

MATERIAL SAFETY DATA SHEET



Calcium Carbide

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DATE PRINTED: July 19, 2006

MSDS No.: CC0201

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: **Calcium Carbide**

Product Code: CC0201 to CC0299

Synonyms/Trade Names: Carbide, Acetylenogen, Calcium Dicarbide, Calcium acetylide, Foundry Carbide, Desulfurization Carbide, Gas Grade Carbide

CAS No.: 75-20-7

MANUFACTURER:

Elkem Metals Company - Ashtabula L.P.

P.O. Box 266

Pittsburgh, PA 15230

(412) 299-7200 or (440) 993-2300

EMERGENCY TELEPHONE NUMBERS:

CHEMTREC (800) 424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS ¹

	<u>wt. %</u>	<u>CAS Registry No.</u>
Calcium Carbide	65 to 85 %	75-20-7
Calcium Oxide	10 to 30 %	1305-78-8

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200):

	<u>EXPOSURE LIMITS (mg/m³)</u>	
	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Calcium Oxide	5.0	2.0

¹ Elemental analysis of the product. The manufacturer can provide a more detailed analysis, including other trace elements.

3. HAZARDS IDENTIFICATION

Calcium carbide reacts with water to form acetylene, an extremely flammable gas. (See Section 10) Calcium carbide will react with humidity in the air to form acetylene gas. Acetylene gas is lighter than air with a wide explosive range (2.5% to 82% by volume in air) and with a relatively low ignition temperature (581 °F, 305 °C). The heat of reaction may be sufficient to ignite the acetylene gas that forms. Calcium oxide present in the product will react with water to form calcium hydroxide and liberate heat.

Small quantities of phosphine and arsine gases may be liberated upon contact with water. See Section 11.

4. FIRST AID MEASURES

INHALATION:

Remove exposed person from dusty area to fresh air. Support breathing as required.

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4. FIRST AID MEASURES (Con't)

SKIN CONTACT:

Wash skin with large amounts of water and/or a mild soap until no evidence of chemical remains. Treat affected area as an alkali burn.

EYE CONTACT:

Flush with water/saline solution continuously until transported to an emergency medical facility. Consult a physician immediately. See a physician on persistent feeling of discomfort.

INGESTION:

If ingested, dilute by drinking one or more glasses of water. Do not induce vomiting. Contact a physician.

Note: After first aid is administered, promptly seek professional medical attention.

5. FIRE FIGHTING MEASURES

Calcium carbide is not combustible, however when it contacts water, acetylene, an extremely flammable gas, is generated. An acetylene fire from wet calcium carbide normally should not be extinguished because acetylene may continue to be generated and accumulate, potentially causing an explosive condition. Do not use water to extinguish an acetylene fire generated by calcium carbide. Contain fire and allow to burn itself out. If the acetylene fire must be extinguished due to life threatening hazards, use dry powder or smother using dry sand. Steps must be taken to ensure acetylene gas that may continue to be generated from the wet calcium carbide does not accumulated and create dangerous explosive conditions.

6. ACCIDENTAL RELEASE MEASURES

Eliminate all heat and ignition sources from the spill area. Clean up personnel should wear appropriate respiratory protective equipment and protect against skin and eye contact. Avoid the use of compressed air to maneuver spills or leaks of fine material. Cover spilled calcium carbide with an inert, noncombustible material such as dry sand. Avoid contact with water. Scoop up spilled calcium carbide using non-sparking tools and place into a dry container. Cover container but do not seal to prevent build up of acetylene gas. Store container under cover.

Report accidental releases of Calcium Carbide greater than the RQ to the National Response Center at 800-424-8802 and to the appropriate state and local response centers.

7. HANDLING AND STORAGE

HANDLING:

Calcium carbide should be handled to prevent contact with water.

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7. HANDLING AND STORAGE (Con't)

STORAGE:

Calcium carbide can be stored outdoors in unopened sealed metal containers. Grounding of calcium carbide containers while in use is recommended to prevent static electricity discharge. Frequent periodic examination of containers should be made to check for excessive rusting. Do not attempt to repair any calcium carbide container. Elkem-American Carbide has a brochure available outlining the safe handling of calcium carbide. Contact the company to obtain this brochure.

Calcium carbide may be stored indoors in accordance with OSHA standards 29 CFR 1910.253. Adequate ventilation should be provided in storage buildings or bins where exposed material is stored to prevent the accumulation of acetylene. Ventilation equipment should be explosion proof.

On-site storage of calcium carbide in polypropylene bags may be a violation of OSHA standards 29 CFR 1910.253

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye protection, eye flushing facilities and protective gloves are recommended. Calcium carbide contact with the eyes requires immediate first aid. Contact lenses may absorb and concentrate irritants. Ensure adequate ventilation. Ventilation systems should be designed to handle acetylene. Wear an appropriate particulate respirator in accordance with 29 CFR 1910.134 or CSA Standard Z94.4-M1982 for dust exposure that may exceed exposure limits. If adequate ventilation is not possible, a self-contained breathing apparatus or an air supplied respirator is recommended.

