

A

Turning

B

Milling

C

Drilling




D

Technical Information

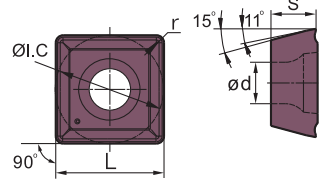


















E

Index

| SPGT | L | I.C | S | d |
|-------|------|------|------|------|
| 05 02 | 5 | 5 | 2.38 | 2.2 |
| 06 02 | 6 | 6 | 2.38 | 2.6 |
| 07 T3 | 7.94 | 7.94 | 3.97 | 2.8 |
| 09 04 | 9.8 | 9.8 | 4.76 | 4.2 |
| 11 04 | 11.5 | 11.5 | 4.76 | 4.4 |
| 14 05 | 14.3 | 14.3 | 5.2 | 5.75 |





-  Ideal machining conditions
-  Normal machining conditions
-  Unfavourable machining conditions

Drilling inserts

| SP** drilling insert | | | HC ¹ (CVD) | HC ¹ (PVD) | HW |
|---|---------------|-----|---|---|---|
|  | P | |   |     | |
| | M | |  |     | |
| | K | |  | | |
| | N | | | |  |
| | S | | |    | |
| | H | | | | |
| ISO | | r | YB6338 YBD252 | YBG105 YBG202 YBS203 YBG205 YB9320 YBG212 | YD201 |
|  | SPGT050204-PM | 0.4 | ● | ● ● | |
| | SPGT060204-PM | 0.4 | ● | ● ● | |
| | SPGT07T308-PM | 0.8 | ● | ● ● | |
| | SPGT090408-PM | 0.8 | ● | ● ● | |
| | SPGT110408-PM | 0.8 | ● | ● ● | |
| | SPGT140512-PM | 1.2 | ● | ● ● | |
|  | SPGT050204-EM | 0.4 | | ● ● | |
| | SPGT060204-EM | 0.4 | | ● ● | |
| | SPGT07T308-EM | 0.8 | | ● ● | |
| | SPGT090408-EM | 0.8 | | ● ● | |
| | SPGT110408-EM | 0.8 | | ● ● | |
| | SPGT140512-EM | 1.2 | | ● ● | |

● Ex stock ○ On demand

HC¹ Coated carbide
HW Uncoated carbide

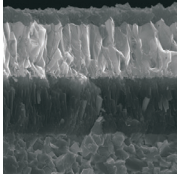

| Tool holder | | | |
|---|---|---|---|
| ZTD02 | ZTD03 | ZTD04 | ZTD05 |
|  |  |  |  |
| C22 | C24 | C26 | C28 |



A

Turning

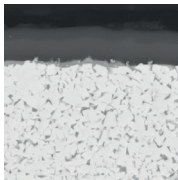
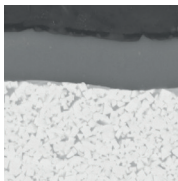
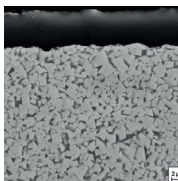
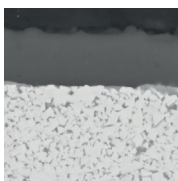
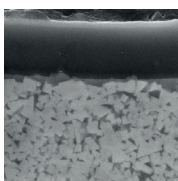
Coated cemented carbide CVD

| Grade | ISO | Micro structure | Grade description |
|---------------|------------------------|---|--|
| YB6338 | P20 - P40 K20 - K40 |  | CVD coated P20–P40/K20–K40 carbide substrate for operation with higher cutting speed and feed rate in steel and cast iron. |
| YBD252 | K20 - K35 |  | CVD coated K20–K35 carbide substrate. Optimized for medium to roughing operation of cast iron and Steel. Good wear resistance and toughness at higher cutting speed. |

