



成都成林数控刀具股份有限公司

**KiloCut**<sup>®</sup>

整体硬质合金刀具  
Solid Carbide Tools



**KiloCut<sup>®</sup>**

企业文化：包容、成长、希望.....

每一粒种子都蕴含着千木成林的诺言，但是不能把种子储存起来，必须还之于肥沃的土地。

给予越多, 获得越丰富。

我们能带给您：

大幅度提高生产率，缩短加工时间

减少刀具浪费以降低成本

充分释放生产潜力

提高企业在行业中的竞争力



公司简介

我们迈向更多元化的未来.....

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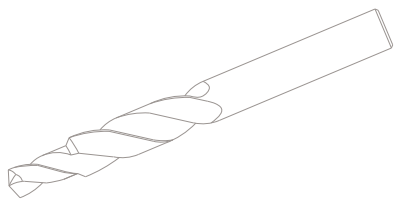
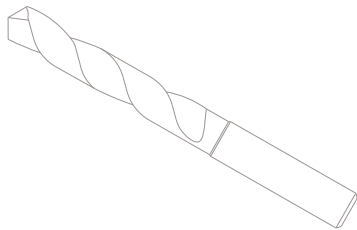
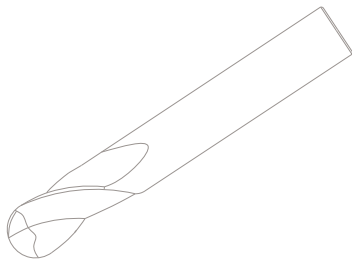
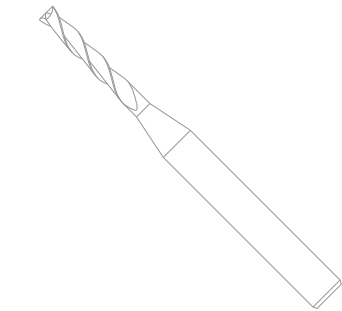
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KILOWOOD  
微信公众号

### Solid Carbide Mills 整体硬质合金铣刀

|                            |             |     |
|----------------------------|-------------|-----|
| Solid Carbide End Mills MG | 整体硬质合金铣刀MG型 | 001 |
| Solid Carbide End Mills MN | 整体硬质合金铣刀MN型 | 008 |
| Solid Carbide End Mills MH | 整体硬质合金铣刀MH型 | 014 |
| Solid Carbide End Mills ME | 整体硬质合金铣刀ME型 | 021 |

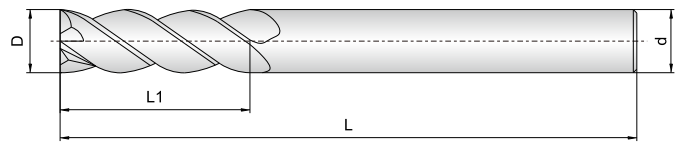
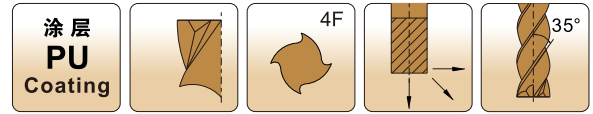


