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**A new class of coatings for cutting tools: non oxide ceramic coating**Jörg Vetter<sup>1</sup>, M. Isaka<sup>2</sup>, T. Ishikawa<sup>3</sup>, K. Kubota<sup>3</sup>, G. Erkens<sup>1</sup>, J. Mueller<sup>1</sup>, J. Alami<sup>1</sup><sup>1</sup>Sulzer Metaplas, Bergisch Gladbach, Germany <sup>2</sup>Hitachi Tool Engineering, , Japan <sup>3</sup>  
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PVD coatings for high performance applications require at least one selected outstanding property like low friction, high hardness, high temperature stability or high oxidation stability. In the last decade a lot of high impact coatings were new developed and successfully introduced in industrial production of tools and components. Such coatings comprise TiSi-based and AlCr- based types (TiSiN, AlCrSiN). These coatings are belonging to the group of crystalline coatings and show a limit in the oxidation temperature of about 1000 °C. The SiBNC0 coatings deposited by magnetron sputtering are able to withstand higher temperatures without a significant oxidation rate. The paper describes coating properties in dependence from the used reactive gases nitrogen, oxygen and carbon. Coating properties are high lightened by SEM, hardness measurement, EDX, X-ray diffraction and XPS. Tribological properties were investigated by Pin-On-Disc. Oxidation experiments were carried out up to 1000 °C. Preliminary cutting tests will be presented.

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high temperature  
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arc