

Provect-IR® Antimethanogenic ISCR Sleeve for Deep Plume Treatment, Residual Polishing and Routine Deployment

PROVECT-IR® TECHNOLOGY DESCRIPTION

Provect-IR® is easily deployed via groundwater wells using the Provectus® Sleeve delivery system to stimulate anaerobic biodegradation of organic contaminants. Provect-IR is a unique mixture of reagents combined into a single product that optimizes the *in situ* chemical reduction (ISCR) of chemicals present in soil, sediment, and groundwater. It acts by promoting synergistic interactions between:

- ◆ Natural antimethanogenic compounds
- ◆ Hydrophilic, nutrient rich organic carbon sources
- ◆ Zero valent iron (ZVI)
- ◆ Chemical oxygen scavengers
- ◆ Vitamin and mineral sources

Notably, Provect-IR is the only ISCR reagent to simultaneously inhibit the production of methane during the requisite carbon fermentation processes. This promotes more efficient use of the hydrogen donor while avoiding negative issues associated with elevated methane (CH₄) in groundwater, soil gas, and indoor air.

BENEFITS OF ISCR SLEEVES™

- ◆ Multiple Provect-IR Sleeve options depending on site-specific conditions including contaminants of interest, geochemistry, and remedial goals.
- ◆ Significant cost savings due to ISCR approach that promotes biotic, abiotic, and thermodynamic degradation mechanisms.
- ◆ All the field proven benefits of Provect-IR.
- ◆ Readily biodegradable H donor.
- ◆ Estimated longevity of 9 to 12 months.
- ◆ Unique mode of action does not require use of specialty microorganisms.
- ◆ Substantial time savings in the field because the reusable ISCR Sleeves (PVC or stainless steel) are easy to insert and retrieve from the well (see picture).
- ◆ Ease of determining the exact depth at which the ISCR Sleeve is deployed.
- ◆ Sleeves available for 2" and 4" wells.
- ◆ Even material distribution over the length of the ISCR Sleeve because the canister will not collapse.



PROVECTUS® ISCR SLEEVE FAQs

- ◆ **What are the main application scenarios for ISCR Sleeves?** The ISCR Sleeve is most conducive to physically challenging situations where a readily biodegradable carbon source and reduced iron are needed to induce ISCR of targeted compounds. For example, ISCR Sleeves can be used in deep well settings, PRBs that require routine amendment, and strategic placement into “problem” well locations.
- ◆ **What contaminants are amenable to ISCR Sleeve treatment?** Chlorinated solvents, chlorinated pesticides, and energetics are the primary targets.
- ◆ **How often should I replace my ISCR Sleeves?** The ISCR Sleeves are typically replaced every 9 to 12 months. However, various site-specific factors will influence the effective lifetime of the Sleeve including contaminant type and concentration, geochemistry, and hydrogeological.
- ◆ **Do I need to install new wells?** No. The ISCR Sleeves are designed to fit standard 2-inch and 4-inch diameter groundwater wells.
- ◆ **Is the technology applicable to free product treatment?** ISCR Sleeves are not intended for free product remediation.
- ◆ **Can specialty ISCR Sleeves be developed?** Yes, please contact Provectus Environmental to discuss site-specific construction and Sleeve content (e.g., ZVI size).