

# Nickel Sulphamate HS

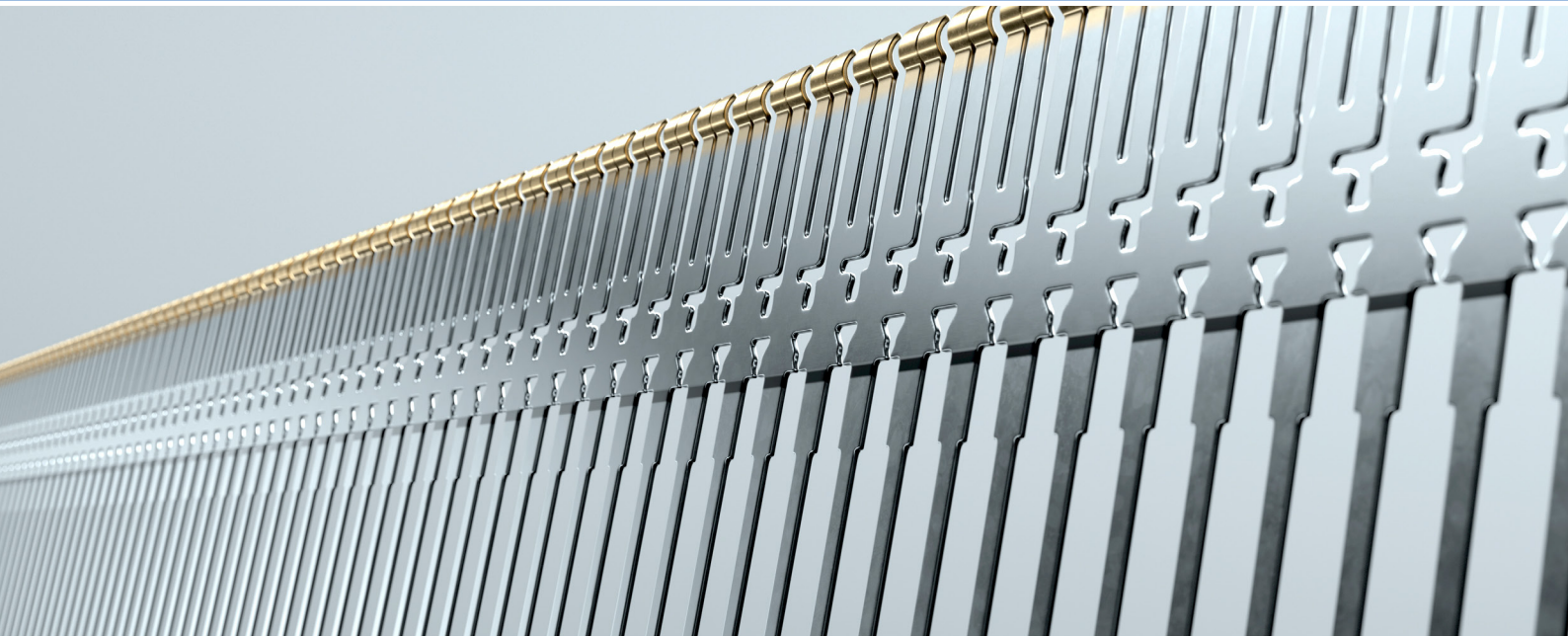
## High-speed nickel



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## Low stress at high-speed nickel plating

### Nickel Sulphamate HS

is a high-speed nickel-plating process designed for the highest deposition rates in all tools. The Nickel Sulphamate HS electrolyte creates the purest nickel deposits with exceptionally low internal stress. To promote the process, either chloride or bromide can be added to the electrolyte. By operating halide-free, internal stress can be reduced to a minimum.

### Benefits

- Provides very ductile, low stress nickel deposits
- Highest deposition rates (4  $\mu\text{m}/\text{min}$  – up to 20  $\mu\text{m}/\text{min}$ )
- 2-additive-system with 2 extra optional additives
- Easy to analyze
- For all tools – Reel-to-Reel and Rack & Barrel

# Nickel Sulphamate HS – High-speed nickel

## Mechanical properties

The co-deposition of impurities or a deposition condition that results in a mismatch between the base material and the deposited layer creates internal stress. Ni-Sulphamate HS deposits show very low impurity levels. This results in low internal stress and improvement of ductility. Ni-Sulphamate HS layers deliver ductility values of 14 – 16 % examined with Ductensiomat (ISO 8401 certified). The Vickers hardness varies between 460 ± 60 HV 0.0005.

## Influence of additives

Ni-Sulphamate HS comes with four additives: speed enhancer, stabilizer, additive, and wetting agent.

Ni-Sulphamate Speed Enhancer contains halides that promote anode dissolution, stabilize pH and prevent hydrolysis of nickel. The Ni-Sulphamate HS Stabilizer is based on a boric-acid system that maintains the correct pH value and prevents the co-deposition of basic nickel salts.

The Ni-Sulphamate HS Additive permits a greater CD range while providing great deposit uniformity. It reduces deposited grain sizes and therefore creates brightness and increases deposit hardness.

The Ni-Sulphamate HS Wetting Agent is for use in case of poor solution agitation.

Both additive and wetting agents, are optional.

Bath parameters	HS-B (bromide)	HS-C (chloride)	Halide-free
Total nickel (g/l)	140	100	100
Stabiliser (g/l)	40	50	50
Speed enhancer (ml/l)	30	26	-
Additive		optional	
Wetting agent		optional	
Temperature		55 – 65 °C (optimum: 60 °C)	
pH		4.0	
Cathodic CD (A/dm <sup>2</sup> )		10 – 120	

