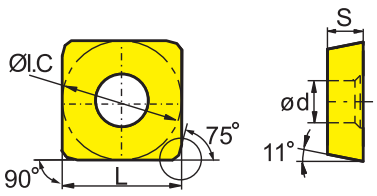
## Milling inserts

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

| SPKW | L | I.C | S | d |
|---|---|---|---|---|
| **12** 04 | 12.7 | 12.7 | 4.76 | 5.56 |




| SP** milling insert | | HC¹ (CVD) | | | | | | | | HC¹ (PVD) | | | | | | | | | | HT | HC² | HW | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P | Normal | Normal | Unfavourable | Normal | Normal | Unfavourable | | Normal | | | Normal | Unfavourable | | Normal | Normal | Unfavourable | | Ideal | Ideal | Ideal | | |
| | M | | Normal | Unfavourable | Normal | Normal | Unfavourable | | | | | Normal | Unfavourable | | Normal | Normal | Unfavourable | Unfavourable | Ideal | Ideal | Ideal | | |
| | K | | | | | | | Normal | Unfavourable | | Ideal | | | | | | | | Ideal | | | | Unfavourable |
| | N | | | | | | | | | Normal | | | | | | | | | | | | Normal | Unfavourable |
| | S | | | | Unfavourable | | Unfavourable | | | | Ideal | Normal | | Normal | Normal | Normal | | Unfavourable | | | | | |
| | H | | | | | | | | | | | | | | | | | | | | | | |
| ISO | | YBC302 | YBC301 | YBC401 | YBM253 | YBM251 | YBM351 | YBD152 | YBD252 | YBG101 | YBG102 | YBG202 | YBG212 | YBS203 | YBG205 | YB9320 | YBG302 | YBS303 | YBG252 | YNG151 | YNG151C | YD101 | YD201 |
|  | SPKW1204EDFR | | | | | | | | | | | ○ | | | | | | | | | | | |
| | SPKW1204EDSR | | | | | | | | | | | ○ | | | | | | | | | | | |

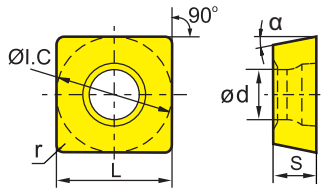
● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

## Milling inserts

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

| SPKT | L | I.C | S | d |
|---|---|---|---|---|
| **12** 04 | 12.7 | 12.7 | 4.76 | 5.56 |




| SP** milling insert | | HC¹ (CVD) | | | | | | | | HC¹ (PVD) | | | | | | | | | | HT | HC² | HW | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P | Normal | Normal | Unfavourable | Normal | Normal | Unfavourable | | Normal | | | Normal | Unfavourable | | Normal | Normal | Unfavourable | | Ideal | Ideal | Ideal | | |
| | M | | Normal | Unfavourable | Normal | Normal | Unfavourable | | | | | Normal | Unfavourable | | Normal | Normal | Unfavourable | Unfavourable | Ideal | Ideal | Ideal | | |
| | K | | | | | | | Normal | Unfavourable | | Ideal | | | | | | | | Ideal | | | | Unfavourable |
| | N | | | | | | | | | Normal | | | | | | | | | | | | Normal | Unfavourable |
| | S | | | | Unfavourable | | Unfavourable | | | | Ideal | Normal | | Normal | Normal | Normal | | Unfavourable | | | | | |
| | H | | | | | | | | | | | | | | | | | | | | | | |
| ISO | | YBC302 | YBC301 | YBC401 | YBM253 | YBM251 | YBM351 | YBD152 | YBD252 | YBG101 | YBG102 | YBG202 | YBG212 | YBS203 | YBG205 | YB9320 | YBG302 | YBS303 | YBG252 | YNG151 | YNG151C | YD101 | YD201 |
|  | SPKT1204EDR | | | | | | | | | | | ○ | | | | | | | | | | | |

● Ex stock ○ On demand

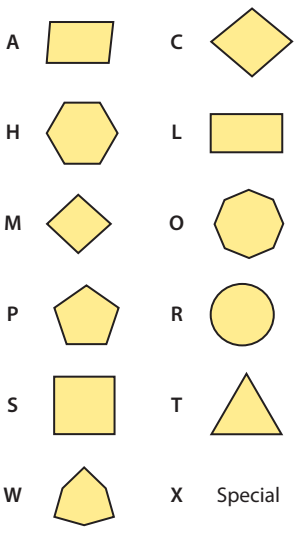
HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

