ELECTROLESS NICKEL

TS electroless nickel is a nickel phosphorus alloy (4 to 13% phosphorus depending on use) obtained through catalytic reduction of a nickel salt by sodium hypophosphite in an aqueous medium.
Thanks to its original technology and range of demanding applications, TS electroless nickel can be applied to the most complex shapes, while maintaining perfect regularity.
Parts coated with electroless nickel TS can be subjected to heat treatment at temperatures ranging from 150°C to 650°C depending on the metal treated and the desired characteristics:

- Hardness
- Corrosion resistance
- Ductility
- Wear resistance
- etc.

Sample applications

- Valve bodies
- Distributor pistons
- Plastic injection moulds
- Battery casings
- Cylinder rods
- Battery casings
- Valve control stems
- Manhole covers
- Brake control pins
- Mould rings for glassware
- Anti-balloon devices for textile machines
- Synchronisers
- Windscreen wiper shafts
- etc.

Uniformity of deposition thickness

Unlike conventional electrolytic depositions, TS electroless nickel is impervious to peak effects which enables a coating of constant thickness with an accuracy of approximately 10% of the thickness applied; in practice, this is limited to a maximum of 120 microns.

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Role of heat treatment after deposition

- Treatment between 150 and 220°C. The objective is to degas and de-tension. Deposition hardness varies from 550 to 650 HV.
- Treatment for 10 hours at 290°C or 1 hour at 400°C: this procedure hardens the coating > 850 HV. This characteristic provides good resistance to wear and seizure in a lubricated environment.
- Treatment between 600 and 650°C: the treatment time (between 3 and 10 hours) is selected according to the base metal. Treated in this manner, the hardness of the layer varies between 600 and 700 HV. From 600°C, TS electroless nickel diffuses into iron-containing substrates. Diffusion at the substrate/layer interface gives the deposition excellent adhesion properties and remarkable corrosion resistance.

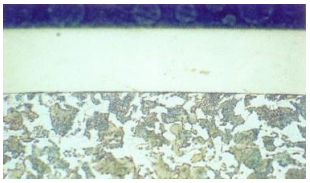
Masking

TS electroless nickel can be applied locally on parts. Specify on the plans the areas to be treated and the areas to be masked.

Materials suitable for treatment

- All steels and all cast irons
- Stainless steels
- Aluminium alloys
- Copper alloys

TS electroless nickel can be applied directly on zinc, lead, tin or alloys that contain high percentages of these metals. Metallic sub-layers can be interposed.

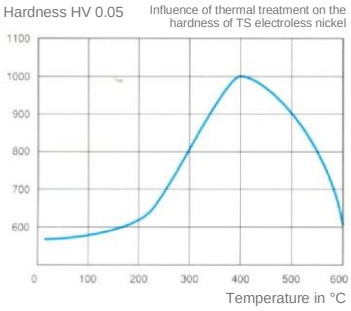


Electroless nickel on steel

Corrosion resistance

At equivalent thickness, TS electroless nickel offers better corrosion resistance than electrolytic nickel.

When treated at high temperatures of 600 to 650°C, TS electroless nickel has excellent corrosion resistance, particularly in marine environments. In these environments, we recommend thickness between 60 and 80 microns.



Surface condition

The TS electroless nickel coating accurately reproduces the surface finish of the parts on which it is applied. This means that the roughness required after treatment must be obtained beforehand when machining the part.

Safety measures

- The parts that will be treated with TS chemical nickel must be sound and free of porosity.
- When manufacturing parts, the thickness of the deposition and its tolerance must be taken into account.
- Avoid sharp edges by chamfering or rounding.
- Parts to be heat treated after electroless nickel plating must be stress-relieved.

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