# ● 整体硬质合金铣刀

## 整体硬质合金立铣刀MG型 Solid Carbide End Mills MG

超细微粒硬质合金;  
有较好的韧性, 刃口锋利, 切削轻快;  
优异的几何角度切削刃设计使排屑流畅。

Ultrafine particle cemented carbide .  
Great toughness, sharp edges, Provide easy cutting.  
Outstanding chip control by excellent geometric angle and edge design.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type              | 尺寸(mm) Dimension |    |     |     |
|----------------------|------------------|----|-----|-----|
|                      | D                | d  | L1  | L   |
| D1-3-50-D4-4F MG     | 1.0              | 4  | 3   | 50  |
| D1.5-4-50-D4-4F MG   | 1.5              | 4  | 4   | 50  |
| D2-6-50-D4-4F MG     | 2.0              | 4  | 6   | 50  |
| D2.5-7.5-50-D4-4F MG | 2.5              | 4  | 7.5 | 50  |
| D3-8-50-D4-4F MG     | 3.0              | 4  | 8   | 50  |
| D4-11-50-4F MG       | 4.0              | 4  | 11  | 50  |
| D4-16-75-4F MG       | 4.0              | 4  | 16  | 75  |
| D4-20-100-4F MG      | 4.0              | 4  | 20  | 100 |
| D5-15-50-D6-4F MG    | 5.0              | 6  | 15  | 50  |
| D5-20-75-D6-4F MG    | 5.0              | 6  | 20  | 75  |
| D6-15-50-4F MG       | 6.0              | 6  | 15  | 50  |
| D6-24-75-4F MG       | 6.0              | 6  | 24  | 75  |
| D6-30-100-4F MG      | 6.0              | 6  | 30  | 100 |
| D8-20-60-4F MG       | 8.0              | 8  | 20  | 60  |
| D8-25-75-4F MG       | 8.0              | 8  | 25  | 75  |
| D8-35-100-4F MG      | 8.0              | 8  | 35  | 100 |
| D10-25-75-4F MG      | 10.0             | 10 | 25  | 75  |
| D10-40-100-4F MG     | 10.0             | 10 | 40  | 100 |
| D12-30-75-4F MG      | 12.0             | 12 | 30  | 75  |
| D12-45-100-4F MG     | 12.0             | 12 | 45  | 100 |

### 推荐应用范围

### Recommended applications

■ 推荐应用 Main application □ 扩展应用 Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               | ~45HRC              | ~55HRC  | ~60HRC | ~65HRC | ~35HRC | ~350HB                  |  |                      |                        |                |                        |                               |               |
| ■                    | ■                   | □   |        |        | ■      | ■                       |  |                      |                        | □              | □                      |                               |               |

➔ 推荐切削参数, 详见07页。  
Recommended cutting data, see page 07 for details.

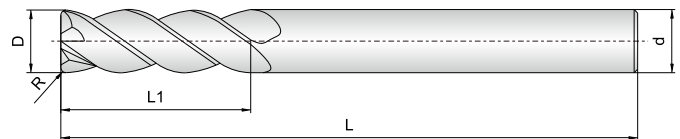
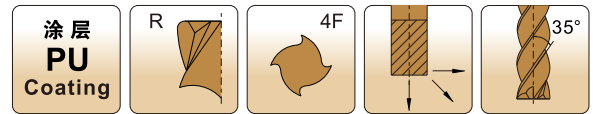


# ● 整体硬质合金铣刀

## 整体硬质合金圆角立铣刀MG型 Solid Carbide Round End Mills MG

超细微粒硬质合金;  
有较好的刚性, 刃口锋利, 切削轻快;  
高刚性截面和刀尖R角加上35°强力螺旋角设计。

Ultrafine particle cemented carbide .  
Great toughness, sharp edges, Provide easy cutting.  
The design of high rigidity section and tip with 30° strong spiral angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type                | 尺寸(mm) Dimension |   |     |    |     |
|------------------------|------------------|---|-----|----|-----|
|                        | D                | d | R   | L1 | L   |
| D1R0.2-3-50-D4-4F MG   | 1.0              | 4 | 0.2 | 3  | 50  |
| D1.5R0.2-4-50-D4-4F MG | 1.5              | 4 | 0.2 | 4  | 50  |
| D2R0.2-6-50-D4-4F MG   | 2.0              | 4 | 0.2 | 6  | 50  |
| D3R0.2-8-50-D4-4F MG   | 3.0              | 4 | 0.2 | 8  | 50  |
| D4R0.2-11-50-4F MG     | 4.0              | 4 | 0.2 | 11 | 50  |
| D4R0.5-11-50-4F MG     | 4.0              | 4 | 0.5 | 11 | 50  |
| D4R0.5-16-75-4F MG     | 4.0              | 4 | 0.5 | 16 | 75  |
| D4R1-11-50-4F MG       | 4.0              | 4 | 1.0 | 11 | 50  |
| D4R1-16-75-4F MG       | 4.0              | 4 | 1.0 | 16 | 75  |
| D6R0.2-15-50-4F MG     | 6.0              | 6 | 0.2 | 15 | 50  |
| D6R0.2-24-75-4F MG     | 6.0              | 6 | 0.2 | 24 | 75  |
| D6R0.2-30-100-4F MG    | 6.0              | 6 | 0.2 | 30 | 100 |
| D6R0.5-15-50-4F MG     | 6.0              | 6 | 0.5 | 15 | 50  |
| D6R0.5-24-75-4F MG     | 6.0              | 6 | 0.5 | 24 | 75  |
| D6R0.5-30-100-4F MG    | 6.0              | 6 | 0.5 | 30 | 100 |
| D6R1-15-50-4F MG       | 6.0              | 6 | 1.0 | 15 | 50  |
| D6R1-24-75-4F MG       | 6.0              | 6 | 1.0 | 24 | 75  |
| D6R1-30-100-4F MG      | 6.0              | 6 | 1.0 | 30 | 100 |
| D8R0.5-20-60-4F MG     | 8.0              | 8 | 0.5 | 20 | 60  |
| D8R1-24-60-4F MG       | 8.0              | 8 | 1.0 | 24 | 60  |
| D8R1-24-75-4F MG       | 8.0              | 8 | 1.0 | 24 | 75  |

