

GROUNDWATER SOLUTIONS

RemBind® Solutions Exclusively Available
Through Carus in the U.S.


CARUS®


 **RemBind®**

At Carus, we simplify remediation solutions for our customers and partners. With our expertise and commitment to **SIMPLIFIED SCIENCE®**, we help you navigate the complexities of treatment with ease.



PROTECTING GROUNDWATER THROUGH CONTAMINANT REMEDIATION

PFAS, hydrocarbons, and heavy metals in groundwater pose long-term risks to human health and the environment. Traditional remediation options are often expensive, time consuming, or ineffective in complex aquifers.

RemBind® offers proven solutions for *in-situ* applications that immobilize contaminants in source areas, intercept and prevent migration, and work around existing site infrastructure, enabling safe water management.

A HIDDEN PROBLEM WITH LONG TERM CONSEQUENCES

Groundwater is one of the most critical and vulnerable natural resources. It serves as an essential source for drinking water, irrigation, and ecosystem maintenance, with increasing demand and a trend toward a drier climate placing growing pressure on some of our most important aquifers. In many regional and remote communities, groundwater is not a backup supply but the only supply.

Once contaminated, plumes migrate silently through aquifers, crossing property boundaries and accumulating in the environment. The consequences extend beyond compliance. Contaminated groundwater affects land value, restricts site reuse, and creates long-term liability. Acting early, with the right tools, is always less costly than managing a problem after it has spread.

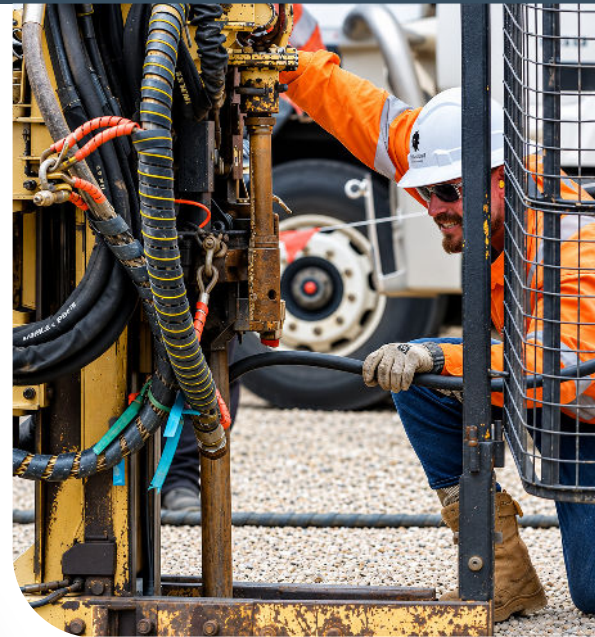
RemBind® SOLUTIONS

RemBind® Inject

A modified RemBind® formulation for direct injection into contaminated groundwater zones for rapid immobilization of PFAS, heavy metals, and other contaminants in aquifers.

RemBind® Well Socks

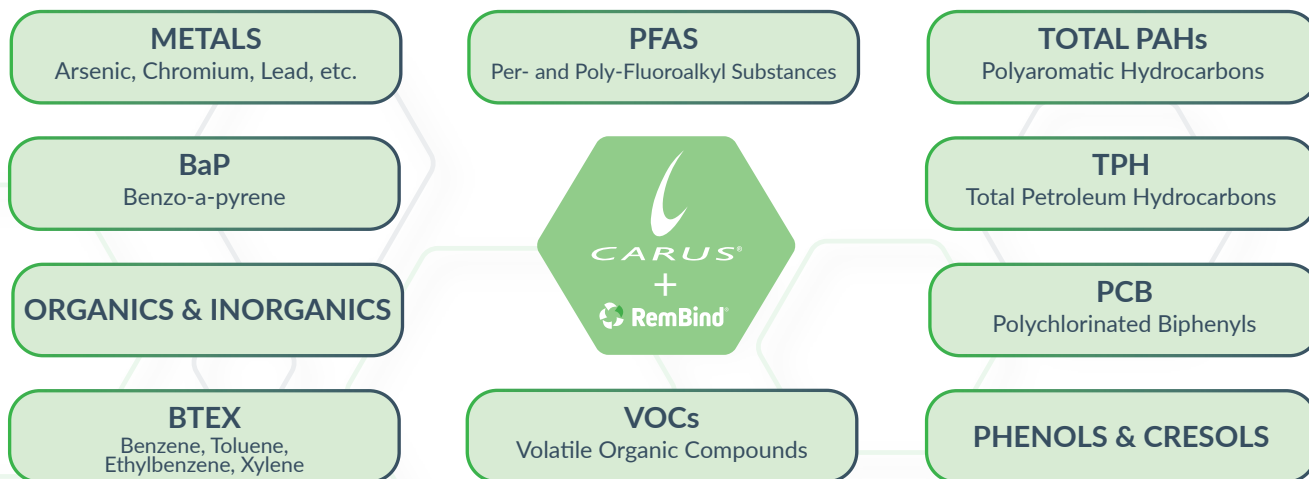
Pre-packed sorbent socks for insertion into remediation wells resulting in continuous treatment as groundwater passes through the well system.





