SAFETY DATA SHEET
CORRSHIELD* MD4100

1. Identification
Product identifier | CORRSHIELD MD4100
Other means of identification | None.
Recommended use | Water-based corrosion inhibitor
Recommended restrictions | None known.

Company/undertaking identification
GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355 3300, F 215 953 5524

Emergency telephone
(800) 877 1940

2. Hazard(s) identification
Physical hazards | Corrosive to metals | Category 1
Health hazards | Acute toxicity, oral | Category 4
Skin corrosion/irritation | Category 1
Serious eye damage/eye irritation | Category 1
Carcinogenicity | Category 2
Specific target organ toxicity, single exposure | Category 3 respiratory tract irritation

OSHA defined hazards | Not classified.

Label elements

Signal word | Danger
Hazard statement | May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. May cause respiratory irritation.
Precautionary statement
Prevention | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep only in original container. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Response | If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin or hair: Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. 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 CENTER or doctor/physician. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.
Storage | Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)
None known.

Supplemental information
None.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrite</td>
<td>7632-00-0</td>
<td>10 - 20</td>
</tr>
</tbody>
</table>

Composition comments
Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact
Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion
Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed
Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. 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
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

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

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Firefighting 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. Cool containers / tanks with water spray.

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

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. 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
Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: 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.
Environmental precautions
Avoid discharge into drains, water courses or onto the ground. Water contaminated with this product may be sent to a sanitary sewer treatment facility, or a permitted waste treatment facility, in accordance with any local agreements.

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. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Store locked up. Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Keep only in the original container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection
Occupational exposure limits
No exposure limits noted for ingredient(s).

Biological limit values
No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls
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. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment
Eye/face protection
Splash proof chemical goggles. Face shield.

Skin protection

Hand protection
Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Suitable gloves can be recommended by the glove supplier. Glove selection must take into account any solvents and other hazards present.

Other
Wear appropriate chemical resistant clothing. Use of an impervious apron 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. A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR’S USE.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
Observe any medical surveillance requirements. Keep away from food and drink. 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.

9. Physical and chemical properties
Appearance
Yellow

Color
Liquid

Physical state
Mild

Odor
Not available.

Odor threshold
12.8

pH (concentrated product)
14 °F (-10 °C)

Melting point/freezing point
220 °F (104 °C)

Initial boiling point and boiling range
Flash point
> 200 °F (> 93 °C) SETA(CC)

Evaporation rate
< 1 (Ether = 1)

Flammability (solid, gas)
Not applicable.

Upper/lower flammability or explosive limits
Flammability limit - lower (%)
Not available.

Flammability limit - upper (%)
Not available.

Explosive limit - lower (%)
Not available.
Explosive limit - upper (%) Not available.
Vapor pressure 18 mm Hg
Vapor pressure temp. 70 °F (21 °C)
Vapor density < 1 (Air = 1)
Relative density 1.18
Relative density temperature 70 °F (21 °C)
Solubility (water) 100 %
Partition coefficient Not available.
Auto-ignition temperature Not available.
Decomposition temperature Not available.
Viscosity 4 cps
Viscosity temperature 70 °F (21 °C)

Other information
Explosive properties Not explosive.
Oxidizing properties Not oxidizing.
Percent volatile 0 (Estimated)
Specific gravity 1.18

10. Stability and reactivity
Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability Material is stable under normal conditions.
Possibility of hazardous reactions Hazardous polymerization does not occur.
Conditions to avoid Protect from freezing. Do not allow to dry. Avoid contact with strong acids. This product may react with reducing agents. Avoid temperatures exceeding the flash point.
Incompatible materials Strong oxidizing agents. Avoid all contact with reducing agents, oils, greases, organics and acids. Contact with strong acids may cause a violent reaction releasing heat. Contact with water reactive compounds may cause fire or explosion.

11. Toxicological information
Information on likely routes of exposure
Inhalation May cause irritation to the respiratory system.
Skin contact Causes severe skin burns.
Eye contact Causes serious eye damage.
Ingestion Causes digestive tract burns.

Symptoms related to the physical, chemical and toxicological characteristics Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.

Information on toxicological effects
Acute toxicity Harmful if swallowed. May cause respiratory irritation.

Test Results

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Corrugate</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORRSHIELD MD4100 (CAS Mixture)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Rabbit</td>
<td>&gt; 5000 mg/kg, (Calculated according to GHS additivity formula)</td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 5 mg/l, 4 Hours, (Calculated according to GHS additivity formula)</td>
<td></td>
</tr>
</tbody>
</table>
Test Results

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>1717 mg/kg, (Calculated according to GHS additivity formula (Category 4))</td>
</tr>
<tr>
<td>LD50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Components

<table>
<thead>
<tr>
<th>Sodium nitrite (CAS 7632-00-0)</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>Rat</td>
<td>180 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

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

Serious eye damage/eye irritation
- Causes serious eye damage.

Respiratory or skin sensitization
- Respiratory sensitization
  - Not a respiratory sensitizer.
- Skin sensitization
  - This product is not expected to cause skin sensitization.

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

Carcinogenicity
- IARC Monographs. Overall Evaluation of Carcinogenicity
  - Not available.
  - Not listed.
- US. National Toxicology Program (NTP) Report on Carcinogens
  - Not available.

Reproductive toxicity
- This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure
- May cause respiratory irritation.

Specific target organ toxicity - repeated exposure
- Not classified.

Aspiration hazard
- Not classified. Aspiration of this product may cause the same corrosiveness/irritation impacts as if it were ingested.

