

# CARUS REMEDATION

CAS Registry No. 7732-18-5, 8001-22-7,  
7439-89-6, 26266-58-0

EZVI (Emulsified Zero-Valent Iron)

## FACT SHEET



EZVI is an emulsion of powdered zero-valent iron, surfactant, oil, and water that reductively dehalogenates halogenated hydrocarbons (e.g., tetrachloroethene (PCE), trichloroethylene (TCE), chlorofluorocarbons (CFC), vinyl chloride (VC)). EZVI has the ability to mix with dense non-aqueous phase liquids (DNAPLs) present in the subsurface environment since EZVI uses an emulsion to deliver reactive iron. Thus, EZVI is a "source area remediation" technology. There are various formulations of EZVI which are customized to your site conditions. This data sheet reflects all of the ranges available.

### PRODUCT RANGES

**Density:** 1.05-1.10 g/mL

**Hydrophobicity:** Digital image verification

**Micellular Structure:** Micrograph digital image verification

### CHEMICAL/PHYSICAL DATA

**Appearance:** Grey to black viscous liquid

**Odor:** Soybean oil (cooking oil) odor

**Solubility in Water:** Insoluble

**Specific Gravity:** 1.05-1.10 g/mL

**Percent Solids By Weight:** 10-17%

### SHIPPING CONTAINERS

**275-gallon IBC (Intermediate Bulk Container)** (1040-L)  
(UN Specification: UN31HA1/Y1.9/100) They are also marked "MX" for multi-trip. IBC weighs 139 lbs (65 kg). The net weight is 2300 lbs (1046 kg). The IBC contains 250 gallons (947 L) of product. The IBC dimensions are 45.4 in (115.3 cm) high, 48 in (121.9 cm) long, and 40 in (101.6 cm) wide. The IBC has a 2 in (5.1 cm) butterfly valve with NPT threads in bottom sump. (Domestic)

**Bulk Shipping-** Quantities up to 5000 gallons (18,927 L) are available. (Domestic)

### SHIPPING

**Proper Shipping Name:** Emulsified Zero-Valent Iron

**Hazard Class:** NA

**ID Number:** NA

**Packing Group:** None

### HANDLING, STORAGE, AND INCOMPATIBILITY

Personal protective equipment during handling should include safety goggles, rubberized gloves (neoprene or PVC), slip-resistant footwear, and other clothing to minimize dermal contact. Surfaces covered with EZVI are slick. Exercise care in handling or cleanup to avoid injury due to falls. Ensure adequate ventilation.

### HANDLING, STORAGE, AND INCOMPATIBILITY

Do not store near oxidizing or acidic materials. Store away from halogens. Hydrogen gas will be produced if combined with halogens. Keep ignition sources away from material.

Fires may be controlled and extinguished by using extinguishing powder. Do not use water, carbon dioxide, or halogenated extinguishers. Refer to MSDS for more information.

### GENERAL FACTS

Field-tested by the U.S. Environmental Protection Agency (EPA) under the Superfund Innovative Technology Evaluation (SITE) program

Primarily used for *in situ* DNAPL source area destruction

Typical source concentration decrease ~90+% within 3 months

Surfactant-stabilized water-in-oil emulsion with zero-valent iron particles

Hydrophobic, dense emulsion absorbs DNAPL, delivering contaminant to iron

*In situ* chemical reduction of chlorinated solvent to ethene and water

Applied using injection or soil mixing using conventional technologies

Does not promote mobilization of DNAPL

Developed/patented by NASA

### AWARDS

2007 NASA Induction into the Technology Hall of Fame

2006 Federal Laboratory Consortium Excellence in Technology Transfer

2005 NASA Government Invention of the Year

2005 NASA Commercialization Invention of the Year

### CARUS CORPORATION

### ONE COMPANY. ENDLESS SOLUTIONS

CORPORATE HEADQUARTERS | 315 Fifth Street, Peru IL 61354 | Tel + 1.815.223.1500 / 1-800-435-6856 | Fax + 1.815.224.6697 | Web: [www.caruschem.com](http://www.caruschem.com) | E-Mail: [salesmkt@caruschem.com](mailto:salesmkt@caruschem.com)

CARUS EUROPE | Parque Empresarial de ASIPO I C/Secundino Rocas 3, Planta 1, Oficina 13-14 I 33428 Cayes, Llanera Spain | Tel +34.985.78.55.13 / Fax +34.985.78.55.10

CARUS WATER, JINING | Jiangmiao Village, Ershilipu Town, Rencheng District, Jining City, | Shandong Province, China. 272000 | Tel +86.053.7279.1228 / Fax +86.053.7279.1339

The information contained herein is accurate to the best of our knowledge. However, data, safety standards and government regulations are subject to change; and the conditions of handling, use or misuse of the product are beyond our control. Carus Corporation makes no warranty, either expressed or implied, including any warranties of merchantability and fitness for a particular purpose. Carus also disclaims all liability for reliance on the completeness or confirming accuracy of any information included herein. Users should satisfy themselves that they are aware of all current data relevant to their particular use(s).

Carus and Design is a registered service mark of Carus Corporation. EZVI is a NASA Kennedy Space Center patented product. EZVI is manufactured by licensee RemQuest (a division of Toxicological & Environmental Associates, Inc. (TEA)). Responsible Care® is a registered service mark of the American Chemistry Council.



Copyright 2011  
rev. 04/13  
form RX1634

