

SPI Supplies Division

Structure Probe, Inc.

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Manufacturer's CAGE: 1P573

Safety Data Sheet

Date Effective: December 15, 2015

SPI Catalog #'s: 421HP-CA, 421HP-MB, 423HP-CA, 423HP-MB,
425HP-CA, 425HP-MB, 429HP-AB, 430HP-AB, 432HP-AB,
434HP-AB, 436HP-AB, 438HP-AB, 439HP-AB, 443HP-AB,
444HP-AB, 446HP-AB, 448HP-AB, 449HP-AB, 456HP-AB,
466HP-AB, 476HP-AB, 479HP-AB, 480HP-AB, 498HP-AB
Highly Ordered Pyrolytic Graphite (HOPG)

Section 1: Identification

Chemical Name/Synonyms..... Highly Ordered Pyrolytic Graphite

Chemical family..... Graphite / Carbon

Identified Use: Scientific research and development

Emergencies

Contacting CHEMTREC:

24 Hour Emergency Use Only #'s...

Worldwide phone: 1-(703)-741-5970

Toll-free phone: 1-(800)-424-9300 USA + Canada only

Product or Trade Name..... HOPG

CAS #'s..... 7782-42-5

Chemical Formula..... C

Section 2: Hazard Identification

GHS Classification of the substance or mixture:

This substance is not classified according to the Globally Harmonized System (GHS).

Contains no ingredients now known to be hazardous by OSHA.

The normal cutting of the HOPG blocks, is suspected of generating small amounts of possibly respirable dust.

We believe that such mechanical cutting should be done in a ventilated hood facility. The normal stripping of the individual layers of HOPG is not thought to generate such particulates.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC: Not applicable.

Label elements:

GHS label elements: Not applicable

Hazard pictograms: Not applicable

Signal word: Not applicable

Hazard statements: Not applicable

Other hazards:

Results of PBT and vPvB assessment:

PBT: Not applicable

vPvB: Not applicable

Hazardous Material Information System USA: Not applicable

NFPA Rating (estimated): Not applicable

Section 3: Composition

Substance:	CAS Number	EC Number
Graphite	7782-42-5	231-955-3

Section 4: First Aid Measures

Eyes: In case of contact, immediately flush eyes with copious amounts of flowing water for at least 15 minutes, retracting eye lids often. Get medical attention immediately. Contact lenses should not be worn when working with this product.

Skin: Wash skin thoroughly with mild soap and water. Flush with luke warm water for 15 minutes.

Inhalation: If large amounts of the dust are inhaled, move the exposed person to fresh air at once. If symptoms persist contact physician.

If swallowed: Seek medical attention.

Most important symptoms and effects, but acute and delayed: No further relevant information available

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

Section 5: Fire Fighting Measures

Extinguishing media:

Suitable extinguishing agents: CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam

Special hazards arising from the substance or mixture: If this product is involved in a fire, Carbon monoxide and Carbon dioxide may be released.

Advice for firefighters:

Protective equipment:

Wear self-contained breathing apparatus.

Wear full protective suit.

Section 6: Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation.

Environmental precautions:

Do not allow material to be released to the environment without proper governmental permits.

Do not allow product to reach sewage system or water bodies.

Do not allow to enter the ground/ soil.

Methods and material for containment and cleaning up:

Collect mechanically.

Prevention of secondary hazards:
No special measures required.

Section 7: Handling and Storage

Precautions for safe handling:
Keep containers tightly sealed.
Store in cool, dry place in tightly closed containers.

Information about protection against explosions and fires:
No information known.

Conditions for safe storage, including any incompatibilities:
Storage requirements to be met by storerooms and containers: No special requirements.
Information about storage in one common storage facility: Store away from oxidizing agents.

Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.

Specific end use(s): No further relevant information available.

Section 8: Exposure Controls and Personal Protection

Additional information about design of technical systems:
Properly operating chemical fume hood with average face velocity of at least 100 feet per minute.

Control Parameters with critical values that require monitoring at the workplace:

CAS# 7782-42-5	Graphite (100%)
REL (USA):	Long-term value 2.5 mg/m ³ – respirable dust
TLV (USA):	Long-term value 2.0 mg/m ³ - respirable dust

Additional information: No data.

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.
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 type N95 (USA) or PE (EN 143) cartridges 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.

Protection of hands:

Check protective gloves prior to each use for their proper condition.
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.
Penetration time of glove material (in minutes): Not determined.

Eye protection: Safety glasses.

Body protection: Protective work clothing.

