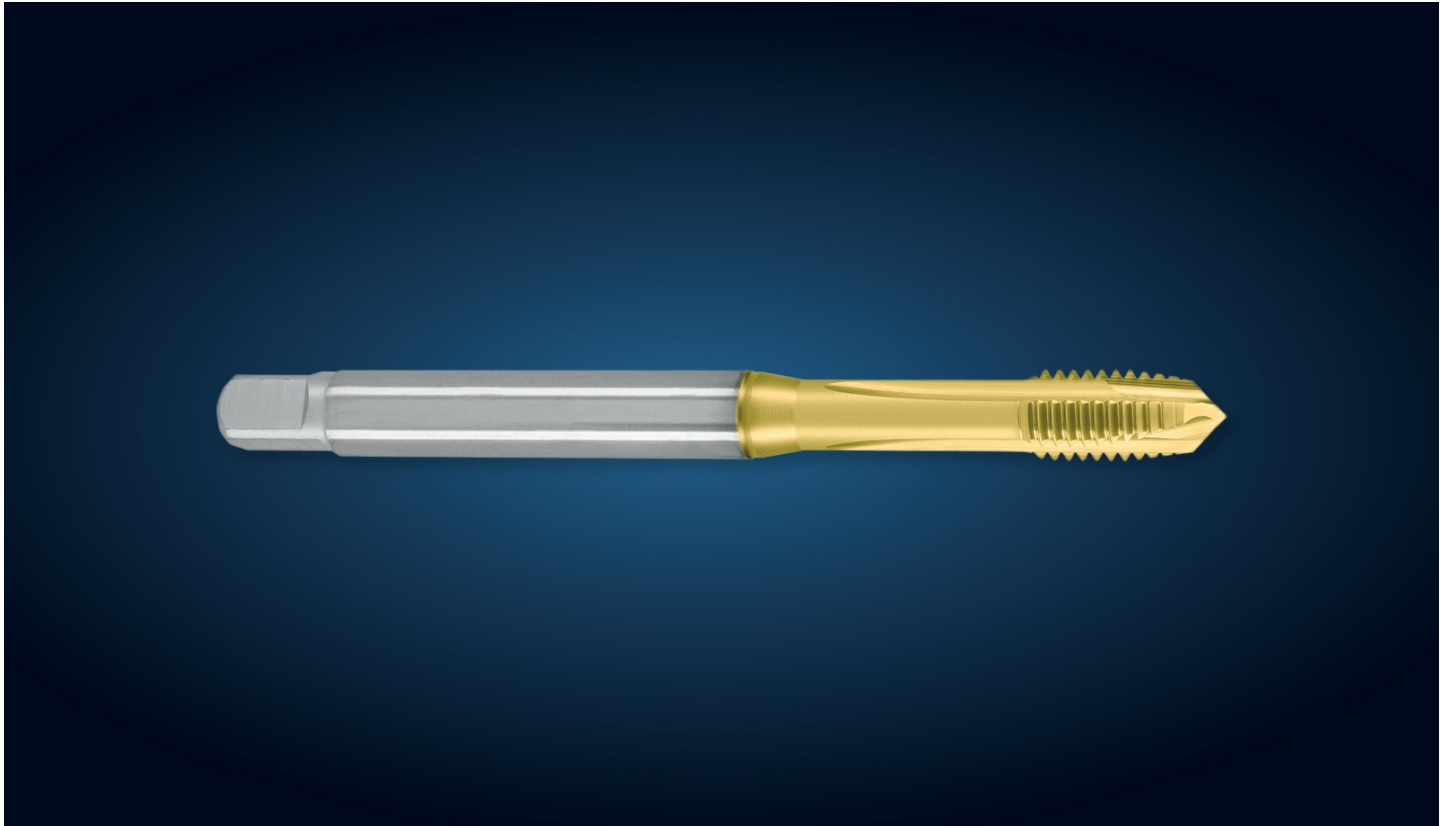


TapCon®Gold – The coating for the perfect thread



HiPIMS ermöglicht beste Performance bei der Gewindefertigung

Internal thread production – whether through hole or blind hole – is one of the most challenging cutting tasks. It is particularly important as one of, if not the last, machining step. Process reliability is the top priority in order not to waste the almost completed component. HiPIMS coating technology opens up here enormous possibilities. The new coating material TapCon®Gold has been specially developed for HSS taps and thread formers and adapted to the requirements of the machining task.

Internal threads can be found in almost every component. These range from engine blocks and many other vehicle components to cellphones and multimedia products – wherever something has to be screwed together. They are so commonplace that we hardly notice them. Extensive know-how goes into their production. Before they are placed into the components, the components are milled, turned, drilled, etc. The thread comes last. "That makes thread production such a critical process. If there is an error during this machining step, the component must at best be reworked in a costly and time-consuming way. In the worst case scenario, the almost finished workpiece becomes scrap, and the previous work was in vain. Process reliability is therefore essential," summarizes CemeCon's Round Tools Product Manager Manfred Weigand.

The path to the future

The threading tools used must therefore not only have a long service life but must also maintain a constant thread quality and tolerance over their entire service life. This places specific demands on the coating: "The

traditional TiN and TiCN coatings have been the points of reference for threading tools for many years. With the development of our HiPIMS coating material TapCon®Gold specifically for HSS taps and thread formers, there has been for the first time a performance leap to precisely these coatings. The gold-colored coating material is opening the path to the future," explains Weigand.



A stable low torque is enormously important for precise and efficient thread production. The newly developed HiPIMS coating material TapCon®Gold has been tailored specifically to these requirements and is the ideal coating base for HSS taps and thread formers.

Perfect properties for thread production

Torque is the critical factor during thread production. The lower the torque, the margin of safety until the tool fails is not only greater, but also the quality of the cut or formed thread is generally better. Furthermore, material adhesions to the threading tools must be prevented. These are often the cause for poor performance. Thanks to its extreme smoothness and high density, TapCon®Gold ensures stable low torques and reliable chip removal without adhesions. Running-in behavior is excellent thanks to the very low-friction surface. In addition, the high degree of toughness of the coating material optimally protects the cutting edges during threading. Together with the exceptional coating adhesion, an integrated complete package results that prepares the HSS taps and thread formers perfectly for the demands of thread production.

Coating can be so diverse

Why does TapCon®Gold have these outstanding properties? The coating material owes them to the unique HiPIMS technology. Weigand explains: "HiPIMS coating materials are extremely smooth and adhesive,

which in particular ensures low torques during thread drilling and forming. TapCon®Gold also scores points with tribological properties, which minimize the adhesion of the machined material on the tool surface. And finally, the specific composition of TapCon®Gold ensures outstanding machining performance and service life."

TapCon®Gold

Coating development

Threading tools

Process reliability

Long tool life

Coating solution

Coating stress

Coating specifications

Future

TapCon®Gold

Torque

Low friction

Smooth layer