



Safety Data Sheet

Material Name: Poco Graphite Synthetic Graphite - Copper Impregnated -
Semiconductor Grade; POCO石墨合成石墨 - 浸渍铜 - 半导体等级
Revision date: 2021-12-07

Compliant with GB/T 16483 and
GB/T 17519
SDS ID: 0140 (CHINA)
Version 2.0

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Material Name

Poco Graphite Synthetic Graphite - Copper Impregnated - Semiconductor Grade; POCO石墨合成石墨 - 浸渍铜 - 半导体等级

Product Description

This SDS covers the following Semiconductor Grades: DFP1C

Details of the supplier of the safety data sheet

当地信息 (Local information) :

艾微美科材国际贸易(上海)有限公司
ATMI International Trading Co.,LTD

上海市科苑路88号德国中心二号楼523-533室
Unit 523-533, Tower 2, German Center, No.88 Keyuan Road, Shanghai 201203, China

邮政编码 : 201203
Zip Code: 201203

电话 : 86-21-80236500
Telephone: 86-21-80236500

应急电话 :
Emergency Call:

400-6267911 (中国24小时化学事故应急咨询服务热线)
4001-204937 (ChemTrec 中国)
1-703-527-3887 (ChemTrec 国际)
86-21-80236500 (上海)
E-mail: Product.stewardship@entegris.com

Product Use

semiconductor manufacture

Restrictions on Use

None known.

Section 2 - HAZARDS IDENTIFICATION

Emergency Overview

gray to black solid block. May form combustible dust concentrations in air. Fatal if swallowed. May be harmful if inhaled. Causes serious eye irritation. May cause allergic skin reaction. May cause genetic defects. May cause cancer. Causes damage to organs. May cause damage to organs. May cause respiratory irritation.

GHS hazard classification (according to GB 30000.2-GB 30000.29)

None needed according to classification criteria.

Label elements

Symbol(s)

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None needed according to classification criteria.

Signal word

None needed according to classification criteria

Hazard Statement(s)

None needed according to classification criteria.

Precautionary statements

Prevention

None needed according to classification criteria.

Response

None needed according to classification criteria.

Storage

None needed according to classification criteria.

Disposal

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

Physical and Chemical Hazards

May form combustible dust concentrations in air.

Health Hazards

Fatal if swallowed, May be harmful if inhaled, respiratory tract irritation, eye irritation, allergic reactions, digestive tract damage, immune system damage, kidney damage, mutagenic effects, cancer

Potential Environmental Effects

Very toxic to aquatic life with long lasting effects.

Other Hazards Which Do Not Result in Classification

When processed by milling, grinding, welding, melting, sawing, brazing, burning or other similar processes the generated dust, fines, fume or mist may pose a hazard through inhalation, ingestion or by eye or skin contact. May form combustible dust concentrations in air (during handling or processing). Small chips and dust generated by processes may be environmentally hazardous and toxic to aquatic life. SECTION 16: Other information.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
7782-42-5	Graphite	40-60
7440-50-8	Copper	40-60

Section 4 - FIRST AID MEASURES

Description of Necessary Measures

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

Skin contact

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact

Flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

Ingestion

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.

Most Important Symptoms/Effects

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Immediate

Fatal if swallowed, May be harmful if inhaled, respiratory tract irritation, eye irritation, allergic reactions, digestive tract damage, immune system damage, kidney damage

Delayed

allergic reactions, mutagenic effects, cancer

Protection of first-aiders

Wear suitable protective clothing. Perform first aid measures in a safe area.

Note to Physicians

No data available

Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively.

Section 5 - FIRE FIGHTING MEASURES**Suitable extinguishing media**

Use extinguishing agents appropriate for surrounding fire.

Unsuitable Extinguishing Media

None known.

Specific hazards arising from the chemical

Negligible fire hazard. 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.

Hazardous combustion products

oxides of carbon, oxides of copper

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. Use extinguishing agents appropriate for surrounding fire. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Avoid inhalation of material or combustion by-products. Dike for later disposal.

Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Wear personal protective clothing and equipment. Minimize dust generation and accumulation. Keep unnecessary people away, isolate hazard area and deny entry. 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. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Environmental precautions

Avoid release to the environment. Collect spillage.

Methods and Materials for Containment and Cleaning Up

Do not touch or walk through spilled material. Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry. If sweeping of a contaminated area is necessary, use a dust suppressant agent. Collect spill using a vacuum cleaner with a HEPA filter or wet and scoop up dry spills. Avoid sweeping spilled dry material. Eliminate ignition sources including sources of electrical, static or frictional sparks. Keep out of water supplies and sewers. Prevent entry into waterways, sewers, basements, or confined areas. Avoid accumulation of airborne dusts. Small spills: Move containers away from spill to a safe area. Vacuum or sweep up material and place in a designated, labeled waste container. Large spills: 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.

