

三 禄 切 削 刀 具  
**SUNROXM**



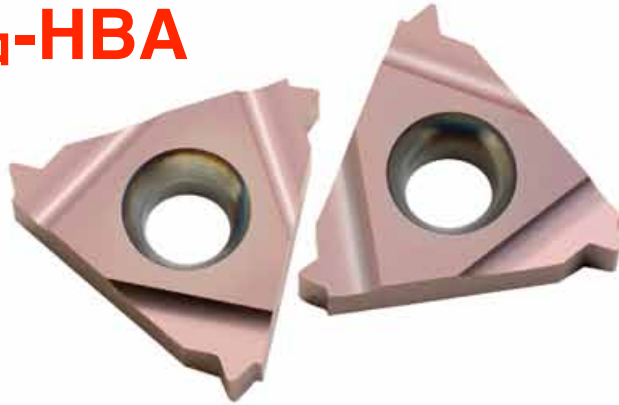
上海三禄贸易有限公司



**New**

**HBA grade**

**新产品-HBA**



**Takes on the toughest materials**

针对最艰难的被加工材料





## Carmex introduces HBA, a new extra-fine sub-micron grade with high toughness for optimized performance.

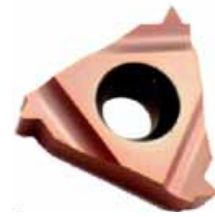
Carmex推出BHA, 一个新的特微细颗粒级高坚韧优化性能的刀片  
Threading of fully hardened and tough materials is increasing due to requirements from manufacturers to avoid thread distortions and reduce the delivery time. Thread turning inserts for machining materials harder than 40 HRC require an optimized combination of carbide substrate, coating type and edge conditions.

To meet this market need, Carmex is introducing HBA, a new extra-fine sub-micron grade with high toughness, for optimized performance on:

- **Hardened Steels and Cast Iron up to 62 HRC.**  
用于硬钢和铸硬钢到HRC62
- **Titanium Alloys and Super Alloys (Hastelloy, Inconel and Nickel base alloys).**  
钛合金、超合金(海斯特、因科镍和镍基合金)

**Advantages:**

- **High wear and heat resistance** 高耐磨和高耐热
- **Excellent edge stability** 杰出的切削刃稳定性
- **Unique coating structure** 独特的涂层结构



因为淬火钢和坚韧材料的螺纹的加工需求, 以避免螺纹扭曲变形和减少加工时间, 增加优化组合涂层的硬质合金基体的螺纹车刀片用于HRC40硬材料加工。

### Test Report 试验报告

#### Application 应用程序

External right hand thread: M32x1.5 右手外螺纹: M32\*5  
Thread length: 65 mm 螺纹长度: 65mm

#### Work piece material 工件材料

Hardened steel D2: 53-56 HRc 淬火钢: HRC53-56

#### Tool description 刀具数据

Thread turning insert 16 ER 1.5 ISO HBA 螺纹车刀片: 16ER 1.5 ISO HBA  
Toolholder: SER 2020 K16 螺纹车刀杆: SER 2020 K16

#### Cutting conditions 切削条件

Cutting speed: 45 m/min 切削速度: 45m/min  
Number of passes: 28 走刀次数: 28  
Coolant: yes 冷却: 有

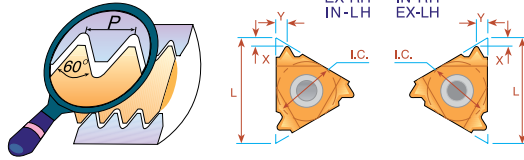
#### Results 结果

Number of threads per corner: 36 每个角加工件数: 36



## Partial Profile 60°

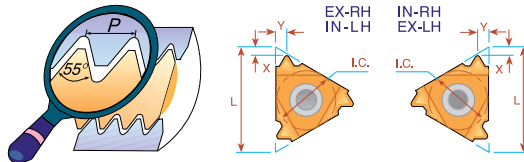
范围牙60°



| L  | I.C.<br>in | Pitch Range |       | <b>EXTERNAL</b>             | <b>INTERNAL</b>             | X   | Y   |
|----|------------|-------------|-------|-----------------------------|-----------------------------|-----|-----|
|    |            | mm          | TPI   | Ordering Code<br>Right Hand | Ordering Code<br>Right Hand |     |     |
| 16 | 3/8        | 0.5-1.5     | 48-16 | <b>16 ER A60</b>            | <b>16 IR A60</b>            | 0.8 | 0.9 |
|    |            | 1.75-3.0    | 14-8  | <b>16 ER G60</b>            | <b>16 IR G60</b>            | 1.2 | 1.7 |
|    |            | 0.5-3.0     | 48-8  | <b>16 ER AG60</b>           | <b>16 IR AG60</b>           |     |     |

