

1. Identification

| | |
|---|---|
| Product identifier | HYDREXX® Nitrogen Stabilizer |
| Other means of identification | |
| Product number | KAS_Hydrex_C_A_EN |
| Synonyms | HYDREXX® |
| Recommended use | Fertilizer Additive. |
| Recommended restrictions | None known. |
| Manufacturer/Importer/Supplier/Distributor information | |
| Manufacturer/Supplier | Koch Agronomic Services, LLC 4111 E 37th St N Wichita, KS 67220 US kochmsds@kochind.com 1.866.863.5550 |
| Emergency | For Chemical Emergency Call CHEMTREC day or night USA/Canada - 1.800.424.9300 Mexico - 1.800.681.9531 Outside USA/Canada - 1.703.527.3887 (collect calls accepted) |

2. Hazard identification

| | | |
|-------------------------|-----------------------------------|-------------|
| Physical hazards | Combustible dusts | Category 1 |
| Health hazards | Serious eye damage/eye irritation | Category 1 |
| | Reproductive toxicity | Category 1B |

Label elements

| | |
|---------------------------------|--|
| Signal word | Danger |
| Hazard statement | May form combustible dust concentrations in air. Causes serious eye damage. May damage fertility or the unborn child. |
| Precautionary statement | |
| Prevention | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Prevent dust accumulation to minimize explosion hazard. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Wear protective gloves/protective clothing/eye protection/face protection. Observe good industrial hygiene practices. |
| Response | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTRE/doctor. Take off contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish. |
| Storage | Store locked up. |
| Disposal | Dispose of contents/container in accordance with local/regional/national/international regulations. |
| Other hazards | None known. |
| Supplemental information | None. |

3. Composition/information on ingredients**Mixtures**

| Chemical name | Common name and synonyms | CAS number | % |
|-------------------------------------|--------------------------|-------------|----------|
| Dicyandiamide | | 461-58-5 | 60 - 100 |
| Non hazardous component | | Proprietary | 5 - 10 |
| N-(n-butyl)-thiophosphoric triamide | | 94317-64-3 | 1 - 5 |
| N-methyl-2-pyrrolidone | | 872-50-4 | 1 - 5 |
| Non hazardous dye | | Proprietary | < 1 |

#: This substance has workplace exposure limit(s).

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. This Safety Data Sheet is not a guarantee of product specification or NPK value(s). NPK content is on specified sales orders, customer invoices, or product specification sheets obtained from supplier.

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Dusts may irritate the respiratory tract, skin and eyes.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media Avoid high pressure media which could cause the formation of a potentially explosible dust-air mixture. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂). Apply extinguishing media carefully to avoid creating airborne dust.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards May form combustible dust concentrations in air.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Use only non-sparking tools. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Collect dust using a vacuum cleaner equipped with HEPA filter. This product is miscible in water. Stop the flow of material, if this is without risk.

Large Spills: Wet down with water and dike for later disposal. Absorb in vermiculite, dry sand or earth and place into containers. Shovel the material into waste container. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.

Environmental precautions

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimise dust generation and accumulation. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Explosion-proof general and local exhaust ventilation. Do not get this material in contact with eyes. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep containers tightly closed in a dry, cool and well-ventilated place. Protect against direct sunlight. Store away from incompatible materials (see section 10 of the SDS). Long term storage at temperatures above 36°C (100°F), and long term storage of opened containers, will cause the product to degrade. As the product degrades, it can release harmful gases. Store below 36°C (100°F), and use opened containers within 30 days. Always use oldest stock first.

8. Exposure controls/personal protection

Occupational exposure limits

ACGIH

| Components | Type | Value | Form |
|------------|------|----------------------|----------------------|
| Dust | TWA | 10 mg/m ³ | Inhalable particles. |

US. ACGIH Threshold Limit Values

| Components | Type | Value | Form |
|------------|------|---------------------|-----------------------|
| Dust | TWA | 3 mg/m ³ | Respirable particles. |

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

| Components | Type | Value | Form |
|------------|------|----------------------|-----------------------|
| Dust | TWA | 3 mg/m ³ | Respirable particles. |
| | | 10 mg/m ³ | Total particulate. |

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

| Components | Type | Value | Form |
|------------|------|----------------------|----------------------|
| Dust | TWA | 3 mg/m ³ | Respirable fraction. |
| | | 10 mg/m ³ | Total dust. |

