

Case Study

SugarMill, South America



SWEETOL™
SUGAR PROCESS
CHEMICALS

Background

Specialty Products of America was asked to make recommendations to clean two heavily scaled clear juice heaters to improve heating efficiency.

JUICE HEATER DETAILS	
Juice Heater Volume	9180 m ³ each
Juice Heater Surface Area	800 m ² each
Material of Construction	Stainless Steel (no copper parts)

Scale Analysis

Elemental and bulk spectroscopic analysis were performed on scale samples recovered from clear juice heater.

- These analysis showed significant presence of elemental C, O, Na, Ca, P and Si. Presence of small quantities of Mg, Al and S were also observed.
- High resolution imaging showed presence of loosely packed mixed crystallites with no defined shape.
- Based on these results, presence of calcium & magnesium carbonate, sulfate & phosphate was predicted. Presence of hard silica scale deposits (amorphous) was likely.
- Crystalline phases of calcium triphosphate hydroxide, calcium phosphate and calcium oxalate were confirmed by bulk spectroscopic analysis.

Scale Dissolution/Disintegration Tests

Numerous tests were performed to dissolve the scale in the lab in alkaline and acidic solutions. Based on experience gained from the lab tests, recommendations to clean the clear juice heater(s) were provided to the Sugar Mill.

Recommendations

A combination of sodium hydroxide cleaning with additive **SWEETOL™ EV37-11** followed by acid cleaning with **Torpedo™** (specially developed for moderate to high silica scales) was recommended.

Conclusions

The two-step cleaning process effectively cleaned the clear juice heaters (refer to images shown on the right). After the completion of successful cleaning, the heat transfer coefficients of the heaters returned to their normal level. The factory has decided to use **SWEETOL™ EV37-11** and **Torpedo™** to clean the heaters on a regular basis.

This Case Study demonstrates that selection of **correct** and **periodic** chemical cleaning program can result in:

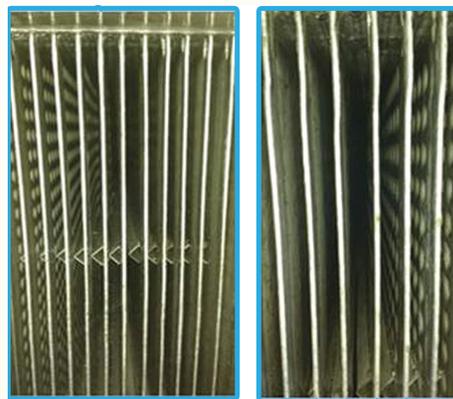
- Removal of toughest scales (such as silica-based scales)
- Increased heat transfer efficiency of the equipment
- Extended equipment life
- Reduced equipment down-time
- Reduced labor costs

© Specialty Products of America 04/2016. **EVEREST™**, **BIORID™**, **BIOSPER™**, **THERMAPRO™**, **TORPEDO™**, **SWEETOL™**, **RO PRO™** & **RAPISOL™** are trademarks of Specialty Products of America.

BEFORE



AFTER



LEARN MORE

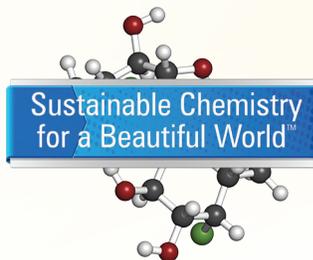
<https://specialtyproductsofamerica.com/case-studies/>



SCAN ME



Specialty Products of America
3191 West Tharpe Street
Tallahassee, FL 32303, USA
+1-850-575-0921 Fax: +1-850-270-6899
specialtyproductsofamerica.com



Made in the USA

SP™