1. Identification of the substance/preparation and company

Product details:
Trade name: Carbon brushes, Quality –L300F12-

Recommended use: Carbon brush

Effect of the preparation: Current supply

Producer/supplier details:
Producer/supplier: Schunk Kohlenstofftechnik GmbH
Postbox 10 09 51, 35339 Giessen
Phone: +49(0)641/6080
FAX: +49(0)641/6082501

Information providing division:
Abt. Arbeitssicherheit, Gesundheits- und Umweltschutz
Phone: +49(0)641/608-1443 Fax: +49(0)641/608-2501

Information in case of emergency:
Phone: +49(0)641/608-1443 Fax: +49(0)641/608-2501

2. Composition/information on ingredients

Chemical characterization
Preparation:
Product/material based on carbon and/or graphite, containing organic material as unhalogenated oil, grease, wax or paraffin.

Hazardous ingredients
No ingredients classified hazardous acc. to 67/548/ECC

Additional information: None

3. Possible hazards

Information on particular hazards to human and environment: None

4. First aid measures

General information:	None
After inhalation:	After inhalation of significant quantities of dust take affected person to fresh air. Visit doctor with irritation of the respiratory tract.
After skin contact:	None
After eye contact:	Rinse with plenty of water
After ingestion:	Drink water

Particular advice for the physician: None

5. Fire-fighting measures

Suitable extinguishing media:
Foam/Sand/Carbon dioxide/Water dizzle/ Water mist/ Dry fire-extinguishing media
Not suitable extinguishing media, by safety reasons:
Direct water spray
Particular risks arising from the substance or preparation itself, its combustion products or from gases formed:
Machining dust may glow in oxygen containing atmosphere above 350 °C . During glowing and in case of fire harmful ignitable gases and vapors, (e.g. formaldehyde), CO/CO_2 and possibly SO_2/SO_3 are formed.

Special protection equipment needed for fire-fighting:
Use breathing apparatus with independent air supply (isolated).

6. Measures by accidental release

Personal precautions:	Use breathing apparatus if exposed to dust.
Environmental precautions:	None
Methodes for cleaning/taking up:	Remove mechanically
Additional information:	None

7. Handling and storage

Handling:

Advice on safe handling:	None
Advice on protection against fire and explosion:	None, if used properly

Storage:

Requirements on storage and tanks:	None
Advice on storage assembly:	None
Additional information on storage conditions:	None
Storage class:	Omit

8. Exposure limitations and personal protection equipment

Measure for limitation and monitoring the exposure:
During machining and dust formation care for good ventilation resp. For suction in the working area.
Additional advice on the design of technical equipment: None

Ingredients with occupational exposure limits to be monitored:

CAS-No.	Name of substance	Type	Air limit value	Unit
	dust A (fine dust) (General dust-limit of TRGS 900)	MAK	3	mg/m3

Additional advice: This limit is valid for Germany.

Personal protective equipment:
General protective and hygiene measures: None
Respiratory protection: P1-mask, if dust is formed
Hand protection: None
Eye protection: Safety glasses, if dust is formed
Body protection: None

9. Physical and chemical properties

Appearance: Solid
Colour: Grey/black
Odour: None

Data relevant to safety:

Parameter		Value/range	Unit	Method
Softening point/range:		Not applicable		
Melting point/range:		Not applicable		
Boiling point/range:		Not applicable		
Flash point:		Not applicable		
Ignitability:		Not applicable		
Ignition temperature:		Not applicable		
Self ignitability:		None [01)]		
Inflammable properties:		None		
Explosive risk:		None [01)]		
Explosion limits:	lower	Not applicable		
	upper	Not applicable		
Vapour pressure:	at 20 °C	Not applicable		
Density:	at 20 °C	1,40 to 2,30	g/cm^3	
Solubility in water	at 20 °C:	Not applicable		
pH-Value in water suspension:		around 7		
Partition coefficient:		Not applicable		
Viscosity:		Not applicable		

Additional information: None
Remarks: [01)] If properly stored and used.

10. Stability and reactivity

Conditions to be avoided:	None
Contact with substances to be avoided:	In case of oil/grease substances no contact with oxidizing agents, e.g. oxygen gas.
Hazardous decomposition:	None, if properly stored and used
Additional information:	None

11. Toxicological information

No toxic effects upon handling are known.

12. Ecological information

No harmful ecological effects are known due to proper handling of the product.

13. Disposal considerations

Product/preparation:	Dispose in accordance with local regulations.
Contaminated packing material:	Dispose in accordance with local regulations.

