bactericide

1.3. Details of the supplier of the safety data sheet

Manufacturer

Company name: NORDOX AS
Postal address: Østensjøveien 13
Postcode: 0661
City: OSLO
Country: Norway
Tel: +47 22 97 50 00
Fax: +47 22 64 12 08
E-mail: marketing@nordox.no
Website: http://www.nordox.no

1.4. Emergency telephone number

Emergency telephone: +47 22 97 50 00

SECTION 2: Hazards identification

2.1. Classification of substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]
Aquatic Acute 1; H400; On basis of test data M-factor 100
Aquatic Chronic 1; H410; On basis of test data M-factor 1

2.2. Label elements

Hazard Pictograms (CLP)

Signal word: Warning
Hazard statements: H410 Very toxic to aquatic life with long lasting effects. H400 Very toxic to aquatic life.

EEC-directive: EC Regulations for the formulated product:
Label name: NORDOX 75 WG

2.3. Other hazards

Description of hazard: Physical/chemical hazards:
Not Flammable.
Not explosive

Environmental hazards:
Copper is a necessary trace element and stimulates plant growth and yield on copper deficient soil. Copper is an integral part of various oxidating enzymes, and several animal diseases may occur if the diet is deficient in copper.

Human health hazards:
Cuprous oxide is classified as harmful, but is not considered a dangerous material for working - (Ullmann Encyclopedia, Band 15, page 560 (1978)). It may cause "metallic fever" after inhalation of dust in the same way as other metal dusts.

Skin irritation:
Non-irritant.

Eye irritation:
Positive irritant.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

<table>
<thead>
<tr>
<th>Substance</th>
<th>Identification</th>
<th>Classification</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (I) Oxide</td>
<td>CAS no.: 1317-39-1</td>
<td>Xn, N; R22, R50/53</td>
<td>86.2 %</td>
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<td></td>
<td>EC no.: 215-270-7</td>
<td>Acute tox. 4; H302; On</td>
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<td></td>
<td></td>
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<tr>
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<td></td>
<td>basis of test data</td>
<td></td>
</tr>
<tr>
<td>Other ingredients</td>
<td></td>
<td></td>
<td>13.8 %</td>
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<tr>
<td>not classified</td>
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</tbody>
</table>

Substance comments
Substance/preparation : Preparation

As copper dusts or mists (CAS No. 7440-50-8). Compounds not precisely identified are proprietary or not hazardous.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation
Remove victim to fresh air.
Give artificial respiration if victim does not breathe.
Seek medical advice.

Skin contact
Remove contaminated clothing.
Wash off with plenty of water and soap.

Eye contact
Wash out with plenty of water with the eyelid held wide open for at least 15 minutes. Seek medical advice.

Ingestion
One glass of water with addition of one tablespoon of common salt may induce vomiting.

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

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

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
In case of fire: Use [CO2 or powder] for extinction. Limit the use of water if
the spillage can contaminate water Sources.

5.2. Special hazards arising from the substance or mixture

5.3. Advice for firefighters

Other Information: Non-flammable product

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal protection measures
Use dust mask and eye protection.
No smoking.
Do not breathe dust and avoid contact with eyes.

6.2. Environmental precautions

Environmental precautionary measures
Do not allow to enter sewerage and other bodies of water.

6.3. Methods and material for containment and cleaning up

Cleaning method
The product should be collected for recycling, or be disposed of in a place where copper is tolerated or needed. To be recovered in the most convenient way. Collect spillage.

6.4. Reference to other sections

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling
Do not breathe dust and avoid contact with eyes.
Take precautionary measures against static discharges.

7.2. Conditions for safe storage, including any incompatibilities

Storage
Store in a dry and preferably cool place.

7.3. Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure limit values

<table>
<thead>
<tr>
<th>Substance</th>
<th>Identification</th>
<th>Value</th>
<th>TWA Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (I) Oxide</td>
<td>CAS no.: 1317-39-1</td>
<td>8-hour TWA: 1 mg/m3, TLV</td>
<td></td>
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<tr>
<td></td>
<td>EC no.: 215-270-7</td>
<td>8-hour TWA: 1 mg/m3, PEL</td>
<td></td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Occupational exposure limits
Engineering measures:
Take precautionary measures against static discharges.

Hygienic measures:
When using do not eat, drink or smoke.

Occupational Exposure Limits:
Not classified.

