

<http://www.cornelsen.co.uk/Products/In-Situ-Chemical-Oxidation/Klozur%C2%AE-Activated-Persulfate.html>

**PRODUCT CODE: KLOZUR**

# Klozur® Activated Persulfate



*Klozur® activated persulfate is the oxidant of choice for remediation because of its ability to treat a wide range of contaminants. When properly activated, Klozur persulfate provides an unmatched combination of oxidative power and control that can be delivered both safely and cost efficiently.*

### KEY BENEFITS:

#### POWER

- Multi –radical attack.
- Rapid destruction of recalcitrant compounds.

#### VERSATILITY

- Flexible activation based on site conditions.
- Multiple methods for delivery: direct push, fixed wells, soil blending.
- Highly soluble (up to 40 wt%).

#### STABILITY

- Persistent in the subsurface, providing an extended radius of influence.
- Safe to handle – does not generate heat or gas under normal use.

FMC has been pioneering applied oxidation chemistry for more than 60 years and has developed or licensed various patents or patent applications governing the activation of persulfate for environmental applications, including the utilization of metals, chelants, heat, high pH or peroxides.

Together with FMC's experts, Cornelsen can help you select the best activation method for your site.

Klozur activated persulfate generates the sulfate radical ( $SO_4^{\cdot-}$ ), one of the strongest oxidizing species available, giving Klozur persulfate the power to destroy the most recalcitrant of contaminants. However, selection of the "right" activation methods depends on many factors, including: the target contaminants, lithology, hydrogeology, and other specific site conditions.

Successful field applications of Klozur Activated Persulfate have been performed globally and at several sites throughout the UK and Europe. 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.

a recommended, lab or field data demonstrating success  
n recommended, noavailable lab or field data  
∅ not recommended

## SELECTION GUIDE

	Fe Chelate	Alkaline	Hydrogen Peroxide	Heat
<b>CHLORINATED SOLVENTS</b>				
Tetrachloroethene (PCE)	✓	✓	✓	✓
Trichloroethene (TCE)	✓	✓	✓	✓
Dichloroethene (cisand trans DCE)	✓	✓	✓	✓
Trichloroethane (TCA)	∅	✓	✓	✓
Dichloroethane (DCA)	∅	✓	■	✓
Carbon tetrachloride	∅	✓	✓	✓
Chloroethane	∅	■	■	✓
Chloroform	∅	✓	✓	✓
Chloromethane	∅	■	■	✓
Chlorotoluene	■	■	■	✓
Methylene chloride	∅	✓	✓	✓
Vinyl chloride	✓	✓	✓	✓
Dichloropropane	∅	■	■	✓
Dichloropropene	∅	■	■	✓
Hexachlorobutadiene	∅	■	■	✓
Tetrachloroethane	∅	■	✓	■
Trichloropropane	∅	■	■	✓
<b>BTEX</b>				
Benzene	✓	✓	✓	✓
Toluene	✓	✓	✓	✓
Ethylbenzene	✓	✓	✓	✓
Xylenes	✓	✓	✓	✓
<b>PAHs</b>				
Acenaphthene	✓	✓	■	✓
Acenaphthylene	✓	✓	■	✓
Anthracene	■	✓	■	■
Benzo(a)anthracene	■	✓	■	■
Benzo(a)pyrene	■	✓	■	■
Benzo(b)fluoranthene	■	✓	■	■
Benzo(ghi)perylene	■	✓	■	■
Bis(2-ethylhexyl)phthalate	■	✓	■	■
n-butylbenzene	✓	■	■	✓
Chrysene	■	✓	■	■
Dibenzo(ah)anthracene	■	✓	■	■
Fluorene	✓	✓	■	✓
Naphthalene	✓	✓	■	✓
Nitrobenzene	∅	∅	✓	✓
Phenathrene	✓	✓	✓	✓
Propylbenzene	✓	✓	✓	✓
4-iso-propyltoluene	✓	✓	✓	✓
Pyrene	■	✓	■	■
Styrene	✓	✓	✓	✓
Trimethylbenzene	✓	✓	✓	✓
<b>OXYGENATES</b>				
Methyl tert-butyl ether (MTBE)	✓	✓	✓	✓
Tert-butylalcohol (TBA)	✓	✓	✓	✓

	Fe Chelate	Alkaline	Hydrogen Peroxide	Heat
<b>PETROLEUM HYDROCARBONS</b>				
GRO (octane)	∅	✓	✓	■
DRO (dodecane)	∅	✓	✓	■
ORO (C20 alkane)	∅	✓	✓	■
Creosote (coal tar)	✓	✓	■	■
<b>CHLOROBENZENES</b>				
Chlorobenzene	✓	✓	■	✓
Dichlorobenzene	✓	✓	■	✓
Trichlorobenzene	∅	✓	■	✓
<b>PHENOLS</b>				
Phenol	■	■	■	✓
4-chloro-3-methyl phenol	■	■	■	✓
2-chlorophenol	■	■	■	✓
2,4-dichlorophenol	■	■	■	✓
2,4-dinitrophenol	■	■	■	✓
4-nitrophenol	■	■	■	✓
Pentachlorophenol	■	■	■	✓
<b>HALOALKANES</b>				
Dichlorodifluoromethane (Freon 12)	∅	✓	■	✓
Trichlorofluoromethane (Freon 11)	∅	✓	■	✓
Trichlorotrifluoroethane (Freon 113)	∅	✓	■	✓
<b>PESTICIDES</b>				
Chlordane	∅	✓	■	✓
DDD	∅	✓	■	✓
DDE	∅	✓	■	✓
DDT	∅	✓	■	✓
Heptachlor Epoxide	∅	✓	■	✓
Lindane (hexachlorocyclohexane)	✓	✓	✓	✓
<b>MISCELLANEOUS</b>				
Acetone	■	✓	✓	✓
4-methyl-2-pentanone (MIBK)	✓	■	✓	✓
1, 4-dioxane	✓	✓	✓	✓
BCEE	∅	✓	✓	✓
BCEM	∅	✓	✓	✓
Perchlorate	∅	∅	∅	∅
Polychlorinated biphenyls (PCBs)	∅	✓	■	✓

The Klozur™activator Selection Guide is for guidance only. It is recommended that a suitable treatability study be performed to verify applicability to your specific contaminant and site conditions.

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