STANFORD ADVANCED MATERIALS

SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Name: Platinum

CAS #: 7440-06-4

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

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.

P241Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P280

Wear protective gloves/ eye protection/ face protection.

P370 + P378

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-none

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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Formula: Pt

Molecular weight: 195.08 g/mol

CAS-No.: 7440-06-4

EC-No.: 231-116-1

Component: Platinum

Classification: Flam. Sol.1; H228

Concentration: <=100%

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4. FIRST AID MEASURES

Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or

in section 11

Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture

No data available

Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.Further information

Use water spray to cool unopened containers.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas.

For personal protection see section 8.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up

Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

Avoid formation of dust and aerosols.

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Provide appropriate exhaust ventilation at places where dust is formed.Keep away from sources of ignition -No smoking. Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place.

Storage class (TRGS 510): Flammable solid hazardous materials

Specific end use(s)

Apart from the uses mentioned in section 1 no other specific uses are stipulated

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

If used in solution, or mixed with other substances, and under conditions which differ from EN 374,contact the supplier of the CE approved gloves. This recommendation is advisory only and must be

evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering

controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

Form: powder

Odor

No data available

Odor Threshold

No data available

pH

No data available

Melting point/freezing point

Melting point/range: 1,772 °C (3,222 °F)-lit.

Initial boiling point and boiling range: 3,827 °C (6,921 °F)-lit.

Flash point

N/A

Evaporation rate

No data available

Flammability (solid, gas)

The substance or mixture is a flammable solid with the category 1.

Upper/lower flammability or explosive limits

No data available

Vapor pressure

No data available

Vapor density

No data available

Relative density

21.45 g/mL

Water solubility

No data available

Partition coefficient: n-octanol/water

No data available

Auto-ignition temperature

No data available

Decomposition temperature

No data available

Viscosity

No data availableExplosive properties

No data available

Oxidizing properties

No data available

Other safety information

No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

No data available

Conditions to avoid

Heat, flames and sparks.

Incompatible materials

Strong oxidizing agents, Alcohols

Hazardous decomposition products

Hazardous decomposition products

-Carbon monoxide, Carbon dioxide (CO2), Sulphur oxides

Other decomposition products

-No data available

In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity

No data available

Inhalation: No data available

Dermal: No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

Carcinogenicity- Rat-Implant

Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Tumorigenic:Tumors at site or application.

Carcinogenicity-Mouse-Implant

Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Tumorigenic:Tumors at site or

application.

IARC:

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.ACGIH:

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP:

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA:

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

No data available

Specific target organ toxicity -single exposure

No data available

Specific target organ toxicity -repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

RTECS: TP2160000

Stomach-Irregularities-Based on Human Evidence

Stomach-Irregularities-Based on Human Evidence

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

No data available

Persistence and degradability:

No data available

Bioaccumulative potential:

No data available

Mobility in soil:

No data available

Results of PBT and vPvB assessment:

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT (US)UN number: 3089

Class: 4.1

Packing group: II

Proper shipping name: Metal powders, flammable, n.o.s.

Reportable Quantity(RQ):

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.

IATA

UN number: 3089

Class: 4.1

Packing group: II

Proper shipping name: Metal powder, flammable, n.o.s.

SECTION 15. REGULATORY INFORMATION

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Fire Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Platinum

CAS-No. 7440-06-4

Revision Date

1993-04-24

Pennsylvania Right To Know Components

Platinum

CAS-No. 7440-06-4

Revision Date

1993-04-24

New Jersey Right To Know Components

Platinum

CAS-No. 7440-06-4

Revision Date

1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 2. HAZARDS IDENTIFICATION

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

The substance is not classified according

to the Globally Harmonized System (GHS).Hazards not otherwise classified

No data available

GHS label elements

N/A

Hazard pictograms

N/A

Signal word

N/A

Hazard statements

N/A

WHMIS classification

Not controlled

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

Health (acute effects) = 1

Flammability = 0

Physical Hazard = 0

Other hazards

Results of PBT and vPvB assessment

PBT:

N/A

vPvB:

N/A

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

CAS No. / Substance Name:

Platinum, 4% on silica

SECTION 4. FIRST AID MEASURES

Description of first aid measures

If inhaled:

Supply patient with fresh air. If not breathing, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

In case of skin contact:

Immediately wash with soap and water; rinse thoroughly.

Seek immediate medical advice.

In case of eye contact:

Rinse opened eye for several minutes under running water. Consult a physician.

If swallowed:

Seek medical treatment.

Information for doctor

Most important symptoms and effects, both acute and delayed

No data available

Indication of any immediate medical attention and special treatment needed

No data 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:

Metal oxide fume

Silicon 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

Use personal protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Environmental precautions:

Do not allow material to be released to the

environment without official permits.

Methods and materials 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.

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:

The product is not flammable

Conditions for safe storage, including any incompatibilities

Requirements to be met by storerooms and receptacles:

No special requirements.

Information about storage in one common storage facility:

No data available

Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well-sealed containers.