Safety signs

Respiratory protection
Respiratory protection
Wear dust mask.
Hand protection
Hand protection
Wear rubber gloves

Eye / face protection
Eye protection
Safety goggles.

Skin protection
Additional skin protection measures
Wear protective clothing during handling of concentrated product and application of spray liquid.

Exposure controls
Exposure control comments
Collect after spillage

Other Information
Other Information
NORDOX 75WG is a registered pesticide. Read and follow the information on the label before use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state
Granules

Colour
Red-brown

Odour
Weak earthy odor

pH (as supplied)
Value: 7.0-8.5

Comments, pH (as supplied)
(1% solution)

Melting point/melting range
Value: > 332 °C
Method of testing: O’connor and Mullee, 2003

Boiling point / boiling range
Value: > 332 °C
Method of testing: O’connor and Mullee, 2003

Comments, Boiling point / boiling range
Decomposes over 332 degrees before boiling. (Purity 87.4 % as total copper)

Comments, Flash point
Not required (solid)

Flammability (solid, gas)
Not highly flammable

Lower explosion limit with unit of measurement
Non explosive

Upper explosion limit with units of measurement
Non explosive

Comments, Vapour pressure
Not necessary as the melting point is above 300 degrees C

Specific gravity
Value: 5.87 kg/L
Method of testing: O’connor and Mullee, 2003
Test temperature: = 20 °C

Solubility in water
Solubility in water at pH 6.6 salt: 0.000639 g/L at 20 º C as Cu 0.000539.
(Purity 87.4 % as total copper)

Solubility in organic solvents
Value: < 14 mg/L
Name: O’connor and Mullee, 2003
Test temperature: = 20 °C

Comments, Solubility
Toluene

Comments, Partition coefficient: n-octanol / water
Not relevant for the ecotoxicological risk assessment, due to the specific absorption mechanism of copper.

Comments, Spontaneous combustability
Not auto-flammable - self ignition temperature is 234 degrees C. (Baker, D. 2003)

Comments, Viscosity
Not applicable

Physical hazards

Explosive properties
Non explosive

Oxidising properties
Not oxidizing

9.2. Other information

Bulk density
Value: 1.70 kg/l

Comments, Bulk density
CIPAC MT 169
Comments, Solvent content

Organic solvents, a determination of the stability in organic solvents is unnecessary. Moreover the active substance as manufactured does not include any organic solvents.

Other physical and chemical properties

Physical and chemical properties

Einecs ref.: Unit 250, col. 2, page 125.

SECTION 10: Stability and reactivity

10.1. Reactivity

10.2. Chemical stability

Stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

10.4. Conditions to avoid

Conditions to avoid

High humidity

10.5. Incompatible materials

10.6. Hazardous decomposition products

Hazardous decomposition products

None

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological Information:

Other toxicological data

Chemical name: Copper (I) oxide
Acute toxicity
Oral: LD50 (rat) 3165 mg/kg bodyweight
Dermal: > 2000 mg/kg
Inhalation: LC50 > 4.84 mg/l, no deaths observed

Other information regarding health hazards

General

Copper is an essential element and therefore, its concentration in the body is strictly and efficiently regulated by homeostatic mechanisms.

Acute toxicity, Mixture estimate

Dermal

Non irritant (OECD)

Metabolism

Metabolism does not occur. Copper is a monatomic ion and cannot be metabolised. It is however used in every cell in the body, and every cell can regulate its copper content.

Potential acute effects

Inhalation

Inhalation: Copper (I) oxide showed little/no toxicity when administered to test animals by other routes. Furthermore, information on the particle size distribution and low water solubility of Copper (I) oxide indicate a low potential for inhalation exposure.

Skin contact

Skin sensitivity: Non sensitiser

Eye contact

Moderate (unwashed) and non-irritation (washed)

Delayed effects / repeated exposure

Skin contact

Non-sensitizer

Chronic effects

Cuprous oxide is classified as harmful, but is not considered a dangerous material for working (Ullmann Encyclopedia, Band 15, page 560 (1978). It may cause "metallic fever" after inhalation of dust in the same way as other metal dusts.

Carcinogenic, Mutagenic or Reprotoxic

Mutagenicity

Negative results were obtained for copper sulphate in vitro in a bacterial cell reverse mutation assay (OECD 471). An In vivo unscheduled DNA synthesis test (equivalent to OECD 486) and a mouse micronucleus test (EC method B.12) performed on copper sulphate also gave negative results.
Copper (I) oxide does not meet the criteria for classification.

