



## **Metal cutting tools industry : Basic knowledge of metal cutting tools**

When selecting the the tool, you need to consider a variety of factors, such as working material, tool material, machining properties. Tool angle generally speaking, refers to the label manufacturing and measurement of angles in the actual work, because of the different installation position of the tool and change the direction of movement of the cutting angle and the angle marked practical work vary, but usually the difference is small .

Tool material must have a high temperature, hardness and wear resistance, the necessary bending strength, impact toughness and chemical inertness, good process.

Usually when high hardness, wear resistance is high; high bending strength, impact toughness is also high. However, the higher the hardness, the lower the flexural strength and impact toughness. High-speed steel for high flexural strength and toughness, and good processability, modern is still the most widely used tool material, followed by carbide.

PCBN suitable for cutting high hardness of hardened steel and hard cast iron; polycrystalline diamond suitable for cutting non-ferrous metals and alloys, plastics and glass steel; carbon tool steel and alloy tool steel now only for the file, dies and taps and other tools.

Hard alloy indexable inserts are now coated with a chemical vapor deposition of titanium carbide, titanium nitride, aluminum or composite hard layer hard layer. Physical vapor deposition method being developed not only for carbide cutting tools, can also be used for high-speed steel cutting tools, such as drills, hobs, taps and milling. As the hard coat layer and the heat conduction block chemical diffusion barrier that slows down the tool wear in cutting speed, blade coating and the life of the coating is not increased by more than about 1 to 3 times .

Due to high temperature, high pressure, high speed, and parts working in corrosive fluid medium, difficult materials more and more of its application, the level of automation of machining and precision have become increasingly demanding. To accommodate this situation, the development direction of the tool will be the development and application of new tool materials; further development of tools vapor deposition coating technology on high strength and high toughness higher hardness matrix deposition coating, to better address hardness and strength of the tool material contradiction between; further development of the structure may be transferred to the tool bit; improve the manufacturing accuracy of the tool, reducing the difference of product quality, and to achieve optimum use of the tool.