OCCUPATIONAL EXPOSURE LIMITS (OSHA and ACGIH):

	8hr TWA mg/m ³	
	OSHA PEL	ACGIH TLV
Total inhalable dust	15	10
Respirable dust	5	3
Calcium Oxide	5	2
Phosphine gas (PH ₃)	0.4	0.42
Arsine gas (AsH ₃)	0.2	0.16

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	granular or powder
Color:	Gray to bluish black
Odor:	Odor upon exposure to air resembles garlic
Solubility (Water):	Decomposes in water to form acetylene gas

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9. PHYSICAL AND CHEMICAL PROPERTIES (Con't)

Melting Point (°C):	1700 to 2300
Specific Gravity (water=1)	2.2-2.3
Bulk density (kg/m ³) approx.	1200-1600 (75-100 lb/ft ³)

10. STABILITY AND REACTIVITY

STABILITY:

Dry calcium carbide is stable as long as sources of moisture are excluded. Calcium carbide does not polymerize.

MATERIALS TO AVOID:

Avoid all forms of moisture: water, water solutions, moist materials and hygroscopic solids. Contact with moisture liberates acetylene, an extremely flammable gas. Avoid exposure to copper and copper alloys, copper containing brass, magnesium, mercury, silver, selenium, strong oxidizing agents, peroxides, hydrogen chloride, stannous chloride.

CONDITIONS TO AVOID:

Avoid exposure to moisture either in the air, in other moist materials or in water solutions. Ventilation should be applied to areas of extended storage. Avoid generation of airborne dusts. Avoid generation of sparks or other ignition sources in the presence of dust or acetylene gas.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

Acetylene is a highly explosive and flammable gas. Heat, hydrated lime, acetylene and small quantities of phosphine and arsine gas are generated during the reaction of calcium carbide with water.

11. TOXICOLOGICAL INFORMATION

ACUTE EFFECTS:

Dry calcium carbide powder reacts quickly with body moisture to form an alkali that may irritate the skin, eyes and respiratory passages. Calcium carbide can cause severe burns due to the heat of reaction and to the alkali nature of the reaction products (calcium hydroxide). All moist surfaces of the body are impacted, but the eyes are most seriously affected. Blindness may result if proper treatment is not obtained.

ACUTE EFFECTS (CONT'D):

Phosphine/arsine may be absorbed from dust deposited on mucous membranes. The toxic mechanism for phosphine is not clear. Phosphine irritates exposed mucous membranes, depresses the central nervous system (CNS) and can cause edema of the lungs. Acute, non-fatal poisoning with phosphine gives temporary effects, among others headache, malaise, vomiting, stomach pains, cough, and difficulty in breathing. Symptomatic treatment: corticosteroids, prophylactic for edema of the lungs.

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11. TOXICOLOGICAL INFORMATION (Cont'd)

CHRONIC EFFECTS:

Overexposure symptoms are similar to acute symptoms but larger in scale. Dry powder and granular calcium carbide have low toxicity other than acute effects. Acetylene is an asphyxiant. Calcium carbide and its reaction products are not known to be reproductive toxins, teratogens or mutagens.

Prolonged exposure (years) to phosphine may lead to chronic effects such as difficulty in movement and speech problems. Epidemiological studies in the Norwegian ferroalloy industry have neither shown an increased rate of mortality nor an increased incidence of cancer.

12. ECOLOGICAL INFORMATION

Calcium carbide reacts with water to form acetylene gas and calcium hydroxide, an alkali material. Due to its alkali forming properties, calcium carbide can damage water or land ecosystems if improperly disposed. All discharges of calcium carbide or its reaction products should be done in accordance with applicable local, state and federal laws and regulations.

13. DISPOSAL CONSIDERATIONS

Reuse all product when possible. Dispose of waste calcium carbide according to applicable federal, state and local rules. Avoid repackaging wet or damp calcium carbide into sealed containers. Upon disposal, unused calcium carbide may exhibit hazardous characteristics as defined in 40 CFR 261.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION):

Proper Shipping Name: Calcium Carbide

Hazard Class: 4.3

I.D. Number and Initials: UN 1402

Packing Group: I, II

Label(s): Dangerous When Wet

RQ = 10 pounds

15. REGULATORY INFORMATION

OSHA - Hazardous by definition of hazardous communication standard (29 CFR 1910.1200)

TSCA (Toxic Substance Control Act):

Components of this product are listed on the TSCA Inventory

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15. REGULATORY INFORMATION (Con't)

CERCLA (Comprehensive Response Compensation, and Liability Act):

Reportable Quantity = 10 pounds

RCRA (Resource Conservation/Recovery Act):

Calcium carbide is not a listed hazardous waste.

Determine hazardous characteristics prior to disposal per 40 CFR 261

SARA TITLE III (Superfund Amendments and Reauthorization Act):

311/312 Hazard Categories:

Immediate Health, Delayed Health.

313 Reportable Ingredients:

None.

CALIFORNIA PROPOSITION 65:

This product contains chemical(s) known to the State of California to cause cancer:

None

16. OTHER INFORMATION

Literature references are available upon request from the manufacturer.

The information relates to this specific material. It may not be valid for this material if used in combination with other materials or in any process. It is the user's responsibility to determine the suitability and completeness of this information for the particular use intended.