Chronic effects
- Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORRSHIELD MD4100 (CAS Mixture)</td>
<td>Bluegill Sunfish</td>
<td>3258 mg/L, Static Acute Bioassay, 96 hour</td>
</tr>
<tr>
<td></td>
<td>Fathead Minnow</td>
<td>2730 mg/L, Acute Toxicity, 96 hour, (Estimated)</td>
</tr>
<tr>
<td></td>
<td>Bluegill Sunfish</td>
<td>1800 mg/L, Static Acute Bioassay, 96 hour</td>
</tr>
<tr>
<td></td>
<td>Fathead Minnow</td>
<td>1850 mg/L, Acute Toxicity, 96 hour, (Estimated)</td>
</tr>
<tr>
<td>Crustacea</td>
<td>Daphnia magna</td>
<td>5997 mg/L, Static Acute Bioassay, 48 hour</td>
</tr>
<tr>
<td>Fish</td>
<td>Rainbow Trout</td>
<td>5000 mg/L, Static Acute Bioassay, 48 hour</td>
</tr>
</tbody>
</table>

Components

<table>
<thead>
<tr>
<th>Sodium nitrite (CAS 7632-00-0)</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Fish</td>
<td>LC50</td>
<td>0.56 - 1.78 mg/l, 96 hour</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Material name: CORRSHIELD* MD4100
Version number: 6.0
Bioaccumulative potential
No data available.

Mobility in soil
Not available.

Persistence and degradability

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. Incinerate the material under controlled conditions in an approved incinerator.

Local disposal regulations
Dispose in accordance with all applicable regulations.

Hazardous waste code
D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]
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
Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT
UN number UN3266
UN proper shipping name CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (SODIUM NITRITE, SODIUM HYDROXIDE), (SODIUM NITRITE) RQ
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group III
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
ERG number 154
Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IATA
UN number UN3266
UN proper shipping name CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (SODIUM NITRITE, SODIUM HYDROXIDE)
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group III
Environmental hazards No.
ERG Code 154
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG
UN number UN3266
UN proper shipping name CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (SODIUM NITRITE, SODIUM HYDROXIDE)
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group III
Environmental hazards No.
Marine pollutant
EmS Not available.
Special precautions for user
Read safety instructions, SDS and emergency procedures before handling.
15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Sodium nitrite (CAS 7632-00-0) 1.0 % One-Time Export Notification only.

CERCLA Hazardous Substance List (40 CFR 302.4)
Sodium nitrite (CAS 7632-00-0) Listed.

SARA 304 Emergency release notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
Yes

SARA 313 (TRI reporting)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
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<tbody>
<tr>
<td>Sodium nitrite</td>
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Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)
Hazardous substance

Safe Drinking Water Act (SDWA)
Not regulated.

Inventory status

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Material name: CORRSHIELD* MD4100
Version number: 6.0
<table>
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<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply 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).

Food and drug administration
No FDA approval for paper or paperboard having food contact.

NSF Registered and/or meets
Registration No. – 141672
Category Code(s):
G5  Cooling and retort water treatment products
G7  Boiler, steam line treatment products - nonfood contact

US state regulations
- **US - Massachusetts RTK - Substance List**
  Sodium nitrite (CAS 7632-00-0)
- **US - Pennsylvania RTK - Hazardous Substances**
  Sodium nitrite (CAS 7632-00-0)
- **US - Rhode Island RTK**
  Sodium nitrite (CAS 7632-00-0)
- **US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)**
  Not listed.
- **US. New Jersey Worker and Community Right-to-Know Act**
  Sodium nitrite (CAS 7632-00-0)
- **US. Pennsylvania Worker and Community Right-to-Know Law**
  Sodium nitrite (CAS 7632-00-0)
- **US. California Proposition 65**
  WARNING: This product contains a chemical known to the State of California to cause cancer.
  - **US - California Proposition 65 - CRT: Listed date/Carcinogenic substance**
    Formaldehyde (CAS 50-00-0) Listed: January 1, 1988
  - **US - California Proposition 65 - CRT: Listed date/Developmental toxin**
    No ingredient listed.
  - **US - California Proposition 65 - CRT: Listed date/Female reproductive toxin**
    No ingredient listed.
  - **US - California Proposition 65 - CRT: Listed date/Male reproductive toxin**
    No ingredient listed.

16. Other information, including date of preparation or last revision

<table>
<thead>
<tr>
<th>Issue date</th>
<th>Oct-29-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision date</td>
<td>May-06-2016</td>
</tr>
<tr>
<td>Version #</td>
<td>6.0</td>
</tr>
</tbody>
</table>

List of abbreviations
- CAS: Chemical Abstract Service Registration Number
- NFPA: National Fire Protection Association
- ACGIH: American Conference of Governmental Industrial Hygienists
- TWA: Time Weighted Average
- STEL: Short Term Exposure Limit
- LD50: Lethal Dose, 50%
- LC50: Lethal Concentration, 50%
- EC50: Effect Concentration, 50%
- NOEL: No Observed Effect Level
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- TOC: Total Organic Carbon
- IATA: International Air Transport Association
- IMDG: International Maritime Dangerous Goods Code
- TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.

References:
No data available
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Hazard(s) identification: Hazard statement
Hazard(s) identification: Response
Exposure controls/personal protection: Hand protection
Exposure controls/personal protection: Respiratory protection
Exposure controls/personal protection: PPE Symbols
Physical & Chemical Properties: Multiple Properties
Physical and chemical properties: Appearance
Stability and reactivity: Conditions to avoid
Toxicological information: Ingestion
Toxicological information: Inhalation
Toxicological information: Specific target organ toxicity - repeated exposure
Toxicological information: Specific target organ toxicity - single exposure
Other information, including date of preparation or last revision: List of abbreviations
GHS: Classification

This SDS has been prepared by GE Water & Process Technologies Regulatory Department (1-215-355-3300).

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