



February 20, 2015

## **Ashland launches new binders for lithium-ion batteries at Battery Japan, 2015**

### ***Combination of physical and electrochemical properties impart better coating performance***

WILMINGTON, Del. - Ashland Specialty Ingredients, a commercial unit of Ashland Inc. (NYSE: ASH), will showcase two new binders for lithium ion batteries at Battery Japan, 2015. The company will launch Bondwell™ BVH9 carboxy methyl cellulose (CMC) binder for the anode, and will introduce its PVP K-Series polyvinylpyrrolidone (PVP) polymers as binders for ceramic-coated separators. Battery Japan 2015 takes place February 25 - 27 at Tokyo Big Sight.

"Ashland produces Bondwell BVH9 CMC binder in our Jiangmen, China facility and provides lithium ion cell producers in the Asia Pacific region with a cost-effective binder that features optimized physical and electrochemical properties," said Kenji Hanada, Tokyo-based senior marketing specialist, Industrial Specialties, Ashland Specialty Ingredients.

Bondwell BVH9 CMC binder is an aqueous binder for natural graphite anodes. Coin cells prepared with Bondwell BVH9 CMC binder have demonstrated significantly low impedance, as well as excellent capacity retention across a range of charge-discharge rates.

Bondwell BVH9 CMC binder is compatible with many commercial styrene butadiene (SB) latexes and has good dispersion power for both natural graphite and conductive carbon black particles. It also adheres well to copper collectors.

### **Binders of choice for ceramic-coated separators**

Ceramic-coated separators are increasingly used to improve lithium ion battery safety by reducing separator shrinkage at high temperatures and by increasing mechanical strength and compression resistance. Ceramic-coated separators may also improve battery performance.

"The Ashland PVP K-Series of binders feature a combination of physical and electrochemical properties that impart better coating performance than commonly used polyvinylidene difluoride (PVDF), or polyvinyl alcohol (PVA) binders," said Hanada. "They have better solubility characteristics, superior dispersion performance, excellent cohesive properties, and good electrochemical stability." As a result, the Ashland PVP K-Series performance polymers are the binders of choice for ceramic-coated separators.

In addition to visiting Ashland's booth W24-5 during Battery Japan, more information about the company's full range of specialty additives for the lithium ion battery market is available at [www.ashland.com/lib](http://www.ashland.com/lib).

### **About Ashland Specialty Ingredients**

Ashland Specialty Ingredients offers industry-leading products, technologies and resources for solving formulation and product performance challenges in key markets including personal care, pharmaceutical, food and beverage, coatings and energy. Using natural, synthetic and semi-synthetic polymers derived from plant and seed extract, cellulose ethers and vinyl pyrrolidones, Ashland Specialty Ingredients offers comprehensive and innovative solutions for today's demanding consumer and industrial applications.

### **About Ashland Inc.**

In more than 100 countries, the people of Ashland Inc. (NYSE: ASH) provide the specialty chemicals, technologies and insights to help customers create new and improved products for today and sustainable solutions for tomorrow. Our chemistry is at work every day in a wide variety of markets and applications, including architectural coatings, automotive, construction, energy, food and beverage, personal care, pharmaceutical, tissue and towel, and water treatment. Visit [ashland.com](http://ashland.com) to see the innovations we offer through our four commercial units - Ashland Specialty Ingredients, Ashland Water Technologies, Ashland Performance Materials and Ashland Consumer Markets.

### **FOR FURTHER INFORMATION:**

Media Relations  
Gillian Zhou  
+86 21 2402 4881  
[gzhou@ashland.com](mailto:gzhou@ashland.com)

*™ Trademark, Ashland or its subsidiaries, registered in various countries.*