* * * Section 1 - PRODUCT AND COMPANY IDENTIFICATION * * *

Material Name: ARTIFICIAL GRAPHITE

Manufacturer Information

CMC Cometals EMERGENCY
CONTACT:
2050 Center Avenue, Suite 250
Ft. Lee, NJ 07024
Mfg Contact: CMC Cometals

Synonyms

* * * Section 2 - HAZARDS IDENTIFICATION * * *

EMERGENCY OVERVIEW

Physical Form: solid

Health Hazards: suspect cancer hazard (in animals)

Physical Hazards: Flammable solid. Dust/air mixtures may ignite or explode.

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: irritation

Long Term: irritation, difficulty breathing, lung damage, cancer

Skin

Short Term: irritation

Long Term: irritation

Eye

Short Term: irritation

Long Term: irritation

Ingestion

Short Term: gastrointestinal irritation

Long Term: no information is available

* * * Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS * * *

CAS	Component	Percent	Symbol(s)	Risk Phrase(s)
7440-44-0	CARBON 231-153-3	40 - 60	F	R:11
409-21-2	SILICON CARBIDE 206-991-8	10 - 20	---	---
7732-18-5	WATER 231-791-2	2 - 12	---	---
1309-37-1	FERRIC OXIDE RED 215-168-2	<2.00	---	---
1344-28-1	ALUMINUM OXIDE 215-691-6	<0.50	---	---

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Graphite, synthetic, Iron oxides, Aluminium compounds, Aluminum insoluble compounds, Aluminium oxides, Aluminum Oxide (135152-65-7).

* * * Section 4 - FIRST AID MEASURES * * *

Inhalation

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

Skin

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.

Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

If a large amount is swallowed, get medical attention.

* * * Section 5 - FIRE FIGHTING MEASURES * * *

See Section 9 for Flammability Properties

NFPA Ratings: Health: 1 **Fire:** 3 **Reactivity:** 0

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

Flammable Properties

Severe fire hazard. Dust/air mixtures may ignite or explode.

Extinguishing Media

regular dry chemical, dry sand, earth, regular foam, water

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Avoid inhalation of material or combustion by-products.

Thermal Decomposition Products

Combustion: oxides of carbon

* * * Section 6 - ACCIDENTAL RELEASE MEASURES * * *

Occupational spill/release

Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Small spills: Collect spilled material in appropriate container for disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

* * * Section 7 - HANDLING AND STORAGE * * *

Handling Procedures

Use methods to minimize dust.

Storage Procedures

Store and handle in accordance with all current regulations and standards. See original container for storage recommendations. Keep separated from incompatible substances.

* * * Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION * * *

Component Exposure Limits

CARBON (7440-44-0)

OSHA (US): 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
Mexico: 2 mg/m3 TWA (dust)

SILICON CARBIDE (409-21-2)

ACGIH: 10 mg/m3 TWA (nonfibrous, inhalable fraction, particulate matter containing no asbestos and <1% crystalline silica); 3 mg/m3 TWA (nonfibrous, respirable fraction, particulate matter containing no asbestos and <1% crystalline silica); 0.1 fiber/cm3 TWA (as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, respirable fibers, including whiskers, length >5 µm, aspect ratio >=3:1)
NIOSH: 10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)
OSHA (US): 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
Mexico: 10 mg/m3 TWA
20 mg/m3 STEL

FERRIC OXIDE RED (1309-37-1)

ACGIH: 5 mg/m3 TWA (respirable fraction)
NIOSH: 5 mg/m3 TWA (as Fe, dust and fume)
2500 mg/m3 IDLH (as Fe, dust and fume)
OSHA (US): 10 mg/m3 TWA (fume)
Mexico: 5 mg/m3 TWA
10 mg/m3 STEL (as Fe)

ALUMINUM OXIDE (1344-28-1)

ACGIH: 1 mg/m3 TWA (respirable fraction)
OSHA (US): 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
Mexico: 10 mg/m3 TWA

Ventilation

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

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

Protective Clothing

Wear appropriate chemical resistant clothing.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.
Respiratory protection is ranked in order from minimum to maximum.
Consider warning properties before use.
Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100 or P100.
Any air-purifying full-facepiece respirator equipped with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any powered, air-purifying respirator with a high-efficiency particulate filter.
Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

