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## **New aluminium alloys are harder and lighter than alternative**

*Sunday, 05 Sep, 2010*

Powdermet Inc has developed new PM alloys which it says have lower weight, higher strength and increased hardness when compared to aluminium alloys currently on the market.

The alloys are made using a scalable, non cryomilling based process developed by the company that can produce nanocrystalline powders with a stably, highly refined grain structure that can be consolidated with combined power metallurgy and deformation processing conditions to produce aluminium products with higher strength and hardness. The process does not require reliance on rare earth or other non domestic sourced alloying elements.

Powdermet said that subscale mill products including plate and sheet have shown strengths and hardnesses comparable to high strength Cr Mn steels. The company has won a competition leading to a multiyear development and demonstration contract from the US Army Research Laboratory under a small business innovative research program to further develop and scale up the demonstrated production processes to produce aluminium mill products having strengths above 500MPa and hardnesses above 400VHN while retaining 8% or greater ductility.

The project will be carried out utilizing the company's Microcomposite Deformation Centre and will include researchers at Case Western Reserve University, Cleveland, Ohio, UK, the Army Research Laboratory and Impact Ballistics, a ballistic testing facility also based in Cleveland among others.

The company plans to manufacture the alloys for military up armouring systems which could have 30% to 50% lower mass than current RHA steel solutions, bridging the gap between steel and titanium armor in terms of cost, weight and performance. It is also considering additional applications in spacecraft, launch vehicle, and ground transportation systems where strength to weight improvements translate into significant lifetime operating cost and emissions/environmental impact reduction.

Mr Andrew Sherman president and CEO of Powdermet said that "Powdermet is excited to be part of the convergence of nanotechnology and advanced metallurgy, leading to a reduction in the environmental and economic footprint of transportation and military vehicles."

(Sourced from [www.metal-powder.net](http://www.metal-powder.net))

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