## Partial Profile 55°

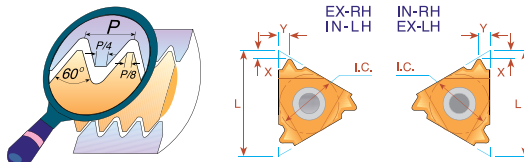
范围牙55°



| L  | I.C.<br>in | Pitch Range |       | <b>EXTERNAL</b>             | <b>INTERNAL</b>             | X   | Y   |
|----|------------|-------------|-------|-----------------------------|-----------------------------|-----|-----|
|    |            | mm          | TPI   | Ordering Code<br>Right Hand | Ordering Code<br>Right Hand |     |     |
| 16 | 3/8        | 0.5-1.5     | 48-16 | <b>16 ER A55</b>            | <b>16 IR A55</b>            | 0.8 | 0.9 |
|    |            | 1.75-3.0    | 14-8  | <b>16 ER G55</b>            | <b>16 IR G55</b>            | 1.2 | 1.7 |
|    |            | 0.5-3.0     | 48-8  | <b>16 ER AG55</b>           | <b>16 IR AG55</b>           |     |     |

## ISO - metric

ISO 公制

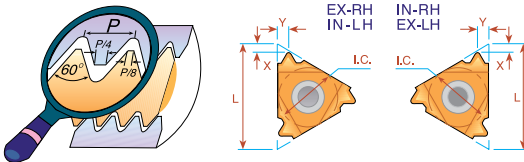


| Pitch<br>mm | L  | I.C.<br>in | <b>EXTERNAL</b>             | X   | Y   | <b>INTERNAL</b>             | X   | Y   |
|-------------|----|------------|-----------------------------|-----|-----|-----------------------------|-----|-----|
|             |    |            | Ordering Code<br>Right Hand |     |     | Ordering Code<br>Right Hand |     |     |
| 1.0         | 16 | 3/8        | <b>16 ER 1.0 ISO</b>        | 0.7 | 0.7 | <b>16 IR 1.0 ISO</b>        | 0.6 | 0.7 |
| 1.25        |    |            | <b>16 ER 1.25 ISO</b>       | 0.8 | 0.9 | <b>16 IR 1.25 ISO</b>       | 0.8 | 0.9 |
| 1.5         |    |            | <b>16 ER 1.5 ISO</b>        | 0.8 | 1.0 | <b>16 IR 1.5 ISO</b>        | 0.8 | 1.0 |
| 1.75        |    |            | <b>16 ER 1.75 ISO</b>       | 0.9 | 1.2 | <b>16 IR 1.75 ISO</b>       | 0.9 | 1.2 |
| 2.0         |    |            | <b>16 ER 2.0 ISO</b>        | 1.0 | 1.3 | <b>16 IR 2.0 ISO</b>        | 1.0 | 1.3 |
| 3.0         |    |            | <b>16 ER 3.0 ISO</b>        | 1.2 | 1.6 | <b>16 IR 3.0 ISO</b>        | 1.1 | 1.5 |