* * * Section 9 - PHYSICAL AND CHEMICAL PROPERTIES * * *

Physical State:	Solid	**Appearance:**	Not available
Physical Form:	solid	**Odor:**	Not Available
Odor Threshold:	Not available	**Melting Point:**	Not available
Boiling Point:	Not applicable	**Vapor Pressure:**	Not applicable
Vapor Density (air = 1):	Not applicable	**Density:**	Not available
Specific Gravity (water = 1):	Not available	**Water Solubility:**	Not available
Coeff. Water/Oil Dist:	Not available		

* * * Section 10 - STABILITY AND REACTIVITY * * *

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition.

Materials to Avoid

acids, alkali metals, ammonium salts, combustible materials, halogenated compounds, metals, metal salts, oxidizing materials, peroxides, reducing agents
CARBON:
ALKALI METALS: Contact may result in an exothermic reaction with ignition or an explosion.
AMMONIUM NITRATE: Possible explosion when heated.
AMMONIUM PERCHLORATE: Possible explosion on heating.
BROMATES: Contact is likely to result in ignition or an explosion.
CALCIUM HYPOCHLORITE: Possible explosion on heating.
CHLORATES: Contact is likely to result in ignition or an explosion.
CHLORINE MONOXIDE: Explodes.
CHROMATES: Incompatible.
DICHLORINE OXIDE: Explosion reaction.
HALOGENS: Contact of carbon with any halogen is liable to result in ignition or an explosion.
INTERHALOGENS: Contact of carbon with any interhalogen is liable to result in ignition or an explosion.
IODATES: Contact is likely to result in ignition or an explosion.
IODINE PENTOXIDE: Explodes when warmed.

METAL NITRATES: Contact is likely to result in ignition or an explosion.
NITRIC ACID: Violent reaction.
NITROGEN OXIDE: Ignition with incandescence.
NITROGEN TRIFLUORIDE: Explosion at reduced temperatures.
OILS (UNSATURATED): Fire and explosion hazard.
OXIDES: Contact with many oxides is likely to result in ignition or an explosion.
OXIDIZERS (STRONG): Fire and explosion hazard.
OXOSALTS: Contact is likely to result in ignition or an explosion.
OXYGEN: May result in ignition or an explosion.
OXYGEN DIFLUORIDE: Possible explosion.
OZONE: Fire hazard.
PEROXIDES: Contact is likely to result in ignition or an explosion.
PEROXYFORMIC ACID: Violent oxidation.
PEROXYFUROIC ACID: Explosive decomposition.
POTASSIUM PERMANGANATE: Ignition on heating.
SODIUM SULFIDE: May undergo spontaneous heating.
TRIOXYGEN DIFLUORIDE: Ignition with possible explosion.
FERRIC OXIDE RED:
ALUMINUM: Intense, exothermic reaction on ignition; may explode in the presence of water.
ALUMINUM-MAGNESIUM ALLOY (MOLTEN) + WATER: Violent reaction.
ALUMINUM-MAGNESIUM-ZINC ALLOY: May produce sparks on impact.
CALCIUM ACETYLIDE: Burns violently when ignited.
CALCIUM HYPOCHLORITE: May explode.
CARBON MONOXIDE: Possible explosion.
CESIUM ACETYLIDE (CESIUM CARBIDE): Incandescent on warming.
ETHYLENE OXIDE: Violently polymerizes, liberating heat.
GUANIDINIUM PERCHLORATE: Reduces the thermal stability of the salt.
HYDRAZINE: Incompatible.
HYDROGEN PEROXIDE: Decomposes.
MAGNESIUM: Violent reaction.
PERFORMIC ACID: Incompatible.
RUBIDIUM ACETYLIDE: Reacts exothermically.

Thermal Decomposition Products

Combustion: oxides of carbon

Possibility of Hazardous Reactions

Will not polymerize.

