UniStrip® Rackstrip AF

Ammonia and amine-free electrolytic rack stripper

General Metal Finishing | Cleaning Stripping Pretreatment | atotech.com

Efficient rack stripping with lower environmental impact

0 %

NOx gas formation

50 %

COD reduction

Fast and effective rack stripping

In decorative plating, high-quality performance can only be guaranteed when racks are kept in good condition. To avoid mechanical racking issues, localized current loss, skip plating, or reduced performance, metallic deposit build-up on rack tips and plastic insulation must be removed. The rack stripping process is commonly carried out at the end of each plating sequence to ensure that racks are in optimal condition for the next plating cycle.

An effective stripping cycle requires a high stripping speed, the capability to strip multiple metal deposits, and a solution that doesn't attack stainless steel rack tips or plastic insulation. Standard electrolytic strippers contain hard complexers like ammonia-derived amines, which can lead to handling, wastewater, and environmental issues. UniStrip® Rackstrip AF was developed without these substances to reduce the process's environmental burden, make it more sustainable, and to simplify its use.

UniStrip® Rackstrip AF can be used in manual and automatic plating lines and efficiently removes plated metals such as chrome, nickel, and copper. The mild and easy-to-use process is suitable for 301, 304, and 316 stainless steel rack tips. UniStrip® Rackstrip AF is free of cyanides, ammonia, amines, boron, fluoride, nitric acid, and hard chelators. It doesn't generate NOx like nitric acid-based processes. In addition, the COD content can be reduced by roughly 50 % compared to current electrolytic rack strippers. The lack of hard chelators facilitates a simple wastewater treatment plan that doesn't require complex breaking chemicals.

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Optimized for sludge filtration

Image 1–3:
Cu plate-out on cathodes
Minimal sludge generation
Stripped rack tip

Plate-out combined with sludge filtration to extend bath life

As metals are stripped from the racks, they dissolve in the bath and build up over time. Critical concentrations reduce effectiveness, limiting the lifetime of a stripper. At the same time, huge amounts of sludge are generated when excess metals precipitate as salts.

UniStrip® Rackstrip AF minimizes contamination build-up and reduces sludge, which means easier and less frequent bath maintenance, decreased downtime, and reduced industrial waste costs. In copper rack stripping, copper plates out onto the cathodes, slowing build-up and minimizing the amount in the bath. This reduces the formation of voluminous hydroxide and oxide sludge.

The use of ammonium nitrate in standard electrolytic rack strippers limits which filtering technologies can be used due to the risk of explosion. UniStrip® Rackstrip AF is free of ammonium nitrate and can be used with common filter technologies, like filter presses. This means more efficient sludge processing and reduced disposal costs.

Process operating parameters

Parameter	Setpoint	Range	Units
AF M concentration	250	225 – 300	ml/l
AF C concentration	215	165 – 265	ml/l
Temperature	35	25 – 50	°C
pH	6.0	5.5 – 6.2	
Current density	50 – 70	20 – 100	A/dm²
Cathode material		Stainless steel (series 304 or 316)	
Cathode/anode ratio		50 : 1	
Voltage	7 – 10	< 12	V
Agitation		Air agitation required	

Features and benefits

- Free from cyanides, ammonia, amines, boron, fluoride, nitric acid, and hard chelators
- Doesn't evolve harmful NOx gas
- Excellent stripping performance
- Fast stripping speed
- Ability to remove multiple metal layers in one operation
- Simple waste treatment
- Negligible rack tip attack
- Low sludge generation and easy filtration
- Easier and less frequent bath maintenance
- Reduced metal loading and increased bath lifetime