MATERIAL SAFETY DATA SHEET
OSHA HAZARD COMMUNICATION RULE

<table>
<thead>
<tr>
<th>CHEMICAL IDENTITY</th>
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<tbody>
<tr>
<td>LABEL IDENTITY</td>
</tr>
<tr>
<td>CHEMICAL NAME/SYNONYMS</td>
</tr>
<tr>
<td>FORMULA</td>
</tr>
<tr>
<td>CHEMICAL FAMILY</td>
</tr>
<tr>
<td>CAS REGISTRY NUMBER</td>
</tr>
<tr>
<td>HAZARDOUS INGREDIENTS</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>PHYSICAL AND CHEMICAL PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLOR, FORM AND ODOR</td>
</tr>
<tr>
<td>BOILING POINT</td>
</tr>
<tr>
<td>DENSITY (gm/cc)</td>
</tr>
<tr>
<td>VAPOR PRESSURE @ 20°</td>
</tr>
<tr>
<td>% VOLATILE BY VOLUME (%)</td>
</tr>
<tr>
<td>REACTION WITH WATER</td>
</tr>
<tr>
<td>EVAPORATION RATE (H2O=1)</td>
</tr>
<tr>
<td>SOLUBILITY IN WATER</td>
</tr>
<tr>
<td>MELTING POINT</td>
</tr>
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<tr>
<th>FIRE AND EXPLOSION HAZARD DATA</th>
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<tbody>
<tr>
<td>FLASH POINT</td>
</tr>
<tr>
<td>AUTOIGNITION TEMPERATURE (°C)</td>
</tr>
<tr>
<td>FLAMMABILITY</td>
</tr>
<tr>
<td>EXTINGUISHING MEDIA</td>
</tr>
<tr>
<td>SPECIAL FIRE FIGHTING PROCEDURES</td>
</tr>
<tr>
<td>UNUSUAL FIRE &amp; EXPLOSION HAZARDS</td>
</tr>
</tbody>
</table>
BARIUM OXIDE
MATERIAL SAFETY DATA SHEET

HEALTH HAZARD INFORMATION

TOXICITY DATA
HMIS RATING: NA
 HEALTH: na FLAMMABILITY: na REACTIVITY: na PERSONAL PROTECTION: na

ROUTES OF ENTRY
 INHALATION: Yes
 SKIN: Yes
 INGESTION: Yes

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: ND
EFFECTS OF OVEREXPOSURE (acute and chronic):
 INHALATION: irritation to mucous membranes, nose and throat
 DERMAL/EYE CONTACT: chemical burns to eyes and skin

CARCINOGENICITY: Nd NTP: Nd IARC MONOGRAPHS: Nd OSHA REGULATE: Nd

EMERGENCY FIRST AID PROCEDURES:
 INGESTION Seek medical attention.
 INHALATION Remove victim to fresh air, administer oxygen if breathing is difficult and seek medical attention immediately.
 SKIN CONTACT remove contaminated clothing under shower, wash skin off with water.
 EYE CONTACT irrigate with water for 15 minutes, obtain medical attention.

REACTIVITY DATA

STABILITY
Stable

CONDITIONS CONTRIBUTING TO UNSTABILITY

INCOMPATIBILITY (MATERIALS TO AVOID)
reacts rapidly with mineral acids generating heat

HAZARDOUS DECOMPOSITION PRODUCTS
None known
Will Not Occur

HAZARDOUS POLYMERIZATION
Will Not Occur

CONDITIONS TO AVOID
reacts with are to form BaCo(3); reacts with water for form Ba(OH)(2) and heat.
generates heat and toxic solutions when dissolved in H2O
BARIUM OXIDE
MATERIAL SAFETY DATA SHEET

SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
  wearing toxic dust respirator, sweep up and transfer to a sealed container

WASTE DISPOSAL METHOD:
  Consult federal, state and local regulations for proper disposal.

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION
  NIOSH/MSHA approved respirator if ventilation controls are not possible
  Local exhaust
    Mechanical (general) NA
    Special NA
    Other NA
  Protective gloves liquid proof PVC
  Eye protection Safety goggles
  Other protective equipment protective clothing

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE:
  Avoid acids in storage area

TRANSPORTATION REQUIREMENTS
  DOT Class: NA
  UN Number: NA
  IMCO Class: NA
  Other: NA

PRECAUTIONARY LABELING
  None

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NA= NOT APPLICABLE
ND= NO DATA FOUND