SAFETY DATA SHEET

Poco Graphite Synthetic Graphite - Copper Impregnated Industrial Grade AXF-5QC

Section 1. Identification

| GHS product identifier | : Poco Graphite Synthetic Graphite - Copper Impregnated Industrial Grade AXF-5QC |
| Other means of identification | : Not available. |
| Product type | : Solid block. |

Relevant identified uses of the substance or mixture and uses advised against

Electrical discharge machining electrodes, other industrial manufacturing components.

Supplier's details

POCO Graphite, Inc.
An Entegris Company
300 Old Greenwood Road
Decatur, Texas 76234
800-433-5547, EXT-4202 (8am - 4pm CT, Mon - Fri)

Emergency telephone number (with hours of operation)

CHEMTREC, U.S.: 1-800-424-9300 International: +1-703-527-3887 (24/7)

Section 2. Hazards identification

OSHA/HCS status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 1

GHS label elements

Hazard pictograms

Signal word

Warning

Hazard statements

Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

Avoid release to the environment.

Response

Collect spillage.

Storage

Not applicable.

Disposal

Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified

May form combustible dust concentrations in air during processing activities (including; but not limited to: cutting, sanding, drilling, machining, dust control equipment, other dust generating activities). Users of this material should perform combustibility testing, prior to use, specific to their use conditions if dust is to be generated.
Section 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other means of identification</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

CAS number/other identifiers
- CAS number: Not applicable.
- Product code: Not available.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite, synthetic</td>
<td>40 - 60</td>
<td>7440-44-0</td>
</tr>
<tr>
<td>Copper</td>
<td>40 - 60</td>
<td>7440-50-8</td>
</tr>
</tbody>
</table>

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Section 4. First aid measures

Description of necessary first aid measures

<table>
<thead>
<tr>
<th>Eye contact</th>
<th>Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Move exposed person to fresh air.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>In case of contact, immediately flush skin with plenty of water for at least 20 minutes.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.</td>
</tr>
</tbody>
</table>

Most important symptoms/effects, acute and delayed

Potential acute health effects

<table>
<thead>
<tr>
<th>Eye contact</th>
<th>No known significant effects or critical hazards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

Over-exposure signs/symptoms

<table>
<thead>
<tr>
<th>Eye contact</th>
<th>No known significant effects or critical hazards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician
- Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments
- No specific treatment.

Protection of first-aiders
- No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)
Section 5. Fire-fighting measures

Extinguishing media

**Suitable extinguishing media**
- Use an extinguishing agent suitable for the surrounding fire.

**Unsuitable extinguishing media**
- None known.

Specific hazards arising from the chemical
- Fine dust clouds may form explosive mixtures with air.

Hazardous thermal decomposition products
- Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Special protective actions for fire-fighters
- This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Special protective equipment for fire-fighters
- Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark
- Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel**
- Minimize dust generation and accumulation. Keep unnecessary and unprotected personnel from entering. Provide adequate ventilation. Put on appropriate personal protective equipment.

**For emergency responders**
- If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Non-sparking tools should be used when working with dust. See also Section 8 for additional information on hygiene measures.

Environmental precautions
- Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. See section 13 for waste disposal information.

Methods and materials for containment and cleaning up

**Small spill**
- Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

**Large spill**
- If emergency personnel are unavailable vacuum or carefully scoop up spilled materials and place in an appropriate container for disposal. Avoid creating dusty conditions and prevent wind dispersal. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
Section 7. Handling and storage

Precautions for safe handling

Protective measures: Provide adequate ventilation. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Non-sparking tools should be used when working with dust. Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Dust levels must be kept within prescribed limits. Spilled product should be cleaned up and a high standard of housekeeping maintained. Transfer product using proper grounding and bonding procedures to avoid static accumulation. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities: Maintain graphite blocks in stable position. Any machined generated dust should be maintained in closed container.

