

ELECTRICAL CONTACTS MANUFACTURER

THE CHALLENGE

A multinational electrical contacts manufacturer on the east coast generates a dark greenish-blue waste stream which contains a significant amount of black solids, has a pH in the range of 9 -12, and contains surfactant/soap that generates foam upon agitation. The main metallic components in the waste are chelated copper and nickel. Although the chelating agent is unknown, it is believed to be an amine type or aminopolycarboxylic acid such as EDTA.

The plant employed a conventional batch treatment which involved the addition of several chemicals and occasionally required that the waste be heated prior to treatment. The treatment involved the following steps:

1. Lowering pH to about 2 with H₂SO₄,
2. Raising pH, with lime, to about 12,
3. Adding dithiocarbamate, DTC,
4. Adding ferric chloride - pH drops from 12 to about 9.5,
5. Adding flocculent, and
6. Allowing batch to settle for 3-6 hours.

This process was laborious, required the handling of dangerous chemicals, and took considerable time to complete. As well, the treatment was pH-sensitive and did not meet discharge requirements on a consistent basis; whenever the treatment failed to meet discharge requirements, the entire treatment had to be re-started from the beginning.

THE SOLUTION

The pH is adjusted to about 8 prior to addition of AQUASIL[®]. Reaction takes about 15 minutes, during which excellent floc forms, settles efficiently and is dewatered easily. The entire batch takes 30-45 minutes to complete. Metal analysis is shown in Table.

Parameter	Discharge Limits (mg/L)	AQUASIL [®] Treatment (mg/L)
Cadmium	0.02	< 0.01
Chromium	0.35	0.02
Copper	1.50	0.69
Lead	0.02	<0.01
Nickel	1.80	0.35
Silver	0.03	0.01
Zinc	0.30	0.06

The AQUASIL[®] treatment is simple and efficient as lime, DTC, ferric chloride and flocculent have all been replaced with a single product. Furthermore, the amount of sulfuric acid, used for initial and final pH adjustments, has significantly been reduced, operator's time saved, and compliance achieved and maintained.

Great Chemistry At Work™