Section 9: Physical and Chemical Properties

Appearance: Black square or rectangular blocks
Color: Black
pH: Not applicable
Odor: None
Vapor Pressure: Not applicable
Vapor Density (Air=1): Not available
Boiling Point/Range: >3000° C
Melting Point/Range: Not available
Specific Gravity: 2 to 2.5 g/cc
Solubility in water: None
Softening Point: Not determined
Molecular Formula: Not known
Molecular Weight: 12.01
%Volatile by Volume: Not determined
Evaporation Rate (n-butyl acetate = 1): Not available
Viscosity: Not available
Bulk Density: Not determined

Section 10: Stability and Reactivity

Reactivity: This material is not reactive.

Conditions to Avoid:

Heat, sparks, flames, and other ignition sources; avoid heating above 290° C (554° F)

Incompatibility (materials to avoid):

Strong oxidizers, fluorine, peroxides

Hazardous Products of Decomposition:

None known

Reactions with Air and Water:

Carbon monoxide and carbon dioxide..

Section 11: Toxicological Information

Eye Effects: May cause eye irritation.

Skin Effects: May cause skin irritation

Skin Effects, Absorption:

No absorption or acute effects expected. However the dust might cause some mild irritation of the skin.

Acute Oral Effects (Ingestion): None known

Acute Inhalation Effects: None known.

Chronic Effects:

A review of the literature does not show obvious long term hazard.

Carcinogenicity:

No component known to be present in this product at > 0.1% is presently listed as a carcinogen by IARC, NTP, or OSHA.

Sensitization: No sensitizing effect known.

Germ cell mutagenicity: No effects known.

Reproductive toxicity: No effects known.

Specific target organ system toxicity – single or repeated exposure: No effects known.

Aspiration hazard: No effects known.

Subacute to chronic toxicity: No effects known.

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 further relevant information available.

Persistence and degradability: No further relevant information available.

Bioaccumulative potential: No further relevant information available.

Mobility in soil: No further relevant information available.

Additional ecological information:

General notes:

Do not allow material to be released the the environment without proper governmental permits.

Generally not hazardous for water.

Avoid transfer into the environment.

Results of PBT and vPvB assessment:

PBT: Not applicable

vPvB: Not applicable

Other adverse effects: No further relevant information available.

Section 13: Disposal Considerations

US EPA Hazardous Waste Numbers:

This product as purchased does not fall under current US EPA (Environmental Protection Agency) RCRA definitions of hazardous waste. Under RCRA it is the generator's responsibility to determine the status of the waste at the time of its disposal.

General Disposal Considerations:

All recovered material should be packaged, transported and disposed of (or reclaimed) using good engineering practices. Disposal method must be in compliance with local, state, and federal regulations regarding health, air and water pollution.

CERCLA Reportable Quantity: This product does not contain any CERCLA regulated materials.

Section 14: Transport Information

Proper Shipping Name: Not Regulated

DOT Hazard Class: Non-Regulated

UN/NA ID: Not Regulated

Packing Group: Not Applicable

Labels: Not Regulated

Marine Pollutant: No information

DOT Status: Not Regulated

Section 15: Regulatory Information

All components of this product are listed on the Toxic Substance Control Act (TSCA) Section 8(b) Chemical Inventory.

This product is not a HAZMAT as defined by the OSHA Hazard Communications Standard (29 CFR 1910.1200).

This product is not a "controlled product" as defined by the Canadian Workplace Hazardous Materials Information System (WHMIS).

SARA Section 302 Extremely Hazardous Substances: Not listed anywhere.

SARA 311/312

Acute: No

Chronic: No

Fire: No

Reactivity: No

Sudden release of pressure: No

SARA Section 313 Toxic Chemicals: No "313 chemicals" contained in this product.

California Prop. 65:

Proposition 65 requires manufacturers or distributors of consumer products into the State of California to provide a warning statement if the product contains ingredients for which the State has found to cause cancer, birth defects or other reproductive harm. If this product contains an ingredient listed by the State of California to cause cancer or reproductive toxicity, it will be listed below:

non listed

No ingredients, present at concentrations > 0.1%, have been found that are presently listed as a carcinogen by IARC, NTP, or OSHA.

All components of this product are listed on the Canadian Environmental Protection Act (CEPA) provisional domestic substances list (DSL).

Section 16: Other Information

Disclaimer of Liability:

Caution! Do not use SPI Supplies products or materials in applications involving implantation within the body; direct or indirect contact with the blood pathway; contact with bone, tissue, tissue fluid, or blood; or prolonged contact with mucous membranes. Products offered by SPI Supplies are not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. SPI Supplies will not provide to customers making devices for such applications any notice, certification, or information necessary for such medical device use required by US FDA (Food and Drug Administration) regulation or any other statute. SPI Supplies and Structure Probe, Inc. make no representation, promise, express warranty or implied warranty concerning the suitability of these materials for use in implantation in the human body or in contact with internal body tissues or fluids.

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