Tech Brief

In Situ Chemical Reduction and Bioremediation

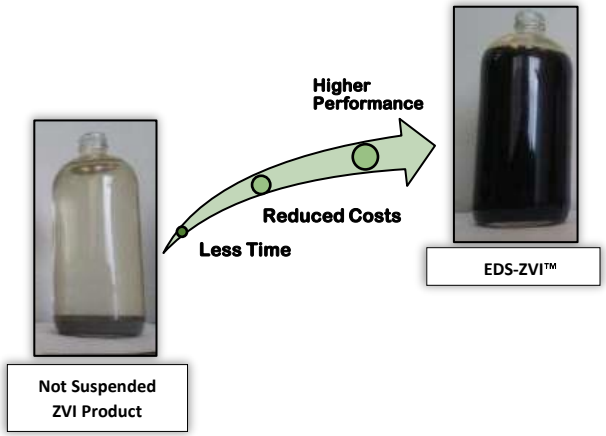
EDS-ZVI™

Electron Donor Solution- Zero Valent Iron

EDS-ZVI™: A Double-Acting Technology for ISCR and Bioremediation

Delivered as a two-part system, *EDS-ZVI™* (Electron Donor Solution – Zero Valent Iron) is designed to effectively remediate contaminated sites by combining advanced technologies for *In Situ* Chemical Reduction (ISCR) and bioremediation. *EDS-ZVI™* is prepared in the field by co-injecting two essential components:

1. A glycerol based colloidal suspension containing less than 5-micron sulfidated ZVI particles (comprising 40% of the mixture).
2. A water-mixable vegetable oil based organic substrate, *EDS-ER™,* to provide a lasting source of carbon and hydrogen for enhanced reductive dechlorination and other bioremediation processes.



Zero valent iron (ZVI) particles are renowned for their strong electrochemical reduction properties. However, to optimize their performance, they must be in close contact with contaminants.

EDS-ZVI™ addresses this challenge by serving as a dual-purpose agent for your remediation project. It acts as a stable carrier that keeps the iron particles suspended while providing both a quick release and long-lasting source of fermentable carbon for bacteria.

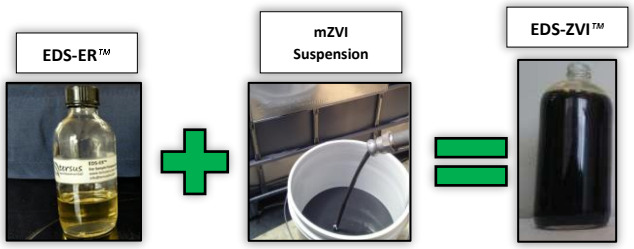
EDS-ZVI™ is versatile, capable of treating various contaminant groups, including Chlorinated Ethanes, Ethenes, Methanes, Chromium (VI), Heavy Metals, Perchlorates, and Explosives.

Advantages

- **Colloidal, Sulfidated Zero-Valent Iron Particle**s: Our solution features colloidal, sulfidated zero-valent iron particles suspended in glycerol, using proprietary environmentally friendly dispersants.
- **No Additional Equipment Required:** *EDS-ZVI™* eliminates the need for powder feeders and thickening with guar. Pneumatic or hydraulic fracturing is not mandatory.
- **Ease of Application:** When co-injected with *EDS-ER™* and diluted with water prior to application, the resulting mixture is easily injectable using either direct push or permanent injection wells.

Field Application Design

EDS-ZVI™ is highly adaptable to address site-specific conditions. The product's field mixture, featuring finely suspended particles of less than 5-micron ZVI, offers versatile subsurface distribution options. It can be efficiently delivered through direct-push injection points, hollow-stem augers, or pumped through screened injection wells.



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Field doses can be customized to suit the specific requirements, ranging from 2 to 10 grams per liter (g/L) for each component, *EDS-ER™* and *mZVI Suspension*.

Product Content

***mZVI* Suspension**		
Chemical Name	**CAS Number**	**Concentration (%)**
Glycerin	56-81-5	40-50
Zero Valent Iron	7439-89-6	30-50
Iron (II) sulfide	1317-37-9	1-4
EDS-ER™		
Chemical Name	**CAS Number**	**Concentration (%)**
Soybean Oil	8001-22-7	90 – 93
Emulsifiers	Proprietary	7 – 10

Product Characteristics

Parameter	***mZVI Suspension***	***EDS-ER™***
Physical State (at 77 °F)	Dark viscous liquid	Yellowish liquid
Boiling Point	>300°C (572°F)	-
Flash Point	-	282°C (540°F)
Specific Gravity	1.05 – 1.10 @ 25°C	-
Density	-	0.925 g/cm3
Water Solubility	Insoluble	Soluble

Packaging Options

EDS-ZVI™ is available for shipping in either 55-gallon poly drums or 275-gallon IBC containers, providing flexibility in packaging options to meet your needs.

Safety Observations

It is recommended to always use personal protective equipment (PPE) that matches the specific task when working with any type of chemicals.

Tersus Provides Site-Specific Remediation Programs and Performance Monitoring Plans To Meet Your Budget

Interested in a Site Evaluation? Scan the code to the right or visit tersusenv.com/support.

Interested in shopping online for amendments, supplements, and products to enhance conditions, accelerate clean-up, and reduce field-time? Please visit our online shop at surbec.com.

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