Recommendations: Maintain blocks as shipped, no specific handling or storage identified. Dust or powder from machining process should be kept in closed container.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>ACGIH TLV (United States, 4/2014). TWA: 1 mg/m³, (as Cu) 8 hours. Form: Dusts and mists TWA: 0.2 mg/m³ 8 hours. Form: Fume OSHA PEL (United States, 2/2013). TWA: 1 mg/m³ 8 hours. Form: Dusts and mists TWA: 0.1 mg/m³ 8 hours. Form: Fume NIOSH REL (United States, 10/2013). TWA: 1 mg/m³, (as Cu) 10 hours. Form: Dusts and mists</td>
</tr>
</tbody>
</table>

Appropriate engineering controls: It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling dusts generated from this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Safety eyewear should be used when there is a likelihood of exposure. Recommended: Safety glasses with side shields.

Skin protection

Hand protection: Use gloves appropriate for work or task being performed. Recommended: Chemical-resistant gloves.
Section 8. Exposure controls/personal protection

- **Body protection**: No special protective clothing is required.
- **Other skin protection**: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- **Respiratory protection**: Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

**Appearance**

- **Physical state**: Solid block.
- **Color**: Not available.
- **Odor**: Odorless.
- **Odor threshold**: Not available.
- **pH**: Not available.
- **Melting point**: Graphite: Sublimation temperature: 3648.9°C (6600°F). Copper: Melting point: 1083°C (1980°F)

**Boiling point**: Not available.
- **Flash point**: Not available.
- **Burning time**: Not available.
- **Burning rate**: Not available.
- **Evaporation rate**: Not available.
- **Flammability (solid, gas)**: Not available.
- **Lower and upper explosive (flammable) limits**: Not available.
- **Vapor pressure**: Not available.
- **Vapor density**: Not available.
- **Relative density**: 2.36
- **Solubility**: Insoluble in water.
- **Solubility in water**: Not available.
- **Partition coefficient: n-octanol/water**: Not available.
- **Auto-ignition temperature**: Not available.
- **Decomposition temperature**: Not available.
- **SADT**: Not available.
- **Viscosity**: Not available.

Section 10. Stability and reactivity

- **Reactivity**: No specific test data related to reactivity available for this product or its ingredients.
- **Chemical stability**: The product is stable.
- **Possibility of hazardous reactions**: Under normal conditions of storage and use, hazardous reactions will not occur.
- **Conditions to avoid**: Minimize dust generation and accumulation.
Section 10. Stability and reactivity

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity
There is no data available.

Irritation/Corrosion

<table>
<thead>
<tr>
<th>Sk i n</th>
<th>There is no data available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>E y e s</td>
<td>There is no data available.</td>
</tr>
<tr>
<td>R e s p i r a t o r y</td>
<td>There is no data available.</td>
</tr>
</tbody>
</table>

Sensitization

<table>
<thead>
<tr>
<th>S k i n</th>
<th>There is no data available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R e s p i r a t o r y</td>
<td>There is no data available.</td>
</tr>
</tbody>
</table>

Mutagenicity
There is no data available.

Carcinogenicity
There is no data available.

Reproductive toxicity
There is no data available.

Teratogenicity
There is no data available.

Specific target organ toxicity (single exposure)

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite, synthetic</td>
<td>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

Specific target organ toxicity (repeated exposure)
There is no data available.

Aspiration hazard
There is no data available.

Information on the likely routes of exposure
Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

<table>
<thead>
<tr>
<th>E y e c o n t a c t</th>
<th>No known significant effects or critical hazards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I n h a l a t i o n</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>S k i n c o n t a c t</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>I n g e s t i o n</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

Symptoms related to the physical, chemical and toxicological characteristics

| E y e c o n t a c t | No known significant effects or critical hazards. |
Section 11. Toxicological information

Inhalation: No known significant effects or critical hazards.
Skin contact: No known significant effects or critical hazards.
Ingestion: No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure
Potential immediate effects: No known significant effects or critical hazards.
Potential delayed effects: No known significant effects or critical hazards.

Long term exposure
Potential immediate effects: No known significant effects or critical hazards.
Potential delayed effects: No known significant effects or critical hazards.

Potential chronic health effects
General: No known significant effects or critical hazards.
Carcinogenicity: No known significant effects or critical hazards.
Mutagenicity: No known significant effects or critical hazards.
Teratogenicity: No known significant effects or critical hazards.
Developmental effects: No known significant effects or critical hazards.
Fertility effects: No known significant effects or critical hazards.

Numerical measures of toxicity
Acute toxicity estimates
There is no data available.

