

MATERIAL SAFETY DATA SHEET

NORDOX 75 WG

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Chemical Product name : NORDOX Cuprous Oxide
Common chemical name : Copper (I) oxide
Product type : Fungicide
EPA signal word : Caution
Supplier : NORDOX Industrier AS
Oestensjoeveien 13
N-0661 OSLO
Tel. (47) 22 97 50 00
Fax: (47) 22 64 12 08
Emergency telephone : Tel: (47) 22 97 50 00

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/preparation : Preparation

Information on active ingredient:

Ingredient name	CAS No.	% by Weight	EC No.	Symbol	ACGIH TLV*	OSHA PEL*
Cuprous oxide	1317-39-1	86.2	215-270-7	X _n	1 mg/m ³	1 mg/m ³
Inert ingredients		13.8				

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

R and S Phrases : R-22: Harmful if swallowed
: R-36: Irritating to eyes
: S-22: Do not breathe dust

S-Phrases : Einecs Ref.:
Unit 250, Col. 2, Page 125

3. HAZARD IDENTIFICATION

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 oxidising 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. (Ulmann Encyclopedia, Band 15, page 560 (1978)). It may cause "metallic fever" after inhalation of dust in the same way as other metal dusts.

Eye irritation : Positive irritant.

4. FIRST AID MEASURES

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

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.

5. FIRE FIGHTING MEASURES

Non-flammable product

6. ACCIDENTAL RELEASE MEASURES

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

Environmental precautions : Do not allow to enter sewerage and other bodies of water.

Methods for cleaning up : 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.

7. HANDLING AND STORAGE

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

Storage : Store in a dry and preferably cool place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures : Take precautionary measures against static discharges.

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

Occupational Exposure Limits : Not classified.

Personal protective equipment : Wear rubber gloves

Respiratory system : Wear dust mask.

Eyes : Safety goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: Granules
Colour	: Red-brown
Odour	: None
Melting point	: 1235 °C (a.i.)
Boiling point	: Decompose at 1800 °C (a.i.)
pH range(1% solution)	: 7,0-8,5
Solubility in water	: Insoluble
Vapour pressure	: Not applicable
Bulk Density	: 1.57 kg/l (Br. Stand. 2955)
Packing Density	: 1.62 kg/l (Br. Stand. 2955)
Specific gravity	: 6.0 kg/l
Viscosity	: Not applicable
Flash point	: Not applicable
Auto ignition temperature	: Non explosive
Lower explosion limit	: Non explosive
Upper explosion limit	: Non explosive
Other data	: Einecs ref.: Unit 250, col. 2, page 125.

10. STABILITY AND REACTIVITY

Stability	: Stable under normal conditions
Conditions to avoid	: High humidity
Hazardous decomposition products	: None

11. TOXICOLOGICAL INFORMATION ON FORMULATED PRODUCT, NORDOX 75 WG

Chemical name, active ingredient : Copper (I) oxide

Acute toxicity

Oral	: LD ₅₀ (rat) 3165 mg/kg bodyweight
Inhalation	: LC50 > 4,84 mg/l, no deaths observed
Dermal	: > 2000 mg/kg

Irritation/Sensitisation

Eye irritation	: Moderate (unwashed) and non-irritation (washed)
Skin Irritation	: Non
Skin sensitivity	: Non sensitiser
Chronic toxicity	: Cuprous oxide is classified as harmful, but is not considered a dangerous material for working (Ulmann Encyclopedia, Band 15, page 560 (1978). It may cause "metallic fever" after inhalation of dust in the same way as other metal dusts.

12. ECOLOGICAL INFORMATION

Copper is a necessary trace element and stimulates plant growth and yield on copper deficient soil. Copper is an integral part of various oxidising 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

13. DISPOSAL CONSIDERATIONS

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.

14. TRANSPORT INFORMATION

UN number : Not classified.
IMDG : Not classified
ADR/RID : Not classified
ICAO/IATA : Not classified
National transport regulations : There are no additional National Transport Regulations required/available.

15. REGULATORY INFORMATION

EC Regulations for the formulated product:

Label name : NORDOX 75 WG
Hazard Symbols : Not classified
Risk phrases : Not classified
Safety phrases : Not classified
National regulations : There are no additional National Regulations required/available.