System code B26 Grade selection B24 Technical info B527 Cutting data B230

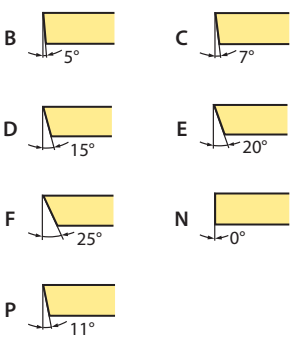
# Indexable milling ISO code – inserts

| S | P | K | N | 12 | 04 | ED | T21K | R | – | DM |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 10 |

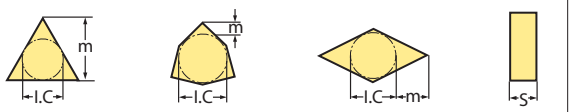
## 1 Insert shape




## 2 Clearance angle



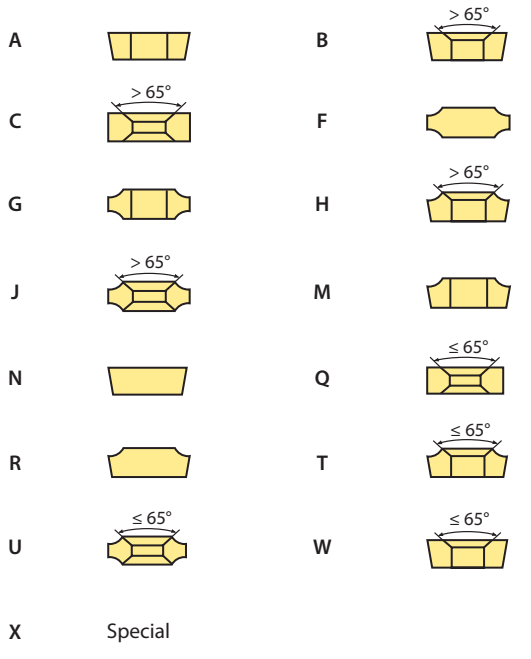

## 3 Tolerance class




| Code | I.C [mm] | m [mm] | S [mm] |
|---|---|---|---|
| A | ±0,025 | ±0,005 | ±0,025 |
| C | ±0,025 | ±0,013 | ±0,025 |
| E | ±0,025 | ±0,025 | ±0,025 |
| F | ±0,013 | ±0,005 | ±0,025 |
| G | ±0,025 | ±0,025 | ±0,130 |
| H | ±0,013 | ±0,013 | ±0,025 |
| J | ±0,05–0,13 | ±0,005 | ±0,025 |
| K | ±0,05–0,13 | ±0,013 | ±0,025 |
| L | ±0,05–0,13 | ±0,025 | ±0,025 |
| M | ±0,05–0,13 | ±0,08–0,18 | ±0,130 |
| N | ±0,05–0,13 | ±0,08–0,18 | ±0,025 |
| U | ±0,08–0,25 | ±0,13–0,38 | ±0,130 |

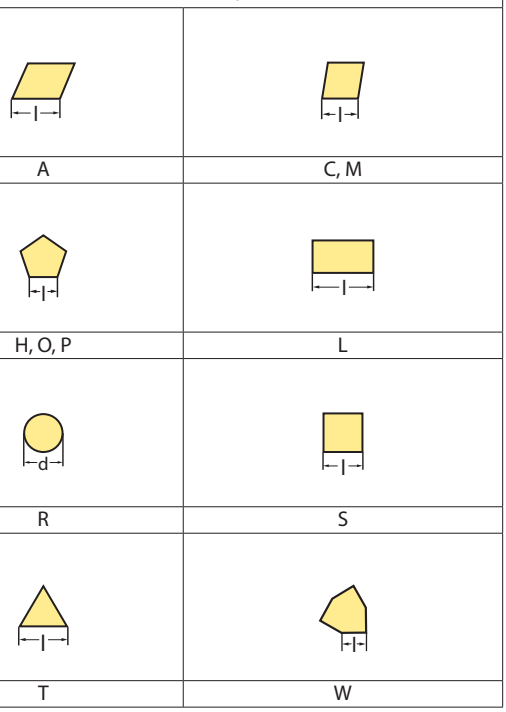
## 4 Fastening features (metric)

