



## Basic knowledge of metal cutting tools (1)

Metal cutting tools basic common sense: in the choice of the angle of the tool, you need to consider a variety of factors, such as workpiece material, tool material and processing properties (roughing and finishing), etc., must be selected depending on the circumstances. 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 (machining, forging and heat treatment, etc.), is not easy to deform.

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 and steel; carbon tool steel and alloy tool steel now only for the file, dies and taps and other tools.

Carbide 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 compared.