B

Milling

Coated cemented carbide PVD

| Grade | ISO | Micro structure | Grade description |
|---------------|-----------------------------------|---|---|
| YBG105 | S05 - S20 |  | PVD multilayer coated S05–S20 carbide substrate for finishing to medium application of super alloy material but also stainless steel. Good wear resistance and thermal stability in a wide application field. |
| YBG202 | P10 - P30 M10 - M25 |  | PVD coated M10–M25/P10–P30 carbide substrate for finishing to medium application of stainless steel and steel (milling). Good wear resistance in a wide application field. |
| YBS203 | S15 - S25 |  | For processing heat-resistant materials. A special carbon substrate and the latest PVD coating technology enable a very good wear behaviour, high fracture toughness and high thermal stability. |
| YBG205 | P10 - P30 M20 - M40 S15-S25 |  | PVD multilayer coated P10–P30/M20–M40/S15–S25 carbide substrate for finishing to medium machining of stainless steel, super alloys and steel (milling). Excellent wear resistance and thermal stability in a wide range of applications. |
| YB9320 | P10 - P30 M10 - M25 |  | PVD multilayer coated P10–P30/M10–M25 carbide substrate for finishing to medium machining of stainless steel, super alloys and steel (grooving/milling). Optimised coating stability for higher wear resistance and thermal stability in a wide range of applic |

C

Drilling

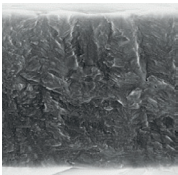
D

Technical Information

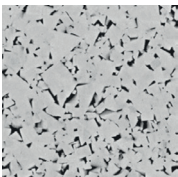
E

Index

Coated cemented carbide PVD

| Grade | ISO | Micro structure | Grade description |
|---------------|----------------------|---|--|
| YBG212 | P25 - P35 M25-M40 |  | PVD coated M25–M40/P25–P35 carbide substrate for steel and stainless steel. Especially for inner insert at drilling operation. |

Uncoated cemented carbide

| Grade | ISO | Micro structure | Grade description |
|--------------|------------------------|---|---|
| YD201 | K10 - K30 N10 - N30 |  | Uncoated N10–N30/K10–K30 carbide substrate for medium application in aluminum and other material. |

A

Turning

B

Milling

C

Drilling

DTechnical
Information**E**

Index

Application fields of grades – indexable drills

| | ISO | HC ¹ (CVD) | HC ¹ (PVD) | HT | HW | PCBN & PCD |
|-----------------------------------|-----|-----------------------|-----------------------|----|-------|------------|
| A Turning | P01 | | | | | |
| | P10 | | | | | |
| | P20 | YBD252 | YBG202 | | | |
| | P30 | YB6338 | YBG205 | | | |
| | P40 | | YBG212 | | | |
| B Milling | M01 | | | | | |
| | M10 | | YBG202 | | | |
| | M20 | | YB9320 | | | |
| | M30 | | YBG205 | | | |
| | M40 | | YBS203 | | | |
| C Drilling | K01 | | | | | |
| | K10 | YBD252 | YBG202 | | | |
| | K20 | YB6338 | YBG205 | | | |
| | K30 | | | | | |
| | K40 | | | | | YBG212 |
| D Technical Information | N01 | | | | | |
| | N10 | | | | | |
| | N20 | | | | YD201 | |
| | N30 | | | | | |
| E Index | S01 | | YBG202 | | | |
| | S10 | | YB9320 | | | |
| | S20 | | YBG205 | | | |
| | S30 | | YBS203 | | | YBG212 |
| F Index | H01 | | | | | |
| | H10 | | | | | |
| | H20 | | | | | |
| | H30 | | | | | |

| | |
|----------|-----------------|
| P | Steel |
| M | Stainless steel |
| K | Cast iron |

| | |
|----------|-----------------------|
| N | Non-ferrous alloys |
| S | Heat-resistant alloys |
| H | Hardened materials |

