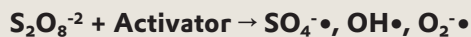


THE FIELD PROVEN AND VERSATILE ISCO SOLUTION TO ADDRESS SOIL & GROUNDWATER CONTAMINATION

KLOZUR® SP is the oxidant of choice for in situ chemical oxidation (ISCO), because of its proven ability to treat a wide range of contaminants including chlorinated solvents, petroleum and PAHs. Based upon an environmental grade of sodium persulfate (SP), KLOZUR® SP is ideal for contaminated source zones and hot spots that require rapid treatment. When properly activated, KLOZUR® SP provides an unmatched combination of oxidative power, versatility, and control that can be delivered both safely and cost effectively. Successful field applications of KLOZUR® activated persulfate have been performed globally. These applications demonstrate the ability of KLOZUR® activated persulfate to treat diverse organic contaminants of concern including: chlorinated ethenes (TCE, PCE, DCE and vinyl chloride), chlorinated ethanes (TCA and DCA), chlorinated methanes (carbon tetrachloride and methylene chloride), BTEX, MTBE, polyaromatic hydrocarbons (PAHs), petroleum hydrocarbons (TPHs, GRO, DRO), 1,4-dioxane and pesticides.

KEY BENEFITS

When used with Evonik's patented activation methods, KLOZUR® SP produces the powerful oxidative ($\text{SO}_4^{\cdot -}$, OH^{\cdot}) and reductive ($\text{O}_2^{\cdot -}$) radicals creating a multi-radical attack for the rapid destruction of recalcitrant compounds.



Multiple activation options and methods of delivery provide for a flexible and custom solution based on site conditions. With a solubility limit of up to 40 wt%, KLOZUR® SP can be applied as a fully soluble solution. KLOZUR® SP is a stable oxidant given its high oxidation potential, with a typical

active lifetime in the subsurface of weeks to months, providing an extended radius of influence. KLOZUR® SP is safe to handle with Evonik's recommended use guidelines and does not generate heat or gas.

EXAMPLES OF CONTAMINANTS OF CONCERN**CHLORINATED SOLVENTS**

PCE, TCE, DCE, VC, TCA, DCA, methylene chloride, carbon tetrachloride, chlorobenzene

PETROLEUM

TPH, BTEX, DRO, GRO

PAHs

creosote, MGP residuals 1,4-dioxane, MTBE, TBA, energetics, chlorinated pesticides

THE SOUND SCIENCE OF KLOZUR® ACTIVATED PERSULFATE

KLOZUR® activated persulfate has a long history of documented success having been used at thousands of sites to remediate contaminants of concern around the world. The field application of KLOZUR® activated persulfate has been scientifically validated in hundreds of independent peer-reviewed journal articles and conference presentations.

APPLICATION METHODS

- Direct push injection
- Fixed well injection
- Soil blending

For more information and detailed case studies, please visit our website.

Disclaimer This information and any recommendations, technical or otherwise, are presented in good faith and believed to be correct as of the date prepared. Recipients of this information and recommendations must make their own determination as to its suitability for their purposes. In no event shall Evonik assume liability for damages or losses of any kind or nature that result from the use of or reliance upon this information and recommendations. EVONIK EXPRESSLY DISCLAIMS ANY REPRESENTATIONS AND WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED, AS TO THE ACCURACY, COMPLETENESS, NON-INFRINGEMENT, MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE (EVEN IF EVONIK IS AWARE OF SUCH PURPOSE) WITH RESPECT TO ANY INFORMATION AND RECOMMENDATIONS PROVIDED. Reference to any trade names used by other companies is neither a recommendation nor an endorsement of the corresponding product, and does not imply that similar products could not be used. Evonik reserves the right to make any changes to the information and/or recommendations at any time, without prior or subsequent notice.

Evonik Operations GmbH
Smart Materials
Active Oxygens Business Line
Soil & Groundwater Remediation

remediation@evonik.com
www.evonik.com/remediation