

# SAFETY DATA SHEET

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## SECTION 1. IDENTIFICATION

**Product Identifier:** (4N) 99.99% Samarium Nanoparticles

**Product Code:** SM-M-04-NP

**CAS Number:** 7440-19-9

**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 in accordance with 29 CFR 1910 (OSHA HCS)

GHS02 Flame

Flam. Sol. 1

H228 Flammable solid.

Water-react. 1 H260 In contact with water releases flammable gases which may ignite spontaneously.

Hazards not otherwise classified

No information known.

Label elements

GHS label elements

The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms



GHS02

Signal word

Danger

Hazard statements

H228 Flammable solid.

H260 In contact with water releases flammable gases which may ignite spontaneously.

#### Precautionary statements

P210

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P231+P232 Handle under inert gas. Protect from moisture.

P280

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

P240

Ground/bond container and receiving equipment.

P241

Use explosion-proof electrical/ventilating/lighting/equipment.

P233

Keep container tightly closed.

P370+P378 In case of fire: Use for extinction: Special powder for metal fires.

P335+P334 Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.

P402+P404 Store in a dry place. Store in a closed container.

P501

Dispose of contents/container in accordance with local/regional/national/international regulations.

#### WHMIS classification

B4 - Flammable solid

B6 - Reactive flammable material

#### Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

Health (acute effects) = 1

Flammability = 3

Physical Hazard = 2

Other hazards

Results of PBT and vPvB assessment

PBT:

Not applicable.

vPvB:

Not applicable.

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization: Substances

CAS# Description:

7440-19-9 Samarium

Identification number(s):

EC number:

231-128-7

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## SECTION 4. FIRST AID MEASURES

Description of first aid measures

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

After eye contact  
Rinse opened eye for several minutes under running water. Then consult a doctor.  
After swallowing  
Seek medical treatment.  
Information for doctor  
Most important symptoms and effects, both acute and delayed  
No further relevant information available.  
Indication of any immediate medical attention and special treatment needed  
No further relevant information available.

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## **SECTION 5. FIREFIGHTING MEASURES**

Extinguishing media  
Suitable extinguishing agents  
Special powder for metal fires. Do not use water.  
For safety reasons unsuitable extinguishing agents  
Water  
Special hazards arising from the substance or mixture  
If this product is involved in a fire, the following can be released:  
Samarium oxide  
Advice for firefighters  
Protective equipment:  
Wear self-contained respirator.  
Wear fully protective impervious suit.

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## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures  
Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation  
Keep away from ignition sources  
Environmental precautions:  
Do not allow material to be released to the environment without proper governmental permits.  
Methods and material for containment and cleaning up:  
Keep away from ignition sources.  
Ensure adequate ventilation.  
Do not flush with water or aqueous cleansing agents  
Prevention of secondary hazards:  
Keep away from ignition sources.  
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.

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## **SECTION 7. HANDLING AND STORAGE**

Handling  
Precautions for safe handling  
Handle under dry protective gas.  
Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.  
Ensure good ventilation at the workplace.  
Information about protection against explosions and fires:  
Protect against electrostatic charges.  
Conditions for safe storage, including any incompatibilities  
Storage  
Requirements to be met by storerooms and receptacles:  
Store in a cool location.  
Information about storage in one common storage facility:  
Store away from air.  
Store away from water/moisture.  
Do not store together with acids.  
Store away from oxidizing agents.  
Store away from halogens.  
Store away from acid chlorides.  
Further information about storage conditions:  
Store under dry inert gas.  
This product is moisture sensitive.  
This product is air sensitive.  
Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.  
Protect from humidity and water.  
Specific end use(s)  
No further relevant information available.

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## **SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Additional information about design of technical systems:  
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.  
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 have to be monitored at the workplace.  
Additional information:  
No data  
Exposure controls  
Personal protective equipment  
General protective and hygienic measures  
The usual precautionary measures for handling chemicals should be followed.  
Keep away from foodstuffs, beverages and feed.  
Remove all soiled and contaminated clothing immediately.  
Wash hands before breaks and at the end of work.  
Maintain an ergonomically appropriate working environment.  
Breathing equipment:  
Use suitable respirator when high concentrations are present.  
Recommended filter device for short term use:  
Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls.  
Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.  
Protection of hands:  
Impervious gloves  
Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

Penetration time of glove material (in minutes)

Not determined

Eye protection:

Safety glasses

Full face protection

Body protection:

Protective work clothing.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

General Information

Appearance:

Form: Powder

Odor: Odorless

Odor threshold: Not determined.

pH-value: Not applicable.

