

SAFETY DATA SHEET

AvCarb™ Gas Diffusion Substrates

Section 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

Product Name: AvCarb™ Carbon Fiber Paper

Chemical Formula: Mixture

Synonyms: GDL, Gas Diffusion Layer/Material

Part No.: P50, P75, EP40,

Manufacturer: Ballard Material Products

Distributor: Fuel Cell Store

Address: 1902 Pinon Drive, Suite B

City, State, Zip: College Station, Texas, 77845

Emergency Phone #: (979) 703-1925

Person Responsible for Preparation: BMP EH&S

Preparation/Revision Date: 2/1/12

Applications: Fuel Cell Material

Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME: Carbon

CAS NO: 7440-44-0

CONTENTS: >99%

EPA RQ: N/A

TPQ: N/A

Section 3: HAZARDS IDENTIFICATION

This product is not classified as hazardous under the current CHIP regulations

EMERGENCY OVERVIEW:

Black carbonized substrate with no odor

WARNING! Wear self-contained breathing apparatus when fighting fires in confined locations. In the event of fire, use water spray, alcohol resistant foam, dry chemical, or carbon dioxide (CO₂).

INHALATION: Inhalation of dust may occur during material handling operations. Breathing dust may cause mild respiratory irritation and/or difficulty in breathing.

INGESTION: No adverse effects expected. May cause mild irritation to the gastrointestinal tract.

SKIN: Not expected to be a health hazard due to skin exposure. May cause mild skin irritation and redness.

EYES: May cause eye mild irritation, including watering and redness.

CHRONIC EFFECTS: May cause skin irritation. Prolonged inhalation of excessive dust may produce pulmonary disorders.

CARCINOGENICITY: IARC: Not Listed / NTP: Not Listed / OSHA: Not Regulated

ROUTES OF ENTRY: Inhalation (breathing). Eye and skin contact.

MEDICAL INFORMATION: Medical conditions aggravated: Allergies, eczema, and skin conditions.

Section 4: FIRST AID MEASURES

INHALATION: Move the exposed person to fresh air at. Provide fresh air, warmth and rest, preferably in a comfortable upright sitting position. Get medical attention if any discomfort continues.

INGESTION: Give water to drink to dilute. If large amounts of dust are swallowed seek medical attention

SKIN: Not expected to require first aid measures. Wash affected areas with large amounts of running water and soap, if available for at least 15 minutes. Remove contaminated clothing and shoes. Seek medical advice if irritation develops. Wash contaminated clothing and shoes before reuse.

EYES: Immediately rinse eyes with running water. Remove any contact lenses and continue flushing with running water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eyes and lids with water. Get medical attention if any discomfort continues.

Section 5: FIRE FIGHTING MEASURES

FLASH POINT: Not Determined **METHOD:** N/A

EXTINGUISHER MEDIA: Fire can be extinguished using: water spray, fog, or mist; alcohol resistant foam, dry chemical, or carbon dioxide (CO₂).

PROTECTIVE MEASURES IN CASE OF FIRE: As in any fire, wear NIOSH approved, positive pressure, self-contained breathing apparatus, and full protective gear.

Section 6: ACCIDENTAL RELEASE MEASURES

Based on the material's physical properties, accidental releases are not expected. Pick up material in such a manner that does not generate dust. Use PPE identified in Section 8 and review Fire Fighting Measures before proceeding with clean up. Warning! Material may absorb hazardous materials.

Section 7: HANDLING AND STORAGE

USAGE PRECAUTIONS: Wear appropriate protective equipment (See Section 8). Wash thoroughly after handling material.

STORAGE PRECAUTIONS: Store in a cool, dry ventilated area. Protect against physical damage. Keep away from moisture and oxidizers.

Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

PROTECTIVE EQUIPMENT:



Section 8 continued: EXPOSURE CONTROLS AND PERSONAL PROTECTION

AIRBORNE EXPOSURE LIMITS

OSHA Permissible Exposure Limits (PEL):

Carbon – total particulate 15 mg/m³ (TWA), respirable fraction - 5 mg/m³ (TWA)

ACGIH Threshold Limit Value (TLV)

Graphite - (all forms except graphite fibers) – 2 mg/m³ (TWA)

ENGINEERING CONTROLS: Use engineering controls to minimize generation of airborne particulate during material handling and processing operations.

