1. HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>CHEMICAL IDENTITY</th>
<th>CONCENTRATION WT%</th>
<th>CAS NUMBER</th>
<th>LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>METAL ALLOY</td>
<td>STEEL</td>
<td>BRONZE</td>
<td>ZAMACK</td>
</tr>
<tr>
<td>Aluminum (metal)</td>
<td>.1-1</td>
<td>7-13</td>
<td>3-7</td>
</tr>
<tr>
<td>Chromium (metal)</td>
<td>1-5</td>
<td>.1-1</td>
<td>.1-1</td>
</tr>
<tr>
<td>Cobalt (metal)</td>
<td>.1-1</td>
<td>1-5</td>
<td>.1-1</td>
</tr>
<tr>
<td>Copper (metal)</td>
<td>.1-1</td>
<td>70-90</td>
<td>1-5</td>
</tr>
<tr>
<td>Manganese (metal)</td>
<td>1-5</td>
<td>1-5</td>
<td>.1-1</td>
</tr>
<tr>
<td>Nickel (metal)</td>
<td>.1-1</td>
<td>.1-1</td>
<td>.1-1</td>
</tr>
<tr>
<td>Silicon (metal)</td>
<td>.1-1</td>
<td>1-5</td>
<td>.1-1</td>
</tr>
</tbody>
</table>

2. PREPARATION INFORMATION

NAME AND PHONE NUMBER OF PERSON/GROUP RESPONSIBLE FOR PREPARATION OF MSDS.
Preparation- Chuck Korn / Sunnen Products Company
Call- Guspro Incorporated / (519) 352-4550

DATE OF PREPARATION OF MSDS.
June 25,2012

3. PRODUCT INFORMATION

MANUFACTURES NAME, ADDRESS & PHONE.
SUNNEN PRODUCTS COMPANY
7910 Manchester Ave.
St. Louis, Mo. 63143
United States of America
314-781-0700

PRODUCT IDENTIFIER
SUNNEN HONING MANDRELS, GUIDE SHOES AND TRUING SLEEVES:

ZAMACK:WB-D, WC-D, WD-D, WE-D, WF-D, WG-D.

Honing Mandrel: STEEL:LH, LJ, RYY, SYY, ML, ALR or AS, AH, BS, BH, CS, or CH suffix. (Example: K5-150CS)
BRONZE:AB, BB or CB, suffix. (Example: K5-150CB)

Truing Sleeve: STEEL: S or ST Prefix. (Example: S-120 or ST-744)

Product use: Tooling for Sunnen Honing Machines.

4. PHYSICAL DATA

PHYSICAL STATE: Solid
ODOR AND APPEARANCE: Solid object. No odor.
ODOR THRESHOLD: Not applicable.
SPECIFIC GRAVITY: Heavier than water.
VAPOR PRESSURE: Not applicable.
VAPOR DENSITY: Not applicable.
EVAPORATION RATE: Not applicable.
BOILING POINT: Not applicable.
FREEZING POINT: Not applicable.
pH: Not applicable.
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable.
5. FIRE OR EXPLOSION HAZARD

CONDITIONS OF FLAMMABILITY: Solid material will not burn.
MEANS OF EXTINCTION: Not applicable.
FLASH POINT & METHOD: Not applicable.
UFL Upper flammability limit: Not applicable.
LFL Lower flammability limit: Not applicable.
AUTO IGNITION TEMPERATURE: Not applicable.
HAZARDOUS COMBUSTION PRODUCTS: Not applicable.
EXPLOSION DATA- Material is stable in the presence of physical impacts or static discharge.
SPECIAL FIRE FIGHTING PROCEDURES: Not applicable.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Material in the solid state does not present a fire or explosion hazard. Dust hazards exist under favoring conditions of small particle size. Dispersion in air and strong ignition source may result in an explosion.

6. REACTIVITY DATA

CONDITIONS WHERE PRODUCT IS NOT STABLE: None known.
LIST INCOMPATIBLE SUBSTANCES: Acids of all types with pH<4, bases or strong oxidizing agents.
CONDITIONS OF REACTIVITY: Contact with incompatible substances.
HAZARDOUS DECOMPOSITION PRODUCTS: Metal fumes if heated (T>150 C).