GROUNDWATER APPLICATION OVERVIEW

CONTAMINANTS SOLVED



WHERE REMBIND® GROUNDWATER SOLUTIONS ARE DEPLOYED

- ◆ Defence & Military Bases
- ◆ Aviation
- ◆ Industrial Facilities
- ◆ Fuel Depots
- ◆ Landfill Sites
- ◆ Fire Training Facilities
- ◆ Mining
- ◆ Former Industrial Land



Technical Support

Carus is supported by a dedicated technical team, evaluating site data, providing guidance on product selection, dosage optimization, and application methods to ensure successful project outcomes.

KEY BENEFITS

- ◆ **Proven Performance**
RemBind® technology binds contaminants *in-situ*, preventing leaching and migration
- ◆ **Versatile**
Works effectively in diverse groundwater conditions, including shallow and deep aquifers
- ◆ **Cost Effective**
Reduces long-term treatment costs and the need for extensive pumping or excavation
- ◆ **Sustainable Outcomes**
Supports circular water management and minimal environmental disruption
- ◆ **Practical Deployment**
Approved contractors and tooling are available



RemBind® WELL SOCKS

RemBind® Well Socks are designed to be inserted into wells to remove Per- and Polyfluoroalkyl Substances (PFAS) from groundwater. RemBind® Well Socks consist of an outer nylon sock filled with RemBind® sorbents, a PFAS sorbent independently shown to effectively bind PFAS. Once the RemBind® Well Socks have extracted PFAS from the groundwater, they are removed from the wells, removing PFAS mass from groundwater.

They are classified as Non-Hazardous Goods. See the Safety Data Sheet (SDS) for further safety information.



PARAMETER	SPECIFICATION
Well Socks	
Material	Nylon
Material pore size	70 µm
Product outer dimension - OD (2-inch well)	40 mm diameter x 1 m
Product outer dimension - OD (4-inch well)	80 mm diameter x 1 m
RemBind Sorbent	
Particle Size Distribution (PSD)	D ₅₀ 525 µm
Moisture content	<6 %
PFOS sorption capacity per 1 m sock (40 mm diameter) ^{1,2}	1,400 mg
PFOS sorption capacity per 1 m sock (80 mm diameter) ^{1,2}	3,840 mg

1 - Sorption isotherms for RemBind® sorbent were carried out by an independent third-party engineering firm using PFAS-contaminated wastewater from a commercial airport site. A sorption capacity of 2,560 µg of PFOS per g of RemBind was calculated at equilibrium at a constant temperature of 25°C.

2 - Sorption capacity in the field may vary considerably based on the water quality and flow rate, the type and concentration of PFAS substances (flux), and the presence of co-contaminants such as hydrocarbons. It is strongly recommended that bench-scale trials are conducted using site water to determine site specific application longevity.

This Product Specification Sheet should be read in conjunction with the Application Notes for the RemBind® Well Socks and the SDS for RemBind®. It supersedes any former publication and is subject to change without notice. The technical data contained herein is based on tests believed to be suitable and reliable for the intended purpose and is offered as a guide only, it being expressly understood that all such advice is being given and accepted at the Buyer's risk.



INSTALLATION INSTRUCTIONS

RemBind® Well Socks are designed for *in-situ* treatment of contaminated groundwater with Per- and Polyfluoroalkyl Substances (PFAS). This document provides instructions for the safe preparation, handling, installation, retrieval, and disposal of RemBind® Well Socks. It is intended for clients, consultants and contractors implementing RemBind® in wells impacted by PFAS and outlines the scope of work to ensure effective PFAS removal while maintaining safety and operational efficiency.

