TWINCLAD® XT

COMPOSITE COATING

SUNIFORMITY
WEAR RESISTANCE
SPECIALIZED FORMULATION
ENVIRONMENT
MAINTENANCE
QUICK RELEASE
CORROSION RESISTANCE

THE CHALLENGE: Develop an electroless nickel (EN) deposit that exceeds the release and wear characteristics of conventional EN composite coatings.

THE SOLUTION: TwinClad® XT chemistry is formulated to deliver a low coefficient of friction and special performance characteristics ideal for injection mold applications including glass-filled resins and silicone rubber.

SUPERIOR WEAR CHARACTERISTICS.
SUPERIOR RELEASE PROPERTIES.

Unique Performance Characteristics

Uniformity

Twin City Plating chemistry and process control guarantee accuracy to tolerances of 0.0001 inch.

Wear Resistance

Superior hardness and pore-free deposit qualities increase resistance to abrasion and adhesive wear for longer coating life.

Specialized Formulation

The unique coating provides significantly better wear and release properties without compromising hardness which makes TwinClad® XT ideal in the most challenging applications from glass-filled resins to silicone rubber.

Environment

Sensitive to environmental concerns, Electroless Nickel and the associated composites help to minimize waste and the impact on the environment.

Maintenance

Can be easily stripped and replated to replenish wear and release properties and maintain optimum production levels.

Ouick Release

The lubricious coating provides an exceptionally low coefficient of friction for the high productivity of snag-free production and long-running wear.

Corrosion Resistance

An undercoat of High Phosphorus EN will improve the corrosion resistance capabilities of the TwinClad® XT - protecting the base material.

We do about 550,000 air cleaner assembly parts a year so wear on the molds is a real concern. A black diamond coating that we tried didn't adhere well. We restripped and tried an EN composite, but after six months it was gone. Then we applied the [TwinClad] XT. It's lasted through a million parts. Three times longer than regular EN ... and holds up in the corners where a part can grab ... so we have no hang-up problems.

Brad Carlbom, Project Engineer 

HARDNESS Rc (as plated)

53 - 55

HARDNESS Rc (heat-treated)

65 - 67

COEFFICIENT OF FRICTION VS. STEEL 0.08

Surface finishing and value added solutions through innovation and continuous improvement.



TWIN CITY PLATING

Property	TwinClad® XT	Electroless Nickel PTFE Codeposit	TwinClad® HP 10.6%-12.5% Phosphorous	Hard Chrome
Hardness HVN (as plated)	550 – 600	275 – 350	450 – 500	1000 – 1200
Hardness Rc (as plated)	53 – 55	27 – 35	45 – 50	69 – 75
Hardness VHN (heat treated)	825 – 900	400	900 – 950	850 – 900
Hardness Rc (heat treated)	65 – 67	41	67 – 68	66 – 68
Taber Wear Index (mg/1000 cycles, as plated)	1 – 2	18 – 20	18 – 22	2 – 3
Coefficient of Friction vs. Steel (dry)	0.08	0.20	0.38	0.21
Coefficient of Friction vs. Steel (lubricated)	data not available	data not available	0.20	0.15
Intrinsic Deposit Stress (psi)	2600	3500	4500	Highly Tensile
Salt Spray as plated (hours)	48	48	48	48
Salt Spray Performance* (hours)	1000	1000	1000	1000
Uniformity	Excellent	Excellent	Excellent	Excellent

^{* 1.0} mil thick undercoat of TwinClad® HP

Electroless Nickel Composites

Electroless Nickel (EN) composites have been used for many different purposes for a number of years. Given EN's amorphous structure, polymers and other non-conducting materials can be co-deposited providing capabilities above and beyond traditional EN. Teflon, Carbide, Diamond, Boron-Nitride – can all be used to improve the characteristics of the coating – Hardness, Lubricity, Corrosion Resistance, Abrasion Resistance, etc.

Twin City Plating (TCP) has been working closely with its suppliers over the years to develop different composite EN coatings to provide customers with alternatives – helping to reduce costs, and increase their capabilities. Give us a call and we can discuss the specifics of the different options, to help find the best solution for your application.

TWINCLAD® XT

SUITABLE FOR

- Steel
- Stainless Steel
- Tool Steel
- Aluminum
- Copper
- Bronze
- Brass
- AlBeMet[®]
- MoldMax[®]
- Others

SERVICES AND CAPABILITIES

- Electroless Nickel
- Composites
 - TwinClad® XT
 - PTFE/Teflon®
 - Diamond
 - Carbide
- Anodize
- Hard Coat Anodize
- Teflon® Impregnation
- Passivation (Nitric and Citric)
- Electropolish
- Hard Gold
- Six plating lines with over 10,000 gallons EN capacity
- Lifting capacity 2-3 tons
- Expedited same-day or next-day service available

