



REGENESIS

Hydrogen Release Compound (HRC[®]) Installation Instructions

(HELPFUL HINTS)

Application in Cold Weather Settings:

The viscosity of HRC is directly related to the ambient temperature. As discussed in the Material Overview, Handling, and Safety section, cold weather tends to increase HRC viscosity and decrease ease of pumping. To maintain HRC at a temperature/viscosity at which it is easy to apply:

1. Raise and maintain HRC's temperature to at least 95°F (35°C) prior to pouring it into the pump hopper
2. Insulate the delivery hose and keep the pump and hot water bath inside an enclosed structure such as a cargo van or trailer
3. Periodically check the HRC temperature in the hopper
4. Occasionally re-circulate HRC through the pump and hose to maintain temperature and viscosity
5. The volume of HRC recirculated should not exceed the volume of HRC in the hopper
6. Do not constantly recirculate HRC through the pump and hoses, as this may adversely affect HRC's longevity.

HRC Bedrock Applications:

When contaminants are present in competent bedrock aquifers, the use of direct push technology as a delivery method is not possible. *RegenesiS is in the process of developing methods for applying HRC via boreholes drilled using conventional rotary techniques.* To develop the best installation strategy for a particular bedrock site, it is critical that our customers call the technical support department at RegenesiS early in the design process.

HRC can be applied into a bedrock aquifer in cased and uncased boreholes. HRC can be delivered by simply filling the borehole without pressure or by using a single or straddle packer system to inject HRC under pressure. Selection of the appropriate

delivery method is predicated on site-specific conditions. The following issues should be considered in developing an HRC delivery strategy:

Is the aquifers transmissivity controlled by fractures?

Backfilling may be the better delivery method in massive, un-fractured bedrock, this is particularly true in an aquifer setting with high permeability and little fracturing

Intervals greater than 10 feet will require a straddle packer system).

- such as found in massive sandstone
- Down-hole packer systems may be more advantageous in fractured bedrock aquifers
- In this case the fracture type, trends, and interconnections should be evaluated and identified

Is the injection and monitoring wells connected by the same fractures?

Determine if it is likely that the HRC injection zone is connected to the proposed monitoring points

If pressure injection via straddle packers is desired, consideration should be given to the well construction. Specific issues to be considered are:

- Diameter of the uncased borehole (*will casing diameter allow a packer system to be used?*)
- Diameter of the casing (same as above)
- Strength of the casing (can it withstand the delivery pressures?)
- Length of screened interval (screened intervals greater than 10 feet will require a straddle packer system).

For direct assistance or answers to any questions you may have regarding these instructions, contact Regenes Technical Services at 949-366-8000.

REGENESIS, 2003
www.regenesis.com