

### Challenges

A manufacturer of welded pipes in Brazil needed to eliminate the use of mineral oils in its forming and final preservation processes (for health and safety reasons), while maintaining high corrosion protection of hot and cold rolled steel as well as galvanized material. In addition, the manufacturer was looking to reduce total applied costs and improve quality, especially with regards to reduced white rust on galvanized materials.

To help improve their operations, Quaker recommended FERROCOTE® 150, a water-soluble synthetic fluid. By making this switch, Quaker wanted to show the manufacturer it could eliminate the use of mineral oils while achieving excellent lubrication and corrosion protection, maintain compatibility with galvanized steel and realize a significant savings in applied cost for each ton of pipes produced.

### Providing Solutions

Quaker introduced FERROCOTE® 150 into the manufacturer's 15,000 liter system, which fed one of six forming lines (producing 6.000 tons/month of cold rolled, hot rolled and galvanized welded pipes). During a 2.5-month evaluation period, fluid consumption was reduced by over 71% and total applied cost was reduced by over 65% – which equated to an annualized cost savings of over R\$ 99.000 (USD \$57.000). In addition, during the trial period Quaker was able to further customize the product formulation in order to ensure that the fluid was capable of performing all of the functions in the process – including lubrication, corrosion protection, and compatibility with galvanized pipes – within the overall lower applied cost mentioned above.

The table below shows more detailed cost savings data:

Cost Savings	Competitor	Quaker
Trial Period	6 months	2.5 months
Pipe Production (tons)	6,792	5,186
Fluid Consumption (liters)	12,000	2,600
Specific Consumption (liters/ton)	1.767	0.501
Concentration	16%	12%
Consumption Reduction		71.6%
Cost Per Ton Reduction		65.7%
Annualized Savings in 1 line		R\$ 99,067 (USD \$57,283)

The table below shows additional operational data related to the fluid comparisons:

Data Comparison	Competitor	Quaker
pH – 10%	9.89	9.12
Total Alkalinity	31.93 mgKOH/g	30.00 mgKOH/g
Film Weight (10%)	0.368 g/m <sup>2</sup>	0.732 g/m <sup>2</sup>
Humidity Chamber (10%) - NBR 10255/ DIN 50105 SK – hours	144	> 480

In addition, the regular instances of white rust on galvanized materials were eliminated, and the manufacturer was able to satisfy new Brazilian Labor Safety Laws that require manufacturers to reduce [and eventually eliminate] the use of mineral oils in their processes, due to health and safety concerns.

After nearly 80 days of critical line evaluations by their engineering department, the manufacturer approved the use of FERROCOTE® 150 for their systems. As a result, today Quaker supplies 100% (all six lines) of the manufacturer's forming systems, and continues to work together with various departments in the manufacturer's operations to provide cost-effective solutions to daily challenges.





Wet galvanized pipes using FERROCOTE® 150 emulsion (10%). No white corrosion after 30 days.



Wet galvanized pipes using the competitor's fluid emulsion (10%). Pipes completely corroded after 30 days.

### Product Description

FERROCOTE® 150 is a fully synthetic, ester-based fluid formulated to provide rust protection on cold rolled and galvanized pipes, even under non-ideal drying conditions. When properly packaged and stored, FERROCOTE® 150 provides up to three months of protection.

In addition, FERROCOTE® 150 offers the following benefits:

- Low operating concentrations yield low product consumption
- Extended sump (bath) life, when maintained per Quaker Chemical's standards
- Excellent rust prevention on HRS, CRS, and GALV
- Stable fluid without odor or foam in soft water conditions
- Lower applied processing costs

### Process & Equipment

<b>Part:</b>	Welded pipes (HR, CR and Galvanized)
<b>Part Alloy:</b>	Steel
<b>System Size:</b>	15m <sup>3</sup>
<b>Concentration:</b>	12%
<b>Pressure:</b>	4.0 bar
<b>Operation:</b>	Forming, Welding, Calibration and Sawing

### Product & Process Expertise

Quaker is a worldwide developer, producer and marketer of custom formulated Tube & Pipe process chemicals and coatings. From first coil to final cut, Quaker is capable of providing process chemicals for all operations in ERW and Seamless mills, and delivers the in-depth process expertise to help maximize your productivity.

Quaker's product line includes hydraulic lubricants, high-temperature greases, cleaners, forming & sizing coolants, drawing & forming compounds, sawing lubricants, hydrotesting compounds, corrosion preventives and a complete line of high-value coatings (including solvent, water-based and UV coatings).