7. TOXICOLOGICAL PROPERTIES

HEALTH, FIRST AID AND MEDICAL DATA. ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION MAY PRODUCE POTENTIALLY HAZARDOUS DUST OR FUMES WHICH CAN BE INHALED, SWALLOWED, OR COME IN CONTACT WITH THE SKIN OR EYES. Dust or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal fume fever (flu-like symptoms). Symptoms may be aggravated for sensitive individuals with respiratory conditions (such as emphysema). Persons with light skin, sensitive skin or large amounts of body hair may experience skin disorders from contact with metal fines.

ABBREVIATIONS USED IN THE FOLLOWING SECTION: NAIF=NO APPLICABLE INFORMATION FOUND, SKIN=SKIN ABSORPTION, EYE=EYE CONTACT, INHAL=INHALATION, INGEST=INGESTION. THE INFORMATION PRESENTED AND CONCLUSIONS DRAWN ARE FROM OTHER THAN DIRECT TEST DATA.

ALUMINUM: ACUTE: SKIN: May cause skin irritation. EYE: Dust may cause swelling and injury to the eye. INHAL: Nuisance dust. INGEST: NAIF. CHRONIC: SKIN: NAIF. EYE: NAIF. INHAL: May cause irritation of the mucous membranes of the upper respiratory system. INGEST: NAIF.

CHROMIUM CARBIDE & CHROMIUM (III): ACUTE: SKIN: For some workers, chromium compounds act as allergens which cause dermatitis. EYE: May cause irritation. INHAL: The dusts of chromium metal may cause coughing and wheezing, headache, difficult breathing, fever and loss of weight. INGEST: Toxicity Oral Hamsters LD Lo=71mg./kg. CHRONIC: SKIN: One of the three most common skin sensitizers of man. EYE: NAIF. INHAL: There are reports of a nodular type of pulmonary disease with impairment of lung function. Some insoluble chromium (VI) compounds are suspected carcinogens. IARC reports all chromium compounds are potential carcinogens. INGEST: NAIF

COBALT: ACUTE SKIN: Sensitization dermatitis may occur in persons who are previously exposed. A rash may develop, usually in the areas of folded skin of the elbow, neck, and face. EYE: May cause irritation with redness, pain, and itching. INHAL: The dusts of cobalt may cause coughing and wheezing, headache, difficult breathing, fever and loss of weight. INGEST: May cause hypotension (low blood pressure), pain, vomiting, nerve deafness, and sensations of hotness or nausea. Severe exposure may cause pericardial effusion (heart problem), convulsions, or enlargement of the thyroid. Cobalt reacts with alcohol to produce severe cardiac effects. CHRONIC: SKIN: May cause contact dermatitis. Sensitization dermatitis may follow inhalation or prolonged contact. EYE: May cause inflammation. INHAL: May cause pneumoconiosis (a progressive lung disease), sensitization of the respiratory tract, obstructed airways syndrome (difficult breathing), interstitial lung disease (a disease affecting the connecting tissue between cells), and density of the lung with symptoms as described in acute exposure. INGEST: May adversely affect the pancreas, thyroid gland, heart, or bone marrow.

COPPER: ACUTE: SKIN: Changes causing hard or horny skin located on the hands and the soles of the feet have been reported. Copper salts may cause skin irritation (itching, redness and dermatitis). EYE: Copper salts may cause swelling, ulceration and cloudy cornea. INHAL: Melting, grinding, cutting of copper may produce fumes or dust exposure and breathing these fumes or dust may present health hazards. Fumes of copper may cause "Metal Fume Fever" with flu-like symptoms and skin and hair discoloration. Copper dust and fume may cause irritation of the upper respiratory tract, metallic taste in the mouth, and nausea. INGEST: Salts of copper act as irritants producing salivation, nausea, vomiting, stomach pain, bleeding stomach inflammation and diarrhea. CHRONIC: SKIN: NAIF. EYE: NAIF. INHAL: Open sores in the inner nose. INGEST: Individuals with Wilson's disease (hepatolenticular degeneration) can experience fatal intoxication.

