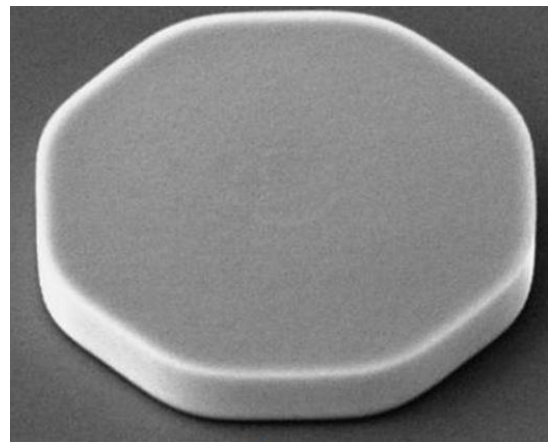


**PRESS RELEASE****MacDermid Alpha Announces Release of MICROFAB®  
EVF NiBAR Boric Acid Free Electrolytic Nickel**

(Waterbury, CT USA) – August 19, 2021 - MacDermid Alpha Electronics Solutions, a global electronics chemicals process supplier MacDermid Alpha Electronics Solutions, a world leader in the production of innovative materials used in semiconductor, circuitry, and electronics assembly announces the release of MICROFAB EVF NiBAR, a boric acid free sulfamate nickel electroplating process for semiconductor applications.

Boric acid has been listed as a Substance of Very High Concern (SVHC) by REACH and is being considered for regulatory restriction in Europe. It has also been included on the Restricted Substances Lists of several countries. In response to these concerns, MacDermid Alpha has introduced MICROFAB EVF NiBAR, a more environmentally friendly alternative to traditional boric acid systems which retains the performance attributes and confers additional key benefits.

MICROFAB EVF NiBAR features a proprietary buffering system that ensures diffusion layer pH stability and a buffering capacity equivalent to boric acid. The new buffering system allows for a wide current density range, and produces a pure, fine-grained, ductile nickel deposit suitable for diffusion barrier and UBM applications.



Smooth, semi-bright, ductile deposit with good uniformity

Additionally, MICROFAB EVF NiBAR features via filling capability, tunable deposit stress, and lower temperature operation versus traditional electrolytic nickel systems. The semi-bright deposit exhibits minimal porosity and excellent barrier properties.

Brian Gokey, Product Group Manager for the Advanced Interconnect Metallization business, noted, "With MICROFAB EVF NiBAR, we enable our customers to achieve best in class performance, while also meeting corporate ESG initiatives by introducing green chemistries into their supply chain."

MICROFAB EVF NiBAR is supplied as a ready-to-use makeup, with a wide operating window and low maintenance requirements. The chemistry is fully compatible with existing toolsets from industry equipment providers and has been successfully trialed at several major manufacturers.

**About MacDermid Alpha Electronics Solutions:**

Through the innovation of specialty chemicals and materials under our Alpha, Compugraphics, Electrolube, Kester, and MacDermid Enthone brands, MacDermid Alpha Electronics Solutions provides solutions that power electronics interconnection. We serve all global regions and every step of device manufacturing within each segment of the electronics supply chain. The experts in our Semiconductor Solutions, Circuitry Solutions, and Assembly Solutions divisions collaborate in design, implementation, and technical service to ensure success for our partner clients. Our

solutions enable our customers' manufacture of extraordinary electronic devices at high productivity and reduced cycle time. Find out more at [www.MacDermidAlpha.com](http://www.MacDermidAlpha.com).

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