

SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Name: Platinum Ink

Product Number: All applicable American Elements product codes, e.g. PT-M-01-INK

CAS #: 7440-06-4

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. P241 Use 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

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.

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

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 bН 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 available

Explosive 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

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

2.1 Classification of the substance or mixture Classification according to Regulation (EC) No 1272/2008 GHS02 flame Flam. Liq. 3 H226 Flammable liquid and vapor. GHS08 health hazard Repr. 1B H360FD May damage fertility. May damage the unborn child. GHS07 Skin Irrit. 2 H315 Causes skin irritation. Other hazards that do not result in classification No data available 2.2 Label elements Labelling according to Regulation (EC) No 1272/2008 The product is classified and labelled according to the CLP regulation. Hazard pictograms



GHS02 GHS07 GHS08 Signal word Danger Hazard-determining components of labelling: 2-Ethoxyethyl acetate Hazard statements H226 Flammable liquid and vapor. H315 Causes skin irritation. H360FD May damage fertility. May damage the unborn child. Precautionary statements P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P280 Wear protective gloves/protective clothing/eye protection/face protection. P281 Use personal protective equipment as required. P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P405 Store locked up. P501 Dispose of contents/container in accordance with local/regional/national/international regulations. 2.3 Other hazards Results of PBT and vPvB assessment PBT: N/A vPvB: N/A

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures Dangerous components: CAS: 98-55-5 EINECS: 202-680-6 alpha-Terpineol Skin Irrit. 2, H315 7,0% CAS: 111-15-9 EINECS: 203-839-2 Index number: 607-037-00-7 2-Ethoxyethyl acetate Flam. Liq. 3, H226; Repr. 1B, H360FD; Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332 7,0% CAS: 9004-70-0 EC number: 618-392-2 Nitrocellulose Flam. Sol. 1, H228; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335 7,0% Additional information None known. Non-Hazardous Ingredients CAS: 7440-06-4 EINECS: 231-116-1 Platinum

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures If inhaled: Supply patient with fresh air. If not breathing, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. Seek immediate medical advice. In case of skin contact: Instantly wash with water and soap and rinse thoroughly. Seek immediate medical advice. In case of eye contact: Rinse opened eye for several minutes under running water. Then consult doctor. If swallowed: Seek medical treatment. 4.2 Most important symptoms and effects, both acute and delayed: No data available 4.3 Indication of any immediate medical attention and special treatment needed: No data available

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing agents CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
5.2 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
Nitrogen oxides (NOx)
Platinum oxide
5.3 Advice for firefighters
Protective equipment:
Wear self-contained breathing apparatus.
Wear full protective suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
6.2 Environmental precautions: Do not allow product to enter drains, sewage systems, or other water

courses system or water bodies.

6.3 Methods and materials for containment and cleanup:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

Prevention of secondary hazards: Keep away from ignition sources.

6.4 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 information on disposal.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Keep containers tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation/exhaustion at the workplace.

Open and handle container with care.

Information about protection against explosions and fires:

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

7.2 Conditions for safe storage, including any incompatibilities

Requirements to be met by storerooms and containers: No special requirements.

Information about storage in one common storage facility: Store away from oxidising agents.

Further information about storage conditions:

Keep container tightly sealed.

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

Store in a locked cabinet or with access restricted to technical experts or their assistants.

7.3 Specific end use(s) No data 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.

8.1 Control parameters

Components with critical values that require monitoring at the workplace:

7440-06-4 Platinum (79,0%)

AGW (Germany) Long-term value: 1 E mg/m³ EU, 13

PEL (USA) Long-term value: 0,002 mg/m³ soluble salts, as Pt

REL (USA) Long-term value: 1* 0,002** mg/m³ *Metal **soluble salts, as Pt

TLV (USA) Long-term value: 1* 0,002** mg/m³ *metal **soluble salts, as Pt 111-15-9 2-Ethoxyethyl acetate (7,0%)