MANGANESE: ACUTE: SKIN: NAIF. EYE: May cause slight eye irritation. INHAL: Can cause bronchitis and inflammation of lung. Early symptoms of Manganese poisoning include lack of coordination, apathy, anorexia, headache and spasms. Freshly formed fumes can cause fever and chills similar to the flu. INGEST: Early symptoms of Manganese poisoning include lack of coordination, apathy, anorexia, headache and spasms. CHRONIC: SKIN: NAIF. EYE: NAIF. INHAL/INGEST: Manganese poisoning is not fatal but may present a large range of nervous system disorders that vary among individuals. Advanced symptoms are similar to classical Parkinson's disease (tremor, muscular weakness, rigidity).

NICKEL: ACUTE: SKIN: May cause swelling and irritation. Skin sensitization may occur upon repeated exposure. EYE: May cause irritation. INHAL: May cause respiratory irritation, cough, pneumonitis (inflammation of lung), and fever. Pulmonary edema (fluid in lungs) may be a delayed symptom.
Pulmonary sensitization reaction or anaphylaxis (allergic shock) may occur upon repeated exposure. INGEST: Literature reports ingested nickel is eliminated and not absorbed to any great extent. CHRONIC SKIN: May cause sensitization dermatitis. EYE: May cause inflammation. INHAL: May cause mucous membrane irritation and pulmonary sensitization (acquired sensitivity). IARC reports all nickel compounds are potential carcinogens. INGEST: None reported in humans.

SILICON: ACUTE: SKIN: Physical damage to the skin caused by dust or by cleaning procedures used to remove it. EYE: Dust may irritate eyes. INHAL: Dust may cause physical damage to the mucous membranes or nasal passages. INGEST: NAIF. CHRONIC: SKIN: NAIF. EYE: NAIF. INHAL: May produce x-ray changes in the lungs without disability. INGEST: NAIF.

EXPOSURE LIMITS: ACGIH LIMITS mg/cu m
- aluminum (metal) 10
- chromium (metal) .5
- cobalt (metal) as dust/fume .05
- copper (metal) as fume .2
- copper (metal) as dust/mist 1
- manganese (metal) as fume 5 dust/1 fume
- nickel (metal) .05
- nickel (metal) as soluble compounds .05
- silicon (metal) 5 dust

IRRITANCY: Refer to Acute effects of exposure.
SENSITIZATION TO PRODUCT: Nickel, Chromium and Cobalt are the three most common skin sensitizers of man and most common cause of contact dermatitis in North America.
CARCINOGENICITY: IARC-L.A.R.C. reports all compounds containing nickel or chromium are potentially carcinogenic.
REPRODUCTIVE TOXICITY: NO
TERATOGENICITY: NO
MUTAGENICITY: NO
TOXICOLOGICALLY SYNERGISTIC PRODUCTS: No applicable information found.

8. PREVENTIVE MEASURES

RESPIRATORY PROTECTION: If abnormal conditions of use (dry honing, cutting, grinding, welding, brazing or soldering of tool) give rise to dust use NIOSH approved respirator rated for metal dust or positive ventilation to maintain levels of dust below ACGIH TLV/PEL levels.
SKIN PROTECTION: Not required.
EYE PROTECTION: Although the material is not an eye irritant one should always wear NIOSH approved eye protection when working around or operating machinery.
OTHER EQUIPMENT: Not required.
VENTILATION-LOCAL: Normal.
MECHANICAL: If abnormal conditions of use (dry honing, cutting, grinding, welding, brazing or soldering of tool) give rise to dust use NIOSH approved respirator rated for metal dust or positive ventilation to maintain levels of dust below ACGIH TLV/PEL levels.
STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS: Sweep up. Avoid breathing dust.
WASTE DISPOSAL METHODS: Used Honing tools are generally considered to be "scrap metal" and are not normally considered to be hazardous waste. Dispose of in accordance with applicable laws, regulations, rules, orders and ordinances.
NORMAL STORAGE AND HANDLING: No special procedures required.
NORMAL USE: No special procedures required.
MEASURES TO BE TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT WITH THIS MATERIAL: None. Vacuum or wipe up dust.

9. FIRST AID MEASURES

INHALATION: Remove from further exposure. If unconsciousness occurs, seek immediate medical assistance and call a physician. If breathing has stopped, begin mouth to mouth resuscitation. EYE CONTACT: Remove contact lenses (if wearing) and flush eyes with water for 15 minutes. Seek medical attention to check for possible irritation. SKIN CONTACT: Wash contact areas with mild non-abrasive soap and water. INGESTION: Do not induce vomiting. Call physician or poison control center immediately.

NOTICE

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