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## Effect of porous glass-ceramic materials addition on the cubic boron nitride (cBN) tools properties

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### Keywords

cubic boron nitride (cBN) tools, vitrified bond, bubble alumina, magnesium aluminosilicate, wetting test, microhardness, pre-performance investigaton

### Abstract

The results of physicochemical and mechanical investigations into the properties of bubble alumina (BA) and magnesium aluminosilicate (MA) addition to abrasive masses designed for cubic boron nitride (cBN) tools have been presented. Two kinds of addition were investigated by the following experimental techniques: scanning electron microscopy - microstructure, densimeter - helium density, microhardness test, dilatometer -  $\alpha$ -TMA, wetting test. Bubble alumina fulfilled all the criteria of usability. Tools of 1A1 35×5×10×10 B126, 100, Pb21K with BA addition (0, 5, 10, 12 vol%) were made. A pre-performance investigation was done on grinding a LH-15 steel with tool speed of 30, 45, 60 m/s, microtopographies of wheels and work-pieces were described by the following roughness parameters:  $R_a$  (0.2-0.5  $\mu\text{m}$ ),  $R_z$  (1.16-2.2  $\mu\text{m}$ ),  $\Delta_k$  (2-8  $\mu\text{m}$ ). The best results were obtained by using wheels with 10 vol% BA addition.



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