

SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Name: Gold(I) Potassium Cyanide

CAS #: 13967-50-5

Relevant identified uses of the substance: Scientific research and development

Supplier details:

Stanford Advanced Materials

E-mail: sales@samaterials.com

Tel: (949) 407-8904

Address: 23661 Birtcher Dr., Lake Forest, CA 92630 U.S.A.

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

GHS06 Skull and crossbones

Acute Tox. 1 H300 Fatal if swallowed.

Acute Tox. 1 H310 Fatal in contact with skin.

Acute Tox. 1 H330 Fatal if inhaled.

GHS05 Corrosion

Met. Corr.1

H290 May be corrosive to metals.

Eye Dam. 1 H318 Causes serious eye damage.

GHS07

Skin Irrit. 2

H315 Causes skin irritation.

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

GHS05

GHS06

Signal word

Danger

Hazard statements

H290

May be corrosive to metals.

H300+H310+H330 Fatal if swallowed, in contact with skin or if inhaled.

H315

Causes skin irritation.

H318

Causes serious eye damage.

Precautionary statements

P260

Do not breathe dust/fume/gas/mist/vapors/spray.

P301+P310

IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses,

if present and easy to do. Continue rinsing.

P320

Specific treatment is urgent (see on this label).

P405

Store locked up.

P501

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

WHMIS classification

D1A - Very toxic material causing immediate and serious toxic effects

D2B - Toxic material causing other toxic effects

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

Health (acute effects) = 3

Flammability = 0

Physical Hazard = 1

Other hazards

Results of PBT and vPvB assessment

PBT:

Not applicable.

vPvB:

Not applicable.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization: Substances

CAS# Description:

13967-50-5 Gold(I) potassium cyanide

Concentration:

≤100%

Identification number(s):

EC number:237-748-4

Index number:

SECTION 4. FIRST AID MEASURES

Description of first aid measures

General information

Immediately remove any clothing soiled by the product.

Remove breathing apparatus only after contaminated clothing has been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

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

Do not induce vomiting; immediately call for medical help.

Information for doctor

Most important symptoms and effects, both acute and delayed

Causes skin irritation.

Fatal if inhaled.

Fatal in contact with skin.

Fatal if swallowed.

Causes serious eye damage.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing agents

Product is not flammable. Use fire-fighting measures that suit the surrounding fire.

Special hazards arising from the substance or mixture

If this product is involved in a fire, the following can be released:

Carbon monoxide and carbon dioxide

Hydrogen cyanide (HCN)

Nitrogen oxides (NOx)

Potassium oxide

Gold oxide

Advice for firefighters

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Mount respiratory protective device.

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Environmental precautions:

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

Methods and material for containment and cleaning up:

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

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.

Protective Action Criteria for Chemicals

PAC-1:

Substance is not listed.

PAC-2:

Substance is not listed.

PAC-3:

Substance is not listed.

SECTION 7. HANDLING AND STORAGE

Handling

Precautions for safe handling

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Open and handle container with care.

Only handle and refill product in closed systems.

Information about protection against explosions and fires:

The product is not flammable

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:

Do not store together with acids.

Store away from oxidizing agents.

Store away from metals.

Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Specific end use(s)

No further relevant information available.

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:

13967-50-5 Gold(I) potassium cyanide (100.0%)

PEL (USA) Long-term value: 5 mg/m³ as CN; Skin

REL (USA) Ceiling limit value: 5* mg/m³, 4.7* ppm as CN; *10-min

TLV (USA) Ceiling limit value: 5 mg/m³, 4.7 ppm as CN; Skin

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.

Store protective clothing separately.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

Breathing equipment:

Use self-contained respiratory protective device in emergency situations.

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.

Material of gloves

Nitrile rubber, NBR

Penetration time of glove material (in minutes)

480

Glove thickness:

0.11 mm

Eye protection:

Tightly sealed goggles

Safety glasses with side shields / NIOSH (US) or EN 166(EU)

Body protection:

Protective work clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

General Information

Appearance:

Form:

Crystalline powder Odor:

Odorless

Odor threshold:

Not determined.

pH-value:

Not applicable.

