1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of the substance/preparation: OREAS 70B
Use of the substance/preparation: Used as a check standard for soil and geochem calibrations.
Version No.: 02
CAS No.: Mixture
Product code: Q0203078
Manufacturer
  Company name: Evident Scientific
  Address: 48 Woerd Avenue
  Waltham, MA 02453
  USA
  Telephone number: +1-781-419-3900
Emergency telephone number: CHEMTREC

2. HAZARDS IDENTIFICATION

Classification
  Carc. Cat. 1; R49, Muta. Cat. 3; R68, T; R48/23, R43, R52/53

Physical hazards: Not classified as a physical hazard.

Health hazards: May cause cancer by inhalation. May cause sensitisation by skin contact. Also toxic: danger of serious damage to health by prolonged exposure through inhalation. Possible risk of irreversible effects.

Environmental hazards: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Specific hazards: Toxic: danger of serious damage to health by prolonged exposure through inhalation. May cause sensitisation by skin contact. May cause cancer by inhalation. Danger of serious damage to health by prolonged exposure. Possible risk of irreversible effects. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. For additional information on inhalation hazards, see Section 11 of this safety data sheet.

Main symptoms: Dusts may irritate the respiratory tract, skin and eyes.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS No.</th>
<th>Percent</th>
<th>EC-No.</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>High grade massive nickel sulfide ore</td>
<td>-</td>
<td>100</td>
<td></td>
<td>Carc. Cat. 1; R49, Muta. Cat. 3; R68, T; R48/23, R43, R52/53</td>
</tr>
<tr>
<td>barren ultramafic material</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Constituents

<table>
<thead>
<tr>
<th>Constituents</th>
<th>CAS No.</th>
<th>Percent</th>
<th>EC-No.</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>-</td>
<td>238-878-4</td>
<td>Carc. Cat. 1; R49, Xn; R48/20</td>
</tr>
<tr>
<td>Nickel sulphide</td>
<td>16812-54-7</td>
<td>-</td>
<td>240-841-2</td>
<td>Carc. Cat. 1; R49, Muta. Cat. 3; R68, T; R48/23, R43, N; R50/53</td>
</tr>
</tbody>
</table>

Composition comments: The hazard evaluation is based on the content of nickel sulphide.

4. FIRST-AID MEASURES

Inhalation: Move to fresh air. Call a physician or poison control centre immediately.

Skin contact: Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.

Eye contact: Do not rub eyes. Flush eyes immediately with large amounts of water. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth. If ingestion of a large amount does occur, call a poison control centre immediately.

General advice: Take off contaminated clothing and shoes immediately. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Keep victim under observation. Keep victim warm.

Notes to physician: Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use fire-extinguishing media appropriate for surrounding materials.

Extinguishing media which must not be used for safety reasons
None known.

Unusual fire & explosion hazards
None known.

Specific hazards
None known.

Special protective equipment for fire-fighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
Use water spray to cool unopened containers.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
The product is non-combustible.

6. ACCIDENTAL RELEASE MEASURES

Containment procedures
Prevent entry into waterways, sewer, basements or confined areas.

Personal precautions
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe dust. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Environmental precautions
Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

Methods for cleaning up
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Minimise dust generation and accumulation. Collect dust using a vacuum cleaner equipped with HEPA filter. Prevent product from entering drains. Stop the flow of material, if this is without risk.

Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.

Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.

7. HANDLING AND STORAGE

Handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimise dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid contact with eyes, skin, and clothing. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

Storage
Store locked up. Store in tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see section 10 of the SDS).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel sulphide (CAS 16812-54-7)</td>
<td>TWA</td>
<td>0.2 mg/m3</td>
<td>Inhalable fraction.</td>
</tr>
<tr>
<td>Quartz (CAS 14808-60-7)</td>
<td>TWA</td>
<td>0.025 mg/m3</td>
<td>Respirable fraction.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel sulphide (CAS 16812-54-7)</td>
<td>TWA</td>
<td>0.1 mg/m3</td>
<td>Dust and fume.</td>
</tr>
</tbody>
</table>

Egypt. OELs. Threshold limits for carcinogens and suspected carcinogens (Decree No. 388, Annex 8)

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel sulphide (CAS 16812-54-7)</td>
<td>TWA</td>
<td>0.2 mg/m3</td>
<td>Total dust.</td>
</tr>
<tr>
<td>Quartz (CAS 14808-60-7)</td>
<td>TWA</td>
<td>0.29 mg/m3</td>
<td>Total dust.</td>
</tr>
</tbody>
</table>
**Egypt. OELs. Threshold limits of air pollutants in the workplace (Decree No. 388, Annex 8)**

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.098 mg/m³</td>
<td>Inhalable dust.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.73 mp/ft³</td>
<td></td>
</tr>
</tbody>
</table>

**Kenya. OEL-CL. Control Limits for Hazardous Chemical Substances (The Factories and Other Places of Work Rules in 2007 of the Factories and Other Places of Work Act (CAP. 514))**

<table>
<thead>
<tr>
<th>Constituents</th>
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<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel sulphide (CAS 16812-54-7)</td>
<td>TWA</td>
<td>0.5 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**Kenya. OEL-RL. Recommended Limit for Hazardous Chemical Substances (The Factories and Other Places of Work Rules in 2007 of the Factories and Other Places of Work Act (CAP. 514))**