Secondary disaster prevention measures

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No data available

Section 7 - HANDLING AND STORAGE

Precautions for safe handling

Do not breathe dust. Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Wear protective gloves/clothing and eye/face protection. Contaminated work clothing must not be allowed out of the workplace. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions.

Conditions for safe storage, including any incompatibilities

None needed according to classification criteria.

Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances. Maintain graphite blocks in stable position. Any machine generated dust should be maintained in closed container. Maintain blocks as shipped, no specific handling or storage identified. Dust or powder from machining process should be kept in closed container.

Incompatible Materials

acids, oxidizing materials

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component Exposure Limits

Graphite	7782-42-5
China:	4 mg/m3 TWA total dust ; 2 mg/m3 TWA respirable dust
ACGIH:	2 mg/m3 TWA (all forms except graphite fibers) respirable particulate matter
Copper	7440-50-8
China:	1 mg/m3 TWA dust ; 0.2 mg/m3 TWA fume
ACGIH:	0.2 mg/m3 TWA fume
Hong Kong:	0.2 mg/m3 TWA fume ; 1 mg/m3 TWA dust and mist

Biological limit value

There are no biological limit values for any of this product's components.

Appropriate engineering controls

Provide local exhaust or process enclosure ventilation system. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Ensure compliance with applicable exposure limits.

Personal protective equipment

Respiratory Protection

SCBA with full face piece should be available in case of emergency.

Hand protection

Wear appropriate chemical resistant gloves.

Eye/face protection

Wear safety glasses. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

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Skin and Body Protection

Wear appropriate chemical resistant clothing.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	gray to black solid block	Physical State	solid
Odor	odorless	Color	gray to black
Odor Threshold	Not available	pH	Not available
Melting Point	1083 °C (Copper)	Boiling Point	Not available
Boiling Point Range	Not available	Freezing point	Not available
Evaporation Rate	Not available	Flammability (solid, gas)	Not flammable
Autoignition Temperature	Not available	Flash Point	(Not flammable)
Lower Explosive Limit	Not available	Decomposition temperature	Not available
Upper Explosive Limit	Not available	Vapor Pressure	Not available
Vapor Density (air=1)	Not available	Specific Gravity (water=1)	Not available
Water Solubility	(Insoluble)	Partition coefficient: n-octanol/water	Not available
Viscosity	Not available	Kinematic viscosity	Not available
Solubility (Other)	Not available	Density	2.8 - 3.5 g/cc
Physical Form	solid block	Sublimation	3648.9 °C (graphite)
Molecular Weight	Not available		

Section 10 - STABILITY AND REACTIVITY

Chemical stability

Stable at normal temperatures and pressure.

Possibility of hazardous reactions

No reactivity hazard is expected.

Polymerization

Will not polymerize.

Conditions to avoid

Avoid accumulation of airborne dusts. Avoid contact with incompatible materials.

Materials to Avoid (Incompatibilities)

acids, oxidizing materials

Hazardous decomposition products

Thermal decomposition products

oxides of carbon, oxides of copper

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Section 11 - TOXICOLOGICAL INFORMATION

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Graphite (7782-42-5)

Inhalation LC50 Rat >2000 mg/m³ 4 h (no deaths occurred)

Copper (7440-50-8)

Inhalation LC50 Rat >5.11 mg/L 4 h

Acute Toxicity Estimate

No data available.

Immediate Effects

Fatal if swallowed, May be harmful if inhaled, respiratory tract irritation, eye irritation, allergic reactions, digestive tract damage, immune system damage, kidney damage

Delayed Effects

allergic reactions, mutagenic effects, cancer

Skin Corrosion/Irritation

No information on significant adverse effects.

Severe Damage/Irritation of Eyes

irritation

Respiratory Sensitization

No data available.

Dermal Sensitization

Component data indicate the substance is sensitizing.

Germ cell mutagenicity

Available data characterizes this mixture as mutagenic.

Carcinogenicity

May cause cancer.

Component Carcinogenicity

None of this product's components are listed by Ministry of Health, ACGIH or IARC.

Reproductive Effects

No data available for the mixture.

Teratogenicity

No data available for the mixture.

Specific Target Organ Toxicity - Single Exposure

respiratory system, digestive system, immune system, kidneys

Specific Target Organ Toxicity - Repeated Exposure

No target organs identified.

Aspiration hazard

No data available.

Medical Conditions Aggravated by Exposure

kidney disorders, respiratory disorders, skin disorders and allergies, digestive disorders, immune system disorders

Additional Data

No data available.