Change in condition

Melting point/Melting range:

Decomposes

Boiling point/Boiling range:

Not determined

Sublimation temperature / start:

Not determined

Flammability (solid, gaseous)

Not determined.

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):

3.45 g/cm³ (28.79 lbs/gal)

Relative density

Not determined.

Vapor density

Not applicable.

Evaporation rate

Not applicable.

Solubility in / Miscibility with

Water:

Soluble

Partition coefficient (n-octanol/water):

Not determined.

Viscosity:

dynamic:

Not applicable.

kinematic:

Not applicable.

Other information

No further relevant information available.

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Contact with acids liberates very toxic gas.

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 acids liberates very toxic gas.

Conditions to avoid

No further relevant information available.

Incompatible materials:

Oxidizing agents

Metals

Acids

Hazardous decomposition products:

Hydrogen cyanide

Nitrogen oxides

Potassium oxide

Carbon monoxide and carbon dioxide

Gold oxide

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity:

Fatal in contact with skin.

Fatal if swallowed.

Fatal if inhaled.

Danger through skin absorption.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.

LD/LC50 values that are relevant for classification:

No data

Skin irritation or corrosion:

Causes skin irritation.

Eye irritation or corrosion:

Causes serious eye damage.

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.

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.

Ecotoxicological effects:

Remark:

Very toxic for aquatic organisms

Additional ecological information:

General notes:

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

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

May cause long lasting harmful effects to aquatic life.

Avoid transfer into the environment.

Very toxic for aquatic organisms

Results of PBT and vPvB assessment

PBT:

Not applicable.

vPvB:

Not applicable.

Other adverse effects

No further relevant 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.

Recommended cleansing agent:

Water, if necessary with cleansing agents.

SECTION 14. TRANSPORT INFORMATION

UN-Number

DOT, IMDG, IATA

UN1588

UN proper shipping name

DOT

Cyanides, inorganic, solid, n.o.s.

ADR

1588 Cyanides, inorganic, solid, n.o.s.

(Gold(I) potassium cyanide)

IMDG

CYANIDES, INORGANIC, SOLID, N.O.S. (Gold(I) potassium cyanide), MARINE

POLLUTANT

IATA

CYANIDES, INORGANIC, SOLID, N.O.S. (Gold(I) potassium cyanide)

Transport hazard class(es)

DOT

Class

6.1 Toxic substances

Label

6.1

ADR

Class

6.1 (T5) Toxic substances

Label

6.1

IMDG

Class

6.1 Toxic substances

Label

6.1

IATA

Class

6.1 Toxic substances

Label

6.1

Packing group

DOT, ADR, IMDG, IATA

I

Environmental hazards:

Marine pollutant (IMDG):

Yes (DOT)

Symbol (fish and tree)

Special precautions for user

Warning: Toxic substances

EMS Number:

F-A,S-A

Segregation groups

Cyanides

Stowage Category

A

Segregation Code

SG35 Stow "separated from" acids.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

Transport/Additional information:

DOT

Quantity limitations

On passenger aircraft/rail: 5 kg

On cargo aircraft only: 50 kg

Hazardous substance:

10 lbs, 4.54 kg

Marine Pollutant (DOT):

No

Remarks:

Special marking with the symbol (fish and tree).

IMDG

Limited quantities (LQ)

Excepted quantities (EQ)

Code: E5

Maximum net quantity per inner packaging: 1 g

Maximum net quantity per outer packaging: 300 g

UN "Model Regulation":

UN 1588 CYANIDES, INORGANIC, SOLID, N.O.S. (GOLD(I) POTASSIUM
CYANIDE), 6.1, I

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

GHS05

GHS06

Signal word

Danger

Hazard statements

H290

May be corrosive to metals.

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H315

Causes skin irritation.

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Causes serious eye damage.

Precautionary statements

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IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses,

if present and easy to do. Continue rinsing.

P320

Specific treatment is urgent (see on this label).

P405

Store locked up.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)

13967-50-5 Gold(I) potassium cyanide

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

13967-50-5 Gold(I) potassium cyanide

Information about limitation of use:

For use only by technically qualified individuals.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

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.

SECTION 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.