RemBind Well Socks Contents

- 20 x 2" or 9 x 4" Well Socks with carabiner hooks (for connecting Well Socks into a chain)
- 1 x priming bucket
- 1 x well plug
- 1 x 20-meter rope
- 1 x rope cutter
- 2 x P2 dust masks
- 2 pairs of gloves (powderless nitrile gloves)
- 1 x general waste disposal bag
- 1 x used sock disposal bag

Precautions

- Always wear gloves and P2 masks when handling RemBind® Well Socks
- Avoid inhalation or direct skin contact with RemBind® material
- Treat all wastewater or water removed from wells as potentially contaminated with PFAS or other chemicals
- Follow all local environmental regulations for handling, use, and disposal
- Health and safety requirements are the responsibility of the contractor

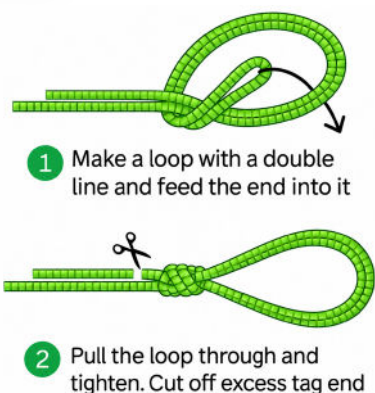


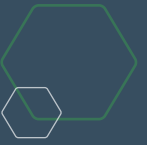
PREPARING THE RemBind® WELL SOCKS

- 1 Determine the total depth of the well to the nearest meter - this equals the number of RemBind® Well Socks required.
- 2 Measure the distance from the well head to the groundwater level - this is the length of free rope required below the Well Plug.
- 3 Collect the required number of RemBind® Well Socks, fold each in half, and place in the Priming Bucket.
- 4 Fill the bucket with potable water to prime the RemBind® Well Socks. It is normal for the water to turn dark grey/black on first flush.
- 5 Use the provided Carabiner Hooks to connect the primed RemBind® Well Socks into a single chain of the required length.
- 6 Attach one end of the RemBind® Well Sock chain to the Well Plug and rope, which will secure the RemBind® Well Sock to the well head.
- 7 Measure and cut the length of rope to match the distance between the well head and groundwater level. The priming bucket includes a measuring guide and can be used to unwind the required rope length. Avoid excess slack when measuring the rope length as this may lower the RemBind® Well Socks below the target zone and make retrieval difficult.
- 8 Tie a loop knot (see left) at each end of the rope length. Secure one end to the well plug snap hook. Secure the other end to the sock chain using the snap hook already attached to the sock.
- 9 The RemBind® Well Sock is now ready for installation.



View Video





WHY CHOOSE CARUS FOR REMEDIATION?

- **Proven Expertise**
Decades of remediation experience & thousands of successful applications
- **Comprehensive Support**
Tailored technical support from pilot testing through full-scale application
- **Regulatory Compliance**
ISO 9001 certified & REACH registered
- **High-Quality Assurance**
Certificate of Analysis with every shipment for consistent, reliable quality



CARUS®

BEST-IN-CLASS SORPTION FOR PFAS IN GROUNDWATER

RemBind® Inject is a proven injection product designed to remove Per- and Polyfluoroalkyl Substances (PFAS) in impacted groundwater, as well as chlorinated and hydrocarbon compounds.

This targeted approach delivers cost-effective contaminant reduction while minimizing site disturbance, supporting efficient and controlled remediation of impacted groundwater.

KEY BENEFITS

- Optimized *in-situ* delivery under multiple hydrogeological conditions
- Enhanced sorption of long- and short-chain PFAS and other organic contaminants effectively reducing concentrations in groundwater
- Cost-effective compared to *ex-situ* approaches, eliminating pumping, excavation, and disposal requirements
- Support includes conceptual site model (CSM) review, expert design consultation, injection planning, and equipment support
- Proven performance demonstrating reliable reagent delivery and emplacement

INJECTION PROCESS

Site Assessment

Review the Conceptual Site Model (CSM), boring logs, field data, previous remediation and historical monitoring information.

Design & Planning

Injection specialists develop a tailored remediation strategy that can include liaising with local drillers and tooling suppliers.

Sorbent Delivery

RemBind® Inject is slurried and injected into the subsurface using appropriate pump(s) and tooling.