Section 12 - ECOLOGICAL INFORMATION
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Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Component Analysis - Aquatic Toxicity

Graphite	7782-42-5
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Fish:	LC50 96 h Danio rerio >100 mg/L [semi-static]
Copper	7440-50-8
Fish:	LC50 96 h Pimephales promelas 0.0068 - 0.0156 mg/L; LC50 96 h Pimephales promelas <0.3 mg/L [static]; LC50 96 h Pimephales promelas 0.2 mg/L [flow-through]; LC50 96 h Oncorhynchus mykiss 0.052 mg/L [flow-through]; LC50 96 h Lepomis macrochirus 1.25 mg/L [static]; LC50 96 h Cyprinus carpio 0.3 mg/L [semi-static]; LC50 96 h Cyprinus carpio 0.8 mg/L [static]; LC50 96 h Poecilia reticulata 0.112 mg/L [flow-through]
Algae:	EC50 72 h Pseudokirchneriella subcapitata 0.0426 - 0.0535 mg/L [static] EPA ; EC50 96 h Pseudokirchneriella subcapitata 0.031 - 0.054 mg/L [static] EPA
Invertebrate:	EC50 48 h Daphnia magna 0.03 mg/L [Static] EPA

Persistence

No data available for the mixture.

Bioaccumulative potential

No data available for the mixture.

Mobility in Environmental Media

No data available for the mixture.

Other adverse effects

No data available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations.

Component waste information

There is no applicable waste information for this product's components.

Contaminated packaging disposal

Dispose in accordance with all applicable regulations.

Section 14 - TRANSPORT INFORMATION

IATA Information:

UN#: Not regulated

ICAO Information:

UN#: Not regulated

IMDG Information:

UN#: Not regulated

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Special precautions

None

Section 15 - REGULATORY INFORMATION

China Regulations

Law of the People's Republic of China on Prevention and Control of Occupational Diseases: Catalogue of Occupational Hazard Factors

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Graphite	7782-42-5
Dust:	Present
Copper	7440-50-8
Chemical:	Present

State Administration of Work Safety (SAWS) - List of Dangerous Chemicals

None of this product's components are on the list.

List of Dangerous Chemicals for Priority Management

None of this product's components are on the list.

Dangerous Goods List (GB 12268-2012)

None of this product's components are on the list.

Regulation of Environmental Management on the First Import of Chemicals and the Import and Export of Toxic Chemicals: Catalog of Toxic Chemicals Severely Restricted From Import and Export

None of this product's components are on the list.

Hazardous Chemicals Control Ordinance (HongKong)

None of this product's components are on the list.

Controlled Chemicals Schedule (HongKong)

None of this product's components are on the list.

Information on International Conventions and Agreements

**The Montreal Protocol on Substances that Deplete the Ozone Layer
 Montreal Protocol**

No components of this material are listed.

UNEP - Stockholm Convention - Persistent Organic Pollutants (POPs)

Stockholm Convention

No components of this material are listed.

UN/FAO/Rotterdam Convention - Chemicals Subject to Prior Informed Consent (PIC)

No components of this material are listed.

Component Analysis - Inventory

Graphite (7782-42-5)

US	CA	AU	CN	EU	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2
Yes	DSL	Yes	Yes	EIN	No	No	Yes	No

KR - REACH CCA	MX	NZ	PH	TH-TECI	TW, CN	VN (Draft)
No	Yes	Yes	Yes	Yes	Yes	Yes

Copper (7440-50-8)

US	CA	AU	CN	EU	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2
Yes	DSL	Yes	Yes	EIN	Yes	No	Yes	No

KR - REACH CCA	MX	NZ	PH	TH-TECI	TW, CN	VN (Draft)
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No	Yes	Yes	Yes	No	Yes	Yes
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Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 3 Fire: 0 Instability: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

12/6/2021 - Update to Section(s) 2, 4, 11, 16.

Preparation Date

4/5/2016

Revision date

12/6/2021

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL), KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; KR REACH CCA - Korea Registration and Evaluation of Chemical Substances Chemical Control Act; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; Ne - Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL - Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA - Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TH-TECI - Thailand - FDA Existing Chemicals Inventory (TECI); TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW - Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

Training advice

Available upon request

Key literature references and sources for data

Available upon request

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Other Information

Disclaimer:

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When processed by milling, grinding, welding, melting, sawing, brazing, burning or other similar processes the generated dust, fines, fume or mist may pose a hazard through inhalation, ingestion or by eye or skin contact. Combustible Dust; Acute Toxicity - Oral Category 2; Acute Toxicity - Inhalation Category 5; Serious Eye Damage/Eye Irritation Category 2A; Skin Sensitization Category 1; Germ Cell Mutagenicity Category 1; Carcinogenicity 1A; Specific Target Organ Toxicity - Single Exposure Category 1: digestive tract; Specific Target Organ Toxicity - Single Exposure Category 2: immune system, kidneys; Specific Target Organ Toxicity - Single Exposure Category 3: respiratory system; Hazardous to the Aquatic Environment - Acute Category 1; Hazardous to the Aquatic Environment - Chronic Category 1.