### 推荐应用范围 Recommended applications

■ 推荐应用 Main application □ 扩展应用 Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               | ~45HRC              | ~55HRC  | ~60HRC | ~65HRC | ~35HRC | ~350HB                  |  |                      |                        |                |                        |                               |               |
| ■                    | ■                   | □   |        |        | ■      | ■                       |  |                      |                        | □              | □                      |                               |               |

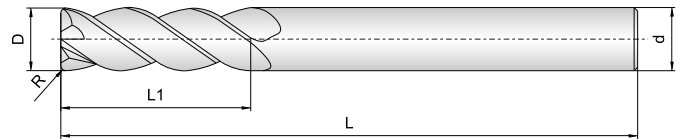
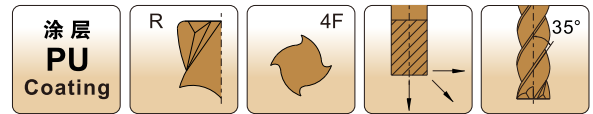
➔ 推荐切削参数, 详见07页。  
Recommended cutting data, see page 07 for details.

# ● 整体硬质合金铣刀

## 整体硬质合金圆角立铣刀MG型 Solid Carbide Round End Mills MG

超细微粒硬质合金;  
有较好的刚性, 刃口锋利, 切削轻快;  
高刚性截面和刀尖R角加上35°强力螺旋角设计。

Ultrafine particle cemented carbide .  
Great toughness, sharp edges, Provide easy cutting.  
The design of high rigidity section and tip with 30° strong spiral angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type             | 尺寸(mm) Dimension |    |     |    |     |
|---------------------|------------------|----|-----|----|-----|
|                     | D                | d  | R   | L1 | L   |
| D8R1-32-100-4F MG   | 8.0              | 8  | 1.0 | 32 | 100 |
| D8R2-24-60-4F MG    | 8.0              | 8  | 2.0 | 24 | 60  |
| D8R2-24-75-4F MG    | 8.0              | 8  | 2.0 | 24 | 75  |
| D8R2-32-100-4F MG   | 8.0              | 8  | 2.0 | 32 | 100 |
| D8R3-24-60-4F MG    | 8.0              | 8  | 3.0 | 24 | 60  |
| D8R3-24-75-4F MG    | 8.0              | 8  | 3.0 | 24 | 75  |
| D8R3-32-100-4F MG   | 8.0              | 8  | 3.0 | 32 | 100 |
| D10R0.5-25-75-4F MG | 10.0             | 10 | 0.5 | 25 | 75  |
| D10R1-30-75-4F MG   | 10.0             | 10 | 1.0 | 30 | 75  |
| D10R1-35-100-4F MG  | 10.0             | 10 | 1.0 | 35 | 100 |
| D10R2-30-75-4F MG   | 10.0             | 10 | 2.0 | 30 | 75  |
| D10R2-35-100-4F MG  | 10.0             | 10 | 2.0 | 35 | 100 |
| D10R3-30-75-4F MG   | 10.0             | 10 | 3.0 | 30 | 75  |
| D10R3-35-100-4F MG  | 10.0             | 10 | 3.0 | 35 | 100 |
| D12R0.5-30-75-4F MG | 12.0             | 12 | 0.5 | 30 | 75  |
| D12R1-30-75-4F MG   | 12.0             | 12 | 1.0 | 30 | 75  |
| D12R1-40-100-4F MG  | 12.0             | 12 | 1.0 | 40 | 100 |
| D12R2-30-75-4F MG   | 12.0             | 12 | 2.0 | 30 | 75  |
| D12R2-40-100-4F MG  | 12.0             | 12 | 2.0 | 40 | 100 |
| D12R3-30-75-4F MG   | 12.0             | 12 | 3.0 | 30 | 75  |
| D12R3-40-100-4F MG  | 12.0             | 12 | 3.0 | 40 | 100 |

### 推荐应用范围 Recommended applications

■ 推荐应用 Main application    □ 扩展应用 Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               | ~45HRC              | ~55HRC  | ~60HRC | ~65HRC | ~35HRC | ~350HB                  |  |                      |                        |                |                        |                               |               |
| ■                    | ■                   | □   |        |        | ■      | ■                       |  |                      |                        | □              | □                      |                               |               |

➔ 推荐切削参数, 详见07页。  
Recommended cutting data, see page 07 for details.





