

SAFETY DATA SHEET

Date Accessed: 04/24/2024

Date Revised: 01/15/2022

SECTION 1. IDENTIFICATION

Product Name: Aluminum Ink

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

CAS #: 7429-90-5

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

Classification according to Regulation (EC) No 1272/2008

GHS02 Flame

Pyr. Sol. 1 H250 Catches fire spontaneously if exposed to air.

Water-react. 2 H261 In contact with water releases flammable gas.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

F; Highly flammable

R15-17: Contact with water liberates extremely flammable gases. Spontaneously flammable in air.

Information concerning particular hazards for human and environment:

N/A

Hazards not otherwise classified

No data available.

Label elements

Labelling according to Regulation (EC) No 1272/2008

The substance is classified and labeled according to the CLP regulation.

Hazard pictograms



GHS02

Signal word: Danger

Hazard statements

H250 Catches fire spontaneously if exposed to air.

H261 In contact with water releases flammable gas.

Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P222 Do not allow contact with air.

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

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

P422 Store contents under inert gas.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

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: N/A.

vPvB: N/A

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

CAS No. / Substance Name:

7429-90-5 Aluminum

Identification number(s):

EC number: 231-072-3

Index number: 013-001-00-6

SECTION 4. FIRST AID MEASURES

Description of first aid measures

If inhaled:

In case of unconsciousness place patient stably in side position for transportation.

Supply 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 information available.

Indication of any immediate medical attention and special treatment needed
No information available.

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
Spontaneously flammable in air.
If this product is involved in a fire, the following can be released:
Metal oxide fume
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
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
Environmental precautions:
No special measures required.
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:
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.

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 adequate ventilation.
Information about protection against explosions and fires:
Substance/product is self ignitable.

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 strong bases.

Store away from halogenated compounds.

Store away from air.

Store away from water/moisture.

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

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:

7429-90-5 Aluminum (100.0%)

PEL (USA) Long-term value: 15*; 15** mg/m³

*Total dust; ** Respirable fraction

REL (USA) Long-term value: 10* 5** mg/m³

*Total dust **Respirable fraction

TLV (USA) Long-term value: 1* mg/m³ as Al; *as respirable fraction

EL (Canada) Long-term value: 1.0 mg/m³ metal and insoluble compounds, respirable

EV (Canada) Long-term value: 5 mg/m³ aluminium-containing (as aluminium)

Additional information: No data

Exposure controls

Personal protective equipment

Follow typical general protective and industrial hygiene measures 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.

Breathing equipment:

Use suitable respirator when high concentrations are present.

Protection of hands:

Impervious gloves

Inspect gloves prior to use.

Suitability of gloves should be determined both by material and quality, the latter of which may vary by manufacturer.

Penetration time of glove material (in minutes): No data available.

Eye protection:

Safety glasses

Full face protection
Body protection:
Protective work clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance:

Form: Powder

Color: Silver gray

Odor: Odorless

Odor threshold: No data available.

pH: N/A.

Melting point/range: 660.4 °C (1221 °F)

Boiling point/range: 2519 °C (4566 °F)

Sublimation temperature / start: No data available.

Flash point: N/A

Flammability (solid, gas):

Contact with water liberates extremely flammable gases.

Ignition temperature: 400 °C (752 °F)

Decomposition temperature: No data available.

Auto igniting: Spontaneously flammable in air.

Danger of explosion: No data available.

Explosion limits:

Lower: No data available.

Upper: No data available.

Vapor pressure: N/A.

Density at 20 °C (68 °F): 2.7 g/cm³ (22.532 lbs/gal)

Relative density: No data available.

Vapor density: N/A.

Evaporation rate: N/A.

Solubility in Water (H₂O):

Contact with water releases flammable gases

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

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

Catches fire spontaneously if exposed to air.

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

Spontaneously flammable in air.

Contact with water releases flammable gases

Conditions to avoid

No information available.

Incompatible materials:

Acids

Air

Oxidizing agents

Bases

Halocarbons

Water/moisture

Hazardous decomposition products:

Metal oxide fume

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity: N/A

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: N/A

Carcinogenicity:

ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.

Reproductive toxicity:

The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.

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.

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.

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: N/A.

vPvB: N/A.

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.

SECTION 14. TRANSPORT INFORMATION

UN-Number

DOT, IMDG, IATA

UN1396

UN proper shipping name

DOT

Aluminum powder, uncoated

IMDG, IATA

ALUMINIUM POWDER, UNCOATED

Transport hazard class(es)

DOT

Class

4.3 Substances which, in contact with water, emit flammable gases.

Label

4.3

Class

4.3 (W2) Substances which, in contact with water, emit flammable gases

Label

4.3

IMDG, IATA

Class

4.3 Substances which, in contact with water, emit flammable gases.

Label

4.3

Packing group

DOT, IMDG, IATA

II

Environmental hazards:

N/A.

Special precautions for user

Warning: Substances which, in contact with water, emit flammable gases

EMS Number:

F-G,S-O

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

N/A.

Transport/Additional information:

DOT

Marine Pollutant (DOT):

No

UN "Model Regulation":

UN1396, Aluminum powder, uncoated, 4.3, 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 Domestic Substances List (DSL).

SARA Section 313 (specific toxic chemical listings)

7429-90-5 Aluminum

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.

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.

REACH - Pre-registered substances

Substance is listed.

Chemical safety assessment:

A Chemical Safety Assessment has not been carried out.

SECTION 2. HAZARDS IDENTIFICATION

Irritant

Combustible liquid.