HC¹ Coated cemented carbide
 HT Uncoated cermet
 HW Uncoated cemented carbide

Indexable drills

| | Material group | Composition / structure / heat treatment | | HB | Machining group | ZSD* | | ZSD* | | | |
|---|--|--|---|---------------------|-----------------|------------------------|-----------|------------------------|-----------|-----------|-----------|
| | | | | | | SPMX04 | | SPMX05/06 | | | |
| | | | | | | v _c [m/min] | f [mm] | v _c [m/min] | f [mm] | | |
| A Turning | P Unalloyed steel | approx. 0,15 % C | annealed | 125 | 1 | 200-300 | 0,05-0,08 | 200-300 | 0,05-0,10 | | |
| | | approx. 0,45 % C | annealed | 190 | 2 | 200-300 | 0,05-0,08 | 200-300 | 0,05-0,10 | | |
| | | approx. 0,45 % C | tempered | 250 | 3 | 200-300 | 0,05-0,08 | 200-300 | 0,05-0,10 | | |
| | | approx. 0,75 % C | annealed | 270 | 4 | 200-300 | 0,05-0,08 | 200-300 | 0,05-0,10 | | |
| | | approx. 0,75 % C | tempered | 300 | 5 | 200-300 | 0,05-0,08 | 200-300 | 0,05-0,10 | | |
| | B Milling | P Low-alloyed steel | | annealed | 180 | 6 | 140-220 | 0,05-0,08 | 140-220 | 0,05-0,10 | |
| | | | | tempered | 275 | 7 | 140-220 | 0,05-0,08 | 140-220 | 0,05-0,10 | |
| | | | | tempered | 300 | 8 | 140-220 | 0,05-0,08 | 140-220 | 0,05-0,10 | |
| | | | | tempered | 350 | 9 | 140-220 | 0,05-0,08 | 140-220 | 0,05-0,10 | |
| | | C Drilling | P High-alloyed steel and high-alloyed tool steel | | annealed | 200 | 10 | 120-180 | 0,05-0,08 | 120-180 | 0,05-0,10 |
| | hardened and tempered | | | 325 | 11 | 120-180 | 0,05-0,08 | 120-180 | 0,05-0,10 | | |
| D Technical Information | M Stainless steel | ferritic/martensitic | annealed | 200 | 12 | 110-230 | 0,05-0,08 | 110-230 | 0,05-0,10 | | |
| | | | martensitic | tempered | 240 | 13 | 110-230 | 0,05-0,08 | 110-230 | 0,05-0,10 | |
| | | | austenitic | quench hardened | 180 | 14 | 110-230 | 0,05-0,08 | 110-230 | 0,05-0,10 | |
| | | | austenitic-ferritic | | 230 | 15 | 110-230 | 0,05-0,08 | 110-230 | 0,05-0,10 | |
| | K Cast iron | K Grey cast iron | perlitic/ferritic | | 180 | 16 | 170-240 | 0,05-0,08 | 170-240 | 0,05-0,10 | |
| | | | perlitic (martensitic) | | 260 | 17 | 170-240 | 0,05-0,08 | 170-240 | 0,05-0,10 | |
| | | K Cast iron with spheroidal graphite | ferritic | | 160 | 18 | 130-200 | 0,05-0,08 | 130-200 | 0,05-0,10 | |
| | | | perlitic | | 250 | 19 | 130-200 | 0,05-0,08 | 130-200 | 0,05-0,10 | |
| | K Malleable cast iron | ferritic | | 130 | 20 | 120-220 | 0,05-0,08 | 120-220 | 0,05-0,10 | | |
| | | perlitic | | 230 | 21 | 120-220 | 0,05-0,08 | 120-220 | 0,05-0,10 | | |
| E Index | N Aluminium wrought alloys | cannot be hardened | | 60 | 22 | | | | | | |
| | | hardenable | hardened | 100 | 23 | | | | | | |
| | N Cast aluminium alloys | ≤ 12 % Si, cannot be hardened | | 75 | 24 | | | | | | |
| | | ≤ 12 % Si, hardenable | hardened | 90 | 25 | | | | | | |
| | | > 12 % Si, cannot be hardened | | 130 | 26 | | | | | | |
| | N Copper and copper alloys (bronze/brass) | machining steel, PB > 1% | | 110 | 27 | | | | | | |
| | | CuZn, CuSnZn | | 90 | 28 | | | | | | |
| CuSn, Pb-free copper, electrolytic copper | | 100 | 29 | | | | | | | | |
| S Heat-resistant alloys | S Fe-based alloys | annealed | | 200 | 30 | | | | | | |
| | | hardened | | 280 | 31 | | | | | | |
| | | annealed | | 250 | 32 | | | | | | |
| | | hardened | | 350 | 33 | | | | | | |
| | S Ni or Co base | cast | | 320 | 34 | | | | | | |
| pure titanium | | R _m 400 | 35 | | | | | | | | |
| S Titanium alloys | α and β alloys | | hardened | R _m 1050 | 36 | | | | | | |
| | hardened and tempered | | 55 HRC | 37 | | | | | | | |
| H Hardened steel | hardened and tempered | | 60 HRC | 38 | | | | | | | |
| | Hard cast iron | | cast | 400 | 39 | | | | | | |
| | Hardened cast iron | | hardened and tempered | 55 HRC | 40 | | | | | | |
| X Non-metallic materials | Thermoplasts | | | 41 | | | | | | | |
| | Thermosetting plastics | | | 42 | | | | | | | |
| | Plastic, glass-fibre reinforced GFRP | | | 43 | | | | | | | |
| | Plastic, carbon fibre reinforced CFRP | | | 44 | | | | | | | |
| | Graphite | | | 45 | | | | | | | |
| | Wood | | | 46 | | | | | | | |