## ● 整体硬质合金MG铣刀

### 推荐切削参数

### Recommended Cutting Data

#### 侧铣

| 工件材料                    | 切削量<br>(mm) | VC<br>(m/min) | 刃径(mm)       | 1     | 2     | 3     | 4     | 6    | 8    | 10   | 12   | 16   | 20   |
|-------------------------|-------------|---------------|--------------|-------|-------|-------|-------|------|------|------|------|------|------|
| 碳钢合金钢<br>(<35HRC)       | (ap≤1.5D)   | 180           | 转速(r/min)    | 38000 | 28000 | 19110 | 14330 | 9550 | 7170 | 5730 | 4780 | 3580 | 2870 |
|                         | (ae≤0.15D)  | 180           | 进给速度(mm/min) | 2600  | 2240  | 2140  | 2060  | 1830 | 1860 | 1830 | 1720 | 1720 | 1720 |
| 合金钢<br>(35-48HRC)       | (ap≤1D)     | 130           | 转速(r/min)    | 22000 | 16800 | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|                         | (ae≤0.12D)  | 130           | 进给速度(mm/min) | 1480  | 1340  | 1210  | 1160  | 1100 | 1240 | 1130 | 1010 | 830  | 750  |
| 不锈钢                     | (ap≤1.5D)   | 130           | 转速(r/min)    | 22000 | 16800 | 13800 | 10350 | 6900 | 5180 | 4140 | 3450 | 2590 | 2070 |
|                         | (ae≤0.15D)  | 130           | 进给速度(mm/min) | 1480  | 1340  | 1380  | 1330  | 1190 | 1300 | 1230 | 1170 | 980  | 910  |
| 灰铸铁<br>球墨铸铁<br>(<32HRC) | (ap≤1.5D)   | 160           | 转速(r/min)    | 22000 | 16800 | 16990 | 12740 | 8490 | 6370 | 5100 | 4250 | 3190 | 2550 |
|                         | (ae≤0.15D)  | 160           | 进给速度(mm/min) | 1880  | 1780  | 1700  | 1630  | 1630 | 1500 | 1410 | 1360 | 1210 | 1120 |
| 高合金铸铁<br>(35-45HRC)     | (ap≤1D)     | 140           | 转速(r/min)    | 22000 | 16800 | 14860 | 11150 | 7430 | 5570 | 4460 | 3720 | 2790 | 2230 |
|                         | (ae≤0.12D)  | 140           | 进给速度(mm/min) | 1580  | 1480  | 1310  | 1340  | 1340 | 1250 | 1160 | 1120 | 1000 | 910  |

#### 仿形铣

| 工件材料                    | 切削量<br>(mm) | VC<br>(m/min) | 刃径(mm)       | 1     | 2     | 3     | 4     | 6    | 8    | 10   | 12   |
|-------------------------|-------------|---------------|--------------|-------|-------|-------|-------|------|------|------|------|
| 碳钢合金钢<br>(<35HRC)       | (ap≤0.2D)   | 160           | 转速(r/min)    | 30000 | 22000 | 16000 | 12740 | 8490 | 6370 | 5100 | 4250 |
|                         | (ae≤0.3D)   | 160           | 进给速度(mm/min) | 1200  | 1100  | 1050  | 1020  | 1020 | 1020 | 1020 | 1020 |
| 合金钢<br>(35-48HRC)       | (ap≤0.15D)  | 120           | 转速(r/min)    | 17800 | 14800 | 13800 | 9550  | 6370 | 4780 | 3820 | 3190 |
|                         | (ae≤0.15D)  | 120           | 进给速度(mm/min) | 760   | 670   | 620   | 610   | 610  | 610  | 610  | 610  |
| 不锈钢                     | (ap≤0.2D)   | 110           | 转速(r/min)    | 17800 | 14800 | 13800 | 8760  | 5840 | 4380 | 3500 | 2920 |
|                         | (ae≤0.2D)   | 110           | 进给速度(mm/min) | 760   | 670   | 620   | 610   | 610  | 610  | 610  | 610  |
| 灰铸铁<br>球墨铸铁<br>(<32HRC) | (ap≤0.2D)   | 140           | 转速(r/min)    | 17800 | 14800 | 13800 | 11150 | 7430 | 5570 | 4460 | 3720 |
|                         | (ae≤0.2D)   | 140           | 进给速度(mm/min) | 840   | 820   | 800   | 780   | 820  | 800  | 800  | 820  |
| 高合金铸铁<br>(35-45HRC)     | (ap≤0.1D)   | 120           | 转速(r/min)    | 17800 | 14800 | 13800 | 9550  | 6370 | 4780 | 3820 | 3190 |
|                         | (ae≤0.1D)   | 120           | 进给速度(mm/min) | 760   | 680   | 640   | 610   | 660  | 670  | 650  | 670  |