Organic solvents: may form explosive peroxides. Harmful if swallowed, inhaled, absorbed through the skin. Irritating to eyes, respiratory

system and skin. Do not breathe vapors/spray; avoid inhalation of aluminum ink aerosol. May damage fertility or the unborn child. Target organs – liver, kidneys, blood, male/female reproductive system.



SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance Name: Aluminum
Formula: Al
Weight Percent: 30-70%
CAS #: 7429-90-5
RTECS Number: BD0330000
EINECS Number: 231-072-3
Substance Name: Proprietary Solvent Mixture
Formula: Proprietary
Weight Percent:
30-70%
CAS #: --

SECTION 4. FIRST AID MEASURES

Inhalation: If cough, shortness of breath or other breathing problems occur, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention if symptoms persist.

Skin Exposure: Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Seek medical attention if redness, swelling, itching, burning or visual disturbances occur. Thoroughly wash clothing and shoes before reuse.

Eye Exposure: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Seek medical attention if redness, swelling, itching, burning or visual disturbances occur.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately.

SECTION 5. FIREFIGHTING MEASURES

Flammable Hazard: Organic solvents may form peroxides of unknown stability.

Flammability Data: Flash Point > 190°F

Explosion Limits: Not established for this product.

Autoignition Temperature: Not established for this product.

Fire Extinguishing Media: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Firefighting: Wear suitable protective equipment and self-contained breathing apparatus. Combustible liquid. Emits toxic fumes under fire conditions.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Ensure adequate ventilation. Remove all sources of ignition. Use personal protective equipment. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Spill Procedure: Evacuate area. Shut off all sources of ignition. Do not allow material to be released to the environment without proper governmental permits.

Spill Clean-Up: Absorb with sand and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

SECTION 7. HANDLING AND STORAGE

Handling/Usage Precautions: Avoid inhalation of aluminum ink/paste aerosol. Avoid contact with skin and eyes. Avoid formation of dust, aerosol, or mist. Do not breathe aerosols or dust from dried material. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.

Avoid prolonged or repeated exposure.

Storage Precautions: Keep container tightly closed in a cool dry place. Keep in properly labeled containers. Keep away from heat and sources of ignition. Minimize exposure to air. If peroxide formation is suspected, do not open or move container.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Provide exhaust ventilation or other engineering controls to minimize airborne concentration of vapors. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protective Equipment: Safety glasses and compatible chemical-resistant gloves. Where risk assessment shows air-purifying respirators are appropriate use a NIOSH approved full-face respirator with multi-purpose combination respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

General Hygiene Measures: Wash thoroughly after handling. Wash contaminated clothing before reuse. Keep away from foodstuffs, beverages and feed.

Exposure Limits: There are no exposure limits for this specific product.

Aluminum Metal (mg/m³)

ACGIH TLV 10 (dust); 5 (pyro powder)

Alberta Canada TWA 10; 20-STEL (dust)

5; 10-STEL (pyro powder)

Belgium TWA 10 (dust); 5 (pyro powder)

BC Canada TWA 3 (resp dust); 10 (total dust); 5 (pyro powder)

Germany MAK 1.5 (resp dust)

Ireland TWA 5 (resp dust); 10 (total inhal dust)

Japan TWA 0.5 (resp dust); 2 (total dust)

Netherlands MAC-TGG 10 (dust); 5 (pyro powder)

Quebec Canada TWA 10 (dust); 5 (pyro powder)

Sweden TWA 4 (resp dust); 10 (total dust)

United Kingdom TWA 4 (resp dust); 10 (total inhal dust)

USA PEL 5 (resp dust); 15 (total dust); 5 (pyro powder)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid, paste

Color: Silver-grey

Molecular Weight: Aluminum 26.98 amu

Melting Point: Not established for this product.

Boiling Point: Not established for this product.

Density @ 20°C: Not established for this product.

Solubility: Sparingly soluble in water. Miscible with organics such as toluene.

SECTION 10. STABILITY AND REACTIVITY

Stability: Stable under ordinary conditions of use and storage. Upon exposure to air, product may slowly degrade, forming peroxides, which can be unstable.

Incompatibilities: Strong oxidizing agents and strong bases. Heat, flames, sparks.

Reactivity: Not established for this product.

SECTION 11. TOXICOLOGICAL INFORMATION

Route of Exposure: Skin Contact/Absorption – Irritating to skin. May be harmful if absorbed through the skin. Avoid contact with skin.

Eye Contact – Irritating to eyes. Avoid contact with eyes.

Inhalation – May be harmful if inhaled. Irritating to respiratory system. Avoid inhalation.

Ingestion – Harmful if swallowed.

Signs and Symptoms of Exposure:

Not established for this product.

Target Organs or Systems: Not established for this product.

Toxicity Data: Not established for this product.

Additional Toxicological

Information:

To the best of our knowledge the acute and chronic toxicity of this product is not fully known.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Hazards: Avoid washing into water courses. Avoid contaminating public drains or water supply. Do not allow material to be released to the environment without proper government permits.

SECTION 13. DISPOSAL CONSIDERATIONS

Product: Recover and reclaim or recycle if practical. Observe all state, local or national environmental regulations.

Uncleaned Packaging: Disposal must be made according to official regulations.

SECTION 14. TRANSPORT INFORMATION

DOT Regulations: Not dangerous goods

Air Transport IATA-DGR: Not dangerous goods

SECTION 15. REGULATORY INFORMATION

Regulatory Information: Not established. All components listed on TSCA Inventory.

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.