16. Other information:

None

Oslo,
2002-07-19
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MATERIAL SAFETY DATA SHEET

NORDOX CUPROUS OXIDE, ORANGE, AGRO-GRADE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Chemical Product name : NORDOX Cuprous Oxide, Agro
Common chemical name : Copper (I) oxide
Product type : Fungicide
Supplier : NORDOX Industrier AS
Oestensjoeveien 13
N-0661 OSLO
Tel. (47) 22 97 50 00
Fax: (47) 22 64 12 08
Emergency telephone : Tel: (47) 22 97 50 00

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/preparation : Preparation

Information on hazardous ingredients

Ingredient name	CAS No.	% by weight	EC No.	Symbol	ACGIH TLV*	OSHA PEL*
Cuprous oxide	1317-39-1	min. 97 %	215-270-7	X _n	1 mg/m ³	1 mg/m ³
Cupric oxide	1317-38-0	max. 1 %		X _n	1 mg/m ³	1 mg/m ³

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

R and S Phrases : R-22: Harmful if swallowed
R-36: Irritating to eyes
S-22: Do not breathe dust

S-Phrases : Einecs Ref.:
Unit 250, Col. 2, Page 125

3. HAZARD IDENTIFICATION

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 - (Ulmann 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.

4. FIRST AID MEASURES

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

5. FIRE FIGHTING MEASURES

Non-flammable product

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Use dust mask and eye protection. No smoking. Do not breathe dust and avoid contact with eyes.
Environmental precautions : Do not allow to enter sewerage and other bodies of water.
Methods for cleaning up : 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.

7. HANDLING AND STORAGE

Handling : Do not breathe dust and avoid contact with eyes. Take precautionary measures against static discharges.
Storage : Store in a dry and preferably cool place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures : Take precautionary measures against static discharges.
Hygienic measures : When using do not eat, drink or

smoke.

Occupational Exposure Limits : Not classified.

Personal protective equipment : Wear rubber gloves

Respiratory system : Wear dust mask.

Eyes : Safety goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : Powder
Colour : Red-brown
Odour : None
Melting point : 1235 °C (a.i.)
Boiling point : Decompose at 1800 °C (a.i.)
pH (1% solution) : 7.0
Solubility in water : Insoluble
Vapour pressure : Not applicable
Bulk Density : 1.15 kg/l (Br. Stand. 2955)
Packing Density : 1.90 kg/l (Br. Stand. 2955)
Viscosity : Not applicable
Flash point : Not applicable
Autoignition temperature : Non explosive
Lower explosion limit : Non explosive
Upper explosion limit : Non explosive
Other data : Einecs ref.: Unit 250, col. 2, page 125.

10. STABILITY AND REACTIVITY

Stability : Stable under normal conditions
Conditions to avoid : High humidity
Hazardous decomposition products : None

11. TOXICOLOGICAL INFORMATION

Chemical name : Copper (I) oxide
Acute toxicity :
Oral : LD₅₀ = 300-500 mg/kg bodyweight
Dermal : > 2000 mg/kg bodyweight
Inhalation : LC₅₀ = 3.34 mg/l

Eye irritation : moderate
Dermal irritation : non-irritant
Sensitisation : non-sensitiser

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

12. ECOLOGICAL INFORMATION

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.

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

13. DISPOSAL CONSIDERATIONS

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.
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14. TRANSPORT INFORMATION

UN number	: Not classified.
IMDG	: Not classified
ADR/RID	: Not classified
ICAO/IATA	: Not classified
<u>National transport regulations</u>	: There are no additional National Transport Regulations required/available.

15. REGULATORY INFORMATION

EC Regulations

Label name	: NORDOX CUPROUS OXIDE, ORANGE, AGRO-GRADE
Hazard Symbols	: Xn HARMFUL
Risk phrases	: R-22 Harmful if swallowed R-36 Irritating to eyes
Safety phrases	: S-22 Do not breathe dust
<u>National regulations</u>	: There are no additional National Regulations required/available.

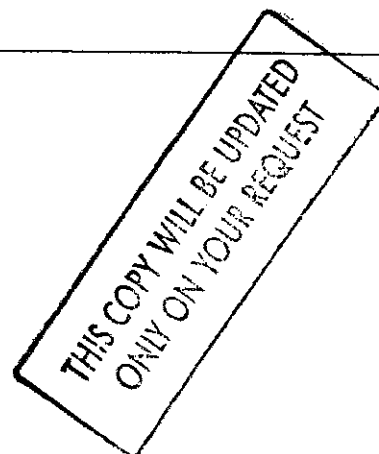
16. Other information:

None

Trond Kristiansen
NORDOX Industrier AS
Oslo, 03.07.2000



MATERIAL SAFETY DATA SHEET
Meets 91/155/EEC and ISO 11014-1



1. Production and Company Identification.

Product Name: Borresperse NAF
Product code: 200000, 200059
Supplier: Borregaard LignoTech
Box 162
N-1701 Sarpsborg
Norway
Telephone No.: +47 69 118000
Emergency telephone number: +47 69 118000

2. Composition / Information on Ingredients.

Product description: Sodium lignosulphonate derived from fermented spruce wood sulphite liquor.
CAS NO: 8061-51-6 (Sodium Lignosulphonate).
EINECS NO: 23 25 059 (Sodium Lignosulphonate).
Dangerous Ingredients: None

3. Hazards Identification.

Important hazards: None

4. First Aid Measures.

Inhalation: Remove to fresh air
Skin Contact: Wash with water
Eye contact: Irrigate with water
Ingestion: Drink water

5. Fire Fighting Measures.

Extinguishing Media: Water, Foam, Carbon dioxide, etc.
Protection of Fire fighters: No special precautions, but respiratory mask is recommended
Hazardous Decomposition Products: Sulphur oxides, Carbon Monoxide

6. Accidental Release Measures.

Environmental precautions: Avoid infiltration of larger quantities into drains, surface water, groundwater and soil.
Personal precautions: Respiratory protection and safety goggles are recommended.
Destruction and clean up: Sweep without creating dust into another suitable container for disposal and wash area with water.



7. Handling and Storage.

Handling:	Ensure adequate ventilation when handling. Respiratory protection is recommended.
Storage:	Must be stored under dry conditions.
Incompatible materials:	None

8. Exposure Controls / Personal Protection.

Technical measures/precautions:	Adequate ventilation
Personal Protection:	
Respiratory Protection:	Respiratory protection is recommended.
Hand Protection:	Borresperse NAF is not a skin irritant.
Eye Protection:	Borresperse NAF is not an eye irritant, but safety goggles are recommended.
Skin & Body Protection:	Borresperse NAF is not a skin irritant.

9. Physical and chemical properties.

Physical state:	Liquid.
Colour:	Brown.
Odour:	Very slight odour.
pH (10% solution):	8.3 ± 0.8
Dry matter:	51.0 ± 2.0 %
Density (20°C):	1260 kg/m ³
Solubility:	Soluble in water.
Solubility in organic solvents:	Very low.
Partition coefficient (N-octanol/water):	Method for determination is not applicable for this product.
Vapour pressure:	Not applicable.
Boiling point/range:	Melting point/range: >130°C
Flashpoint:	Not applicable.
Explosion properties:	Not explosive.
Autoignition temperature:	Not applicable.

10. Stability and reactivity.

Borresperse NAF is stable for several months under normal storage.	
Hazardous decomposition products:	Not known.
Materials to avoid:	Not known.
Conditions to avoid:	None.



SAFETY DATA SHEET according to EC directive 93/112/EC
CERATOFIX® CV

Update
07.01.2002

Print Date
28.8.2003

Version
1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product information

Commercial Product Name : CERATOFIX® CV

Company : Söd-Chemie AG
Business Unit Paper
Ostenriederstrasse 15
85368 Moosburg

Telephone : +498761820

Telefax : +49876182169

Contact Point : BAA-M2 +49 (0)8761/82-645

Emergency telephone number : +49 (0)613284463 only for working place emergency (contact only in german or english)



Possehl Erzkontor
Gesellschaft mit beschränkter Haftung
Bockengrube 39-52 D-23552 Lübeck
F 0 430 16 33 0-23505 Lübeck
Phone: +49 (0) 431 148 - 0
Fax: +49 (0) 431 148 - 355
E-Mail: info@erzkontor.com
Internet: www.erzkontor.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Bentonite, alkaline activated

Components	CAS-No.	Symbol(s)	R-phrase(s)	Concentration
FREE CRYSTALLINE SILICA *) IN ALVEOLAR DUST	14808-60-7			< 5,00 %
ALVEOLAR DUST < 7.1 µm				< 10,00 %
BREATHABLE CONTENT OF CRYSTALLINE SILICA *) IN WHOLE PRODUCT				< 1,00 %

(* including quartz, cristobalite, tridymite)

3. HAZARDS IDENTIFICATION

Avoid inhalation and/or exceeding of occupational limit value.

4. FIRST AID MEASURES

General advice : none
Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Skin contact : Wash off with soap and plenty of water.
Inhalation : Move to fresh air.
Ingestion : Rinse mouth.