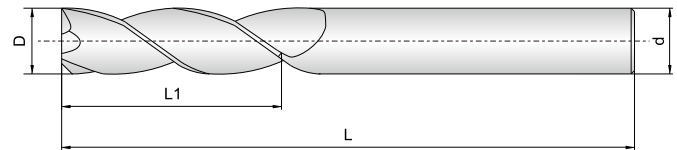
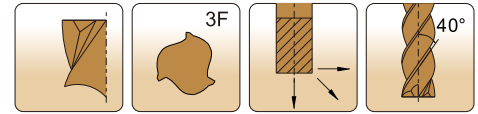


# ● 整体硬质合金铣刀

## 整体硬质合金立铣刀MN型 Solid Carbide End Mills MN

无涂层;  
超细微粒硬质合金;  
优异的几何角度特殊切刃设计。

Non-coating.  
Ultrafine particle cemented carbide .  
Special cutting edge design with excellent geometric angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type              | 尺寸(mm) Dimension |    |     |     |
|----------------------|------------------|----|-----|-----|
|                      | D                | d  | L1  | L   |
| D1-3-50-D4-3F MN     | 1.0              | 4  | 3   | 50  |
| D1.5-4.5-50-D4-3F MN | 1.5              | 4  | 4.5 | 50  |
| D2-6-50-D4-3F MN     | 2.0              | 4  | 6   | 50  |
| D3-9-50-D4-3F MN     | 3.0              | 4  | 9   | 50  |
| D4-12-50-3F MN       | 4.0              | 4  | 12  | 50  |
| D4-16-75-3F MN       | 4.0              | 4  | 16  | 75  |
| D4-20-100-3F MN      | 4.0              | 4  | 20  | 100 |
| D5-15-50-D6-3F MN    | 5.0              | 6  | 15  | 50  |
| D5-20-75-D6-3F MN    | 5.0              | 6  | 20  | 75  |
| D5-25-100-D6-3F MN   | 5.0              | 6  | 25  | 100 |
| D6-18-50-3F MN       | 6.0              | 6  | 18  | 50  |
| D6-24-75-3F MN       | 6.0              | 6  | 24  | 75  |
| D6-30-100-3F MN      | 6.0              | 6  | 30  | 100 |
| D8-24-60-3F MN       | 8.0              | 8  | 24  | 60  |
| D8-25-75-3F MN       | 8.0              | 8  | 25  | 75  |
| D8-35-100-3F MN      | 8.0              | 8  | 35  | 100 |
| D10-30-75-3F MN      | 10.0             | 10 | 30  | 75  |
| D10-40-100-3F MN     | 10.0             | 10 | 40  | 100 |
| D12-36-75-3F MN      | 12.0             | 12 | 36  | 75  |
| D12-45-100-3F MN     | 12.0             | 12 | 45  | 100 |
| D16-45-100-3F MN     | 16.0             | 16 | 45  | 100 |
| D16-65-150-3F MN     | 16.0             | 16 | 65  | 150 |

## 推荐应用范围 Recommended applications

■ 推荐应用 Main application  
□ 扩展应用 Extended application

| 碳素钢<br>Carbon steels      | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        | 不锈钢<br>Stainless steels   | 铸铁<br>Cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|---------------------------|---------------------|---|--------|--------|---------------------------|-----------------|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| 预硬钢<br>Prehardened steels | 工具钢<br>Tool steels  |   |        |        | 球墨铸铁<br>Ductile cast iron |                 |                      |                        |                |                        |                               |               |
| ~40HRC                    |                     | ~45HRC  | ~55HRC | ~60HRC | ~65HRC                    | ~35HRC          | ~350HB               |                        |                |                        |                               |               |
|                           |                     |   |        |        |                           |                 | ■                    | ■                      |                |                        |                               | □             |