Insert shape




## 5 Cutting edge length l [mm]

Insert shape



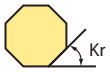
## Insert thickness S [mm]




| 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**

## Angle







| Code | Kr | Code | αn |
|---|---|---|---|
| **A** | 45° | **A** | 3° |
| **D** | 60° | **B** | 5° |
| **E** | 75° | **C** | 7° |
| **F** | 85° | **D** | 15° |
| **P** | 90° | **E** | 20° |
| **Z** | Special | **F** | 25° |
| | | **G** | 30° |
| | | **N** | 0° |
| | | **P** | 11° |
| | | **Z** | Special |

**7**

## Chamfer

| Code | Type | Code | Angle | Code | Width [mm] | Code | Position |
|---|---|---|---|---|---|---|---|
| **F** |  | **0** | 5° | **0** | 0,10 | **K** |  |
| **E** |  | **1** | 10° | **1** | 0,15 | | |
| **T** |  | **2** | 15° | **2** | 0,20 | **P** |  |
| **S** |  | **3** | 20° | **3** | 0,25 | | |
| | | **4** | 25° | **4** | 0,30 | **W** |  |
| | | **5** | 30° | **5** | 0,35 | | |
| | | | | **6** | 0,40 | | |
| | | | | **7** | 0,45 | **–** |  |

**8**

## Cutting direction

| Code | Description |
|---|---|
| **R** | Right |
| **L** | Left |
| **N** | Right and left |

**9**

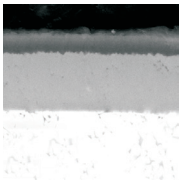
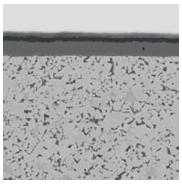
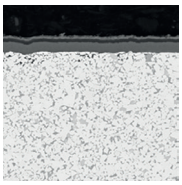
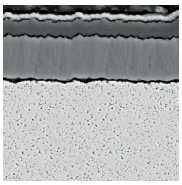
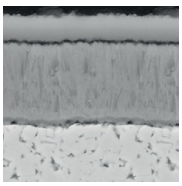
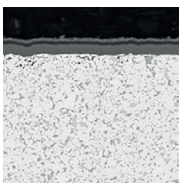
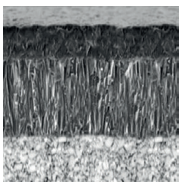
**Chip breaker overview**
**(on page B20)**

**10**

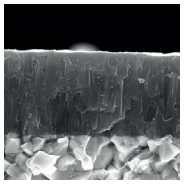
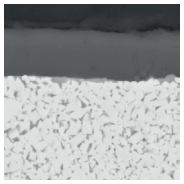
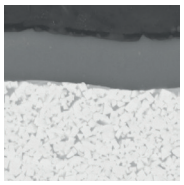
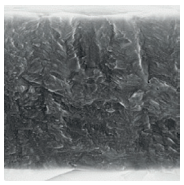
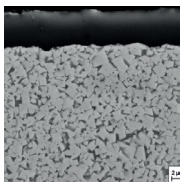
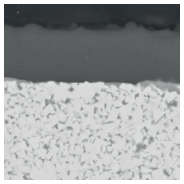
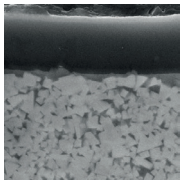
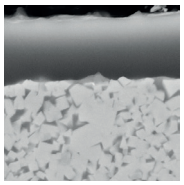
## Chip breaker overview

| | Finishing | Medium machining | Roughing |
|---|---|---|---|
| P | DF | DM | DR |
| | APF | APM | – |
| | PF | PM | PR |
| | GF | GM | GR |
| | GL | GM | GH |
| | – | HGR | – |
| | – | – | ZR |
| | – | XR | – |
| | – | MM | – |
| | MO-2 | MO-1 | MO-3 |
| M | EF | EM | – |
| | APF | APM | – |
| | DF | DM | – |
| | PF | PM | PR |
| | GF | GM | GR |
| | GL | GM | GH |
| | – | HGR | – |
| | E | E | – |
| | – | – | ZR |
| | – | XR | – |
| | – | MM | – |
| K | CF | CM | CR |
| | DF | DM | DR |
| | EDFR | DER | DER |
| | PF | PM | PR |
| | GF | GM | GR |
| | GL | GM | GH |
| | – | – | ZR |
| | – | XR | – |
| | MO-2 | MO-1 | MO-3 |
| S | EF | EM | – |
| | NM | NM | – |
| N | LH | LH | LH |
| | ALH | ALH | ALH |