<table>
<thead>
<tr>
<th>Constituents</th>
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<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz (CAS 14808-60-7)</td>
<td>TWA</td>
<td>0.4 mg/m³</td>
<td>Respirable dust.</td>
</tr>
</tbody>
</table>

**South Africa. Control Limits. Regulations for Hazardous Chemical Substances, Table 1**

<table>
<thead>
<tr>
<th>Constituents</th>
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<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel sulphide (CAS 16812-54-7)</td>
<td>TWA</td>
<td>0.5 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**South Africa. Recommended Exposure Limits (RELs) Regulations for Hazardous Chemical Substances, Table 2**

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz (CAS 14808-60-7)</td>
<td>TWA</td>
<td>0.4 mg/m³</td>
<td>Respirable dust.</td>
</tr>
</tbody>
</table>

**Biological limit values**

No biological exposure limits noted for the ingredient(s).

**Recommended monitoring procedures**

Not available.

**Additional exposure data**

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

**Engineering measures**

Wear respirator with dust filter.

Hand protection

Wear appropriate chemical resistant gloves.

Eye protection

Use tight fitting goggles if dust is generated.

Skin and body protection

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Environmental exposure controls

Inform appropriate managerial or supervisory personnel of all environmental releases.

**Hygiene measures**

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**

- **Physical state**: Solid.
- **Form**: Powder.
- **Colour**: Not available.
- **Odour**: Not available.
- **pH**: Not available.
- **Melting point/freezing point**: Not available.
- **Boiling point, initial boiling point, and boiling range**: Not available.
- **Flash point**: Not applicable.
- **Auto-ignition temperature**: Not applicable.
- **Combustion characteristics (solid, gas)**: This material will not burn.
- **Flammability limit - lower (%)**: Not available.
- **Flammability limit - upper (%)**: Not available.
- **Vapour pressure**: Not applicable.
Vapour density Not applicable.
Evaporation rate Not applicable.
Solubility(ies) Solubility (water) Insoluble in water.
Partition coefficient (n-octanol/water) Not available.
Decomposition temperature Not available.

10. STABILITY AND REACTIVITY
Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.
Conditions to avoid Contact with incompatible materials.
Hazardous decomposition products No hazardous decomposition products are known.
Stability Material is stable under normal conditions.
Materials to avoid Powerful oxidizers. Chlorine.
Hazardous polymerisation No dangerous reaction known under conditions of normal use.

11. TOXICOLOGICAL INFORMATION
Acute toxicity Not expected to be acutely toxic.
Routes of exposure Inhalation. Skin contact. Eye contact.
Chronic toxicity Danger of serious damage to health by prolonged exposure. Possible risks of irreversible effects. Chronic lung disease (silicosis) and/or lung cancer may result from prolonged/repeated breathing of the dust of this material.
Sensitisation May cause sensitisation by skin contact.
Carcinogenicity May cause cancer.
IARC Monographs. Overall Evaluation of Carcinogenicity
Nickel sulphide (CAS 16812-54-7) 1 Carcinogenic to humans.
Quartz (CAS 14808-60-7) 1 Carcinogenic to humans.
Mutagenicity Suspected of causing genetic defects.
Reproductivity This product is not expected to cause reproductive or developmental effects.
Epidemiology No epidemiological data is available for this product.
Local effects Repeated or prolonged inhalation may cause toxic effects. Inhalation of dusts may cause respiratory irritation. May cause sensitisation by skin contact.
Symptoms and target organs Dusts may irritate the respiratory tract, skin and eyes.

12. ECOLOGICAL INFORMATION
Ecotoxicity Expected to be harmful to aquatic organisms. May cause long-term adverse effects in the environment.
Persistence and degradability No data is available on the degradability of any ingredients in the mixture.
Bioaccumulation No data available.
Mobility No data available for this product.
Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. DISPOSAL CONSIDERATIONS
Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.
Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Avoid discharge into water courses or onto the ground.
Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION
IATA Not regulated as dangerous goods.
IMDG Not regulated as dangerous goods.
15. REGULATORY INFORMATION

Labelling
Contains
High grade massive nickel sulfide ore and barren ultramafic material

Symbol(s)
Toxic

R-phrase(s)
R49 May cause cancer by inhalation.
R43 May cause sensitisation by skin contact.
R48/23 Also toxic: danger of serious damage to health by prolonged exposure through inhalation.
R68 Possible risk of irreversible effects.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)
S22 Do not breathe dust.
S24/25 Avoid contact with skin and eyes.
S36/37 Wear suitable protective clothing and gloves.
S53 Avoid exposure - obtain special instructions before use.

16. OTHER INFORMATION

Wording of the R-phrases in sections 2 and 3
R43 May cause sensitisation by skin contact.
R48/23 Also toxic: danger of serious damage to health by prolonged exposure through inhalation.
R49 May cause cancer by inhalation.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R68 Possible risk of irreversible effects.

Recommended use
Used as a check standard for soil and geochem calibrations.

Disclaimer
Evident Scientific cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

Prepared by
Evident Scientific

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