



Ferrous Sulfide Activator In Situ Chemical Oxidation (ISCO) Activator for Sodium and Potassium Persulfates

Terra Systems sodium and potassium persulfate products are powerful chemical oxidant used for In Situ Chemical Oxidation (ISCO). They can be activated with ferrous sulfide and injected into the groundwater to rapidly produce the oxidative radicals $SO_4^{\cdot-}$ and OH^{\cdot} and the reductive $O_2^{\cdot-}$ radical.

Terra Systems ferrous sulfide reagent is capable of safe and reliable activation of sodium and potassium sulfate. This proprietary reagent is designed for extended activation of the persulfates in groundwater.

Reagent Description

Our TSI-FSA reagent is a blend of mackinawite structured iron sulfide and other compounds. Given its structure and composition, our reagent is minimally soluble and not as readily affected by native site conditions (e.g. pH and ORP). As a result, TIS-FSA is a cost-effective activator for the persulfates in groundwater.

Key Communication Points

- Safe – Low-toxicity fluid
- Easy to inject
- Ideal for the remediation of source areas and hot spots that require rapid treatment
- Lower pH injection fluids result in greater safety for the injection crew
- Provides extended activation of the persulfates in groundwater

Physical and Chemical Properties

Physical Form	Colloidal Suspension
Color	Black
Odor	Sulfurous
Specific Gravity	1.15-1.22
Density	9.6 – 10.2 lb/gal
Solubility in Water	Minimal
pH	9.5-12.5 SU
ORP	-700 to -1300 mV



Dosage and Application

The specific TSI-FSA reagent delivered to the customer is formulated based on site conditions to meet their specific treatment goals. These formulations are developed based on contaminant(s) of concerns, ORP, pH and site geology. TSI-FSA is a liquid that is compatible with a variety of application methods including bucket mixing, pug milling, in-situ mixing, and direct injection. Typical dosages are 0.1 pound of activator per pound persulfate.

Materials of Construction

Below are all suitable materials for use with TSI-FSA:

- 304L or 316L stainless steel
- Fiberglass (FRP)
- Polypropylene
- PVC
- high density polyethylene
- lined carbon steel

The injectate is a liquid that is compatible with a variety of application methods including:

- Bucket mixing
- Pug milling
- In-situ mixing
- Direct injection.
- Soil blending
- Fixed well injection

Packaging Options

- 330-gallon IBC totes
- 275-gallon IBC totes
- 55-gallon drums