

Hardmetal as a cutting material for wood and manmade wood materials consist in hard grains of tungsten carbide with a grain size of 0,4 to 5 μ with a binder of metallic cobalt or a compound binder with iron, cobalt, nickel. The binder content is between 2 and 20%. Hardmetal is a brittle material. An increasing binder content increases the bending strength and in a slight increase of the fracture toughness. But even a binder content of 20% results in a fracture toughness with about 1% of a tool steel.

TIGRA controls the quality of the cutting inserts after the actual state of engineering.

Since it is not possible to perform a 100% control of the micro structure without destroying the parts, it is not possible to guarantee parts which are absolute free of defects.

Therefore the producer of tools, distributors and users have to take care that even in the case of rupture no part of the carbide insert can leave the tool. This has to be ensured by an appropriate clamping system. About all in the case of manual feed all security instructions of the tool producer are to observe.

The tool producer has to guarantee a grinding of the cutting edge free of cracks. Then he takes care that the mounting is made properly. No dust or other deposits or incrustations are allowed between the matching surfaces. The fixation of the screws has to be performed by using a tension wrench to avoid a rupture of the insert caused by too high pressure strength. The tool producer gives a manual to the distributor or the user with the exact description of the mounting procedure and a warning for wrong handling which can cause rupture.

Brazed tools must be free of stresses, which can cause a rupture of the cutting edge.

This catalogue describes cemented carbide products. Grinding of these products will produce dust of potentially hazardous ingredients. Dust from grinding the products described in this catalogue can cause nose, throat, skin and eye irritation and temporary or permanent respiratory disease in a small percentage of exposed individuals. Permanent respiratory disease can lead to disability or death. Coolant mist from wet grinding may contain dust. Avoid prolonged skin contact with dust or mist. Use adequate ventilation when grinding. Maintain dust levels below OSHA and ACGIH levels. Use protective devices. Wash hand thoroughly after handling, before eating or smoking. Dispose of materials according to local, state and/or federal regulations.

After grinding or regrinding a control for grinding cracks is necessary. The balancing has to be made carefully, because vibrations can cause tool fracture.

The tool manufacturer and the distributor are obliged to give the warnings for the risks in mounting, application and regrinding to the users. The user is to inform that the woodworking machines have to be protected, that fragments of tools and inserts cannot leave the machine.

The future European standard EN 847-1 for CNC-routers prescribes a bullet proof curtain or a complete cover to avoid that fragments can hurt the operators. The user has to take care that during the woodworking operation there are no collision between the tool and metal, stone or plastic parts, and that the tool and cutting material is able to cut loose knots without cracking.