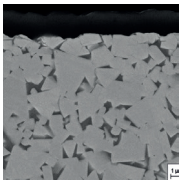
## Coated cemented carbide CVD

| Grade | ISO | Micro structure | Grade description |
|---|---|---|---|
| **YBC302** | P20 - P35 |  | CVD coated P20–P35 carbide grade for medium operation to roughing of steel at higher cutting speed. Optimal performance of wear resistance and toughness for a wide application field. |
| **YBC301** | P20 - P35 |  | CVD coated P20–P35 carbide grade for medium operation to roughing of steel at lower cutting speed. |
| **YBC401** | P30 - P50<br>M30 - M40 |  | CVD coated P30–P50/M30–M40 carbide grade for roughing operation of steel at lower cutting speed and unstable condition. |
| **YBM251** | P20 - P30<br>M15 - M35 |  | CVD coated P20–P30/M15–M35 carbide grade for medium to roughing operation in stainless steel and steel with wide application field. Good wear resistance and capability against plastic deformation at normal cutting speed. |
| **YBM253** | M15 - M35 |  | CVD coated M15–M35 carbide grade for medium to roughing operation in stainless steel with wide application field. High wear resistance and capability against plasctic deformation at higher cutting speed. |
| **YBM351** | P25 - P40<br>M20 - M40 |  | CVD coated P25–P40/M25–M40 carbide grade for roughing operation in stainless steel and steel. Good wear resistance and edge stability at normal cutting speed. |
| **YBD152** | K10 - K25 |  | CVD coated K10–K25 carbide substrate. Optimized for medium to roughing operation of cast iron. Good wear resistance and toughness at higher cutting speed. |
| **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. |

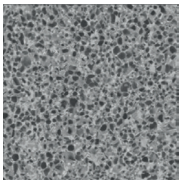
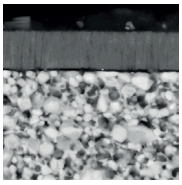
## Coated cemented carbide PVD

| Grade | ISO | Micro structure | Grade description |
|---|---|---|---|
| **YBG101** | N05–N20 |  | PVD coated N05–N20 carbide substrate for finishing to semi-finishing in aluminium materials. Coating only on the top face, in combination with the aluminium chip breakers, prevents built-up edges and gives a smooth cut. |
| **YBG102** | S05 - S15 |  | PVD coated S05–S15 carbide substrate for finishing to medium application of super alloy material, stainless steel and aluminum. Good wear resistance in a wide application field. |
| **YBG202** | P10 - P30<br>M10-M25 |  | PVD coated P10–P30/M10–M25 carbide substrate for finishing to medium application of stainless steel and steel (milling). Good wear resistance in a wide application field. |
| **YBG212** | P25 - P35<br>M25-M40 |  | PVD coated M25–M40/P25–P35 carbide substrate for steel and stainless steel. Especially for inner insert at drilling operation. |
| **YBS203** | S15 – S25 |  | Turning and milling grades 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<br>M20 - M40<br>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<br>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 applications. |
| **YBG302** | P15 - P30<br>M25 - M40 |  | PVD coated P15–P30/M25–M40 carbide substrate for medium roughing application of stainless steel and steel (milling). Good wear resistance and toughness. |

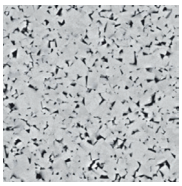
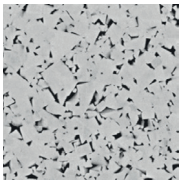
## Coated cemented carbide PVD

| Grade | ISO | Micro structure | Grade description |
|---|---|---|---|
| **YBS303** | S25 - S35 |  | Milling grade for machining titanium alloys. A tough carbide substrate and the latest PVD coating technology with increased impact resistance and high thermal stability. |

## Cermet

| Grade | ISO | Micro structure | Grade description |
|---|---|---|---|
| **YNG151** | P05 - P15 |  | Uncoated P05–P15 cermet grade for fine finishing operation of steel and stainless steel. Good resistance against plastic deformation for good surface finishing. |
| **YNG151C** | P05 - P15 |  | PVD coated P05–P15 cermet grade for fine finishing operation of steel and stainless steel. Good wear resistance and capability against plastic deformation for good surface roughness. |

## Uncoated cemented carbide

| Grade | ISO | Micro structure | Grade description |
|---|---|---|---|
| **YD101** | N05 - N25<br>K05 - K20 |  | Uncoated K05–K20/N05–N20 carbide substrate for fine to medium application in aluminum and other material. |
| **YD201** | K10 - K30<br>N10 - N30 |  | Uncoated K10–K30/N10–N30 carbide substrate for medium application in aluminum and other material. |

## Application fields of grades – indexable milling

