

# SAFETY DATA SHEET

## AvCarb™ Gas Diffusion Substrates

### Section 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

**Product Name:** AvCarb™ Carbon Fiber  
**Chemical Formula:** Mixture  
**Synonyms:** GDL, Gas Diffusion Layer/Material  
**Part No.:** P50, P75, EP40  
**Manufacturer:** Ballard Material Products  
**Applications:** Fuel Cell Material

### Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NO.	CONTENTS	EPA RQ	TPQ
Carbon	7440-44-0	>99%	N/A	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 odour  
**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 (CO<sub>2</sub>)

**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      OSHA: Not Regulated

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

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



## Section 8 continued: EXPOSURE CONTROLS AND PERSONAL PROTECTION

### AIRBORNE EXPOSURE LIMITS

#### OSHA Permissible Exposure Limits (PEL):

Carbon ó total particulate 15 mg/m<sup>3</sup> (TWA), respirable fraction - 5 mg/m<sup>3</sup> (TWA)

#### ACGIH Threshold Limit Value (TLV)

Graphite - (all forms except graphite fibers) ó 2 mg/m<sup>3</sup> (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

<b>APPEARANCE:</b>	Thin black substrate	<b>COLOR:</b>	Black
<b>ODOUR/TASTE:</b>	Odourless	<b>% VOLATILE:</b>	0%
<b>SOLUBILITY:</b>	Insoluble in water or organic Solvents	<b>FLASH POINT:</b>	N/A
<b>SPECIFIC GRAVITY:</b>	Not Determined	<b>VAPOR PRESSURE:</b>	N/A
<b>BURNING RATE:</b>	Not Determined	<b>VAPOR DENSITY:</b>	N/A
<b>MELTING POINT:</b>	3,550C (6,422F)	<b>BOILING POINT:</b>	Sublimes
<b>UEL:</b>	N/A	<b>LEL:</b>	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 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)	Yes	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:

Ballard Material Products provides the information contained herein in good faith, but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving this information must exercise their judgment in determining its appropriateness for a particular purpose. Ballard Material Products makes no representations or warranties, either expressed or implied, including, without limitation, any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers. Ballard Material Products will not be responsible for damages resulting from use of or reliance upon this information.

### PREPARED BY:

Ballard Material Products