Change in condition

Melting point/Melting range: 1072 °C (1962 °F)

Boiling point/Boiling range: 1794 °C (3261 °F)

Sublimation temperature / start: Not determined

Flammability (solid, gaseous)

Highly flammable.

Contact with water liberates extremely flammable gases.

Ignition temperature: Not determined

Decomposition temperature: Not determined

Auto igniting: Not determined.

Danger of explosion: Not determined.

Explosion limits:

Lower: Not determined

Upper: Not determined

Vapor pressure: Not applicable.

Density at 20 °C (68 °F): 7.52 g/cm<sup>3</sup> (62.754 lbs/gal)

Relative density

Not determined.

Vapor density

Not applicable.

Evaporation rate

Not applicable.

Solubility in / Miscibility with Water: Contact with water releases flammable gases

Partition coefficient (n-octanol/water): Not determined.

Viscosity:

dynamic: Not applicable.

kinematic: Not applicable.

Other information

No further relevant information available.

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## SECTION 10. STABILITY AND REACTIVITY

#### Reactivity

In contact with water releases flammable gases which may ignite spontaneously.

#### 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

Reacts with strong oxidizing agents

Contact with water releases flammable gases

Conditions to avoid

No further relevant information available.

Incompatible materials:

Acids

Air

Oxidizing agents

Halogens

Acid chlorides

Water/moisture

Hazardous decomposition products:

Samarium oxide

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## SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity:

No effects known.

LD/LC50 values that are relevant for classification:

No data

Skin irritation or corrosion:

May cause irritation

Eye irritation or corrosion:

May cause irritation

Sensitization:

No sensitizing effects known.

Germ cell mutagenicity:

No effects known.

Carcinogenicity:

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

Reproductive toxicity:

No effects known.

Specific target organ system toxicity - repeated exposure:

No effects known.

Specific target organ system toxicity - single exposure:

No effects known.

Aspiration hazard:

No effects known.

Subacute to chronic toxicity:

No effects known.

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.

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## **SECTION 12. ECOLOGICAL INFORMATION**

Toxicity

Aquatic toxicity:

No further relevant information available.

Persistence and degradability

No further relevant information available.

Bioaccumulative potential

No further relevant information available.

Mobility in soil

No further relevant information available.

Additional ecological information:

General notes:

Do not allow material to be released to the environment without proper governmental permits.

Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.

Avoid transfer into the environment.

Results of PBT and vPvB assessment

PBT:

Not applicable.

vPvB:

Not applicable.

Other adverse effects

No further relevant information available.

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## **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.

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## **SECTION 14. TRANSPORT INFORMATION**

UN-Number

DOT, IMDG, IATA

UN3089

UN proper shipping name

DOT

Metal powders, flammable, n.o.s. (Samarium)

IMDG, IATA

METAL POWDER, FLAMMABLE, N.O.S. (Samarium)

Transport hazard class(es)

DOT

Class

4.1 Flammable solids, self-reactive substances and solid desensitised explosives.

Label  
4.1  
Class  
4.1 (F3) Flammable solids, self-reactive substances and solid desensitised explosives  
Label  
4.1  
IMDG, IATA  
Class  
4.1 Flammable solids, self-reactive substances and solid desensitised explosives.  
Label  
4.1  
Packing group  
DOT, IMDG, IATA  
II  
Environmental hazards:  
Not applicable.  
Special precautions for user  
Warning: Flammable solids, self-reactive substances and solid desensitised explosives  
EMS Number: F-G,S-G  
Segregation groups  
Heavy metals and their salts (including their organometallic compounds), powdered metals  
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code  
Not applicable.  
Transport/Additional information:  
DOT  
Marine Pollutant (DOT):  
No  
UN "Model Regulation":  
UN3089, Metal powders, flammable, n.o.s. (Samarium), 4.1, II

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## SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture  
GHS label elements  
The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)  
Hazard pictograms  
GHS02  
Signal word  
Danger  
Hazard statements  
H228 Flammable solid.  
H260 In contact with water releases flammable gases which may ignite spontaneously.  
Precautionary statements  
P210  
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P231+P232 Handle under inert gas. Protect from moisture.  
P280  
Wear protective gloves/protective clothing/eye protection/face protection.  
P240  
Ground/bond container and receiving equipment.  
P241  
Use explosion-proof electrical/ventilating/lighting/equipment.  
P233



Keep container tightly closed.

P370+P378 In case of fire: Use for extinction: Special powder for metal fires.

P335+P334 Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.

P402+P404 Store in a dry place. Store in a closed container.

P501

Dispose of contents/container in accordance with local/regional/national/international regulations.

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 Domestic Substances List (DSL).

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.

Chemical safety assessment:

A Chemical Safety Assessment has not been carried out.

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## 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 properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.