MATERIAL SAFETY DATA SHEET
Meeting OSHA Standard 29 CFR 1910.1200 (g)

SECTION I: IDENTIFICATION AND EMERGENCY INFORMATION

TRADE NAME: COBALT OXIDE 7273
PRODUCT DESCRIPTION: Black powder, no odor.
AFTER HOURS TELEPHONE: NO. 216-781-8383
BUSINESS HOURS TELEPHONE: NO. 216-781-2125

SECTION II: COMPONENTS AND HAZARD INFORMATION

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>% WT.</th>
<th>EXPOSURE GUIDELINES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PEL TWA</td>
</tr>
<tr>
<td>Cobalt Oxide</td>
<td>1308-06-1</td>
<td>99.9</td>
<td>0.1</td>
</tr>
<tr>
<td>Nickel Oxide</td>
<td>1313-99-1*</td>
<td>0.1</td>
<td>1</td>
</tr>
</tbody>
</table>

OSHA 29 CFR 1910.1000 Table Z-1-A (Final Rule)

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>0</td>
<td>0</td>
<td>E</td>
</tr>
</tbody>
</table>

Nickel is a suspected carcinogens. Cobalt and cobalt compounds are Group 2B carcinogens.

SECTION III: PRIMARY ROUTES OF ENTRY AND EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: May cause eye irritation. Flush with large amounts of water, lifting upper and lower lids occasionally. Get medical attention.

SKIN: May cause skin irritation. Thoroughly wash exposed area with soap and water. Remove contaminated clothing. Launder contaminated clothing before re-use.

INHALATION: May be harmful if inhaled. May cause respiratory irritation. If affected, remove individual to fresh air. If breathing is difficult, administer oxygen. If breathing is stopped, give artificial respiration. Keep person warm, quiet. Get medical attention.

INGESTION: May be harmful if swallowed. Induce vomiting immediately by giving two glasses of water and sticking finger down throat. Call a physician. Never give anything by mouth to an unconscious person.
SECTION IV: FIRE AND EXPLOSION HAZARD INFORMATION

Flash Point (Minimum)°F: Not Applicable

Handling Precautions
Use product with caution around heat, sparks, pilot lights, static electricity, and open flame. Avoid generating dust.

EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES
Foam, water spray (fog) dry chemical, carbon dioxide.

DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS
Toxic fumes and metal oxides may be present during decomposition.

"EMPTY" CONTAINER WARNING:

SECTION V: HEALTH AND HAZARD INFORMATION

EFFECTS OF OVEREXPOSURE (Signs and Symptoms of Exposure)
May cause eye, skin and upper respiratory tract irritation. Overexposure to cobalt compounds may cause respiratory sensitization and an allergic skin reaction. Cobalt compounds are mildly irritating to the eyes and if swallowed, may cause vomiting, diarrhea and a sensation of hotness. Excessive inhalation and/or ingestion of cobalt salts may affect the kidneys, lungs and thyroid. Nickel oxide is a possible cancer hazard based on laboratory animal experiments.

NATURE OF HAZARD AND TOXICITY INFORMATION

Carcinogenicity: NTP: Yes XX No
IARC: XX Yes No
OSHA: Yes XX No

IARC has classified cobalt and cobalt compounds as Group 2B carcinogens. Group 2B carcinogens are possibly carcinogenic to humans. See IARC Monograph, Volume 52.
SECTION VI: PHYSICAL DATA

The following data are approximate or typical values and should not be used for precise design purposes.

Boiling Point: N/A  
Vapor Pressure: N/A  
Vapor Density (Air = 1)  
Heavier than air  
Evaporation Rate: N/A

% Volatile by Weight: N/A  
% Volatile by Volume: N/A  
Apparent Bulk Density: 0.9 g per cubic centimeter  
Color: Black

SECTION VII: REACTIVITY

This product is stable and will not react violently with water. Hazardous polymerization will not occur. Avoid contact with strong oxidizing agents (e.g., hydrogen peroxide, bromine and chromic acid). Yields CO₂.

SECTION VIII: ENVIRONMENTAL INFORMATION

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Eliminate all sources of ignition (flares, flames, including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Ventilate area of spill. Collect material into appropriate containers for reuse or disposal. Material may also be flushed with water to a wastewater treatment system.

Dispose in closed containers in accordance with local, state and federal regulations.

SECTION IX: PROTECTION AND PRECAUTIONS

VENTILATION: Provide sufficient mechanical (general) and/or local exhaust ventilation to maintain exposure below TLVs.

RESPIRATORY PROTECTION: Use a NIOSH/MSHA approved respirator if exposure may, or does exceed occupational exposure limits.

PROTECTIVE GLOVES: Wear resistant gloves such as Neoprene.

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other types of safety glasses.

OTHER PROTECTIVE EQUIPMENT: Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.

WORK PRACTICES/ENGINEERING CONTROLS

Keep containers and storage containers closed when not in use. Do not store near heat, sparks, flame or open flames.

PERSONAL HYGIENE: Minimize breathing vapor, mist or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry clean before reuse. Remove contaminated shoes and thoroughly clean before reuse. Wash thoroughly after contact, before breaks and meals, and at the end of the day.
SECTION X: TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION
For further information relative to spills resulting from transportation incidents, refer to the latest Department of Transportation Emergency Response Guidebook, DOT P 5800.5. Guide #27

DOT IDENTIFICATION NUMBER

Classifications: DOT Shipping Name: Not Regulated
DOT Hazard Class: Not Regulated
UN or NA Number:

Material with a flash point of 100°F - 200°F are subject to the Hazardous Material Regulations only in 119 gallon containers or larger.

INTERNATIONAL TRANSPORTATION:

Hazardous Material: Yes No
For further information, refer to the latest IMCO Regulations.

AIR FREIGHT TRANSPORTATION:

Hazardous Material: Yes No
For further information, refer to the latest ICAO Regulations or IATA Regulations.

SECTION XI: SPECIAL COMMENTS

TSCA: All components are listed on TSCA Inventory: Yes No

SARA:

Section 302 Extremely Hazardous Substance List 40 CFR 355 Yes No
Section 313 Toxic Chemical List 40 CFR 372.65 Yes No

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Chemical Name</th>
<th>% by Weight</th>
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<tr>
<td>Not Applicable</td>
<td>Cobalt Compounds</td>
<td>99.9</td>
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<tr>
<td>Not Applicable</td>
<td>Nickel Compounds</td>
<td>0.1</td>
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CERCLA: Hazardous Substance List 40 CFR 302.4 Yes No

RQ Lbs.: _______

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Code 97 Page 4 of 4