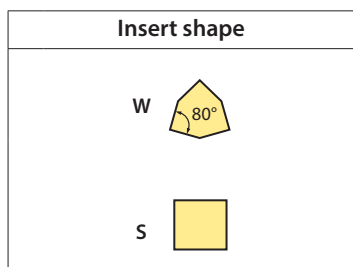
Note: The given cutting values are guide values, which were determined under ideal conditions.
 The values have to be adapted in individual cases.
 With hole depths of 5xD adjust the cutting data accordingly to the application.
 For examples of material for cutting tool groups view page D11.

W C M X 08 04 12 R – PG

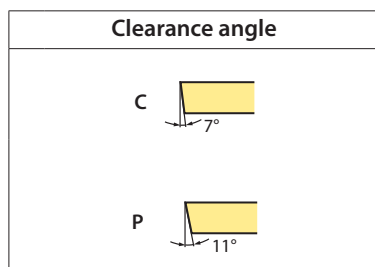
1 2 3 4 5 6 7 8 9

A

Turning



1



2

Tolerance class

| Code | I.C [mm] | m [mm] | S [mm] |
|------|------------|------------|--------|
| G | ±0,025 | ±0,025 | ±0,130 |
| M | ±0,05-0,13 | ±0,08-0,18 | ±0,130 |

3

B

Milling

Fastening features (metric)

Insert shape

T ≤ 65°

X Special

4

Cutting edge length l [mm]

| I.C [mm] | Insert shape | |
|----------|--------------|-----------|
| | S | W |
| 3,8 | | 03 |
| 4,3 | | 04 |
| 5,4 | | 05 |
| 6,35 | 06 | |
| 6,5 | | 06 |
| 8,0 | | 08 |
| 8,7 | 08 | |
| 9,252 | 09 | |
| 12,7 | 12 | |

5

C

Drilling

Insert thickness S [mm]

| Code | S | Code | S |
|------|------|------|-------|
| 00 | 0,79 | 05 | 5,56 |
| T0 | 0,99 | T5 | 5,95 |
| 01 | 1,59 | 06 | 6,35 |
| T1 | 1,98 | T6 | 6,75 |
| 02 | 2,38 | 07 | 7,94 |
| T2 | 2,58 | 09 | 9,52 |
| 03 | 3,18 | T9 | 9,72 |
| T3 | 3,97 | 11 | 11,11 |
| 04 | 4,76 | 12 | 12,70 |
| T4 | 4,96 | | |

6

Nose radius r [mm]

| Code | r |
|------|-----|
| 04 | 0,4 |
| 08 | 0,8 |
| 12 | 1,2 |

7

Rotation direction

| Code | Description |
|------|-------------|
| R | Right |
| L | Left |

8

D

Technical Information

E

Index

Chip breaker overview (on page C3)

9