Reproductive toxicity
NOAEL for reproductive toxicity of copper sulphate pentahydrate in rats is > 1500 ppm in food. Test guideline OECD 416.

Symptoms of Exposure
Copper (I) oxide does not meet the criteria for classification.

Other Information
Copper (I) oxide is not classified on the basis of acute oral, inhalation or dermal toxicity.

Copper (I) oxide does not meet the criteria for classification as STOT for a single exposure.

SECTION 12: Ecological information

12.1. Toxicity
Ecotoxicity
Copper is a necessary trace element and stimulates plant growth and yield on copper deficient soil. Copper is an integral part of various oxidizing enzymes, and several animal diseases may occur if the diet is deficient in copper. Cuprous oxide is an active ingredient in antifouling paints and accordingly toxic to primitive marine organisms.

Ecotoxicity (Cu²⁺): EC50 (Daphnia magna: 48 h): 9.8 - 41.2 ppb

Aquatic, comments
Chronic marine waters toxicity test results and PNEC derivation:

Chronic toxicity of copper ions from soluble copper compounds was assessed using 51 NOEC/EC10 values from 24 species representing different trophic levels (fish, invertebrates and algae). Species-specific NOECs were calculated after normalizing to dissolved organic carbon (DOC) and were used to derive SSDs and HC5 values. Normalisation at a typical DOC for coastal waters of 2 mg/l resulted in an HC5 of 5.2 µg dissolved Cu/L. Applying an assessment factor of 1, a default chronic marine PNEC of 5.2 µg dissolved Cu/L is assigned to assess local risks.

12.2. Persistence and degradability
Comments, Biodegradability
Copper is an element and not degrade.

12.3. Bioaccumulative potential
Bioaccumulative potential
The “bioaccumulative” criteria are not applicable to essential metals.

Comments, BCF
Copper-ions bind strongly to soil. The median water-soil partitioning coefficient (Kp) is 2120 L/kg.

12.4. Mobility in soil
Mobility
Copper salts will in general gradually release Cu²⁺ ions in soil. The ions will strongly adhere to negatively charged clay minerals and soil oxides, and charged organic molecules. Some ions will also be absorbed as nutrient to biota. Following this the mobility of copper ions is strongly restricted in soil.

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects
Other adverse effects / Remarks
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Specify the appropriate methods of disposal
The product should be collected for recycling, or be disposed of in a place where copper is tolerated or needed. Leakage to water should be avoided. Comply with local legislation.
SECTION 14: Transport information

14.1. UN number
ADR 3077
RID 3077
IMDG 3077
ICAO/IATA 3077

14.2. UN proper shipping name
ADR ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
RID ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
IMDG ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
ICAO/IATA ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

14.3. Transport hazard class(es)
ADR 9
RID 9
IMDG 9
ICAO/IATA 9

14.4. Packing group
ADR III
RID III
IMDG III
ICAO/IATA III

14.5. Environmental hazards
IMDG Marine pollutant Yes

14.6. Special precautions for user
EmS F-A, S-F

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Additional information.
There are no additional National Transport Regulations required/available.

SECTION 15: Regulatory information

Hazard symbol

R-phrases R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrases S 2 Keep out of reach for children
S 29 Do not empty into drains
S 36/37 Wear suitable protective clothing and gloves
S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets

EC no. 215-270-7

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
References (laws/regulations) There are no additional National Regulations required/available.

15.2. Chemical safety assessment
Chemical safety assessment performed Yes
## SECTION 16: Other information

<table>
<thead>
<tr>
<th>Supplier's notes</th>
<th>This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]</td>
<td>Acute tox. 1; H302; Aquatic Acute 1; H400; On basis of test data Aquatic Acute 1; H410; Aquatic Chronic 1; H410; On basis of test data</td>
</tr>
<tr>
<td>List of relevant R-phrases (under headings 2 and 3).</td>
<td>R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R22 Harmful if swallowed.</td>
</tr>
<tr>
<td>List of relevant H-phrases (Section 2 and 3).</td>
<td>H302 Harmful if swallowed. H410 Very toxic to aquatic life with long lasting effects. H400 Very toxic to aquatic life.</td>
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<tr>
<td>Version</td>
<td>1</td>
</tr>
<tr>
<td>Responsible for safety data sheet</td>
<td>NORDOX AS</td>
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