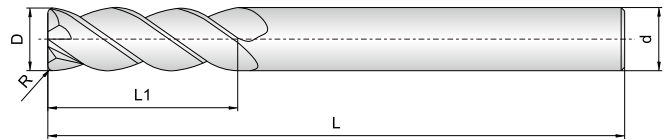
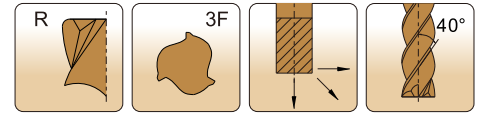
➔ 推荐切削参数, 详见13页。  
Recommended cutting data, see page 13 for details.

# ● 整体硬质合金铣刀

## 整体硬质合金圆角立铣刀MN型 Solid Carbide Round End Mills MN

无涂层;  
超细微粒硬质合金;  
优异的几何角度特殊切刃设计。

Non-coating.  
Ultrafine particle cemented carbide .  
Special cutting edge design with excellent geometric angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type                  | 尺寸(mm) Dimension |   |     |     |     |
|--------------------------|------------------|---|-----|-----|-----|
|                          | D                | d | R   | L1  | L   |
| D1R0.2-3-50-D4-3F MN     | 1.0              | 4 | 0.2 | 3   | 50  |
| D1.5R0.2-4.5-50-D4-3F MN | 1.5              | 4 | 0.2 | 4.5 | 50  |
| D2R0.2-6-50-D4-3F MN     | 2.0              | 4 | 0.2 | 6   | 50  |
| D3R0.2-9-50-D4-3F MN     | 3.0              | 4 | 0.2 | 9   | 50  |
| D4R0.2-12-50-3F MN       | 4.0              | 4 | 0.2 | 12  | 50  |
| D4R0.5-12-50-3F MN       | 4.0              | 4 | 0.5 | 12  | 50  |
| D4R0.5-16-75-3F MN       | 4.0              | 4 | 0.5 | 16  | 75  |
| D4R1-11-50-3F MN         | 4.0              | 4 | 1.0 | 11  | 50  |
| D4R1-16-75-3F MN         | 4.0              | 4 | 1.0 | 16  | 75  |
| D6R0.2-18-50-3F MN       | 6.0              | 6 | 0.2 | 18  | 50  |
| D6R0.2-24-75-3F MN       | 6.0              | 6 | 0.2 | 24  | 75  |
| D6R0.2-30-100-2F MN      | 6.0              | 6 | 0.2 | 30  | 100 |
| D6R0.5-18-50-3F MN       | 6.0              | 6 | 0.5 | 18  | 50  |
| D6R0.5-24-75-3F MN       | 6.0              | 6 | 0.5 | 24  | 75  |
| D6R0.5-30-100-4F MN      | 6.0              | 6 | 0.5 | 30  | 100 |
| D6R1-18-50-3F MN         | 6.0              | 6 | 1.0 | 18  | 50  |
| D6R1-24-75-3F MN         | 6.0              | 6 | 1.0 | 24  | 75  |
| D6R1-30-100-3F MN        | 6.0              | 6 | 1.0 | 30  | 100 |
| D8R0.5-24-60-3F MN       | 8.0              | 8 | 0.5 | 24  | 60  |
| D8R0.5-24-75-3F MN       | 8.0              | 8 | 0.5 | 24  | 75  |
| D8R0.5-32-100-3F MN      | 8.0              | 8 | 0.5 | 32  | 100 |

### 推荐应用范围

### Recommended applications

■ 推荐应用 Main application □ 扩展应用 Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               |                     | ~45HRC  | ~55HRC | ~60HRC | ~65HRC | ~35HRC                  | ~350HB                                       |                      |                        |                |                        |                               |               |
|                      |                     |   |        |        |        |                         | ■  | ■                    |                        |                |                        | □                             |               |

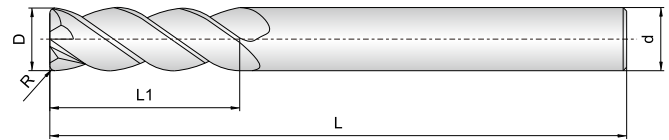
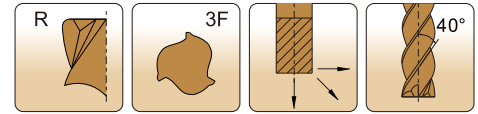
➔ 推荐切削参数, 详见13页。  
Recommended cutting data, see page 13 for details.

