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NIPLATE® 600
Medium Phosphorus Electroless Nickel

Niplate 600 is a medium phosphorus (5-9% in P) electroless nickel plating. Niplate 600 is the most commonly used of Niplate coatings thanks to its high wear resistance, good corrosion resistance and its affordability.

EXCELLENT WEAR RESISTANCE

Thanks to its hardness and micro crystalline structure Niplate 600 has high wear and fretting resistance.

CHEAPER

Thickness being equal, compared to other treatments Niplate is cheaper thanks to the high efficiency of the deposition process.

UNIFORM THICKNESS

Uniform and constant thickness over the entire surface, including holes, ideal for precision mechanical engineering pieces with reduced tolerances.

APPLICABLE ON VARIOUS METALS

All the most common alloys used in mechanical engineering can be coated: iron, copper and aluminium alloys.

TECHNICAL SPECIFICATIONS

COMPOSITION
Ni 91 ÷ 95 %
P 5 ÷ 9 %
Ni-P alloy, medium phosphorus electroless nickel plating

APPLICABLE STANDARDS
PRODUCT TECHNICAL STANDARDS
ISO 4527 | NiP(7)
ASTM B733 | Type IV
NSF 51 CERIFICATION
✅ Certified NSF 51 – Food equipment material
ROHS CONFORMITY
✅ RoHS conform. No restricted-use substances beyond maximum tolerated concentrations
REACH CONFORMITY
✅ REACh conform. No SVHC in quantities greater than 0.1% by weight.

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COATABLE METALS

IRON ALLOYS	PRE-TREATMENT	ADHESION	CORROSION RESISTANCE
Carbon steel	-	★ ★ ★ ★ ★	★ ★ ★ ☆ ☆
Stainless steel	Sandblasting	★ ★ ★ ★ ☆	★ ★ ★ ★ ★
Case-hardened steel	Sandblasting	★ ★ ★ ★ ☆	★ ★ ★ ☆ ☆
Nitrided steel	Sandblasting	★ ★ ★ ☆ ☆	★ ★ ★ ☆ ☆
COPPER ALLOYS			
Brass, Bronze, Copper	-	★ ★ ★ ★ ★	★ ★ ★ ★ ★
ALUMINIUM ALLOYS			
Wrought alloys	-	★ ★ ★ ★ ☆	★ ★ ★ ★ ☆
Foundry and die-casting alloys	-	★ ★ ★ ★ ☆	★ ★ ★ ☆ ☆
TITANIUM ALLOYS			
Pure titanium and alloys	Sandblasting	★ ★ ★ ★ ☆	★ ★ ★ ★ ★

COATING THICKNESS

NOMINAL THICKNESS, OPTIONAL	TOLERANCE
3 ÷ 75 µm	± 10% (min ±2 µm)
Uniform thickness over entire external and internal surface	
Absence of point effect typical of galvanic coatings	

AESTHETIC APPEARANCE

Bright stainless metal appearance based on the morphology of the machined piece

Matt finish option (sandblasted, shot peened or shotblasted)

In case of hardening treatment, the layer could become discoloured:
- 260-280°C, white colour and possible yellow halo effect
- 340°C, iridescent blue-red colour

HARDNESS

The surface hardness of Niplate 600 varies according to the hardening heat treatment performed after layer deposition

HARDNESS VALUE	HEAT TREATMENT
700±50 HV	Dehydrogenation 160-180°C x 4 hrs
800±50 HV	Hardening 260-280°C x 8 hrs
1000±50 HV	Hardening 340°C x 4 hrs

WEAR RESISTANCE

Niplate 600 has high wear resistance, depending on the heat treatment performed

APPROXIMATE WEAR VALUE, TWI-CS10	HEAT TREATMENT
16±2 mg / 1000 cycles	Dehydrogenation 160-180°C x 4 hrs
12±2 mg / 1000 cycles	Hardening 260-280°C x 8 hrs
9±2 mg / 1000 cycles	Hardening 340°C x 4 hrs

A LOW NUMBER INDICATES A BETTER PERFORMANCE – ASTM B733 X1 – TABER ABRASER WEAR TEST – ABRASIVE WHEELS CS 10 – LOAD 1 KG

FRICTION COEFFICIENT

DYNAMIC DRY FRICTION COEFFICIENT VALUE
0.4 ÷ 0.6 depending on antagonist material

CORROSION RESISTANCE

The corrosion protection of Niplate 600, assessed by means of salt mist test, depends on the base material, piece machining and finishing and the thickness of the applied coating

APPROXIMATE CORROSION RESISTANCE VALUES	BASE MATERIAL
≥1000 hours	Brass
≥180 hours	Carbon steel
≥240 hours	Aluminium 6082

NSS ACCORDING TO ISO 9227 – THICKNESS 20 µm – CORRODED SURFACE < 5%

CHEMICAL RESISTANCE

For application where high chemical resistance is required Niplate 500 is recommended.
Niplate 600 does in any case have good chemical resistance above all in alkaline environments.

- ✓ Hydrocarbons (e.g. petrol, diesel fuel, mineral oil, toluene)
- ✓ Alcohols, ketones (e.g. ethanol, methanol, acetone)
- ✓ Neutral saline solutions (e.g. sodium chloride, magnesium chloride, brine)
- ✗ Diluted reducing acids (e.g. citric acid, oxalic acid)
- ✗ Oxidizing acids (e.g. nitric acid)
- ✗ Concentrated acids (e.g. sulphuric acid, hydrochloric acid)
- ✓ Diluted bases (e.g. diluted sodium hydroxide)
- ✗ Oxidizing bases (e.g. sodium hypochlorite)
- ✓ Concentrated bases (e.g. concentrated sodium hydroxide)

Approximate values of compatibility with the coating environment only, they do not indicate corrosion protection of the base material. The overall performance of the coated piece depends to a large extent also on the type and quality of the base material. The actual resistance to the environment must in any case be tested in the field.

WELDABILITY

- ✓ Easily braze weldable using RMA, RA acid flow agents

FERROMAGNETISM

PRESENCE OF FERROMAGNETISM	HEAT TREATMENT
Ferromagnetic	Dehydrogenation 160-180°C x 4 hrs
Ferromagnetic	Hardening 260-280°C x 8 hrs
Ferromagnetic	Hardening 340°C x 4 hrs

MELTING POINT, SOLIDUS

870°C

DENSITY

8,1 g/cm³

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