14. Transport information

No hazardous material acc. to transportation regulations

15. Regulations

Labelling acc. to ECC regulations
Code letter and hazard-symbol for the product:
Not subject to mandatory marking
Hazardous ingredients relevant for labelling:
None

National regulations:
Additional classification acc. to GefStoffV (D):
None
Regulation for handling restrictions (D):
None
Hazardous industries directive (ECC):
No
Hazard classification for water (D):
Not hazardous for water
Other national regulations, restrictions and prohibition regulations:
None

16. Other informations

Other informations: None

This information is based on our present state of knowledge. It is provided in order to describe our product in respect of safety requirements and must not be contrued as guaranteeing specific properties of the product described or their suitability for particular application. This information does not substantiate a contractual agreement.

P/N 092658

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

MSDS # 0102

IDENTITY *(As Used on Label and List)*
Copper/Graphite with binder

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Grade M1, MZ50, MCL, MZ, MZ65, MZ75, MC10, MZ3, MC10A, MZ90, M10T, M9, CM

Manufacturer's Name CARBON ENGINEERING CORP.	Emergency Telephone Number 1-800-843-2768
Address *(Number, Street, City, State, and ZIP Code)* 180 James Street Slinger, WI 53086	Telephone Number for Information 1-414-644-6931
	Date Prepared 10-1-89
	Signature of Preparer *(optional)*

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% *(optional)*
Graphite CAS # 7782-42-5	15mg/M^3 Total Dust	10mg/M^3 Total Dust	5mg/M^3 Respirable Dust	
** Pure Copper CAS # 7440-50-8	1.0mg/M^3 Dust and Mist .1 mg/M^3 Fume	1.0mg/M^3 .2mg/M^3 Fume		
Binder None listed	N/A	N/A		
Proprietary Chemcials	N/A	N/A		

** Copper is the critical component in this mixture for assessment of hazards.

Section III — Physical/Chemical Characteristics

Boiling Point Pure Copper	2300°C	Specific Gravity (H_2O = 1) 8.9	
Vapor Pressure (mm Hg.) N/A		Melting Point Pure Copper	1083C
Vapor Density (Air = 1) N/A		Evaporation Rate (Butyl Acetate = 1) N/A	

Solubility in Water
Insoluble

Appearance and Odor
Gray to red/brown solid with negligible odor. (mixture)

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) None	Flammable Limits N/A	LEL N/A	UEL N/A

Extinguishing Media
Use appropriate media for working environment. Examples: Sand, Dry chemicals.

Special Fire Fighting Procedures
Self contained breathing apparatus.

Unusual Fire and Explosion Hazards
Normally not explosive, but may weakly contribute if the event is initiated by another explosive dust or gas. Graphite metal dust is electrically conductive; dust accumulation may cause electrical malfunctions and hazards.

n V — Reactivity Data

	Unstable		Conditions to Avoid N/A
	Stable	X	

ability (*Materials to Avoid*)
ng oxidizing media.

ous Decomposition or Byproducts
CO_2, copper fume oxidizes.

ous rization	May Occur		Conditions to Avoid N/A
	Will Not Occur	X	

on VI — Health Hazard Data

) of Entry: Inhalation? Yes | Skin? Yes | Ingestion? Unlikely

Hazards (*Acute and Chronic*)
r exposure in breathing/ingestion of copper dust/fume may cause metal fume fever, a allic taste, irritation of the upper respiratory tract and vomiting. Possible temporary coloration of skin. Dust particles may cause mechanical irriatation to eyes and skin.

genicity: NTP? IARC Monographs? OSHA Regulated?
e known. No No No

and Symptoms of Exposure
tal fume fever - nausea, vomiting, dizziness

al Conditions
ally Aggravated by Exposure Individuals with Wilson's disease should not be exposed to copper fumes, dust or mist. viduals with pre-existing respiratory impairments may be at increased risk of pneumoconiosis if prolonged repeated over exposures to dust occur.

ary and First Aid Procedures
ion: Remove victim to fresh air, treat symptomatically.
estion: If victim is conscious, give large amounts of water; manually induce vomitting and seek medical attention.

ion VII — Precautions for Safe Handling and Use

to Be Taken in Case Material Is Released or Spilled
uum, sweep, shovel. Avoid making dust air borne.

Disposal Method
ject to local, state and Federal regulations for solid waste disposal.

utions to Be Taken in Handling and Storing
phite is electrically conductive, dust accumulations may cause electrical short circuits other malfunctions.

Precautions
intain good housekeeping practices.

tion VIII — Control Measures

iratory Protection (*Specify Type*)
PEL or TLV is exceeded, use NIOSH approve type as appropriate

ation	Local Exhaust: Dust collection when machining	Special: N/A
	Mechanical (*General*): N/A	Other: N/A

ctive Gloves: N/A	Eye Protection: If airborne particles are produced.

tective Clothing or Equipment
Normal work clothing is sufficient.

/Hygienic Practices
rmal hygienic practices are usually adequate. Clothing should be routinely laundered.

* U.S.G.P.O.: 1986-491-529/45775