

# NiKlad ELV 849

*Bright Medium Phosphorus Electroless Nickel*

**New Level Of ELV Excellence...  
MacDermid's Brightest ELV Deposit**



## Key Features

- Brightness Range from 140 -110 Gloss Units
- RoHS, ELV and WEEE compliant
- Plating Rate Ranges from 0.8 - 0.6 mil/hr
- Efficient Operation from 70 -120 % of Optimum Concentration

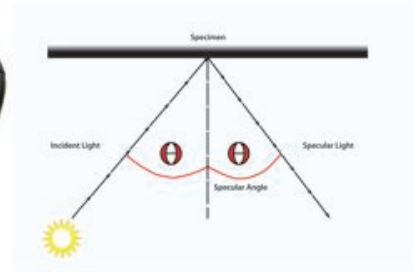
# NiKlad ELV 849

## Electroless Nickel That's Bright And Measurable

Assessing the brightness of both conventional and ELV compliant electroless nickel deposits has historically been subjective and variable, depending on how measurements are made. The human eye is not the perfect instrument for doing this, so MacDermid has developed a technique to measure brightness more accurately and consistently than ever before. By using a gloss meter set at a 20 Degree angle, a solid value measured in Gloss Units (GU) can be determined. MacDermid's new **NiKlad ELV 849** Medium Phosphorus process (7-9 %) is one of the brightest ELV electroless nickel deposits that is available in the Metal Finishing Industry today, with an average GU in the 120's.

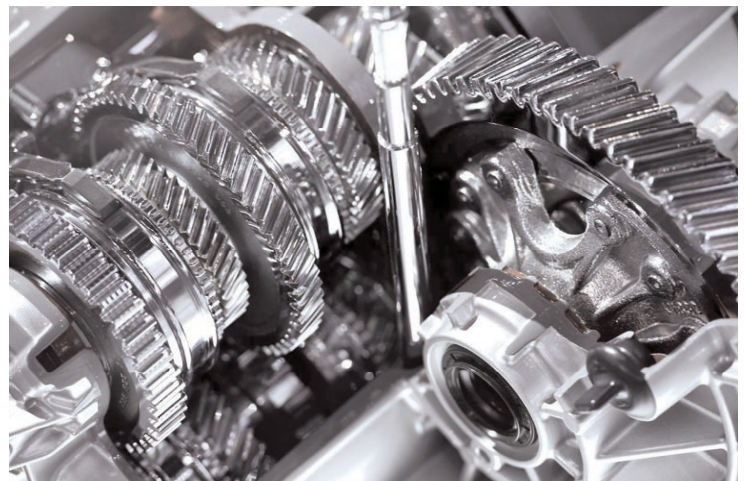
### Measuring Gloss...

When measured at a 20° angle **NiKlad ELV 849** has an average (GU) in the 120's



### Compliance...

**NiKlad ELV 849** is designed without lead, cadmium or other controlled materials to be compliant with **WEEE, RoHS** and **ELV** directives and NSF 51.



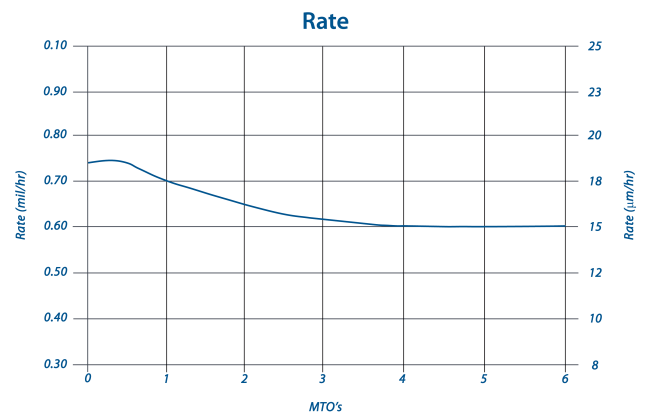
# NiKlad ELV 849

You no longer have to sacrifice quality, performance or consistency to meet environmental constraints. **NiKlad ELV 849** is designed without lead, cadmium or other controlled materials to be compliant with **WEEE, RoHS** and **ELV** directives and NSF 51. NiKlad ELV's meet or exceed the performance benchmarks of conventional processes without compromising compliance.

NiKlad ELV systems are available in a wide variety of phosphorous alloys, brightness levels and pH self-regulating systems.

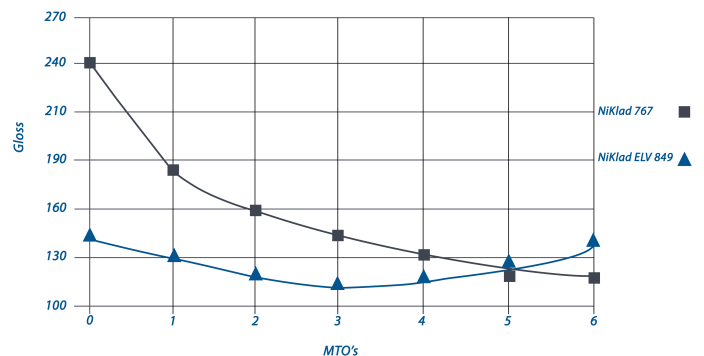
## Plating Rate...

**NiKlad ELV 849** has a deposition rate that is consistent for its entire bath life. It delivers consistent performance load after load for more than 6 MTO's.



## Gloss...

**NiKlad ELV 849** is MacDermid's brightest medium phosphorus electroless nickel. The deposit retains its brightness throughout the entire bath life. This ensures a consistently high quality finish and uniform bright deposit.



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## Electroless Nickel That's Bright And Measurable

### NiKlad ELV 849 Properties

Properties	Results	Units
% Phosphorus	7 - 9	%
Deposit Density Range	8.0 – 8.2	g/cm
Plating Deposition Rate um/hr	15 - 20	µm/hr
Plating Deposition Rate mil/hr	0.6 - 0.8	mil/hr
Hardness As Plated	500 - 600	HK100
Rockwell C Hardness as Plated	50- 56	Rc
Hardness After Heat Treatment (400C for 1 hour)	850 - 950	HK100
Rockwell C Hardness after Heat Treatment (400C for 1 hour)	66 - 69	Rc
Taber Wear Index as Plated (mg/1000 Cycles, Cs-10 Wheel,1000g Load)	22 – 26	mg/1000 cycles
Taber Wear Index After Heat Treatment (400C for 1 hour) (same as above)	14 – 18	mg/1000 cycles
Coefficient of Thermal Expansion	11 – 14	µm/m/°C
Electrical Resistivity	70 - 90	µOhm-cm
Thermal Conductivity	0.016	CAL/cm/sec/°C
Deposit Internal Stress as Plated (Tensile or Compressive)	Slightly Tensile	
Elongation	0.5 – 1	%
Modulus of Elasticity	45 -65	GPa
Melting Range	890 – 1455	°C
Coercivity	10 – 15	Oe
Magnetic Properties as Plated	Slightly Magnetic	
Gloss	110 – 140	GU



It takes more than innovative, high performance products and superior technical service to help our customers compete and win in today's global marketplace. It takes a total commitment to understanding their needs and the ability to provide the right solutions—every time.

When success is your only goal, trust MacDermid.

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