



Enhanced plating efficiency with reduced environmental impact

High productivity – less waste and wastewater generation

ZYpHEX®, MKS' Atotech regeneration system for acid zinc and acid zinc nickel electrolytes, enables customers to achieve higher production throughputs by ensuring consistent process conditions over extended operating times while simultaneously reducing chemical consumption and minimizing waste and wastewater generation.



High cloud point consistency

By removing contaminants – dragged in oils and residues from pretreatment and organic breakdown products from the electrolyte solution – ZYpHEX® allows for optimum plating conditions and a consistently high cloud point throughout the entire lifetime of the electrolyte. In combination with Atotech acid zinc and acid zinc nickel electrolytes from the Zylite® or Zinni® process families, ZYpHEX® ensures reliable high levels of productivity and product quality, as well as reduced environmental impact.



Features and benefits

- Excellent tool for Atotech acid zinc and acid zinc nickel electrolytes
- Consistently high plating quality
- Reduced additive consumption
- Reduced generation of waste and wastewater
- Optimum plating conditions throughout the entire lifetime of the electrolyte
- Reduced maintenance efforts
- Online purification that eliminates production downtimes
- Mass production proven system
- Compact size for small space requirements
- Fully automatic operation; easy to use

Consistent plating quality with reduced use of resources

The influence of TOC on plating performance

During acid zinc or acid zinc nickel plating, the drag-in of oils and residues from pretreatment as well as breakdown products from bath additives accumulate the total amount of undesirable organic substances in the electrolyte. As this so-called Total Organic Content (TOC) steadily increases in the bath, it leads to either a reduction in performance or the breakdown of the bath, and therefore to a decrease in the degree of gloss. As a result, the bath requires continuous feed-and-bleed or manual cleaning using the pH reduction method.

If no maintenance is performed, chemical consumption increases significantly, or a new bath make-up is required. A bath with increasing levels of organic carbon contamination leads to a degradation of plating efficiency and deposit quality.

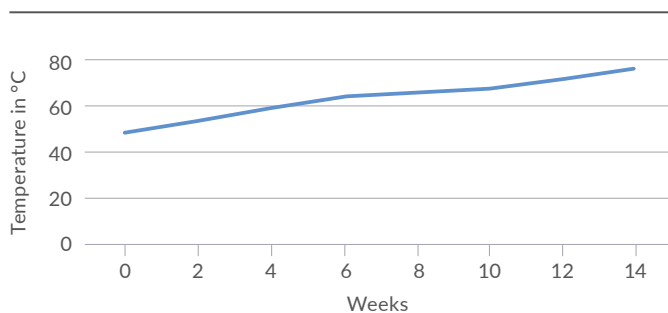
The continuous regeneration of electrolytes enabled by ZYpHEX® removes the need for plating line downtime and allows for consistent coating quality while reducing resource use, waste and wastewater generation.

Cloud point / TOC development at household accessory manufacturer

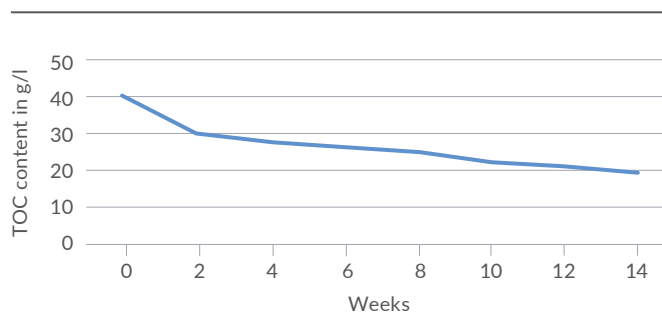
In an electrolyte that had been maintained with ZYpHEX® for several months, the TOC content could be reduced from almost 40 g/l to 20 g/l. After 14 weeks of utilizing ZYpHEX®, the cloud point increased from 50 °C to over 75 °C.

At the same time, the consumption of the brightener Zylite® HT Brightener Plus was reduced from 3 liters to 1.5 liters per 10 kAh.

Cloud point development (°C)



Development of TOC (g/l) content



Cloud point and TOC development at a brake caliper manufacturer

	Contaminated electrolyte	New make-up	Carbon treatment (2 g/l), t = 30 min	ZYpHEX®	ZYpHEX® + carbon treatment (2 g/l)
TOC	30 g/l	10 g/l	---	20 g/l	17 g/l
Cloud point	25 °C	85 - 100 °C	45 °C	44 °C	65 °C

In combination with carbon treatment, the TOC content in this plating line was reduced by almost half, while the cloud point increased from 25 °C to 65 °C.