VENTILATION: Provide adequate general and local exhaust ventilation to keep employee exposures below the airborne exposure limits. Local ventilation is preferred since it can control emissions at the source, preventing dispersion into the general work area.

RESPIRATORS: In conditions where high concentrations of airborne material are present (inadequate ventilation), wear a respirator that has been selected by a technically qualified person for the specific work conditions. For emergencies, use a full-face positive pressure, supplied air respirator.

SKIN PROTECTION: Wear rubber gloves (natural, latex) and clean body-covering clothing.

EYE PROTECTION: Wear approved safety glasses or safety goggles.

PROTECTIVE CLOTHING: Wear appropriate gloves and long sleeved clothing when working with this material.

HYGIENIC WORK PRACTICES: Wash at the end of each work shift and before eating, smoking, or using the lavatory. Launder clothing separate from other clothing.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Thin black substrate

COLOR: Black

ODOUR/TASTE: Odorless

% VOLATILE: 0%

SOLUBILITY: Insoluble in water or organic Solvents

FLASH POINT: N/A

SPECIFIC GRAVITY: Not Determined

VAPOR PRESSURE: N/A

BURNING RATE: Not Determined

VAPOR DENSITY: N/A

MELTING POINT: 3,550C (6,422F)

BOILING POINT: Sublimes

UEL: N/A **LEL:** N/A

Section 10: STABILITY AND REACTIVITY

STABILITY: Stable Under ordinary conditions of storage and use.

CONDITIONS TO AVOIS: Moisture and incompatibles.

INCOMPATIBLEIES: Strong Oxidizers such as ozone, chlorine, permanganate may result in rapid combustion. Avoid contact with strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS:

Involvement in a fire causes electrically conductive airborne particulate, carbon monoxide, carbon dioxide.

Section 11: TOXICOLOGICAL INFORMATION

Ingredient Identification	NTP Carcinogen IARC		IARC Category
	Known	Anticipated	
Carbon (7440-44-0)	No	No	None

Section 12: ECOLOGICAL INFORMATION

ENVIRONMENTAL HAZARDS: Not regulated as dangerous for the environment

Section 13: DISPOSAL CONSIDERATIONS

DISPOSAL METHODS: Processing, use, or contamination of this product may change the waste management options. Dispose of in accordance with federal, state, and local requirements (state and local disposal regulations may differ from federal disposal regulations).

Section 14: TRANSPORTATION INFORMATION

PROPER SHIPPING DESCRIPTION: Not Regulated
U.S. DOT, UN/NA NO.: Not Regulated
CANADIAN TRANSPORT: Not Regulated
TDGR CLASS: Not Regulated
TDGR LABEL: Not Regulated

Section 15: REGULATORY INFORMATION

Federal State & International Regulations, Part 1

	SARA 302		SARA 313	
	RQ	TPQ	List	Chem Catg
Carbon (7440-44-0)	No	No	No	No

Federal State & International Regulations, Part 2

	CERCLA	RCRA 261.33	TSCA 8(d), 12(b)
Carbon (7440-44-0)	No	No	No

Chemical Inventory Status – Canada

	DSL	NDSL
Carbon (7440-44-0)	No	No

WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR), and the MSDS contains all of the information required by the CPR.

Section 16: OTHER INFORMATION

HAZARDOUS MATERIALS INFORMATION SYSTEM RATINGS:

HEALTH	1
FLAMMABILITY	0
REACTIVITY	0

LABEL PRECAUTIONS: Avoid contact with eyes, skin, and clothing.

Avoid breathing dust.

Use with adequate ventilation.

Wash thoroughly after handling.

LABEL FIRST AID: If airborne dust is inhaled, remove to fresh air. Seek medical attention for any breathing difficulty.

DISCLAIMER:

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PREPARED BY:

Ballard Material Products