

Press Release

Heraeus Porocarb® Additive Now Commercially Available for Lead Acid Battery Manufacturers

New synthetic carbon additive improves lead acid battery life and performance

KLEINOSTHEIM, GERMANY- September 13, 2017- Heraeus Battery Technology, the world's sole producer of synthetic carbon functional additives, announced today its Porocarb® porous carbon powders are now commercially available for lead acid batteries.

Developed in 2014 and tested with actual customer pilots, Heraeus Porocarb® Lead represents a new generation of advanced electrode additives for lead acid batteries. With its well-defined internal porosity, Porocarb® Lead is the first conductive additive that not only ensures electronic connectivity and nucleation within the electrode, but also enhances the ionic conductivity and confinement of discharge products. Dr. Dominik Samuelis, Head of Innovation for Heraeus Battery Technology, added, "Porocarb's unique material properties make it ideal to significantly improve the performance of lead-acid batteries, particularly for Start-Stop applications, which require optimized power supply, deep discharge and quick recharge functionality. A better-performing battery ensures the internal combustion engine shuts down when idling, quickly re-starts and, most importantly, reduces fuel consumption and emissions."

Through its extensive research and real world testing with lead-acid battery customers, Heraeus has been able to demonstrate significant performance improvements with Porocarb, including:

- Increasing charge acceptance by up to 120%
- Enabling quick recharging in advanced lead-acid batteries for brake energy recovery
- Increasing endurance cycle life by up to 100% for a longer lifetime of electrical power systems
- Nearly 50% more capacity at deep-discharge operations for longer power supply in industrial and automotive applications

As the oldest type of rechargeable battery, lead acid batteries have been a workhorse for applications from auto batteries to back-up power in cell towers, hospitals and other stand-alone power systems. According to a recent report published by Grand View Research, the current global lead-acid battery market is approximately \$47 billion annually. The market is expected to nearly double by 2025 to around \$84.5 billion annually to support growing demand in automotive, industrial manufacturing, material handling systems, backup power storage and telecommunications.

Dr. Michael Rohde, the Head of Marketing & Sales for the Heraeus Battery Technology group, notes that the expected growth in the lead-acid battery market means battery manufacturers must meet higher expectations for battery life and performance. He said, "Batteries are expected to last longer, charge faster and deliver more power, all at a lower cost. Porocarb can help solve that equation."

For more information about Heraeus Porocarb® Lead as well as its Porocarb product lines for lithium-ion and super-cap applications, visit www.heraeus-porocarb.com.

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About Heraeus Battery Technology

Heraeus Battery Technology, an independent company of the Heraeus Group, is focused on optimizing the performance and efficiency of batteries and other energy storage conversion products. Working with customers and strategic partners worldwide, we combine cutting-edge research and state-of-the-art manufacturing capabilities to develop and produce innovative battery solutions around the Porocarb® platform for automotive, industrial and consumer applications. Visit www.heraeus-porocarb.com for more information.

About the Heraeus Group

Heraeus, the technology group headquartered in Hanau, Germany, is a leading international family-owned company formed in 1851. With expertise, a focus on innovations, operational excellence and an entrepreneurial leadership, we strive to continuously improve the businesses of our customers around the world.

We create high-quality solutions for our customers and strengthen their long-term competitiveness by combining material expertise with technological know-how. Our ideas are focused on important issues such as the environment, energy, health, mobility and industrial applications. Our portfolio ranges from components to coordinated material systems which are used in a wide variety of industries, including the steel, electronics, chemical, automotive and telecommunications industries.

In the 2016 financial year, the FORTUNE Global 500 listed company generated revenues without precious metals of €2.0 bn and a total revenue of €21.5 bn. With approximately 12,400 employees worldwide in more than 100 subsidiaries in 40 countries, Heraeus holds a leading position in its global markets. In 2016, the Foundation for Family Businesses named Heraeus as one of the “Top 10 Family Businesses” in Germany.

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