Technical Data Sheet

EBS CalNit™ and Ferrox™ Nitrate Formulations for Wastewater Treatment

Overview

Metal salts and nitrate solutions have long been applied to wastewater treatment systems to mitigate hydrogen sulfide and related odors, as well as improving effluent quality by favorably impacting solids clarification and addressing oxygen deficiencies. EBS has been successfully providing calcium nitrate for over twenty years to assist our clients with upset mitigation where an additional terminal electron accepter (TEA), such as nitrate, has an enormous impact. Our laboratory research and real-world experiences with this approach have resulted in an expansion of the EBS product line to include EBS CalNit™ calcium nitrate and EBS Ferrox™ ferric nitrate solutions, as well as the potential to create customized blends of these components.

EBS CalNit™ Calcium Nitrate Solution – Nitrate is between dissolved oxygen and sulfate on the electron tower for bacteria. When a wastewater stream containing organic material becomes oxygen limited, the bacteria look for an alternative terminal electron acceptor, or TEA. If there is no nitrate available, the bacteria utilize sulfate, forming hydrogen sulfide (H_2S) and creating health and odor issues. If nitrate is available, the byproduct is odorless and harmless nitrogen gas. CalNit™ nitrate solution is non-hazardous and generates no harmful byproducts.

EBS Ferrox™ Ferric Nitrate Solution – Ferrox™ provides the same benefits of CalNit™ in terms of supplemental TEA. However, it adds the power component of iron precipitation of existing sulfides in the wastewater, which can be critical when trying to address an existing odor issue in need of rapid resolution.

Product Selection

For prevention of hydrogen sulfide, CalNit™ is the more cost effective and safer option from a chemical handling perspective. For existing sulfide remediation and to provide a double layer of protection, Ferrox™ is the better option.

Product Dosage

The recommended application rates will depend on a variety of factors. Typical dosage rates will be in the range of 10 – 60 mg/l as product.

Availability

EBS CalNit™: Bulk tanker loads of 48,000 pounds or 275-gallon IBC containing 3,350 pounds.

EBS Ferrox™: Bulk tanker loads of 48,000 pounds or 275-gallon IBC containing 3,200 pounds.

Transportation

EBS CalNit™ is not classified as hazardous as defined by 49 CFR 172.101 by the US Department of Transportation.

EBS Ferrox™ is classified as a hazardous material by the US Department of Transportation. The proper shipping name is: UN3093, Corrosive Liquid, Oxidizing, N.O.S. (Ferric Nitrate Solution).

Chemical and Physical Properties

PRODUCT NAME	EBS CalNit™	EBS Ferrox™
CHEMICAL NAME	Calcium Nitrate Tetrahydrate (70%)	Ferric Nitrate (43%)
CHEMICAL FORMULA	$(Ca(NO3)_2\text{-}4H_2O)$	$Fe(NO_3)_3$
CAS NUMBER	10124-37-5	10412-48-4
% NO_3	48 – 50 %	43 – 45%
% N FROM NO_3	8 – 9%	7 – 8%
% CALCIUM (Ca)	11 – 12%	Not Applicable
% IRON (Fe)	Not Applicable	10 – 11%
SPECIFIC GRAVITY / DENSITY	1.47 (12.26 lbs/gal)	1.455 (12.13 lb/gal)
SALT-OUT TEMP	35°F (1.67°C)	55°F (12.8°C)
COLOR	Clear to slight yellow	Reddish brown
ODOR	Odorless	Odorless to slight acrid
pH	5.0 – 7.0	< 1.0

Certificate of Analysis

PRODUCT NAME	EBS CalNit™	EBS Ferrox™
CHEMICAL NAME	Calcium Nitrate Tetrahydrate (70%)	Ferric Nitrate (43%)
NITROGEN, TOTAL (N), %	8.60	7.34
CALCIUM (Ca), %	12.74	Not Applicable
IRON (Fe), %	0.015	10.54
MAGNESIUM (Mg), %	0.072	Not Applicable
SPECIFIC GRAVITY @ 20°C	1.4871	1.4695
pH VALUE, SU	5.87	1.44

We certify that that the results given above are correct as of the time of sampling.