# MATERIAL SAFETY DATA SHEET

## SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: EdgeMet Solution A  
IDENTIFICATION NUMBER: 20-8192a (Solution A)  
PRODUCT USE/CLASS: Sample Prep Solution  

SUPPLIER:  
BUEHLER, LTD  
41 WAUKEGAN ROAD  
LAKE BLUFF, IL 60044  

EMERGENCY: 800-424-9300  
INFORMATION: 847-295-6500  
PREPARER: Technical Department, 847-295-6500  
PREPARE DATE: 04/03/2012, 03 April 2012

## SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CHEMICAL NAME</th>
<th>CAS NUMBER</th>
<th>WT/WT%</th>
<th>ACGIH TLV-TWA</th>
<th>ACGIH TLV-STELE</th>
<th>OSHA PEL-TWA</th>
<th>OSHA PEL - CEILING</th>
<th>COMPANY TLV-TWA</th>
<th>SKIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Nickel chloride</td>
<td>7718-54-9</td>
<td>5.0-10.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(SEE SECTION 16 FOR ABBREVIATION LEGEND)
SECTION 3 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Harmful or fatal if swallowed. Harmful if inhaled. Causes skin and eye burns. May cause allergic skin reaction.

ACUTE EFFECTS – EYE CONTACT: CORROSIVE. Can cause eye burns and permanent tissue damage.

ACUTE EFFECTS - SKIN CONTACT: Repeated or prolonged contact may cause sensitization. CORROSIVE. Contact may cause chemical burns and blistering.

ACUTE EFFECTS – INHALATION: Harmful if inhaled. Causes respiratory tract irritation.

ACUTE EFFECTS - INGESTION: This material may be harmful or fatal if swallowed. May cause irritation or burns of mouth, throat, and stomach, with nausea, abdominal pain, and possible collapse.

CHRONIC OVEREXPOSURE EFFECTS: *This product contains nickel. No exposure to free respirable nickel is anticipated during normal use of this product. IARC has listed metallic nickel as possibly carcinogenic to humans (Group 2B), and some nickel compounds, and nickel refining, have been listed as carcinogenic to humans (Group I). Studies involving nickel chloride, however, have specifically shown it to be not carcinogenic.

OTHER INFORMATION: Not Applicable.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT, INHALATION, EYE CONTACT

SECTION 4 – FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT: Immediately flush skin with plenty of water. Remove clothing. Get medical attention immediately. Wash clothing separately before reuse.

INHALATION: If symptoms occur, remove to fresh air. Medical personnel may administer oxygen if breathing is difficult. Seek medical attention if symptoms persist.

INGESTION: If swallowed, do NOT induce vomiting. Give victim a glass of water or milk. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN: If swallowed, gastric lavage is indicated. Treat symptomatically.
SECTION 5 – FIRE FIGHTING MEASURES

FLASH POINT: N.A.
LOWER EXPLOSIVE LIMIT: N.A.
UPPER EXPLOSIVE LIMIT: N.A.
AUTOIGNITION TEMPERATURE: No Flash
EXTINGUISHING MEDIA: Unknown
UNUSUAL FIRE AND EXPLOSION HAZARDS: Does not burn.
SPECIAL FIREFIGHTING PROCEDURES: Does not burn.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Dike or contain spill. Reclaim clean material. Absorb contaminated material with inert absorbent such as clay. Sweep up used absorbent into appropriate waste container and dispose of in accordance with applicable federal, state and local regulations. Prevent washings from entering waterways.

SECTION 7 – HANDLING AND STORAGE

HANDLING: Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid contact with skin and eyes.
STORAGE: Keep from freezing.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General ventilation usually adequate.
RESPIRATORY PROTECTION: None normally required under general ventilation. If TLV/PEL is exceeded, if use is performed in a poorly-ventilated space, or if inhalation effects occur, use NIOSH-approved vapor cartridge respirator in accordance with applicable health and safety regulations and manufacturer’s recommendations.
SKIN PROTECTION: Clean clothing to cover skin. Rubber or synthetic gloves.
EYE PROTECTION: Chemical splash goggles. Face shield.
OTHER PROTECTIVE EQUIPMENT: Accessible eye wash and safety shower.
HYGIENIC PRACTICES: Follow good general industrial safety practices during use. Do not smoke or eat during use.
### SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Range</td>
<td>N.A.</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild Sweet</td>
</tr>
<tr>
<td>Appearance</td>
<td>Green</td>
</tr>
<tr>
<td>Solubility in H₂O</td>
<td>Complete</td>
</tr>
<tr>
<td>Freeze Point</td>
<td>32 Def F</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>17.5 mmHg @ 20°C</td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Coefficient of Water/Oil</td>
<td>No data</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Is slower than Butyl Acetate</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.0865</td>
</tr>
<tr>
<td>pH @ 0.0%</td>
<td>N.D</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Low</td>
</tr>
</tbody>
</table>

(See Section 16 for Abbreviation Legend)

### SECTION 10 – STABILITY AND REACTIVITY

**Conditions to Avoid:** Not Applicable.

**Incompatibility:** Nickel will react with acids to liberate hydrogen gas which can form explosive mixtures with air. Potassium, F₂; NH₄NO₃; Hydrazine; NH₃; (H₂ + dioxane); performic acid; P; Se; S; (Ti + KClO₃); oxidants, perchlorates.

