The advantages of coatings on tools

HSS-tools are usually coated with TiN. In the case of HM-tools, other varieties of coatings are possible as a result of PVD and CVD processes. Several coatings and their respective advantages are listed below.

TiN-coating:

Increases a tool's endurance by approx. 200%; reduced tendency to form built-up edges; suitable for precision work. May be applied to HSS and HM-tools. A coating of silver-TiN has shown to give more protection against wear and to reduce the formation of built-up edges than coatings with gold-TiN.

TiCN-coating:

Higher resistance to wear than TiN, therefore longer service life. Especially suitable for use on high-alloy steels.

TiAlN-coating:

Higher resistance to wear than TiN; therefore longer service life. Especially suitable for use on hard steels and cast iron.

Carboride-coating:

This coating has good gliding properties and therefore forms fewer built-up edges. Especially suitable for HM-reamers for use on stainless steel and high-temperature steel.

Diamond-coating:

HM-tools attain a high resistance to wear. Only suitable for Fe- and TiN-free materials. Also suitable for the high-speed machining of Al, Cu and plastics; Alternative to tools tipped with PCD-plates.

Advantage: considerably lower price

Disadvantage: slightly reduced service life

Further information can be found in the table on coatings on Page 139.

Coating recommendations
for HSS and carbide-tipped reamers and core drills

Material group	No.	Gold-TiN	Silver-TiN	TiCN	TiAlN	Icer Tool	Carboride	Carboride Special
Soft plastics	0		HM			HSS		HM
			HM			HSS		HM
Hard plastics	1		HSS/HM		HM			
			HSS/HM		HM			
Machining steel	2	HSS/HM					HM	
		HSS/HM					HM	
Constructional steel	3			HSS		HSS/HM	HM	
		HSS/HM					HM	
Low-alloy steel	4			HSS		HSS/HM	HM	
		HSS/HM		HSS			HM	
Tempering steel	5			HSS		HSS/HM	HM	
		HSS/HM		HSS			HM	
Tool steel	6			HSS	HM	HSS	HM	
				HSS	HM	HSS	HM	
High tensile steel	7				HM	HM		
					HM	HM		
Stainless steel	8		HSS/HM			HSS	HM	
			HSS/HM				HM	
Ditto with Mo-content	9		HSS/HM			HSS	HM	
			HSS/HM				HM	
Ditto austenitic	10		HSS/HM			HSS	HM	
			HSS/HM				HM	
Low-hardness cast iron	11		HSS/HM		HM			
			HSS/HM		HSS/HM			
Low-alloy cast iron	12		HSS/HM		HM			
			HSS		HSS/HM			
Alloyed cast iron med. hardness	13		HSS/HM		HM			
			HSS		HSS/HM			
High-alloy cast iron	14		HSS/HM		HM			
			HSS		HSS/HM			
Al, Mg, Zn	15		HSS/HM			HSS/HM		HSS/HM
			HSS/HM			HSS/HM		HSS/HM
Al, Cu, Bronze	16		HSS/HM					HSS/HM
			HSS/HM					HSS/HM
Inconel, Monel < 30 HRC	17						HSS/HM	HM
							HSS/HM	HM
Inconel, Monel > 30 HRC	18						HSS/HM	HM
							HSS/HM	HM
Ti, Ti-alloys	19						HSS/HM	HM
							HSS/HM	HM

Recommendations for reamers
Recommendations for drills and core drills