



BGCR-S

BioGeoChemical Reduction-Solution

Bio-Geo-Chemical Reduction (BGCR) is a microcrystalline cellulose electron donor combined with highly reactive ZVI

Benefits Include

Rapidly reduce high sulfate levels in groundwater

Generates colloidal scale iron sulfide for long term abiotic reduction of chlorinated solvents or reduction of metals

Rapidly reduces sulfate reducing bacterial competition for native Dehalococcoides (DHC)

Combine with DHC bioaugmentation cultures to speed up the reduction process and reduce time of remediation

Field Applications

Groundwater injections in soils with low or high permeability and fractured rock applications

Permeable reactive zones (PRZs) and Source Areas

Low pressure permeation injections or hydraulic / pneumatic fracturing

Soil Mixing and Trench PRBs or infiltration galleries

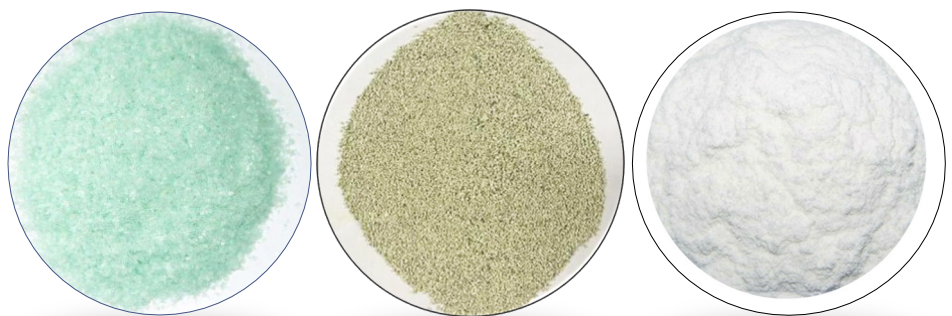
Applicable to Treatment of many contaminants including:

Chlorinated Solvents
PCE, TCE, DCE
And degradation products
Other chlorinated compounds

Inorganics and Metals
Hexavalent Chromium (CrVI)
Arsenic
Selenium
And other heavy metals

C.E.R.E.S. Bio-Geo-Chemical Reduction Solution (BGCR-S) is engineered to order completely soluble product and contains **high quality food grade donors** combined with oxygen scavenger, nutrients, for biostimulation of anaerobes in groundwater for the bioremediation of chlorinated solvents, nitrate, some metals and nitrated explosives. Alternative iron includes ferrous sulfate or ferrous gluconate. Other optional components include sulfate, buffering agents, and other chemistries.

BGCR combines physical, chemical, and microbiological processes to create strong reducing conditions that stimulate dechlorination of organic solvents and other recalcitrant organics (e.g., perchlorate).



<u>Material</u>	<u>wt %</u>	<u>Physical Properties</u>
Ferrous Gluconate	< 60%	Form: Powder
Calcium Acetate	< 50%	Solubility: soluble
Calcium lactate	< 50%	pH: adjustable from 6 to 8
Fe or Mg Sulfate	< 50%	Density: ~1.5 g/cm ³
Other donors available	< 30%	
Sodium Bicarbonate	< 10%	
Sodium Sulfite	< 10%	
Ascorbate, B12, N, PO ₄	< 4%	

Packaging available in 50lb bags or super sacks from 1,000 to 3,000 lb.