Monitoring

Temporary or permanent wells are used to assess treatment effectiveness and confirm contaminant immobilization.

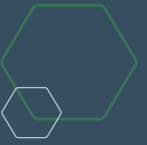


How It Works

RemBind® Inject is delivered into impacted saturated media using direct push drilling technologies, with specialized pumps and tooling ensuring precise placement of the reagent.

Once emplaced, RemBind® Inject binds and removes PFAS and other organic contaminants, reducing mobility and effectively immobilizing them in place.

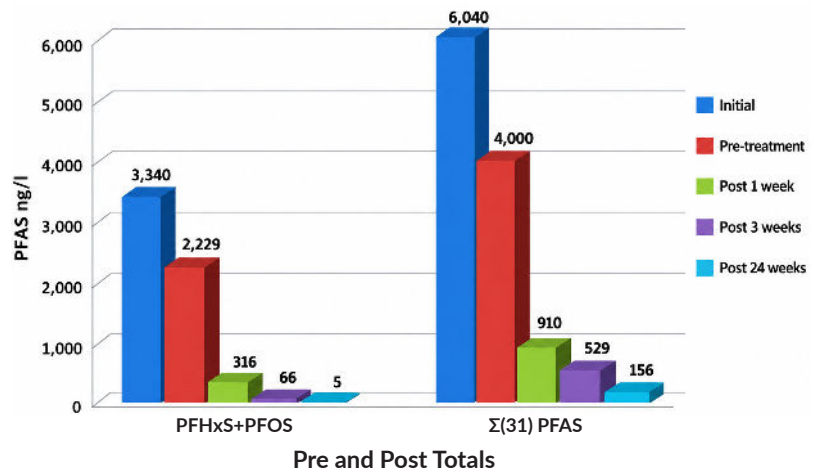
Treatment can target source areas or can be designed to intercept contaminant plumes through the installation of robust, long-lived permeable reactive barriers (PRBs).



PERFORMANCE DATA

Figure 1: PFAS concentrations in groundwater before and after treatment with RemBind® Inject.

FIGURE 1: PFAS Reductions in Groundwater



WHY CHOOSE REMBIND® INJECT?

- Proven with effective PFAS and organic contaminant immobilization
- Scalable for small and large sources and plumes
- Includes equipment and injection support as part of the service
- Minimizes regulatory and operational risks by treating contaminants in place

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TECHNICAL SUPPORT

Our team provides comprehensive, end-to-end guidance and support to ensure successful project delivery:

- Site characterization and Conceptual Site Model (CSM) review
- Injection design and planning
- Equipment guidance and selection and operational oversight
- Monitoring and post-injection performance evaluation

Contact Carus Technical Support to discuss your project and request a site-specific plan.



RemBind® INJECT CASE STUDY

RemBind teamed with an Australian injection contractor to demonstrate the injection of RemBind powdered reagent using conventional drilling, pumps and mixing tooling, and to assess its PFAS immobilization performance.

SITE OVERVIEW

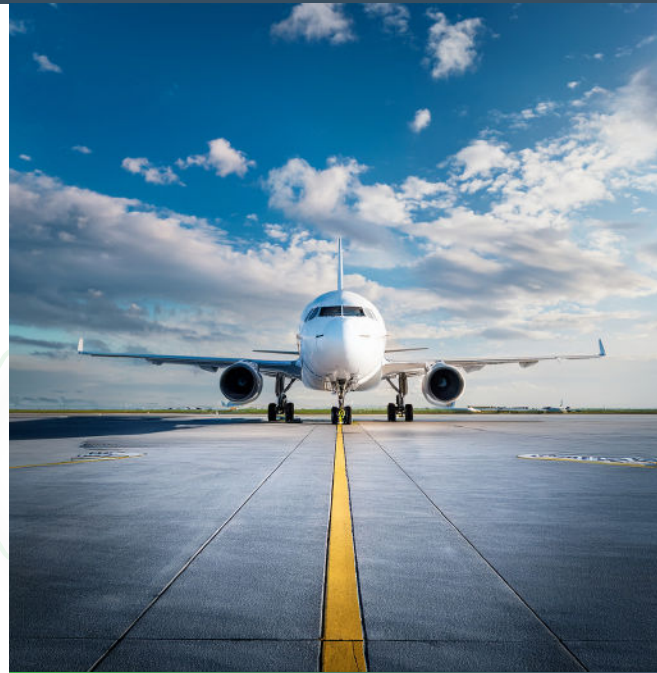
A PFAS impacted site adjacent to an international airport was chosen as the demonstration site. 11 months prior to injection, the highest groundwater concentration was 3,300 and 6,400 ng/l for the PFOS+PFHxS, and Σ (30) PFAS, respectively, while the PFOS total concentration in the silty clay was around 4,400 ng/kg.