## UN - Unified

UNC, UNF, UNEF, UNS

UN60°UNC, UNF, UNEF, UNS



| Pitch<br>TPI | L  | I.C.<br>in | <b>EXTERNAL</b>             | X   | Y   | <b>INTERNAL</b>             | X   | Y   |
|--------------|----|------------|-----------------------------|-----|-----|-----------------------------|-----|-----|
|              |    |            | Ordering Code<br>Right Hand |     |     | Ordering Code<br>Right Hand |     |     |
| 28           | 16 | 3/8        | <b>16 ER 28 UN</b>          | 0.6 | 0.7 | <b>16 IR 28 UN</b>          | 0.6 | 0.7 |
| 24           |    |            | <b>16 ER 24 UN</b>          | 0.7 | 0.8 | <b>16 IR 24 UN</b>          | 0.7 | 0.8 |
| 20           |    |            | <b>16 ER 20 UN</b>          | 0.8 | 0.9 | <b>16 IR 20 UN</b>          | 0.8 | 0.9 |
| 18           |    |            | <b>16 ER 18 UN</b>          | 0.8 | 1.0 | <b>16 IR 18 UN</b>          | 0.8 | 1.0 |
| 16           |    |            | <b>16 ER 16 UN</b>          | 0.9 | 1.1 | <b>16 IR 16 UN</b>          | 0.9 | 1.1 |
| 14           |    |            | <b>16 ER 14 UN</b>          | 1.0 | 1.2 | <b>16 IR 14 UN</b>          | 0.9 | 1.2 |
| 12           |    |            | <b>16 ER 12 UN</b>          | 1.1 | 1.4 | <b>16 IR 12 UN</b>          | 1.1 | 1.4 |



Thread Turning Inserts Technical Section



螺纹车刀片技术部分

螺纹车刀片推荐切削速度 (m/min)

Recommended cutting speed (m/min) for thread turning inserts

| ISO Standard  | Material 材料   |                          | Condition              | 螺纹刀片材质  |          |         |         |         |         |         |         |  |
|---|---|--------------------------|------------------------|---------|----------|---------|---------|---------|---------|---------|---------|--|
|   |   |                          |                        | HBA     | BLU      | BMA     | P25C    | MXC     | BXC     | K20     | P30     |  |
| P   | Non-Alloy Steel and Cast Steel, Free Cutting Steel<br>非合金钢、铸钢和易切钢       | <0.25%C                  | Annealed               |         |          |         |         |         |         |         |         |  |
|   |   | ≥0.25%C                  | Annealed               |         |          |         |         |         |         |         |         |  |
|   |   | <0.55%C                  | Quenched & Tempered    | 110-210 | 120-180  | 100-180 | 100-180 | 70-150  |         | 50-130  |         |  |
|   |   | ≥0.55%C                  | Annealed               |         |          |         |         |         |         |         |         |  |
|   | Low Alloy Steel and Cast Steel (less than 5% alloying elements) 低合金钢、铸钢 |                          | Quenched & Tempered    |         | 90-140   | 80-130  | 70-120  | 70-120  | 60-90   |         | 50-80   |  |
|   |   |                          | Annealed               |         |          |         |         |         |         |         |         |  |
| High Alloy Steel, Cast Steel, and Tool Steel<br>高合金钢、铸钢、工具钢 |   | Quenched & Tempered      |                        | 70-90   | 60-80    | 50-60   | 55-70   | 50-60   |         | 40-50   |         |  |
|   |   | Annealed                 |                        |         |          |         |         |         |         |         |         |  |
| M   | Stainless Steel and Cast Steel<br>不锈钢和铸造不锈钢                             |                          | Ferritic / Martensitic |         | 110-160  | 90-130  | 60-90   | 60-90   | 50-80   | 50-80   |         |  |
|   |   |                          | Martensitic            |         |          |         |         |         |         |         |         |  |
|   |   |                          | Austenitic             |         |          |         |         |         |         |         |         |  |
| K   | Cast Iron Nodular (GGG) 球铁  |                          | Ferritic / Pearlitic   |         | 120-150  | 100-130 |         | 80-110  | 60-90   |         |         |  |
|   |   |                          | Pearlitic              |         |          |         |         |         |         |         |         |  |
|   | Grey Cast Iron (GG) 灰铁  |                          | Ferritic               |         | 140-150  | 120-130 |         | 90-100  | 65-85   |         |         |  |
|   |   |                          | Pearlitic              |         |          |         |         |         |         |         |         |  |
| Malleable Cast Iron 可锻铸铁                                    |   | Ferritic                 |                        | 110-140 | 100-130  |         | 80-100  | 60-85   |         |         |         |  |
|   |   | Pearlitic                |                        |         |          |         |         |         |         |         |         |  |
| N   | Aluminum-Wrought Alloy 精锻铝合金  |                          | Not Cureable           |         | 700-1000 |         |         | 600-800 | 450-600 | 600-800 | 350-500 |  |
|   |   |                          | Cured                  |         |          |         |         |         |         |         |         |  |
|   | Aluminum-Cast, Alloyed 铸铝合金   | <=12% Si                 | Not Cureable           |         | 280-750  |         |         | 200-550 | 150-350 | 200-550 | 110-300 |  |
|   |   | >12% Si                  | High Temperature       |         |          |         |         |         |         |         |         |  |
|   | Copper Alloys 铜合金   | >1% Pb                   | Free Cutting           |         | 190-350  |         |         | 150-250 | 110-180 | 150-250 | 90-150  |  |
|   |   |                          | Brass                  |         |          |         |         |         |         |         |         |  |
|   |   | Electrolytic Copper      |                        |         |          |         |         |         |         |         |         |  |
| S   | High Temp. Alloys, Super Alloys<br>高温合金、超合金                             | Fe based 铁基              | Annealed               |         |          |         |         |         |         |         |         |  |
|   |   |                          | Cured                  |         |          |         |         |         |         |         |         |  |
|   |   | Ni or Co based 镍和钴基      | Annealed               | 20-80   | 30-65    | 25-60   |         |         |         |         |         |  |
| Cured   |   |                          |                        |         |          |         |         |         |         |         |         |  |
|   |   | Cast                     |                        |         |          |         |         |         |         |         |         |  |
|   | Titanium Alloys 钛合金   | Alpha +Beta Alloys Cured | 30-60                  | 40-50   | 35-45    |         |         |         | 35-45   |         |         |  |
| H   | Hardened Steel 硬钢   |                          | Hardened 45-50 HRc     | 30-60   | 40-50    | 35-45   |         |         |         |         |         |  |
|   |   |                          | Hardened 51-55 HRc     |         |          |         |         |         |         |         |         |  |
|   |   |                          | Hardened 56-62 HRc     |         |          |         |         |         |         |         |         |  |
|   | Chilled Cast Iron 冷硬铸铁  | Cast                     | 20-50                  | 30-40   | 25-35    |         |         |         |         |         |         |  |
| Cast Iron 硬铸铁   | Hardened  | 20-40                    | 20-30                  | 15-25   |          |         |         |         |         |         |         |  |



