



## An All-In-One Combined Remedy Approach to Address Soil and Groundwater Contamination

Klozur<sup>®</sup> CR, a Combined Remedy technology, is comprised of a specially formulated mixture of Klozur<sup>®</sup> SP and PermeOx<sup>®</sup> Ultra.

Klozur CR is a single, all-in-one formulated product that can be readily applied to either source areas or plumes with mixed petroleum and chlorinated solvents contamination. Klozur CR destroys contaminants in soil and groundwater by promoting three modes of action: Klozur activated persulfate chemical oxidation, aerobic bioremediation and anaerobic bioremediation.

### The benefits of Klozur CR

Two field proven technologies formulated into an all-in-one preblended product.

- **The Power of Klozur Activated Persulfate**
  - A built in Klozur persulfate activator delivers proven and powerful chemical oxidation action from generated sulfate and hydroxyl radicals
  - Rapid in situ chemical oxidation to target source and hot spot contaminate zones, typically lasting 3-6 months
- **The Performance of PermeOx Ultra**
  - Engineered calcium peroxide providing extended oxygen release for up to one year; longer than any other oxygen release compound available
  - Longevity delivers enhanced aerobic bioremediation in down gradient plumes



### The sound science of Klozur CR

Klozur CR provides self-activating Klozur persulfation oxidation technology, utilizing the alkalinity generated by calcium peroxide to achieve a pH in the range of 11. In addition, the calcium peroxide will slowly generate hydrogen peroxide allowing for peroxide activation of persulfate. High pH activated persulfate is capable of destroying a wide range of contaminants, including petroleum hydrocarbons and chlorinated solvents.

Following the initial chemical oxidation phase, Klozur CR will continue to release oxygen to be used as an electron receptor for aerobic bioremediation for up to a year, as a result of the slow hydration of the engineered calcium peroxide. Diffusion and transport of oxygen downgradient will support contaminant reductions in plume areas, treating BTEX, PAH's and petroleum hydrocarbons.

As a result of the persulfate oxidation with organic compounds, generated sulfate ions can be utilized by sulfate reducing bacteria as an electron acceptor under anaerobic conditions to degrade BTEX, PAH's and petroleum hydrocarbons.

### Application Methods

- Direct push injection
- Soil blending
- Direct application in an excavation

For more information and detailed case studies, please visit our website.



### Examples of Contaminants of Concern

#### CHLORINATED SOLVENTS

PCE, TCE, DCE,  
VC, TCA, DCA

#### PETROLEUM GRO, DRO, ORO, BTEX

#### PAHs

Creosote, MGP residuals  
1,4-dioxane, MTBE, TBA