* * * 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:

CARBON (7440-44-0)

Oral LD50 Rat: >10000 mg/kg

WATER (7732-18-5)
Oral LD50 Rat: >90 mL/kg
FERRIC OXIDE RED (1309-37-1)
Oral LD50 Rat: >10000 mg/kg
ALUMINUM OXIDE (1344-28-1)
Oral LD50 Rat: >5000 mg/kg

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:
WATER (7732-18-5)
Oral: >90 ml/kg oral rat LD50

Component Carcinogenicity

SILICON CARBIDE (409-21-2)
ACGIH: A2 - Suspected Human Carcinogen (fibrous, including whiskers)
DFG: Category 2 (considered to be carcinogenic for man, fibre dust)
FERRIC OXIDE RED (1309-37-1)
ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Supplement 7 [1987]; Monograph 1 [1972] (Group 3 (not classifiable))
ALUMINUM OXIDE (1344-28-1)
ACGIH: A4 - Not Classifiable as a Human Carcinogen
DFG: Category 2 (considered to be carcinogenic for man, fibre dust)

RTECS Irritation

The components of this material have been reviewed and RTECS publishes no data as of the date on this document.
Experimental studies showed an increased incidence of benign and malignant lung tumors in rats after inhalation of ceramic fibers. Intrapleural implantation of several kinds of ceramic fibers in rats produced variable incidences of pleural mesotheliomas or sarcomas. Mesotheliomas of the abdominal cavity were found after intraperitoneal injection of ceramic fibers in rats and hamsters. Tumor incidence was related to fiber length and dose in the intraperitoneal studies.

Medical Conditions Aggravated by Exposure

respiratory disorders

RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:
SILICON CARBIDE (409-21-2)
200 mg/kg implant rat TDLo; 300 mg/kg intraperitoneal rat TDLo (26 week(s))
FERRIC OXIDE RED (1309-37-1)
135 mg/kg subcutaneous rat TDLo
ALUMINUM OXIDE (1344-28-1)
200 mg/kg implant rat TD; 200 mg/kg implant rat TDLo; 90 mg/kg intrapleural rat TDLo

RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes the following endpoints:
CARBON (7440-44-0)
167 mg/kg subcutaneous rat TDLo (pregnant female 8 day(s), continuous)

HEALTH EFFECTS

Inhalation - Acute Exposure

SILICON CARBIDE (CARBORUNDUM): Excessive amounts may cause mucous membrane irritation. CARBON: Inhalation of dust may cause slight mucous membrane irritation. METAL FUME FEVER: Metal fume fever, an influenza-like illness, may occur due to the inhalation of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur. Tolerance to fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours.

Inhalation - Chronic Exposure

SILICON CARBIDE (CARBORUNDUM): Repeated or prolonged exposure to dust may lead to pulmonary changes with slight respiratory symptoms in normal people, but may cause extensive fibrosis and progressive disease in persons with tuberculosis. An examination of 53 silicon carbide crushers showed 15 cases of pulmonary fibrosis and 17 cases of nodular opacities. Several cases of pneumoconiosis in workers employed on the crushing, sieving and packing of silicon carbide have been reported. Both male and female rats showed an increase in the incidence of benign and malignant lung tumors after administration by inhalation. CARBON: Repeated or prolonged exposure may cause irritation and pulmonary disorders. Lung damage may result if sufficient exposure occurs. METAL FUME FEVER: There is no form of chronic metal fume fever, however, repeated bouts with symptoms as described above are quite common. Resistance to the condition develops after a few days of exposure, but is quickly lost in 1 or 2 days.

Inhalation - Other Toxicity Information

FERRIC OXIDE RED: Chronic exposure may cause dyspnea and chronic bronchitis. Repeated exposure, usually from 6-10 years, to iron oxide dust or fume may cause a benign pneumoconiosis (siderosis) which may cause X-ray shadows that can be indistinguishable from fibrotic pneumoconiosis. See information on metal fume fever.

Skin Contact - Acute Exposure

CARBON: Contact may cause irritation. FERRIC OXIDE RED: No data available. SILICON CARBIDE (CARBORUNDUM): May cause irritation due to mechanical action.