## 德国的试刀报告证明:

**HBA不仅可以加工淬火硬度达到HRC62的硬材料和高温合金，同时还可以加工 304、316、不锈钢。HBA是一款宽范围的刀片材质，与BMA相比优势明显。**

Carmex在德国试刀报告:

The following are the feedback of HBA testing inserts.

以下是HBA刀片测试反馈。

**16ER 1.5 ISO HBA,**

**16IR 14 NPT HBA**

**16IR 11.5 NPT HBA**

**16IR 11 BSPT HBA**

**16IR 14 BSPT HBA**

Cutting speeds and feeds for Stainless steel: VC100-130, H: 30-60

切削速度和进给用于不锈钢: VC = 100-130, H:30-60

Tool life: 刀具寿命:

Tool life of processing 304,316 Stainless steel, BPST and NPT inserts: tool life of BMA is about 110 workpieces, tool life of HBA is about 130 workpieces. Comparing with BMA, when processing 304,316 stainless steel, HBA is 10-20% better than BMA.

BMA材质BSPT和NPT刀片加工304, 316不锈钢刀具寿命约为110个工件, HBA材质加工130个工件, 与MBA加工不锈钢相比, HBA要优于BMA10-20%。

Tool life of processing Quenching parts, 1.5ISO inserts: tool life of BMA is more than 300 workpieces (the total tool life of 3 cutting edges); when processing the material with more than 50 HRC, tool life of HBA is about 450-500 workpieces. Therefore, comparing with BMA, and when processing quenching parts and hardness material, HBA is about 50% better than BMA.

刀具加工淬火零件寿命(应为调质热处理), 16ER1.5 ISO 刀片: BMA刀具寿命超过300件(3个切削刃的刀具总寿命); 当加工材料超过50 HRC, HBA刀具寿命约450-500工件。因此, 与BMA比, 当加工淬火的零件硬度HRC50时, HBA大约优于BMA 50%。

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