Average groundwater levels started at 0.9 m below ground surface (bgs) and wells were screened at around 1.0 to 4.0 m bgs.

METHODOLOGY

RemBind® product was injected as a 9% slurry into a network of 9 direct push injection points with an average of 5.5 discrete intervals spaced vertically 0.5 m.

Injection intervals at adjacent points were offset by 2 m horizontally and 0.25 m vertically (from the previous point) to ensure robust delivery and coverage of the 128 m³ treatment zone.





RemBind® INJECT CASE STUDY - RESULTS

Average hydraulic conductivity (K) for the target well and the untreated upgradient wells were calculated as 3.15×10^{-4} and 7.52×10^{-4} , respectively, indicating that the injected RemBind® had no significant reductions of the overall seepage velocity through the treatment zone.

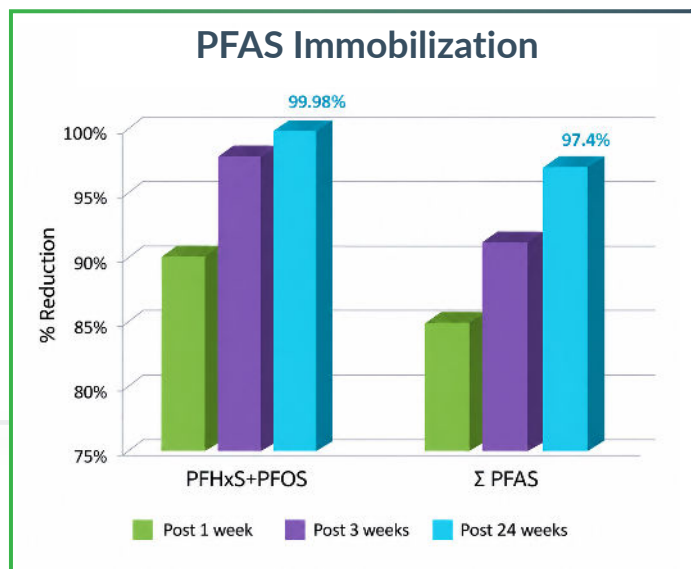
Additionally, other field parameters such as pH, ORP, DO, and conductivity quickly returned to background levels following the injection process.

The injection program was designed to immobilize both the existing PFAS in the treatment zone, and 'new' PFAS mass migrating through the zone in slow moving groundwater over the longer-term. Results showed significant reductions in PFOS+PFHxS (97% reduction) and PFOA (87% reduction) in the treatment zone (see Figure 1 at right).

Based on the total binding capacity of the injected RemBind®, the PFAS levels, and the groundwater velocity, the injection solution would be expected to last for a prolonged period of time with little or no ongoing management apart from monitoring.

Given the depth and area of impacts, RemBind® Inject proved to be an efficient and cost-effective method for treating a large plume migrating from an offsite source. Commercial-scale design would involve emplacement of permeable absorptive barriers across the site to intercept the contaminants. Barriers could be placed in areas that minimize impacts to ongoing site operations, allowing for the immediate commencement of site activities after injections are complete.

This ground-breaking application demonstrates a method for safe, sustainable and economical management of PFAS contaminated aquifers.



READY TO EXPLORE RemBind® SOLUTIONS?

Whether you're addressing PFAS, metals, petroleum hydrocarbons, or other site remediation challenges, Carus can help identify the right RemBind solution for your project.

Contact our remediation team to discuss your site conditions, technology selection, and implementation approach.

CONNECT
with a Carus Remediation Specialist Today

(815) 223-1500

salesmkt@carusllc.com | carusllc.com/RemBind



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& Technical Resources

RemBind® Solutions. Carus Expertise.

Bringing innovative immobilization technologies
to remediation professionals across the United States.

Carus Headquarters USA
315 Fifth Street | Peru, IL 61354 | Tel +1 (815) 223-1500
carusllc.com | salesmkt@carusllc.com

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Driving Safety & Sustainability