

## CRS® Technical Description

CRS® (Chemical Reducing Solution) is an iron-based reagent that facilitates biogeochemical *in situ* chemical reduction (ISCR) of halogenated contaminants such as chlorinated ethenes and ethanes. CRS is a pH neutral, liquid iron solution that is easily mixed with 3-D Microemulsion® Factory Emulsified before injection into a contaminated aquifer. CRS provides a soluble, food-grade source of ferrous iron (Fe<sup>2+</sup>), designed to precipitate as reduced iron sulfides, oxides, and/or hydroxides. These Fe<sup>2+</sup> minerals are capable of destroying chlorinated solvents via chemical reduction pathways, thus improving the efficiency of the overall reductive dechlorination process by providing multiple pathways for contaminant degradation in groundwater.



Example of CRS

For a list of treatable contaminants with the use of CRS, view the [Range of Treatable Contaminants Guide](#).

### Chemical Composition

- Water 7732-18-5
- Ferrous Gluconate 299-29-6

### Properties

- Appearance – Dark green to black
- Odor – Odorless
- pH 6.0 to 8.0
- Density – Approximately 1.0 grams per cubic centimeter (0.9 to 1.1 g/cc)
- Solubility – Miscible
- Vapor Pressure – None
- Non-hazardous

### Storage and Handling Guidelines

#### Storage

- Store in original tightly closed container
- Store away from incompatible materials
- Recommended storage containers: plastic-lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass
- Store in a cool, dry, well-ventilated place
- Keep away from extreme heat and strong oxidizing agents

#### Handling

- Avoid prolonged exposure
- Observe good industrial hygiene practices
- Wear appropriate personal protective equipment
- Avoid contact with eyes, skin, and clothing
- Avoid breathing spray mist
- Use with adequate ventilation

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## Applications

- Permanent injection wells
- Direct-push injection points

Application instructions for this product are contained in the CRS Application Instructions.

## Health and Safety

The manufacturer lists no ingredients as hazardous according to OSHA 29 CFR 1910.1200. Observe good industrial hygiene practices. Wash hands after handling. Store away from incompatible materials. Dispose of waste and residues in accordance with local authority requirements. Please review the [CRS PLUS Material Safety Data Sheet](#) for additional storage, usage, and handling requirements.



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