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

| Components | Type | Value | Form |
|------------|------|---------------------|-----------------------|
| Dust | TWA | 3 mg/m ³ | Respirable particles. |

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

| Components | Type | Value | Form |
|------------|------|---------------------|----------------------|
| Dust | TWA | 3 mg/m ³ | Respirable fraction. |

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

| Components | Type | Value | Form |
|--|------|-----------------------|---------------------|
| | | 10 mg/m ³ | Inhalable fraction. |
| N-methyl-2-pyrrolidone (CAS 872-50-4) | TWA | 400 mg/m ³ | |

Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)

| Components | Type | Value | Form |
|------------|------|----------------------|-------------|
| Dust | TWA | 10 mg/m ³ | Total dust. |

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

| Components | Type | Value | Form |
|------------|-----------|----------------------|----------------------|
| Dust | 15 minute | 6 mg/m ³ | Respirable fraction. |
| | | 20 mg/m ³ | Inhalable fraction. |
| | 8 hour | 3 mg/m ³ | Respirable fraction. |
| | | 10 mg/m ³ | Inhalable fraction. |

Biological limit values**ACGIH Biological Exposure Indices**

| Components | Value | Determinant | Specimen | Sampling Time |
|--|----------|----------------------------------|----------|---------------|
| N-methyl-2-pyrrolidone (CAS 872-50-4) | 100 mg/l | 5-Hydroxy-N-methyl-2-pyrrolidone | Urine | * |

* - For sampling details, please see the source document.

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL (occupational exposure limit), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection Chemical goggles are recommended.

Skin protection

Hand protection Risk of contact: Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

Other Chemical resistant clothing is recommended.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Wear air supplied respiratory protection if exposure concentrations are unknown. In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practices.

9. Physical and chemical properties

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|------------------------|--------------------------|
| Appearance | Powder or granules. |
| Physical state | Solid. |
| Form | Powder or granules. |
| Colour | White with green flecks. |
| Odour | Slight ammonia. |
| Odour threshold | Not available. |
| pH | 7.5 - 8.2 |

| | |
|---|---|
| Melting point/freezing point | Not available. |
| Initial boiling point and boiling range | Not available. |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability (solid, gas) | Not applicable. |
| Upper/lower flammability or explosive limits | |
| Flammability limit - lower (%) | Not applicable. |
| Flammability limit - upper (%) | Not applicable. |
| Vapour pressure | Not available. |
| Vapour density | Not available. |
| Relative density | Not available. |
| Solubility(ies) | |
| Solubility (water) | Appreciable. |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Viscosity | Not available. |
| Other information | |
| Density | 29.00 - 34.00 lb/ft ³ (20°C) |
| Explosive properties | Not explosive. Combustible dust hazard. |
| Oxidising properties | Not oxidising. |

10. Stability and reactivity

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|---|---|
| Reactivity | The product is stable and non reactive under normal conditions of storage and transport. |
| Chemical stability | Stable under normal temperature conditions. |
| Possibility of hazardous reactions | Hazardous polymerisation does not occur. |
| Conditions to avoid | Keep away from heat, sparks and open flame. Contact with incompatible materials. Minimise dust generation and accumulation. |
| Incompatible materials | Acids. Strong reducing agents. Strong oxidising agents. |
| Hazardous decomposition products | Ammonia. Butyl amide. Phosphoric acid. During combustion: Carbon oxides. Nitrogen oxides. Sulphur oxides. |

11. Toxicological information

Information on likely routes of exposure

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|---------------------|--|
| Inhalation | Dust may irritate respiratory system. Prolonged inhalation may be harmful. |
| Skin contact | Dust or powder may irritate the skin. |
| Eye contact | Causes serious eye damage. |
| Ingestion | May cause discomfort if swallowed. |

Symptoms related to the physical, chemical and toxicological characteristics Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Dusts may irritate the respiratory tract, skin and eyes.

Information on toxicological effects

Acute toxicity May cause discomfort if swallowed.

| Components | Species | Test Results |
|------------------------------|--------------------------|------------------------|
| Dicyandiamide (CAS 461-58-5) | | |
| <u>Acute</u> | | |
| Dermal | | |
| LD50 | New Zealand white rabbit | > 2000 mg/kg, 24 hours |

| Components | Species | Test Results |
|-------------------|------------|-----------------------------------|
| Inhalation | | |
| LC50 | Wistar rat | > 259 mg/m ³ , 4 hours |
| Oral | | |
| LD50 | Wistar rat | > 10000 mg/kg > 7000 mg/kg |

N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3)

Acute

Dermal

LD50 Rabbit > 2000 mg/kg

Inhalation

LC50 Wistar rat > 2.1 mg/l, 4 hours

Oral

LD50 Wistar rat > 2000 mg/kg

N-methyl-2-pyrrolidone (CAS 872-50-4)

Acute

Dermal

LD50 Rat > 5000 mg/kg

Inhalation

Mist

LC50 Rat > 5.1 mg/l, 4 hours

Oral

LD50 Rat 3605 mg/kg

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitisation

Respiratory sensitisation Not a respiratory sensitiser.