Notes to physician

Treatment : none



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5. FIRE-FIGHTING MEASURES

- Specific hazards during fire fighting : none
- Special protective equipment for fire-fighters : none
- Suitable extinguishing media : The product itself does not burn.
Use extinguishing measures appropriate to the environment.
- Extinguishing media which must not be used for safety reasons : none

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Do not breathe dust.
- Environmental precautions : none
- Methods for cleaning up : Take up uncontaminated material and pass on for further processing.
Take up contaminated material by mechanical means, load into clean containers, and dispose of in accordance with legal regulations.
- Additional advice : Avoid dust formation.

7. HANDLING AND STORAGE

Handling

- Safe handling advice : Avoid formation of dust and aerosols.
- Advice on protection against fire and explosion : No special precautions required.

Storage

- Requirements for storage areas and containers : Keep container tightly closed and dry.
- Advice on common storage : no restrictions

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Additional technical information on the plant : Local exhaust

Components with workplace control parameters

Components	CAS-No.	Value	Basis / Remarks
limiting value of inert dust (alveolar content)		1,5 mg/m ³	TRGS900 MAK
QUARTZ (ALVEOLAR CONTENT)*	14808-60-7	0,15 mg/m ³	TRGS900
limiting value of inert dust (breathable content)		4 mg/m ³	MAK

(* including cristobalit and tridymit)

Personal protective equipment

- Respiratory protection : In case of formation of dust: Dust-mask/filter P2
- Hand protection : In case of formation of dust: protective gloves
- Eye protection : safety glasses
- Skin and body protection : none



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Hygiene measures : Wash off with warm water and soap.
Protective measures : Prophylactic use of protective ointment (barrier cream) is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : powder
Colour : beige
Odour : none

Other data

melting point : > 1.000 °C
boiling point : n.a.
Flash point : n.a.
Ignition temperature : n.a.
Autoignition temperature : none
Upper explosion limit : n.a.
Lower explosion limit : n.a.
Vapour pressure : n.a.
Density : 2,6 g/cm³
Bulk density : 750 kg/m³ +/- 50
Water solubility : insoluble
pH : 9,5 - 10,5
at 20 g/l (20 °C)
Method: Aqueous suspension
Oxidizing properties : Other data: none
Explosive properties : Other data: none

10. STABILITY AND REACTIVITY

Hazardous reactions : None known
(Conditions to avoid)

Hazardous reactions : None known
(Materials to avoid)

Information about decomposition : No decomposition if stored and applied as directed.



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11. TOXICOLOGICAL INFORMATION

Acute toxicity

Acute oral toxicity : LD50 rat
Dose: > 5.000 mg/kg
The product has not been tested in animal experiments. The toxicological data has been taken from products of similar composition.

Irritation, Sensitization, Other data Toxicology

Eye irritation : Result: moderately irritating to mucous membranes.

Sensitization : Result: not sensitizing

Repeated dose toxicity : no data available

Human experience : Dust may render the skin dry and chappy. In the event of long-term excess of the TLV value and extended inhalation effect, fine dust containing quartz may cause silicosis. Due to dust raising, light irritation of eyes and/or mucous membranes is possible.

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Decomposition : Result: not biodegradable
Product is of mineral origin.

Distribution to environmental compartments : no data available

Ecotoxicity effects

Further information : no data available
Ecotoxicity

13. DISPOSAL CONSIDERATIONS

Product : Can be landfilled or incinerated, when in compliance with the Environmental Protection (Duty of Care) Regulations 1991. Contact waste disposal services.

Contaminated packaging : Can be re-used after emptying and cleaning.

14. TRANSPORT INFORMATION



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Land transport : Not classified as dangerous in the meaning of transport regulations.

Sea transport : Not classified as dangerous in the meaning of transport regulations.

Air transport : Not classified as dangerous in the meaning of transport regulations.

15. REGULATORY INFORMATION

General advice : The product does not need to be labelled in accordance with EC directives or respective national laws.

Hazardous components which must be listed on the label:

preparation : Not applicable

Other information : S22 - Do not breathe dust (recommendation)
Follow the usual precautions required when handling chemicals.

16. OTHER INFORMATION

Responsible for SDS: Environmental Protection Contact person: Dep.
CEQ Tel.: 08761/82-654

The information presented herein is believed to be accurate, but is not warranted.

It does not represent any assurance of properties of the product.

The specifications are to be drawn from the corresponding leaflet.

A vertical bar (|) in the left margin indicates an amendment from the previous version.

Legend

n.a.: not applicable

n.av.: not available

n.r.: not relevant