



**NEWS RELEASE**

**FOR IMMEDIATE RELEASE**

## **New Double-Printing Metallization Pastes from Ferro Electronic Materials**

**Pastes for print-on-print process  
reduce shading effect and improve electrical conductivity**

**CLEVELAND, OH—3 September 2010**—Ferro Electronic Materials, a leading supplier of materials for fabricating photovoltaic silicon solar cells for more than 25 years, will introduce two new print-on-print metallization pastes at the 25th European Photovoltaic Solar Energy Conference and Exhibition to be held in Valencia, Spain, September 6–9. NS 33-514 and NS 33-515 pastes have optimized inorganic and organic properties that make them compatible with the double-printing (also known as print-on-print) process.

Double-printing of metal grid lines permits solar cell manufacturers to print taller, narrower lines, reducing the shadowing effect caused by wide grid lines, while enhancing electrical conductivity.

Double-printing is experiencing strong growth due to the potential for better print resolution and subsequent increases in efficiency. Ferro's NS 33-514 and NS 33-515 are capable of printing grid lines that are 70-microns wide with a greater than 0.3 aspect ratio.

In double printing, the bottom layer silver can be tailored to have lower contact resistance and the top layer can be designed to have low bulk resistivity. The net effect is to improve electrical output, efficiency, and production, enabling solar energy to become a more cost-competitive energy generation alternative.

"Ferro has been engaged with double printing applications for more than five years," said Todd Williams, business manager for Ferro Electronic Materials. "This technology is experiencing strong pull due to the improvements in electrical efficiency possible from the higher aspect ratios that can be produced."

### **About Ferro Corporation**

Ferro Corporation ([www.ferro.com](http://www.ferro.com)) is a leading global supplier of technology-based performance materials for manufacturers. Ferro materials enhance the performance of products in a variety of end markets, including electronics, solar energy, telecommunications, pharmaceuticals, building and renovation, appliances, automotive, household furnishings, and industrial products. Headquartered in Cleveland, Ohio, the Company has approximately 5,200 employees globally and reported 2009 sales of \$1.7 billion.

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**MEDIA CONTACTS:**

Mary Abood  
Director, Corporate Communications, Ferro Corporation  
Phone: 216-875-6202  
E-mail: [aboodm@ferro.com](mailto:aboodm@ferro.com)

**INVESTOR CONTACT:**

David Longfellow  
Director, Investor Relations, Ferro Corporation  
Phone: 216-875-7155  
E-mail: [longfellowd@ferro.com](mailto:longfellowd@ferro.com)