Skin sensitisation This product is not expected to cause skin sensitisation.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not classifiable as to carcinogenicity to humans.

Reproductive toxicity May damage fertility or the unborn child.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

| Components | Species | Test Results |
|------------------------------|---|-----------------------|
| Dicyandiamide (CAS 461-58-5) | | |
| <i>Acute</i> | | |
| EC50 | Selenastrum capricornutum (Pseudokirchnerella subcapitata) | 2.04 g/l, 4 days |
| Aquatic | | |
| <i>Acute</i> | | |
| Crustacea | Daphnia magna | > 3177 mg/l, 48 hours |

| Components | | Species | Test Results |
|--|------|---------------------------|-----------------------|
| Fish | LC50 | Lepomis macrochirus | > 1000 mg/l, 96 hours |
| | | Oncorhynchus mykiss | 7700 ppm, 96 hours |
| <i>Chronic</i> | | | |
| Crustacea | LC50 | Daphnia magna | > 100 mg/l, 21 days |
| Fish | LC50 | Oryzias latipes | > 100 mg/l, 14 days |
| N-(n-butyl)-thiophosphoric triamide (CAS 94317-64-3) | | | |
| Aquatic | | | |
| Algae | EC50 | Selenastrum capricornutum | 280 mg/l, 96 hours |
| Crustacea | EC50 | Daphnia magna | 290 mg/l, 48 hours |
| | LC50 | Daphnia | 350 mg/l, 48 hours |
| Fish | LC50 | Lepomis macrochirus | 1140 mg/l, 96 hours |
| N-methyl-2-pyrrolidone (CAS 872-50-4) | | | |
| Aquatic | | | |
| <i>Acute</i> | | | |
| Algae | EC50 | Scenedesmus subspicatus | > 500 mg/l, 72 Hours |
| Crustacea | EC50 | Daphnia magna | > 1000 mg/l, 24 Hours |
| Fish | LC50 | Oncorhynchus mykiss | > 500 mg/l, 96 Hours |
| <i>Chronic</i> | | | |
| Crustacea | NOEC | Daphnia magna | 12.5 mg/l, 21 days |

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

N-methyl-2-pyrrolidone (CAS 872-50-4) -0.54

Mobility in soil This product is moderately water soluble and may disperse in soil.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations**Stockholm Convention**

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Dicyandiamide (CAS 461-58-5)

International Inventories

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | No |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | No |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | Yes |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | No |
| Taiwan | Taiwan Chemical Substance Inventory (TCSI) | No |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

| | |
|------------------------------|---|
| Issue date | 12-August-2019 |
| Revision date | 05-August-2020 |
| Version No. | 02 |
| Further information | Refer to: OSHA 3371-08 2009, Hazard Communication Guidance for Combustible Dusts NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids |
| List of abbreviations | EC50: Effective Concentration, 50%. LC50: Lethal Concentration, 50%. |

Disclaimer

NOTICE: The information contained in this document is based on data considered to be accurate as of the preparation date of this Safety Data Sheet (SDS) and was prepared pursuant to applicable Government regulation(s). This SDS may not be used as a commercial specification sheet of manufacturer or seller, and no warranty or representation, expressed or implied, is made as to the accuracy or comprehensiveness of the above data and safety information, nor is any authorization given or implied to practice any patented invention without a license. Additional information may be needed to evaluate other uses of the product, including use of the product in combination with any materials or in any processes other than those specifically referenced. Information provided about any hazards that may be associated with the product is not meant to suggest that use of the product in a given application will necessarily result in any exposure or risk to workers or the general public. Purchasers and users of the product are responsible for determining that this product is suitable for the intended use and application. No responsibility can be assumed by vendor for any damage or injury resulting from failure to adhere to recommended uses, or from any hazards inherent to the product. Purchasers and users assume all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Purchasers and users of the product should explicitly advise their employees, agents, contractors and customers who will use the product of this SDS.