

NiKlad™ ELV

Electroless Nickel Coatings

The End Of Lead And Cadmium Chemistry

MacDermid NiKlad ELV electroless nickel systems are environmentally-compliant solutions formulated specifically for metal finishers and design engineers that must conform to recycling initiatives.

Our entire **NiKlad ELV** line eliminates lead and cadmium from being used as stabilizers and brighteners in EN coatings and meets strict ELV (End of Life Vehicle), WEEE (Waste Electrical and Electronic Equipment), and RoHS (Restriction of Hazardous Substances) regulations. They provide enhanced uniform deposits, predictable plating rates and exceptional corrosion resistance that covers the conventional range of nickel-phosphorus deposits from 3-12%. Additionally, NiKlad ELV systems run in existing, standard equipment with no loss of performance compared to conventional systems.

For environmentally-focused, performance EN coatings, count on the company that says "Yes We Can." MacDermid.

Key Features

- Lead-and cadmium-free chemistry for better recycling capability
- Full range of options: High, medium, low-medium phosphorus, Ni-P-PTFE co-deposit
- Meets ELV 2000/53/EC, WEEE 2002/96/EC, RoHS 2002/95/EC, and all other OEM restricted reportable substance requirements
- Operates in the same way as conventional EN systems
- Excellent deposition rates for high production throughput
- Completely EDTA-free processes and can be operated completely ammonia free



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NiKlad Product Range

	ELV 811	ELV 809	ELV 805	ELV PTFE
Density Range (g/cm ³)	7.6–7.8	8.0–8.2	8.3–8.5	6.3–7.1
Phosphorus Content (% by weight)	10.0–12.0	7.5–9.0	4.0–6.0	9.0–11.0
Melting Range (°C)	880–980	880–980	880–980	x
Deposit Hardness: (KNOOP & Rockwell C)	475–550 HK ₁₀₀ 42–47 Rc (as plated) 800–950 HK ₁₀₀ 62–67 Rc (heat treated @ 400 °C for 1 hour)	550–650 HK ₁₀₀ 47–53 Rc (as plated) 850–950 HK ₁₀₀ 65–72 Rc (heat treated @ 400 °C for 1 hour)	625–750 HK ₁₀₀ 53–59 Rc (as plated) 850–1100 HK ₁₀₀ 65–74 Rc (heat treated @ 360 °C for 1 hour)	250–350 @8% PTFE 375–425 HK ₁₀₀ (heat treated @ 350 °C for 2 hours)
Wear Resistance Taber Wear Index: (CS-10, 1000 g)	18–24 mg/ 1000 cycles (as plated) 9–15 mg/ 1000 cycles (heat treated @ 400 °C for 1 hour)	16–20 mg/ 1000 cycles (as plated) 9–12 mg/ 1000 cycles (heat treated @ 400 °C for 1 hour)	10–14 mg/ 1000 cycles (as plated) 7–10 mg/ 1000 cycles (heat treated @ 360 °C for 1 hour)	PTFE w/w 2% = 0.08 CoF 5% = 0.07 CoF 7% = 0.05 CoF 11% = 0.04 CoF
Magnetic Tendency	Non-Magnetic (as plated & up to 275 °C for 3 hours)	Slightly magnetic (as plated)	Magnetic (as plated)	x
Electrical Resistivity (μΩ cm)	90–110	40–70	15–45	150–250
Salt Spray (per ASTM B117 – 25.4 μm deposit)	> 168 hours	> 96 hours	> 48 hours	x
Nitric Acid Test (Concentrated nitric for 30 seconds)	PASS	Fail	Fail	x

The Best Of Both Worlds

MacDermid's **NiKlad ELV** systems offer all of the high performance features and benefits of traditional EN products, but are specially formulated to meet new recycling regulations for the electronic and electrical industries.

NiKlad ELV 805, 809, 811

A range of systems that provide lead-and cadmium-free deposits for all applications.

NiKlad ELV PTFE

A single ELV-compliant system for co-depositing from 1-11% by weight PTFE.



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