



VpCI™ ADDITIVES FOR FORMULATORS

S-14 Bio, Scale and Corrosion Inhibitor

Biodegradable water treatment Building Block

Patent Pending



- Scale & corrosion inhibitor
- Protects multiple metals including galvanized steel, copper, aluminum, & ferrous metals
- Easy to formulate in variety of open loop formulations
- Compatible with common water treatment programs
- Economical

APPLICATION

S-14 Bio provides complete corrosion and scale protection in an open loop cooling systems.

TYPICAL PROPERTIES

Appearance	Off-white to tan powder
Odor	Grain-like
Solubility (water)	Soluble
Specific Gravity	N/A
Non-volatile (weight)	95-100%

DOSAGE

S-14 Bio should be added to the make-up water at the rate 20-50 ppm. S-14 Bio is effective at a pH range of 6.0-9.0. S-14 Bio can be dissolved more quickly at higher temperatures (not to exceed 160F/70C) and also by adding alkali to the solution.

If it is necessary to prepare a concentrated solution of S-14 in water, (up to 20% by weight), use the following procedure: Gradually add S-14 Bio to a tank with the appropriate amount of water heated to 140F/60C and agitate well.

PACKAGING AND STORAGE

S-14 Bio is packaged in 5 lbs (2.3 kg) pails, 50 lbs (22.7 kg) pails and 100 lbs (45.4 kg) drums. Product should be stored in a tightly closed container. Shelf life is 12 months.

PRODUCT DESCRIPTION

S-14 Bio is a unique green building block designed for cooling towers and other open-loop, recirculating cooling systems. S-14 Bio is a rare combination of a powerful scale inhibitor and excellent multi-metal corrosion protection. It is comprised of non-toxic, non-hazardous, and readily biodegradable ingredients. Its main component is a low molecular weight natural polymer. The other components are GRAS (Generally Recognized as Safe) substances and food approved preservatives.

In contrast to other commonly used antiscalant products such as phosphonates, polyacrylates, and polyaspartic acid. S-14 Bio protects a variety of metals from corrosion. For example, galvanized steel, aluminum, copper, and ferrous metals are all protected, while S-14 Bio simultaneously prevents scale by a sequestering process.

FEATURES

- Readily biodegradable
- GRAS (Generally recognized as safe by CFR) approved

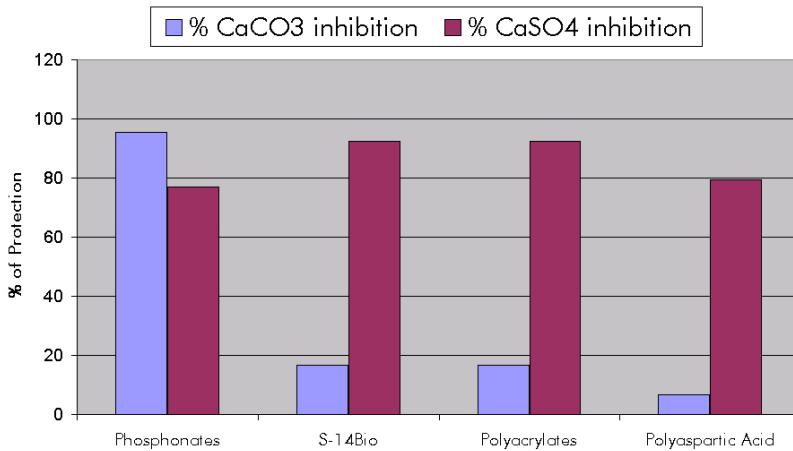


TEST RESULTS

The multimetal corrosion protection offered by the different scale inhibitors in half-immersion solutions; results after 72 hours, room temperature, at 1000ppm

Material	Carbon Steel	Galvanized	Aluminum	Copper
S-14Bio	No Visible Corrosion	No Visible Corrosion	No Visible Corrosion	No Visible Corrosion
Phosphonates	Corrosion	Corrosion	Corrosion	Corrosion
Polyacrylates	Corrosion	Corrosion	Severe Corrosion	Severe Corrosion
Polyaspartic Acid	Corrosion	Severe Corrosion	Slight Corrosion	Slight Corrosion
Control	Corrosion	Corrosion	Corrosion	Corrosion

Scale Inhibition (% of protection) according to NACE Standard TM0374-2001.



Scale inhibitor ability was evaluated using NACE Standard TM0374-2001*, ASTM D 1126** (to evaluate Calcium Carbonate [CaCO₃] and Calcium Sulfate [CaSO₄] scale inhibition).

KEEP OUT OF REACH OF CHILDREN

KEEP CONTAINER TIGHTLY CLOSED

NOT FOR INTERNAL CONSUMPTION

CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION

* NACE Standard TM0374-2001 "Laboratory Screening Test to determine the Ability of Scale Inhibitors to Prevent the Precipitation of Calcium Sulfate and Calcium Carbonate from Solution"

** ASTM D 1126 "Test Method for Hardness in Water"

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Distributed by:

4119 White Bear Parkway, St. Paul, MN 55110 USA
 Phone (651) 429-1100, Fax (651) 429-1122
 Toll Free (800) 4-CORTEC, E-mail info@cortecvci.com
 Internet <http://www.cortecvci.com>

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