



# S-14 Bio, Scale and Corrosion Inhibitor

## Biodegradable water treatment Building Block

### Patented



#### FEATURES

- USDA certified biobased product containing 84% biobased content
- Readily biodegradable
- GRAS (Generally recognized as safe by CFR) approved
- 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	Tan viscous liquid
Odor	Grain-like
Density	9.1-9.3 lb/gal (1.09-1.11 kg/l)
Non-volatile (weight)	20-30%
ph	8.5-9.5(neat)

#### DOSAGE

S-14 Bio should be added to the make-up water at the rate 100-200ppm (20-50ppm of active ingredients). S-14 Bio is effective at a pH range of 6.0-9.0.

#### PACKAGING AND STORAGE

S-14 Bio is packaged in 5 gal (19 liters) pails, 55 gal (208 liters) drums, and totes. 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.

S-14 Bio has been certified as a USDA Certified biobased product and has been awarded USDA BioPreferred<sup>SM</sup> designation ([www.biopreferred.gov](http://www.biopreferred.gov))

In contrast to phosphonates, polyacrylates, and polyaspartic acid which provide only antiscalant treatment, S-14 Bio also 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.

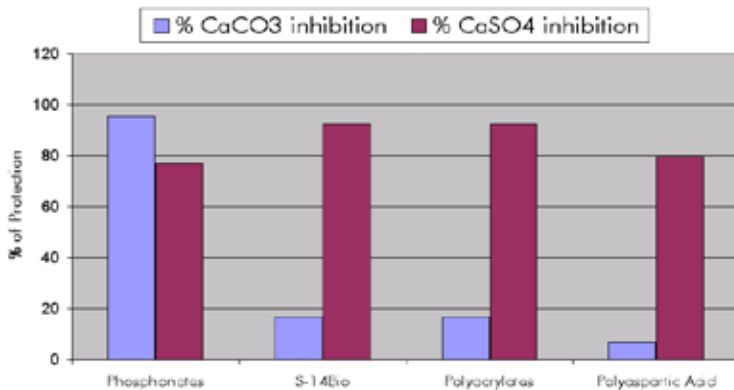


## TEST RESULTS

**The multimetal corrosion protection offered by the different scale inhibitors in half-immersion solutions; results after 72 hours, room temperature, at 4000ppm of S-14 Bio (1000ppm of active ingredients)**

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 [CaCO<sub>3</sub>] and Calcium Sulfate [CaSO<sub>4</sub>] scale inhibition).

### FOR INDUSTRIAL USE ONLY

**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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