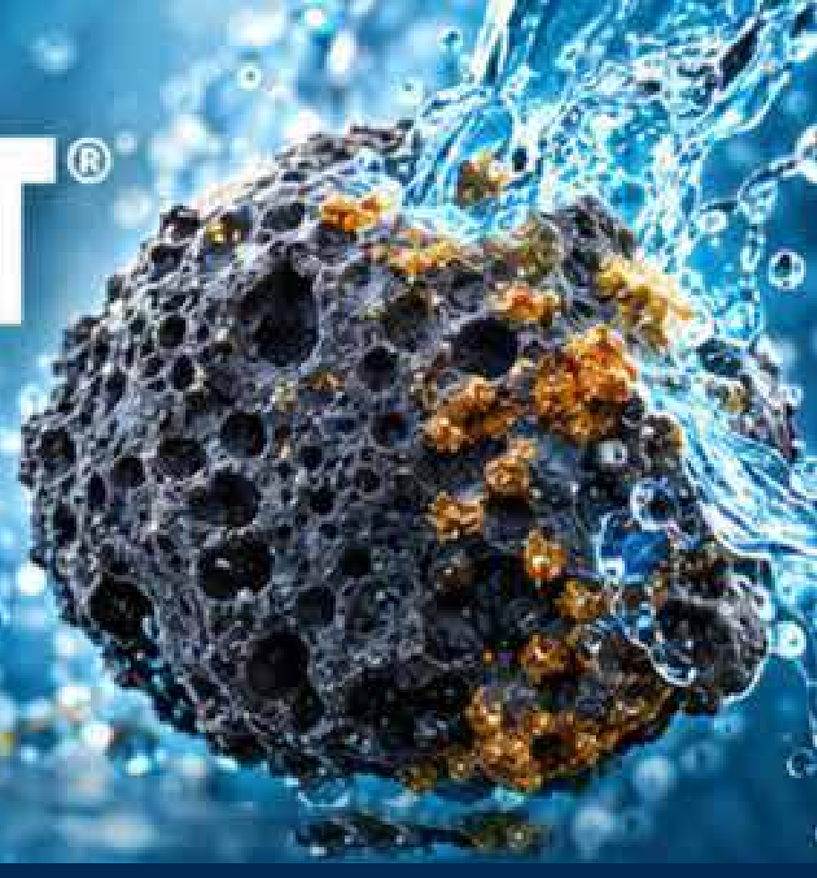
WATCH WATER • PFAS SCIENCE SERIES / 01

KATALOX-LIGHT® PFAS REMOVAL

THE SURFACE-CHEMISTRY CONNECTION

Understanding iron-assisted capture during iron and manganese treatment



320 m²/g
Specified surface area

10% MnO_2
Coating on ZEOSORB®

Approx. 3 µm
Fine-particle filtration

Manufacturer specifications

01 WHY HIGH SURFACE AREA MATTERS

Extensive mineral surface provides contact space. Water-accessible pores, reactive hydroxyl groups and surface charge determine which sites can bind PFAS. Surface area and adsorption affinity work together.

02 IRON CREATES FRESH ADSORPTION SITES

Oxidation converts dissolved ferrous iron into ferric hydroxide solids. These fresh mineral surfaces can adsorb selected PFAS under favourable conditions and become part of the retained filter solids.

03 HOW PFAS MEETS THE SURFACE

PFOA and PFOS usually carry negatively charged head groups in drinking water. Positively charged iron-hydroxide sites can attract them. PFAS identity and surrounding water chemistry influence uptake.

04 THE ROLE OF MANGANESE TREATMENT

The manganese dioxide coating supports catalytic metal treatment. As iron solids and manganese oxides accumulate, the active bed develops a changing mineral–water interface.

05 FILTRATION COMPLETES THE SEPARATION

The bed retains PFAS-bearing particles after adsorption. Backwashing removes collected solids into a managed residual stream. Dissolved PFAS needs adsorption before particle filtration can separate it.

06 WHAT CONTROLS CAPTURE?

- pH and surface charge
- PFAS species
- Phosphate and organic matter
- Contact time and flow
- Available sites and solids retention

THE SCIENTIFIC FOUNDATION

Published ferrihydrite research tested 12 PFAS and linked adsorption to surface charge, pH and phosphate competition. Stronger uptake occurred under acidic, low-competition conditions.

This mineral research explains a possible capture pathway.
Katalox-Light PFAS removal and service life require product-specific inlet/outlet measurements.

FORM THE SURFACE. ENABLE ADSORPTION. RETAIN THE SOLIDS.

Iron-bearing groundwater | Municipal treatment | Professional multi-contaminant treatment trains

PFAS capture transfers PFAS to solids or media; this mechanism does not establish PFAS destruction.

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