

Boron Aluminum Magnesium Composite Material

DOE-EERE

ISU Research Foundation, Iowa Company Assistance Program

Industry

Among the hardest bulk materials after diamond.

Combines high hardness with low friction .

Coefficient of friction lower than Teflon.

Reduces drag in moving parts.

Could protect mechanical parts from wear and tear, and boost energy efficiency.

Ability to cut titanium alloys.

AlMgBoride coating performance of machining Ti6Al4V

	Crater wear	Flank wear
% improvement over WC	86 %	95 %
% improvement over TiAlN	150 %	135 %

Currently being studied as a nanoscale coating for pump components and industrial cutting tools to reduce friction and thereby boost equipment energy efficiency.



Cutting tool made of BAM

Material exclusively licensed to Newtech Ceramics, Boone, IA.

Application development with Eaton and Greenleaf Corporations through a DOE-EERE funded CRADA.

BAM's possible applications include aerospace, mining, oil well drilling, water jet cutting nozzles, bicycle and motorcycle chains, ice skate runners, etc.

BAM coated rotors could save US industry 330 trillion Kilojoules/year by 2030 or about \$179 million a year (est.).