CASE STUDY

project:	Process Water Scale Control Program
product:	WTS 4-123 Multicomponent Antiscalant
industry:	Gold mine
location:	Solomon Islands

Background



A gold mine operating a conventional carbon-in-leach (CIL) gold extraction process had significant scaling challenges, primarily due to high calcium levels and elevated pH after cyanidation. The presence of scale-forming compounds, particularly calcite, posed operational risks including:

- Reduced carbon absorption efficiency in the CIL process due to carbonate scale deposition on activated carbon.
- Scale formation in heat exchangers, process water lines, and motor coolers, compromising equipment efficiency and increasing maintenance costs.

A preliminary qualitative XRD analysis of ore deposits indicated the presence of calcite (dominant), bassanite (minor), and trace amounts of quartz, dolomite, and zeolite. Mathematical modelling confirmed a high scaling potential under current process conditions.

WTS solution

Our team adopted a holistic, phased approach to scale inhibition:

1. **Site Assessment:** Conducted a detailed inspection of process systems to identify critical scaling locations.
2. **Monitoring Setup:** Installed scale coupons at strategic points for baseline measurement of scale formation.
3. **Chemical Integration:** Introduced WTS 4-123 antiscalant into key water circuits.
4. **Data Collection and KPI Establishment:** Collected system performance data to define key performance indicators (KPIs) including scale control, chemical consumption, inventory management, and operator compliance.
5. **Training & Service Support:** Provided hands-on training to site personnel, establish monitoring regimes, and offer continuous service support during start-up and long-term operations.

CASE STUDY

project:	Process Water Scale Control Program
product:	WTS 4-123 Multicomponent Antiscalant
industry:	Gold mine
location:	Solomon Islands

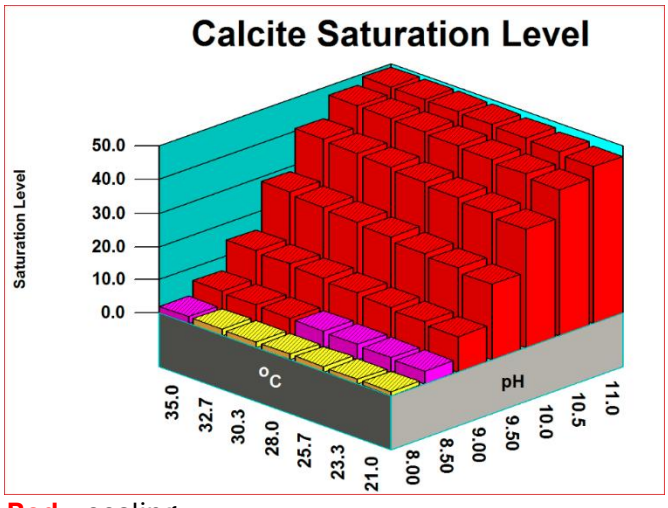
The WTS multicomponent antiscalant WTS 4-123 is a high-performance liquid formulation containing a unique group of polymer building blocks developed by WTS. This makes it particularly effective for controlling the precipitation of calcium-based scale in alkaline, calcium-rich mining circuits. The combined scale inhibiting and dispersing properties prevent the formation of new deposits and slowly remove existing deposits from the system.

Results and Benefits

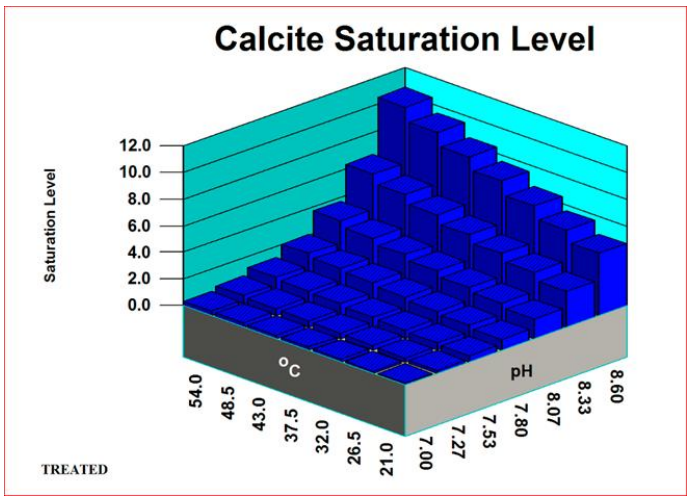
- **Effective scale prevention:** Achieved across critical systems.
- **Reduced maintenance and downtime:** Minimised frequency of maintenance and downtime due to scale-related blockages.
- **Maintain process efficiency:** Sustained carbon absorption efficiency in CIL operations.
- **Safe and compliant chemical use:** Ensured environmentally compliant application with no adverse effects on process water quality.
- **Cost effective operation:** Delivered predictable chemical consumption and minimal inventory disruptions.

Modelling scale potential

Untreated process water



Treated process water



Red = scaling
Pink & **Yellow** = potential scaling
Blue = non-scaling