Specific end use(s)

No data available

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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:

Silica, amorphous-diatomaceous earth

mg/m3

ACGIH TLV 10 (inhalable particulate)

3 (respirable particulate)

Germany TWA

4 (inhalable fraction of the aerosol)

Ireland TWA 1.5

United Kingdom TWA 1.2 (respirable dust)

USA PEL 20 mppcf

Silica, amorphous

mg/m3

Ireland TWA 3 (respirable); 6 (total inhalable)

United Kingdom TWA 2.4 (respirable); 6 (total inhalable)

Silica, amorphous-fused

mg/m3

ACGIH TLV 0.1 (respirable particulate)

Finland TWA 5

Germany TWA 0.3 (respirable fraction of the aerosol)

Ireland TWA 0.1 (respirable)

United Kingdom TWA 0.3 (respirable dust)

Silica, amorphous-fume

mg/m3

ACGIH TLV 2 (respirable particulate)

Germany TWA 0.3 (respirable fraction of the aerosol)

Silica, amorphous-precipitated and gel

mg/m3

ACGIH TLV 10 (inhalable particulate)

Germany TWA

4 (inhalable fraction of the aerosol)

USA PEL 20 mppcf

Silica, crystalline-quartz

mg/m3

ACGIH TLV 0.1

Austria MAK 0.15

Belgium TWA 0.1

Finland TWA 0.2

France VME 10/(X+2)

Germany MAK 0.15

Korea TLV 0.1

Netherlands MAC-TGG 0.075

Norway TWA 0.3 (total dust)

0.1 (resp. dust)

Russia 14-STEL

Sweden NGV 0.1 (resp. dust)

Switzerland MAK-W 0.15

United Kingdom TWA 0.3 (respirable)

USA PEL 10/(% resp. SiO2+2)30/(% SiO2+2) (total sust)

Silica, crystalline-tridymite and cristobalite mg/m3

ACGIH TLV 0.05 (respirable particulate)

Belgium TWA 0.05

Denmark TWA 0.05

Finland TWA 0.1

France TWA 10

Germany TWA 0.15 (respirable fraction of the aerosol)

Ireland TWA 0.4 (respirable)

Netherlands TWA 0.075 (respirable)

Sweden TWA 0.05

Switzerland TWA 0.15

USA PEL 0.5 (value calculated for quartz-respirable dust)

Silica, crystalline-tripoli

mg/m3

ACGIH TLV 0.1 (of contained respirable quartz)

Belgium TWA 0.1

Germany TWA 0.15 (respirable fraction of the aerosol)

Ireland TWA 0.4 (respirable)

USA PEL See quartz

Platinum metal and soluble salts (as Pt)

mg/m3

ACGIH TLV 1 (metal); 0.002 (soluble salts)

Austria MAK 1 (metal); 0.002 (soluble salts)

Belgium TWA 1 (metal); 0.002 (soluble salts)

Denmark TWA 0.002 (soluble salts)

Finland TWA 1 (metal); 0.002 (soluble salts)

France VME 1 (metal)

Germany MAK 0.002 (soluble salts)-Ceiling

Hungary TWA 0.001; 0.002-STEL (soluble salts)

Korea TLV 1 (metal); 0.002 (soluble salts)

Netherlands MAC-TTG 1 (metal); 0.002 (soluble salts)

Norway TWA 0.002

Switzerland MAK-W 0.002

United Kingdom TWA 5 (metal); 0.002 (soluble salts)

USA PEL 0.002

Additional information:

No data

Exposure controls

Personal protective equipment

Follow typical protective and hygienic practices for handling chemicals.

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.

Protection of hands:

Impervious gloves

Inspect gloves prior to use.

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)

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:

Grey

Odor:

No data available

Odor threshold:

No data available.

pH:

N/A

Melting point/Melting range:

No data available

Boiling point/Boiling range:

No data available

Sublimation temperature / start:

No data available

Flammability (solid, gas)

No data available.

Ignition temperature:

No data available

Decomposition temperature:

No data available

Autoignition:

No data available.

Danger of explosion:

Product does not present

an explosion hazard.

Explosion limits:

Lower:

No data available

Upper:

No data available

Vapor pressure:

N/A

Density:

No data available

Relative density

No data available.

Vapor density

N/A

Evaporation rate

N/A

Solubility in / Miscibility with

Water:

InsolublePartition coefficient (n-octanol/water):

No data available.

Viscosity:

Dynamic:

N/A

Kinematic:

N/A

Other information

No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity

No data available

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 data available

Incompatible materials:

No data available

Hazardous decomposition products:

Metal oxide fume

Silicon oxide

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:

Platinum salts, especially ionic platinum halogeno complexes, may cause severe allergic reactions.

Germ cell mutagenicity:

No effects known.

Carcinogenicity:

IARC-3: Not classifiable as

to carcinogenicity to humans.

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:

Exposure to platinum containing dusts or fumes may cause irritation, sensitization reactions and

asthma. Effects include sneezing, coughing, tightness in the chest, dyspnea and wheezing. Cyanosis

is possible. Chronic exposure may result in pulmonary fibrosis.

Subacute to chronic toxicity:

No effects known.

Subacute to chronic toxicity:

Prolonged inhalation of silica may cause silicosis, the formation of adhesions in the lungs progressing

to the formation of a continuous mass of fibrous tissue. If the

disease continues, death may occur. Tuberculosis is often found in people with silicosis. Some forms of silica are more fibrogenic than others. Some forms of crystalline silica have shown carcinogenic, tumorigenic and neoplastic effects in laboratory animals. Amorphous silica is less

harmful by inhalation than crystallineforms. Amorphous silica may, however, contain small amounts of

crystalline silica.

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 data available

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Additional ecological information:

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 data available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Recommendation

Consult official regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation:Disposal must be made according to official regulations.

SECTION 14. TRANSPORT INFORMATION

Not a hazardous material for transportation.

UN-Number

DOT, IMDG, IATA

None

UN proper shipping name

DOT, IMDG, IATA

None

Transport hazard class(es)

DOT, ADR, IMDG, IATA

Class

None

Packing group

DOT, IMDG, IATA

None

Environmental hazards:

N/A

Special precautions for user

N/A

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

N/A

Transport/Additional information:

Not dangerous according to

the above specifications.

DOT

Marine Pollutant (DOT):

No

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

GHS label elements

N/A

Hazard pictograms

N/A

Signal word

N/A

Hazard statements

N/A

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.

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.