

Press Release

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M•A•C (Micro Alloyed Coatings) for High Performance Cutting

Sulzer Metaplas, a Sulzer Metco company, offers state of the art technologies for the deposition of coatings with its new M•A•C (Micro Alloyed Coatings) series. This new coating family is based on APA evaporation technology. Micro alloying is a tool for developing surface properties according to specific tool and customer requirements.

Especially in high performance (HPC) and high speed cutting (HSC) a lot of factors affect the manufacturing quality and time due to increasing cost pressure. Therefore modern precision tools are working at their performance limit for optimum process efficiency. Coatings capable of protecting the cutting tools for cutting of different hard steels and alloys are offered by the coating types *Mpower* and *Mtec* of the Machining series. The application of these new micro alloyed coatings result in significantly longer life time, higher cutting and feeding speed, as well as improved surface finish for increasing productiveness and efficiency. At the same time a reduction of friction and wear can be achieved.



The TiSi-based *Mpower* coating is offered in three different modifications. According to requirements it is optimised for cold working steels with around 57-63 HRC and variable carbide content, for hot working steels with around 45-58 HRC and for steels developed for plastic extrusion and injection-moulding with 40-54 HRC core hardness. Therefore the coatings are combined to nano-, multi- and gradient layers. Recent results have shown the applicability for Titanium treatment.

Mpower stands out due to its high resistance to wear and extreme hardness up to 3600 HV. The convincing performance range for the machining of steels is completed by reduced sticking and prevention of formation of built-up edges, as well as a high phase stability and oxidation resistance up to 1150°C.

These properties lead to significantly reduced wear on the coated cutting edge. The reduction of the tribo-oxidation reduces crater wear.

Short and long time tests have already shown that *Mpower* offers a nearly doubled endurance and far better process safety compared to competitor coatings for wear of the cutting edge.

The AlTi-based *Mtec* coating was developed for heat treated steels, austenitic steels, as well as for a different range of high temperature alloys, AlTi- and nickel-based alloys. Because of the extreme close morphology *Mtec* is especially capable for machining of hard to cut materials. Different types of coating structures are offered from coarse to fine columnar up to nano crystalline. The micro hardness is 3400 HV and the maximum working temperature is around 750°C. For example, one advantage of *Mtec* has already been proven in cutting tests at a tool-steel with a hardness of 40 HRC. The performance could be doubled compared to standard AlTi coatings.

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