

Material

Tools from Gühring are manufactured of the following materials.

High speed steel (HSS). Standard material for universal usage.

High speed steel with increased cobalt content (HSCo and M42). Gives tools with high thermal strength for demands on high performance and productivity.

High speed steel with increased Vanadium content(HSS-E). Gives tools with high cutting edge stability, which is important with precision processing and sensitive processing, e.g. reaming.

Powder-metallurgical steel grades (PM). High speed steel with good characteristics when processing medium hard and hard, difficult to process materials.

Material	Material	Analysis in %						Comparable steel types				
		No	C	Cr	Mo	V	W	Co	Sweden	USA	France	England
HSS	S 6-5-2 (DMo5)	1.3343	0.9	4.2	5.0	2.0	6.5	–	2722	M2	Z 90 WDCV	BM 2
HSCo HSS-E	S 6-5-2-5 (EMo5Co5)	1.3243	0.9	4.2	5.0	2.0	6.5	4.8	2723	M35	Z 90 WDKCV 06-05-05-04-02	–
HSS-E	S 6-5-3 (EMo5V3)	1.3344	1.2	4.2	5.0	3.0	6.5	–	–	M3	Z 120 WDCV 06-05-04-03	–
M42 HSS-E	S 2-10-1-8 (M42)	1.3247	1.1	4.2	10.0	1.2	1.8	8.0	2746	M42	Z 110 DKCWV 09-08-04-02-01	BM42
PM HSS-E	S 6-5-3-9		1.3	4.2	5.0	3.1	6.4	8.5	2726 (ASP 30)	CPM M45	–	–

Surface treatment

High speed steel has good basic characteristics without special surface treatment, i.e. in bright design. However, immense advantages can be obtained with different surface treatments, e.g. longer wear times and reduced swarf build-up.

TiN-coating. The coating forms an effective thermal block, the heat is forced out into the swarf instead of the tool. Gives longer wear times and the possibility of higher cutting data. For all materials.

Taps in general



Taper leads

The lead is the part of the tap that carries out the actual cutting work. The shorter the lead taper the greater the strain on each individual tooth. Using long taper leads reduces the load per tooth, but instead increases the requisite turning torque.

The taper lead on the tap must be adapted to the application area and for fluted tap be at least 2 - 4 threads. Taper lead selection is usually determined by whether the hole is a blind hole or a through hole.

Tap no I (taper lead 8 - 9 threads) used for short through holes not over 1 x diameter.

Tap no II (taper lead 4 - 6 threads) used when tapping long through holes in long chipping material.

Tap no III (taper lead 2 - 3 threads) primarily used when tapping blind holes.

Series taps

(not full thread form) are used when you wish to reduce the torque and when large demands are made of the thread's surface finish. Series taps must be used together with a tap with full thread form (e.g. no III).

Series taps are marked with a ring on the shank:

Series tap no 4 – has one ring.

Series tap no 5 – has two rings.

Application area



Taps with straight flutes

Taps with straight flutes are universally usable. The tap is suitable for all types of material.



Taps with spiral flutes

Taps with right spiral flutes are primarily intended for tapping blind holes in long chipping material. The angle of the spiral forces the swarf backwards out of the hole instead of it being packed in the flute or at the bottom of the hole, with the disadvantages in the form of risks for tap breakage, ripped threads and the like that this causes.



Taps with every other thread ground out

By grinding out every other thread it is easier for the lubricant to penetrate down to the cutting edges, which gives a lower turning torque. This tap type is recommended for materials that are difficult to process.



Taps with swarf clearing flutes

The tap has straight and relatively shallow flutes and has also been called tap with spiral point or gun-nose. Its cutting part is designed in such a way that swarf is pushed forwards.

The relatively narrow flutes are intended to supply the cutting edges with lubricant.

This type of tap is recommended for tapping through holes and for blind holes that have space for swarf.



Taps with flutes only along the lead

The tap's cutting section is designed in the same way as ditto with swarf clearing flutes. The stable design of the tap means that a good processing result is obtained, but the short flute length limits the application area to hole depths less than about 1.5 x diameter.



Fluteless taps

A fluteless tap differs from a normal tap because, as the name suggests, it has no flutes. Accordingly it does not produce a thread by cutting but through material displacement. The fluteless tap's application area is materials with good compressibility. Tensile strength may be max 60 kp/mm².