AGW (Germany) Long-term value: 10,8 mg/m³, 2 ppm 8(II);EU, DFG, H, Z

PEL (USA) Long-term value: 540 mg/m³, 100 ppm Skin REL (USA) Long-term value: 2,7 mg/m³, 0,5 ppm Skin TLV (USA) Long-term value: 27 mg/m³, 5 ppm Skin; BEI Ingredients with biological limit values: 111-15-9 2-Ethoxyethyl acetate (7,0%) BGW (Germany) 50 mg/l Untersuchungsmaterial: Urin Probennahmezeitpunkt: bei Langzeitexposition: Nach mehreren vorangegangenen Schichten Parameter: Ethoxyessigsäure BEI (USA) 100 mg/g creatinine Medium: urine Time: end of shift at end of workweek Parameter: 2-Ethoxyacetic acid Additional information: No data 8.2 Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures should be adhered to in handling the chemicals. Keep away from foodstuffs, beverages and food. Instantly remove any soiled and impregnated garments. Wash hands during breaks and at the end of the work. Store protective clothing separately. Do not inhale dust / smoke / mist. Maintain an ergonomically appropriate working environment. Breathing equipment: Use breathing protection with high concentrations. Recommended filter device for short term use: Use a respirator with multi-purpose combination (US) or type ABEK (EN 14387) 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 such as NIOSH (USA) or CEN (EU). Protection of hands: Inspect gloves prior to use. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. Material of gloves Impervious gloves Eye protection: Safety glasses Face protection Body protection: Protective work clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties Appearance:Form: PasteSmell: Not determinedOdor threshold: Not determined.pH: Not determined. Melting point/Melting range: Not determined Boiling point/Boiling range: Not determined Sublimation temperature / start: Not determined Inflammability (solid, gas) Not determined. Ignition temperature: 380 °C Decomposition temperature: Not determined Self-inflammability: Product is not selfigniting. Danger of explosion: Not determined. Critical values for explosion: Lower: Not determined Upper: Not determined Steam pressure: Not determined **Density Not determined** Relative density Not determined. Vapor density Not determined. Evaporation rate Not determined. Solubility in / Miscibility with Water: Not miscible or difficult to mix Partition coefficient (n-octanol/water): Not determined. Viscosity: Dynamic: Not determined. Kinematic: Not determined. Solvent content: Organic solvents: 7,0 % Solids content: 86.0 % 9.2 Other information No data available

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity No data available

10.2 Chemical stability Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions Reacts with strong oxidising agents

10.4 Conditions to avoid No data available

10.5 Incompatible materials: Oxidising agents

10.6 Hazardous decomposition products:

Carbon monoxide and carbon dioxide

Nitrogen oxides (NOx)

Platinum oxide

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity: 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:

98-55-5 alpha-Terpineol

Oral LD50 3200 mg/kg (RAT)

111-15-9 2-Ethoxyethyl acetate

Oral LD50 2700 mg/kg (rat)

Skin irritation or corrosion: May cause irritation

Eye irritation or corrosion: May cause irritation

Sensitization: No sensitizing effect known.

Germ cell mutagenicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for components in this product.

Carcinogenicity:

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.

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

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

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: 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. The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:

Product is suspected to cause injury to foetus.

May cause harm to the unborn child.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity: No data available

12.2 Persistence and degradability No data available

12.3 Bioaccumulative potential No data available

12.4 Mobility in soil No data available

Additional ecological information:

Water hazard class 1 (Self-assessment): slightly hazardous for water.

Do not allow undiluted product or large quantities to reach groundwater, water courses, or sewage systems.

Avoid transfer into the environment.

12.5 Results of PBT and vPvB assessment

PBT: N/A

vPvB: N/A

12.6 Other adverse effects No data available

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Recommendation
Hand over to disposers of hazardous waste.
Must be specially treated under adherence to official regulations.
Consult official regulations for proper disposal.
Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

SECTION 14. TRANSPORT INFORMATION

UN-Number ADR, IMDG, IATA UN1263 14.2 UN proper shipping name ADR 1263 PAINT, special provision 640E IMDG, IATA PAINT 14.3 Transport hazard class(es) ADR Class 3 (F1) Flammable liquids. Label 3 IMDG, IATA Class 3 Flammable liquids. Label 3 Packing group ADR, IMDG, IATA III 14.5 Environmental hazards: Marine pollutant: No 14.6 Special precautions for user Warning: Flammable liquids. Kemler Number: 30 EMS Number: F-E,S-E 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code N/A Transport/Additional information: ADR Excepted quantities (EQ): E1 Limited quantities (LQ) 5L Transport category 3 Tunnel restriction code D/E UN "Model Regulation": UN1263, PAINT, special provision 640E, 3, III

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture Australian Inventory of Chemical Substances All ingredients are listed. Standard for the Uniform Scheduling of Medicines and Poisons None of the ingredients is listed. National regulations Information about limitation of use: Employment restrictions concerning young persons must be observed. Employment restrictions concerning women of child-bearing age must be observed. For use only by technically qualified individuals. Classification according to VbF: N/A Technical instructions (air): Class Share in % NK 7,0 Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water. Other regulations, limitations and prohibitive regulations ELINCS (European List of Notified Chemical Substances) None of the ingredients is listed.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. 111-15-9 2-Ethoxyethyl acetate 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. None of the ingredients is listed. Annex XIV of the REACH Regulations (requiring Authorisation for use) None of the ingredients is listed. 15.2 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. 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.