MATERIAL SAFETY DATA SHEET
OSHA HAZARD COMMUNICATION RULE

DATE OF LAST REVISION: 03-02

### CHEMICAL IDENTIY

<table>
<thead>
<tr>
<th>LABEL IDENTITY</th>
<th>GOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEMICAL NAME/SYNONYMS</td>
<td>GOLD</td>
</tr>
<tr>
<td>FORMULA</td>
<td>Au</td>
</tr>
<tr>
<td>CHEMICAL FAMILY</td>
<td>METAL</td>
</tr>
<tr>
<td>CAS REGISTRY NUMBER</td>
<td>7440-57-5</td>
</tr>
<tr>
<td>HAZARDOUS INGREDIENTS</td>
<td>NOT ESTABLISHED</td>
</tr>
</tbody>
</table>

### PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>COLOR, FORM AND ODOR</th>
<th>Soft yellow metal, odorless</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOILING POINT</td>
<td>2807</td>
</tr>
<tr>
<td>DENSITY (gm/cc)</td>
<td>17.0 @ 1063°</td>
</tr>
<tr>
<td>VAPOR PRESSURE</td>
<td>1 mm @ 1869°</td>
</tr>
<tr>
<td>% VOLATILE BY WEIGHT</td>
<td>Essentially zero</td>
</tr>
<tr>
<td>REACTION WITH WATER</td>
<td>NA</td>
</tr>
<tr>
<td>EVAPORATION RATE (H20=1)</td>
<td>NA</td>
</tr>
<tr>
<td>SOLUBILITY IN WATER</td>
<td>Insoluble</td>
</tr>
<tr>
<td>MELTING POINT</td>
<td>1064</td>
</tr>
</tbody>
</table>

### FIRE AND EXPLOSION HAZARD DATA

<table>
<thead>
<tr>
<th>FLASH POINT</th>
<th>Non-flammable as a solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTOIGNITION TEMPERATURE (°C)</td>
<td>NA</td>
</tr>
<tr>
<td>FLAMMABILITY</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>EXTINGUISHING MEDIA</td>
<td>This material is non-combustible. Use appropriate extinguishing agent for surrounding fires. Do not use water to extinguish fires around operations involving molten metal, due to the potential for steam explosion.</td>
</tr>
</tbody>
</table>

| SPECIAL FIRE FIGHTING PROCEDURES | Self contained breathing apparatus should be worn when fighting metal dust fires. High levels of dust or fine particles in the air may ignite or explode. |

| UNUSUAL FIRE & EXPLOSION HAZARDS | None known |

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**Note:** This data sheet provides information on the chemical properties and hazards of the substance, including its physical characteristics, chemical family, and potential hazards in fire and explosion scenarios. Always refer to the latest version of the MSDS for the most accurate and up-to-date information.
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HEALTH HAZARD INFORMATION

TOXICITY DATA

NA

HMIS RATING:

HEALTH: na \hspace{1cm} FLAMMABILITY: na \hspace{1cm} REACTIVITY: na \hspace{1cm} PERSONAL PROTECTION: na

ROUTES OF ENTRY

INHALATION: Yes
SKIN: Yes
INGESTION: ND

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Individuals who may have had allergic reactions to metals or sensitivity, may encounter rash or dermatitis, if skin contact with this product occurs. Persons with impaired pulmonary functions, may incur further impairment if dust or fumes are inhaled.

EFFECTS OF OVEREXPOSURE (acute and chronic):

- INHALATION: Dust could be irritating to respiratory trace.
- DERMAL: May cause contact dermatitis.
- OTHER: There is no toxicological data available for gold, but toxicity is thought to be very low.

CARCINOGENICITY: No \hspace{1cm} NTP: No \hspace{1cm} IARC MONOGRAPHS: No \hspace{1cm} OSHA REGULATE: No

EMERGENCY FIRST AID PROCEDURES:

INGESTION

Obtain medical attention at once.

INHALATION

Breathing difficulty, caused by inhalation of dust or fumes requires removal to fresh air. If breathing has stopped perform artificial respiration and seek medical attention at once.

SKIN CONTACT

Skin cuts and abrasions can be treated by standard first aid. Skin contamination with dust or powder can be removed with soap and water. If irritation persists obtain medical assistance.
EYE CONTACT
Dust or powder should be flushed from the eyes with running water for 15 minutes. If irritation persists obtain medical assistance.

REACTIVITY DATA

STABILITY
Stable

CONDITIONS CONTRIBUTING TO UNSTABILITY
None known

INCOMPATIBILITY (MATERIALS TO AVOID)
Acetylene, Ammonia and Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS
None under proper usage conditions
Will Not Occur

HAZARDOUS POLYMERIZATION CONDITIONS TO AVOID
Conditions which create dust or fumes

SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
In solid form this material poses no special clean up problems. Use normal clean-up procedures; wet sweeping or HEPA vacuum, for clean-up of dust or powder. Do not use compressed air for cleaning.

WASTE DISPOSAL METHOD:
Because of its high intrinsic value this material should be reclaimed. Dispose of in accordance with all applicable Federal, State and Local Regulations

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION
Use an appropriate NIOSH approved respirator if airborne dust concentration exceed the PEL or TLV.

LOCAL EXHAUST
Recommended, when cutting, grinding or melting or any other operation where dust or fumes are created.

SKIN PROTECTION
Recommended to prevent mechanical irritation.

EYE PROTECTION
Safety glasses are recommended.

OTHER PROTECTIVE EQUIPMENT
Eye wash fountain should be readily available in areas of use or handling.
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GENERAL:
Recommended.

EXPOSURE LIMITS:
Not established for product as whole.

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE:

In solid form this material poses no special problems. Store metal in a dry area.
Do not store adjacent to acids.

TRANSPORTATION REQUIREMENTS

DOT CLASS: None
UN NUMBER: None
PRODUCT RQ: None
DOT SHIPPING NAME: Not Regulated
TECHNICAL SHIPPING NAME: Metal Alloy

PRECAUTIONARY LABELING

NONE

THE ABOVE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, ANGSTROM SCIENCES MAKE NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR THE RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.

NA= NOT APPLICABLE ND= NO DATA FOUND