



## Case study Neutralac® SLS45

# Chrome and phosphate removal from wastewater in the stainless steel finishing industry

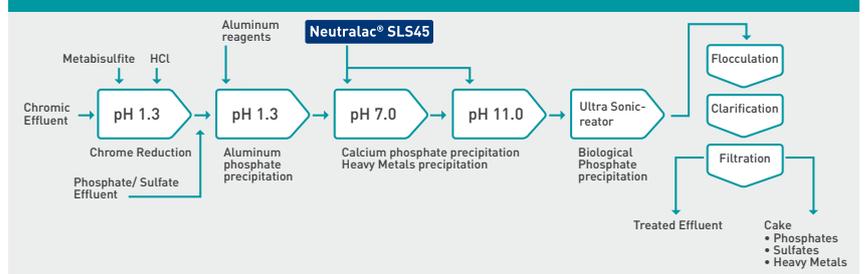
### Customer Application and Activity

Rimex specializes in metal finishing and architectural metals and has been producing surface finishes on stainless steel and other metals since 1959. The process generates an acidic wastewater which is collected in 2 separate sumps, one for effluents containing chromic acid and another for those containing phosphoric and sulfuric acid.

### Customer Wastewater Treatment

The chromic effluent is first treated to reduce the hexavalent chrome to trivalent chrome using sodium metabisulfite in acidic conditions: the pH is limited to a level of 1.3 through the addition of hydrochloric acid. After this treatment, the chromic and phosphoric effluents are mixed and treated to remove the phosphates. This process is based on three additional processes. Firstly, the addition of aluminium reagents precipitates aluminium phosphates. Secondly, the calcium phosphates are removed by adding lime. Finally, an ultrasonic reactor is used to eliminate the remaining biological phosphates. Lime slurry is added at two treatment steps: a primary lime treatment at a pH of 7.0 to precipitate the calcium phosphates, and a secondary treatment at a pH of 11.5 to remove the heavy metals. The precipitated pollutants are then flocculated and finally separated by filtration.

### Rimex Metals Wastewater Treatment





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### Neutralac® SLS45 Solution

Lhoist proposed Neutralac® SLS45, a ready-to-use liquid lime reagent, to provide effective treatment of the effluent stream and target discharge levels to comply with environmental consent levels.

With 45%  $\text{Ca(OH)}_2$  solids by weight being delivered at a viscosity below 300cP, it is more reactive (KIWA T90 < 5sec) and more fluid than any other liquid lime. It is ideally suited for rapid acid neutralization and is proficient at maintaining a steady pH

### Key Achievements

The use of Neutralac® SLS45 had positive effects in the wastewater treatment procedure. Neutralac® SLS45 has proved to be easy to handle, and simple to pump and dose. Depending on dosage rates, Rimex has been able to:

1. Achieve removals of up to 99.7% for sulfates and heavy metals, and up to 99.9% for phosphates
2. Reduce its reagent costs by up to 20%
3. Reduce the operators' workload considerably due to the lower number of delivery vehicles required

### Conclusion

Neutralac® SLS45 allowed for the effective treatment of the effluent stream in combination with the use of a revolutionary ultrasonic reactor to treat the effluent prior to settlement and discharge. The use of Neutralac® SLS45 has yielded several benefits including:

1. Reduced reagent consumption by up to 30%
2. Reduced handling time associated with unloading, stocking full and empty containers on site
3. Reduced deliveries of reagent, in keeping with the company's efforts to reduce its carbon footprint