Skin Contact - Chronic Exposure

CARBON: Repeated or prolonged contact may cause mechanical irritation. FERRIC OXIDE RED: No data available. SILICON CARBIDE (CARBORUNDUM): No data available.

Eye Contact - Acute Exposure

CARBON: Contact with dust may cause mechanical irritation. May also cause conjunctivitis. FERRIC OXIDE RED: Particles of iron or iron compounds which become imbedded in the eye may cause siderosis with varied effects. Discoloring of the iris to yellowish green or brown is the earliest and most common sign of siderosis. SILICON CARBIDE (CARBORUNDUM): Particles may cause irritation, redness, and pain.

Eye Contact - Chronic Exposure

CARBON: Repeated or prolonged exposure may cause mechanical irritation. FERRIC OXIDE RED: No data available. SILICON CARBIDE (CARBORUNDUM): No data available.

Ingestion - Acute Exposure

SILICON CARBIDE (CARBORUNDUM): No data available. CARBON: Extremely large doses may produce gastrointestinal disturbances. FERRIC OXIDE RED: No data available.

Ingestion - Chronic Exposure

SILICON CARBIDE (CARBORUNDUM): No data available. CARBON: No data available. FERRIC OXIDE RED: No data available.

* * * Section 12 - ECOLOGICAL INFORMATION * * *

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

* * * Section 13 - DISPOSAL CONSIDERATIONS * * *

Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

* * * Section 14 - TRANSPORT INFORMATION * * *

US DOT Information

Shipping Name: Carbon, mixture
UN/NA #: UN1361 **Hazard Class:** 4.2 **Packing Group:** III
Required Label(s): 4.2

TDG Information

Shipping Name: Carbon, mixture
UN #: UN1361 **Hazard Class:** 4.2 **Packing Group:** III
Required Label(s): 4.2

ADR Information

Shipping Name: Carbon, mixture
UN #: UN1361 **Hazard Class:** 4.2 **Packing Group:** III
Required Label(s): 4.2

ADR Tunnel Code Restrictions

This list contains tunnel restriction codes for those substances and/or chemically related entries which are found in chapter 3.2 of the ADR regulations.
CARBON (7440-44-0)

RID Information

Shipping Name: Carbon, mixture
UN #: UN1361 **Hazard Class:** 4.2 **Packing Group:** III
Required Label(s): 4.2

IATA Information

Shipping Name: Carbon, mixture
UN #: UN1361 **Hazard Class:** 4.2

ICAO Information

Shipping Name: Carbon
UN #: UN1361 **Hazard Class:** 4.2

IMDG Information

Shipping Name: Carbon, mixture
UN #: UN1361 **Hazard Class:** 4.2 **Packing Group:** II

* * * Section 15 - REGULATORY INFORMATION * * *

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

ALUMINUM OXIDE (1344-28-1)

SARA 313: 1.0 % de minimis concentration (fibrous forms)

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: No **Chronic Health:** Yes **Fire:** Yes **Pressure:** No **Reactive:** No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
CARBON ([1]related to: Graphite, synthetic)	7440-44-0	No	Yes[1]	No	No	Yes[1]	Yes
SILICON CARBIDE	409-21-2	No	Yes	Yes	Yes	Yes	Yes
FERRIC OXIDE RED	1309-37-1	Yes	Yes	Yes	Yes	Yes	Yes
ALUMINUM OXIDE	1344-28-1	Yes	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65

Canada

Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

FERRIC OXIDE RED (1309-37-1)

1 %

Germany Water Classification

CARBON (7440-44-0)

Number 801, not considered hazardous to water

FERRIC OXIDE RED (1309-37-1)

Number 800, not considered hazardous to water

ALUMINUM OXIDE (1344-28-1)

Number 1346, not considered hazardous to water

EU Marking and Labelling

This material is not classified

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
CARBON	7440-44-0	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
SILICON CARBIDE	409-21-2	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes
WATER	7732-18-5	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
FERRIC OXIDE RED	1309-37-1	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes
ALUMINUM OXIDE	1344-28-1	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

* * * Section 16 - OTHER INFORMATION * * *

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; 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; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Full text of R phrases in Section 3

R11 Highly flammable.

Other Information

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