



PRAXAIR NEWS RELEASE

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Praxair to Market Fine Titanium Powders for the Additive Manufacturing Industry

INDIANAPOLIS August 4, 2015 – Praxair, Inc. (NYSE: PX) today announced its Praxair Surface Technologies business will begin marketing fine, spherical titanium powder for use in 3-D printing by additive manufacturers serving the aerospace, automotive, industrial and medical markets.

3-D metal printing with titanium, in which components are built up by depositing the material in layers, can lower manufacturing and raw material costs, improve fuel efficiency and enable the design of the most advanced parts, from aerospace brackets to biomedical implants. This enables the benefits of titanium's strength, light weight and corrosion resistance to be further adopted in advanced applications.

"Until now, there's been limited availability of fine, titanium powder in the marketplace to create parts," said Dean Hackett, vice president of advanced materials and equipment for Praxair Surface Technologies. "That won't be the case for long as we move into full-scale production of aerospace-grade, fine, spherical, titanium powder starting in the third quarter of 2015. In addition to supplying the powder, Praxair also offers the associated industrial gases to the additive manufacturing industry."

Praxair's ability to produce large-scale volumes of titanium powders designed for additive manufacturing is rooted in its more than 50 years of experience producing gas atomized powders for the thermal spray coating industry. In recent years, research and development efforts have focused on the production of metal powders, including cobalt, iron and nickel, for 3-D printing purposes. Further development of a proprietary atomization process designed specifically for titanium allows the company to make some of the largest batches of fine, titanium powder in the world.

"What makes our production of titanium powders different from those currently on the market is that we use close-coupled, high-pressure gas atomization to produce fine, spherical titanium powder in large quantities," said Andy Shives, additive manufacturing marketing manager for Praxair Surface Technologies. "Adding titanium powder to our portfolio enables us to better support the manufacturing needs of aerospace and other industries."

Praxair is currently working with major aerospace original equipment manufacturers (OEM) by providing limited quantities of its fine titanium powder to further OEM research and development efforts ahead of Praxair's full commissioning of its gas-atomized titanium powder line.

Praxair Surface Technologies offers a comprehensive array of high-performance coatings, materials and technologies to aviation, energy, and other industries. By continuously advancing coating and material technologies, Praxair Surface Technologies helps customers improve environmental performance, decrease energy consumption, extend component life, improve productivity, minimize downtime, reduce operating costs and produce high-quality products.

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>> About Praxair

Praxair, Inc., a Fortune 250 company with 2014 sales of \$12.3 billion, is the largest industrial gases company in North and South America and one of the largest [worldwide](#). The company produces, sells and distributes atmospheric, process and specialty [gases](#), and high-performance surface coatings. Praxair products, [services](#) and technologies are making our planet more productive by bringing efficiency and environmental benefits to a wide variety of industries, including [aerospace](#), [chemicals](#), [food and beverage](#), [electronics](#), [energy](#), [healthcare](#), manufacturing, primary metals and many others. More information about Praxair, Inc. is available at www.praxair.com.