



## NITRODE™

No other cap electrode can match Nitrode for its cost-effective, high quality performance in resistance-welding applications

Luvata's Nitrode™ cap is a cold-formed alloy of copper dispersion strengthened with Aluminium Oxide. It consistently outperforms copper chrome and copper chrome zirconium electrodes in resistance to annealing, consistent electrical conductivity, electrode life and maintenance costs. Benefits include:

### **Longer Weld Life**

Nitrode caps last longer than conventional electrodes by resisting annealing.

### **Non-Stick**

Nitrode caps reduce sticking of electrodes on galvanized steel and other coated metals. The refractory qualities of Al<sub>2</sub>O<sub>3</sub> reduce the infusion of liquid and gaseous zinc into the copper matrix.

### **Resists Mushrooming**

Nitrode's resistance to mushrooming minimizes its dressing frequency to one-fourth that of conventional electrodes, significantly reducing line downtime and re-welds.

### **Reduces Maintenance Downtime**

Nitrode caps require less overall maintenance than conventional CuCrZr and CuCr electrodes, increasing welding process and production efficiencies.

### **Reduces Energy Requirements**

Nitrode requires lower current when used on both sides of the weldment. Current settings on your welder can be reduced by up to 10% from conventional settings, with no loss of weld quality.

### **Smoother Start-ups**

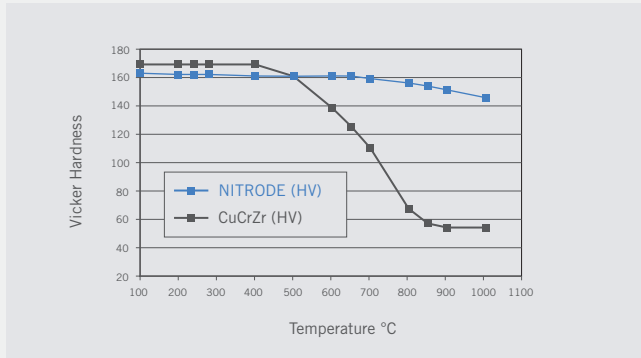
Nitrode caps require no warm-up, conditioning time or initial preparation following electrode changes. If you use automatic step-up controls, the incremental settings can be varied to minimize current adjustments with no loss of weld integrity. The results are fewer electrode changes, fewer interruptions for dressing and smoother start-ups.

### **Works On All Steels**

Nitrode has demonstrated superior welding performance for a variety of steels, including HSS, HSLA, micro-alloyed, nitrogenized, low-carbon, electrolytically zinc-coated, galvanized and many others.

### **Nitrode Cuts Your Company's Costs**

Improved up-time from reduced tip changes, maintenance savings, less tip-dressing, improved weld quality, and lower current settings will increase your company's productivity, and cut your costs compared to conventional electrodes.



Hardness at high temperature



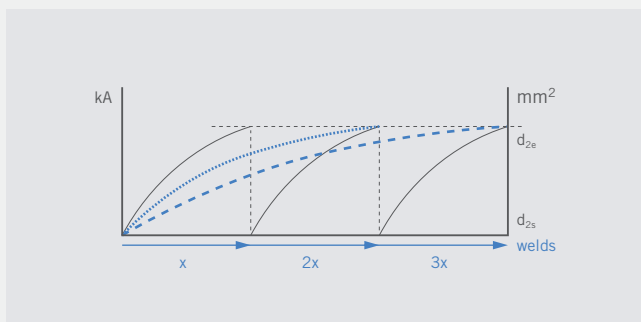
CuCrZr before and after annealing at 900°

CuCrZr after 1200 welds



Nitrode before and after annealing at 900°

Nitrode after 1200 welds



Heat stepping

**Nitrode Metallurgy**

Nitrode is a composite alloy of copper and Al<sub>2</sub>O<sub>3</sub> to become CDA alloy 15760. Conventional copper alloys anneal at temperatures over 500°C. Nitrode does not suffer significant loss of properties till nearly the melting point of 1083°C.

**Nitrode's Physical Properties**

- **Hardness at ambient temperature:**  
Minimum 75 HRB
- **Conductivity:**  
Minimum 75% IACS

**Nitrode's Longer Weld Life**

The contact surface of a resistance welding electrode reaches temperatures of up to 900oC during the welding process. As the contact surface on a CuCrZr or CuCr electrode anneals, it softens and the contact surface grows, limiting the electrode life. Nitrode electrodes resist annealing and slow the mushrooming effect on the contact surface of the electrode, allowing more welds before tip dressing, heat stepping, or tip change.

**Heat Stepping**

Nitrode electrodes allow more welds per heat step than conventional alloys. Adjusting heat-programs allows you to take advantage of the longer life of Nitrode electrodes.

**Traceability**

All Luvata materials are fully traceable. Nitrode electrodes can be recognized by their single knurls.

**About Luvata**

Luvata is a world-leader in metal fabrication, component manufacturing and related engineering and design services. We are committed to partnering with our customers to help them increase their competitiveness. Our products and services enable our customers to improve operational efficiency, improve products and reduce tied-up capital. This focus on our customers' results, backed by our unflinching reliability, makes us a partner on which our customers base their future development.

For more information about the Luvata Nitrode™ please contact:

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