

## Daramend® Reagent for Excavation Backfill and Trench PRB Shallow Groundwater Applications

Daramend® Reagent was originally formulated for surficial soil treatment via land farming techniques but is also frequently used in excavation / backfill applications to promote reductive dehalogenation of residual chlorinated solvents and their metabolites (e.g., cis-DCE and VC). Its coarse particle size provides cost advantages for backfill and trench applications in treating shallow groundwater, and may also enhance the longevity of treatment. Many soil mixing approaches, including simple excavator buckets and axial head mixers, can be used to achieve good distribution. Daramend is a cost-effective solution with approximate product costs of \$13 per ton of treated backfill, while providing active treatment for five or more years in these applications.

This document provides information regarding common approaches in utilizing Daramend for excavation backfills and trench style permeable reactive barrier applications.

### Excavation Backfills

Where average contaminant concentrations and other project details, such as groundwater geochemistry and velocity, are available reagent dosing can be calculated. Absent any specific site data, a typical dosing of 1 % - 2 % by weight of Daramend in the backfilled material or mixed soil volume may be used. Daramend can be mixed directly into the soil using deep soil mixing equipment or mixed into an open excavation base where prior soil removal had been conducted. Daramend is generally applied dry for these applications to enable easy mixing. In very windy conditions, a slurry may be prepared to minimize dust.



### Trench Permeable Reactive Barriers

For permeable reactive barrier (PRB) applications, thorough mixing of the Daramend and sand to be placed in the reactive barrier is essential to ensure uniform treatment in the reactive zone following construction. It is recommended to mix the Daramend and sand mixture as a wet slurry *ex situ* with soil mixing equipment, an excavator, or a cement mixer. Once a homogeneous slurry is created it can be placed into the trench for the PRB construction.

PRBs constructed using dry reagent mixing is generally not recommended; the Daramend will likely segregate from the sand due to varying material densities. In addition, trench PRBs constructed with standing water present will also run the risk of segregation of the Daramend and sand.

With any PRB installation technique one should consider the possible impacts to soil permeability as a result of both the installation technique and the reagent used. The relatively low Daramend dosages typically needed in PRB applications do not adversely impact hydraulic conductivity.

### Health and Safety

Daramend is safe when handled properly in accordance with instructions for use and the safety data sheet (SDS). The SDS is posted on our web site at: <http://www.peroxychem.com/remediation>. When working with Daramend, the use of standard personal protective equipment, including safety glasses, protective clothing and gloves are recommended. Additional safety equipment may be required for mechanical and site operations.

Please contact PeroxyChem for additional guidance.

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