SECTION 1. IDENTIFICATION

Product Identifier: (4N) 99.99% Germanium Nanoparticles

Product Code: GE-E-04-NP

CAS Number: 7440-56-4

Relevant identified uses of the substance: Scientific research and development

Supplier details:

American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351
Emergency telephone number:
+1 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable solids
(Category 1), H228
For the full text of the H-Statements mentioned in this Section, see Section 16.
GHS Label elements, including precautionary statements
Pictogram

Signal word
Danger
Hazard statement(s)
H228
Flammable solid.
Precautionary statement(s)
P210
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P240
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.

Wear protective gloves/protective clothing/eye protection/face protection.

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction. Hazards not otherwise classified (HNOC) or not covered by GHS

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**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substances
CAS No. / Substance Name:
7440-56-4 Germanium
Identification number(s):
EC number: 231-164-3

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**SECTION 4. FIRST AID MEASURES**

Description of first aid measures
General information
No special measures required.
If inhaled:
Seek medical treatment in case of complaints.
In case of skin contact:
Generally the product does not irritate the skin.
In case of eye contact:
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
If swallowed:
If symptoms persist consult doctor.
Information for doctor
Most important symptoms and effects, both acute and delayed
No information available.
Indication of any immediate medical attention and special treatment needed
No information available.

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**SECTION 5. FIREFIGHTING MEASURES**

Extinguishing media
Suitable extinguishing media
Special powder for metal fires. Do not use water.
For safety reasons unsuitable extinguishing media
Water
Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Metal oxide fume
Advice for firefighters
Protective equipment:
No special measures required
SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Not required.
Environmental precautions:
Do not allow material to be released to the environment without official permits.
Do not allow product to reach sewage system or any water course.
Do not allow to penetrate the ground/soil.
Methods and material for containment and cleanup:
Pick up mechanically.
Prevention of secondary hazards:
No special measures required.
Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7. HANDLING AND STORAGE

Handling
Precautions for safe handling
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Information about protection against explosions and fires:
No special measures required.
Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles:
No special requirements.
Information about storage in one common storage facility:
Not required.
Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well-sealed containers.
Specific end use(s)
No information available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical systems:
No further data; see section 7.
Control parameters
Components with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values
that should be monitored at the workplace.
Additional information:
No data
Exposure controls
Personal protective equipment
Follow typical general protective and industrial hygiene measures for handling chemicals.
Breathing equipment:
Not required.
Protection of hands:
Not required.
Penetration time of glove material (in minutes)
No data available.
Eye protection:
Safety glasses
Body protection:
Protective work clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
Appearance:
Form: Powder
Color: Silver-colored
Odor: Odorless
Odor threshold: No data available.
pH: N/A.
Melting point/range: 937.2 °C (1719 °F)
Boiling point/range: 2830 °C (5126 °F)
Sublimation temperature / start: No data available.
Flammability (solid, gas):
No data available.
Ignition temperature: No data available.
Decomposition temperature: No data available.
Auto igniting: No data available.
Danger of explosion: No data available.
Explosion limits:
Lower: No data available.
Upper: No data available.
Vapor pressure at 20 °C (68 °F): 0 hPa
Density at 20 °C (68 °F): 5.32 g/cm³ (44.395 lbs/gal)
Relative density
No data available.
Vapor density
N/A.
Evaporation rate
N/A.
Solubility in Water (H₂O): Insoluble
Partition coefficient (n-octanol/water): No data available.
Viscosity:
Dynamic: N/A.
Kinematic: N/A.
Other information
No information available.

SECTION 10. STABILITY AND REACTIVITY

Reactivity
**Chemical stability**
Stable under recommended storage conditions.
**Thermal decomposition / conditions to be avoided:**
Decomposition will not occur if used and stored according to specifications.
**Possibility of hazardous reactions**
No dangerous reactions known
**Conditions to avoid**
No information available.
**Incompatible materials:**
No data available.
**Hazardous decomposition products:**
Metal oxide fume

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**SECTION 11. TOXICOLOGICAL INFORMATION**

Information on toxicological effects
**Acute toxicity:**
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.
**LD/LC50 values that are relevant for classification:**
No data
**Skin irritation or corrosion:**
Generally the product does not irritate the skin.
**Eye irritation or corrosion:**
No irritant effect.
**Sensitization:**
No sensitizing effects known.
**Germ cell mutagenicity:**
N/A
**Carcinogenicity:**
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**Reproductive toxicity:**
N/A
**Specific target organ system toxicity - repeated exposure:**
N/A
**Specific target organ system toxicity - single exposure:**
N/A
**Aspiration hazard:**
N/A
**Subacute to chronic toxicity:**
The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.
**Additional toxicological information:**
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**Carcinogenic categories**
OSHA-Ca (Occupational Safety & Health Administration)
Substance is not listed.
SECTION 12. ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity:
No information available.
Persistence and degradability:
No information available.
Bioaccumulative potential:
No information available.
Mobility in soil:
No information available.
Additional ecological information:
General notes:
Do not allow material to be released to the environment without official permits.
Avoid transfer into the environment.
Results of PBT and vPvB assessment:
PBT:
N/A.
vPvB:
N/A.
Other adverse effects
No information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Recommendation:
Consult state, local or national regulations to ensure proper disposal.
Uncleaned packagings:
Recommendation:
Disposal must be made according to official regulations.

SECTION 14. TRANSPORT INFORMATION

DOT (US)
UN number: 3089
Class: 4.1
Packing group: II
Proper shipping name: Metal powders, flammable, n.o.s.
Marine pollutant: No
Poison Inhalation Hazard: No
IMDG
UN number: 3089
Class: 4.1
Packing group: II
EMS-No: F-G, S-G
Proper shipping name: METAL POWDER, FLAMMABLE, N.O.S.
Marine pollutant: No
IATA
UN number: 3089
Class: 4.1
Packing group: II
SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic
Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Non-Domestic Substances List (NDSL).
SARA Section 313 (specific toxic chemical listings)
Substance is not listed.
California Proposition 65
Prop 65 - Chemicals known to cause cancer
Substance is not listed.
Prop 65 - Developmental toxicity
Substance is not listed.
Prop 65 - Developmental toxicity, female
Substance is not listed.
Prop 65 - Developmental toxicity, male
Substance is not listed.
Information about limitation of use:
For use only by technically qualified individuals.
Other regulations, limitations and prohibitive regulations
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.
Substance is not listed.
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No
1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
Substance is not listed.
Annex XIV of the REACH Regulations (requiring Authorisation for use)
Substance is not listed.
REACH - Pre-registered substances
Substance is listed.
Chemical safety assessment:
A Chemical Safety Assessment has not been carried out.

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is
believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The
information in this document is based on the present state of our knowledge and is applicable to the
product with regard to appropriate safety precautions. It does not represent any guarantee of the
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