

Sensabac-DHC – anaerobic dechlorination culture for bioaugmentation of CHC groundwater contamination

Product

Sensabac-DHCs are laboratory-enriched microorganism cultures containing the species *Dehalococcoides mccartyi* and have a high reductive degradation potential for CHCs.

Practical experience shows that there is often a strong accumulation of cDCE and VC in groundwater both under natural conditions and under biostimulated conditions. Bioaugmentation ensures that these CHC components are also quickly and effectively treated under anaerobic conditions.



Application

Bioaugmentation is suitable for sites where no CHC degradation has been detectable under natural conditions or where no or only incomplete or very slow CHC degradation takes place despite suitable environmental conditions and substrate supply in the groundwater. The use of bioaugmentation cultures is effective where they already have a sufficiently reduced environment and a favorable auxiliary substrate supply in the groundwater. If the conditions are not yet optimal for bioaugmentation, these can often be adjusted in advance by adding the appropriate substrate. The dechlorination cultures used come from sites with demonstrably intensive dechlorination and high gene copy numbers for the degradation-relevant enzymes *TceA*, *VcrA* and *BvcA*.

Procedure

Once the order has been placed, a bioaugmentation solution that is dimensioned for the respective site application is prepared and incubated in the laboratory for several weeks. The culture is subject to constant monitoring of the environmental conditions and the microbial growth response. Quality control is carried out by means of qPCR analysis to evaluate the gene copy number for *TceA*, *VcrA* and *BvcA* to ensure that the bioaugmentation culture has the desired degradation potential.

Once correspondingly high gene copy numbers have been achieved, the culture is ready for use and is infiltrated into the groundwater at the site under anaerobic conditions.

Central services of Sensatec GmbH

- Analysis of the biogeochemical situation with regard to dechlorination processes at the site
- Production of a suitable nutrient medium and reproduction of a degradable culture in sufficient quantities
- Quality control of the enrichment by detection of the degradation-relevant DNA segments *tceA*, *vcrA* and *bvcA*
- Bioaugmentation/ transport of bioaugmentation culture
- Provision of all materials required for anaerobic inoculation at the site
- Molecular biological success monitoring by means of qPCR to determine whether degrading genes are present in groundwater after bioaugmentation

Preparation time: approx. 8 weeks

Site-specific conditions:

- Pollutant patterns and, if applicable, pollutant patterns degradation processes are known
- Presence of already anaerobic conditions at the site ($O_2 < 0.2$ mg/L) or can be achieved by biostimulation
- Presence of groundwater monitoring point (at least 1") for bioaugmentation

Minimum purchase: 50 L Sensabac-DHC

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