Section 12. Ecological information

Toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>Acute EC50 1100 µg/L Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>4 days</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 2.1 µg/L Fresh water</td>
<td>Daphnia - Daphnia longispina - Juvenile (Fledgling, Hatchling)</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute IC50 13 µg/L Fresh water</td>
<td>Algae - Pseudokirchneriella subcapitata - Exponential growth phase</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Acute IC50 5.4 mg/L Marine water</td>
<td>Aquatic plants - Plantae - Exponential growth phase</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 0.072 µg/L Marine water</td>
<td>Crustaceans - Amphipoda - Adult</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 7.56 µg/L Marine water</td>
<td>Fish - Periophthalmus walti - Adult</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 2.5 µg/L Marine water</td>
<td>Algae - Nitzschia closterium - Exponential growth phase</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 7 mg/L Fresh water</td>
<td>Aquatic plants - Ceratophyllum demersum</td>
<td>3 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.02 mg/L Fresh water</td>
<td>Crustaceans - Cambarus bartoni - Mature</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 2 µg/L Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.8 µg/L Fresh water</td>
<td>Fish - Oreochromis niloticus - Juvenile (Fledgling, Hatchling, Weanling)</td>
<td>6 weeks</td>
</tr>
</tbody>
</table>

Persistence and degradability
There is no data available.

Bioaccumulative potential
Section 12. Ecological information

There is no data available.

**Mobility in soil**

| Soil/water partition coefficient (KOC) | Not available. |

**Other adverse effects**

: No known significant effects or critical hazards.

Section 13. Disposal considerations

**Disposal methods**

: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

<table>
<thead>
<tr>
<th>DOT Classification</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Packing group</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>No.</td>
<td>No.</td>
</tr>
<tr>
<td>Additional information</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Special precautions for user**

: Transport within user’s premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

: Not available.
Section 15. Regulatory information

U.S. Federal regulations

- **Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs):** Listed
- **Clean Air Act Section 602 Class I Substances:** Not listed
- **Clean Air Act Section 602 Class II Substances:** Not listed
- **DEA List I Chemicals (Precursor Chemicals):** Not listed
- **DEA List II Chemicals (Essential Chemicals):** Not listed

**TSCA 8(a) CDR Exempt/Partial exemption:** Not determined

- **Clean Water Act (CWA) 307:** Copper

**State regulations**

- **Massachusetts:** The following components are listed: Copper
- **New York:** The following components are listed: Copper
- **New Jersey:** The following components are listed: Copper
- **Pennsylvania:** The following components are listed: Copper
- **California Prop. 65:** No products were found.

**International regulations**

- **SARA 302/304**

  **Composition/information on ingredients**

  No products were found.

- **SARA 304 RQ**

  Not applicable.

- **SARA 311/312**

  **Classification**

  Not applicable.

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Fire hazard</th>
<th>Sudden release of pressure</th>
<th>Reactive</th>
<th>Immediate (acute) health hazard</th>
<th>Delayed (chronic) health hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite, synthetic</td>
<td>40 - 60</td>
<td>No.</td>
<td>No.</td>
<td>No.</td>
<td>Yes.</td>
<td>No.</td>
</tr>
</tbody>
</table>

**SARA 313**

<table>
<thead>
<tr>
<th>Product name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>40 - 60</td>
</tr>
</tbody>
</table>

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

**State regulations**

**Massachusetts:** The following components are listed: Copper

**New York:** The following components are listed: Copper

**New Jersey:** The following components are listed: Copper

**Pennsylvania:** The following components are listed: Copper

**California Prop. 65**

No products were found.
Section 15. Regulatory information

International lists

Australia inventory (AICS): All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: Not determined.
Korea inventory: All components are listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals: Not listed
Chemical Weapons Convention List Schedule II Chemicals: Not listed
Chemical Weapons Convention List Schedule III Chemicals: Not listed

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health: 1
Flammability: 0
Physical hazards: 0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6866.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Health: 1
Flammability: 0
Instability: 0

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to a certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Additional information: Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

History

Date of issue mm/dd/yyyy: 10/30/2014
Date of previous issue: 01/15/2013
Version: 5
Prepared by: KMK Regulatory Services Inc.
Section 16. Other information

Key to abbreviations:
- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- UN = United Nations

Notice to reader
To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.