**Hazardous Decomposition Products:** Oxides of carbon. Under special conditions, nickel can react with carbon monoxide in reducing atmospheres to form nickel carbonyl, an extremely toxic gas.

**Hazardous Polymerization:** Will not occur under normal conditions.

**Stability:** This product is stable under normal storage conditions.

### SECTION 11 – TOXICOLOGICAL PROPERTIES

**Component Toxicological Information:**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD₅₀</th>
<th>LC₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel chloride</td>
<td>No info</td>
<td>No info</td>
</tr>
</tbody>
</table>

### SECTION 12 – ECOLOGICAL INFORMATION

**Ecological Test Data:** Not Available
SECTION 13 – DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Review all current federal, state, and local regulations regarding health and disposal for appropriate disposal procedures. This material and/or its container must be disposed of as hazardous waste.

SECTION 14 – TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: Corrosive Liquid, nos
DOT TECHNICAL NAME: (Nickel chloride)  HAZARD SUBCLASS: NONE
DOT HAZARD CLASS: 8  PACKAGING GROUP: III
DOT UN/NA CLASS: UN1760  RESP. GUIDE PAGE: 153

INTERNATIONAL SHIPPING NAME: Corrosive Liquid, nos (Nickel chloride)
INTERNATIONAL ID NUMBER: UN1760
IMDG CLASS (1°, 2°): 8, none  IMDG PAGE NUMBER: III
IMDG EMS: 805  IATA CLASS (1°, 2°): 8, none

SECTION 15 – REGULATORY INFORMATION


CERCLA – SARA HAZARD CATEGORY: THIS PRODUCT HAS BEEN REVIEWED, AND IS CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES: IMMEDIATE HEALTH HAZARD  CHRONIC HEALTH HAZARD

SARA SECTION 313: THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 AND 40 CFR PART 372:

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS NUMBER</th>
<th>WT/WT % IS LESS THAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel chloride</td>
<td>7718-54-9</td>
<td>5.0-10.0</td>
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</table>

TOXIC SUBSTANCE CONTROL ACT: THE CHEMICAL SUBSTANCES IN THIS PRODUCT ARE ON THE TSCA SECTION 8 INVENTORY. THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF TSCA 12(B) IF EXPORTED FROM THE UNITED STATES:

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS NUMBER</th>
</tr>
</thead>
</table>

No components found.
SECTION 15 – REGULATORY INFORMATION

NEW JERSEY RIGHT-TO-KNOW: THE FOLLOWING MATERIALS ARE NON-HAZARDOUS, BUT ARE AMONG THE TOP 5 COMPONENTS IN THIS PRODUCT:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
</tr>
<tr>
<td>Sodium citrate</td>
<td>68-04-2</td>
</tr>
<tr>
<td>Sodium acetate</td>
<td>127-09-3</td>
</tr>
</tbody>
</table>

PENNSYLVANIA RIGHT-TO-KNOW: THE FOLLOWING NON-HAZARDOUS INGREDIENTS ARE PRESENT IN THE PRODUCT AT GREATER THAN 3%:

<table>
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CALIFORNIA PROPOSITION 65:  WARNING: This product contains a chemical(s) known to the state of California to cause cancer. (nickel)

CANADIAN WHMIS: THIS MSDS HAS BEEN PREPARED IN COMPLIANCE WITH CONTROLLED PRODUCT REGULATIONS EXCEPT FOR USE OF THE 16 HEADINGS.

CANADIAN WHMIS CLASS: D1B, E

COMPONENT RCRA CLASSIFICATIONS: EP Toxic

COMPONENT RCRA CODES: Not Applicable.

CERCLA RQ VALUE (MINIMUM): 100
## SECTION 16 – OTHER INFORMATION

### HMIS RATINGS

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>FLAMMABILITY</th>
<th>REACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**PREVIOUS MSDS REVISION DATE:** 3/23/2009, 23 March 2009

**REASON FOR REVISION:** Periodic Review

**VOLATILE ORGANIC COMPOUNDS:** 0 grams/ltr

### LEGEND:

- **N.A.** – NO INFORMATION
- **N.E.** – NOT ESTABLISHED
- **N.D.** – NOT DETERMINED

### ABBREVIATIONS:

- ACGIH = AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
- OSHA = OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION
- TLV-TWA = THRESHOLD LIMIT VALUE – TIME WEIGHTED AVERAGE (8 HOURS)
- STEL = SHORT-TERM EXPOSURE LIMIT (15 MINUTES)
- C = CEILING VALUE
- PEL = PERMISSIBLE EXPOSURE LIMIT

### DISCLAIMER:

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