# ● 整体硬质合金铣刀

## 整体硬质合金圆角立铣刀MN型 Solid Carbide Round End Mills MN

无涂层;  
超细微粒硬质合金;  
优异的几何角度特殊切刃设计。

Non-coating.  
Ultrafine particle cemented carbide .  
Special cutting edge design with excellent geometric angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type              | 尺寸(mm) Dimension |    |     |    |     |
|----------------------|------------------|----|-----|----|-----|
|                      | D                | d  | R   | L1 | L   |
| D8R1-24-60-3F MN     | 8.0              | 8  | 1.0 | 24 | 60  |
| D8R1-24-75-3F MN     | 8.0              | 8  | 1.0 | 24 | 75  |
| D8R1-32-100-3F MN    | 8.0              | 8  | 1.0 | 32 | 100 |
| D8R2-24-60-3F MN     | 8.0              | 8  | 2.0 | 24 | 60  |
| D8R2-24-75-3F MN     | 8.0              | 8  | 2.0 | 24 | 75  |
| D8R2-32-100-3F MN    | 8.0              | 8  | 2.0 | 32 | 100 |
| D8R3-24-60-3F MN     | 8.0              | 8  | 3.0 | 24 | 60  |
| D8R3-24-75-3F MN     | 8.0              | 8  | 3.0 | 24 | 75  |
| D8R3-32-100-3F MN    | 8.0              | 8  | 3.0 | 32 | 100 |
| D10R0.5-30-75-3F MN  | 10.0             | 10 | 0.5 | 30 | 75  |
| D10R0.5-35-100-3F MN | 10.0             | 10 | 0.5 | 35 | 100 |
| D10R1-30-75-3F MN    | 10.0             | 10 | 1.0 | 30 | 75  |
| D10R1-35-100-3F MN   | 10.0             | 10 | 1.0 | 35 | 100 |
| D10R3-30-75-3F MN    | 10.0             | 10 | 3.0 | 30 | 75  |
| D10R3-35-100-3F MN   | 10.0             | 10 | 3.0 | 35 | 100 |
| D12R0.5-30-75-3F MN  | 12.0             | 12 | 0.5 | 30 | 75  |
| D12R0.5-40-100-3F MN | 12.0             | 12 | 0.5 | 40 | 100 |
| D12R1-30-75-3F MN    | 12.0             | 12 | 1.0 | 30 | 75  |
| D12R1-40-100-3F MN   | 12.0             | 12 | 1.0 | 40 | 100 |
| D12R3-30-75-3F MN    | 12.0             | 12 | 3.0 | 30 | 75  |
| D12R3-40-100-3F MN   | 12.0             | 12 | 3.0 | 40 | 100 |

### 推荐应用范围

### Recommended applications

■ 推荐应用 Main application □ 扩展应用 Extended application

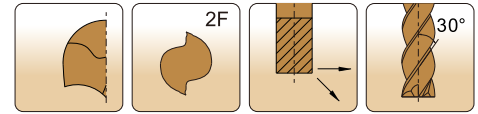
| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               |                     | ~45HRC  | ~55HRC | ~60HRC | ~65HRC                  | ~35HRC                                       | ~350HB               |                        |                |                        |                               |               |
|                      |                     |   |        |        |                         |  | ■                    | ■                      |                |                        |                               | □             |

➔ 推荐切削参数, 详见13页。  
Recommended cutting data, see page 13 for details.



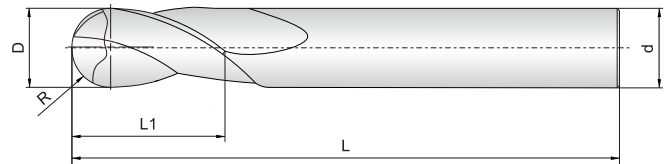
# ● 整体硬质合金铣刀

## 整体硬质合金球头立铣刀MN型 Solid Carbide Ball End Mills MN



无涂层;  
超细微粒硬质合金;  
优异的几何角度特殊切刃设计。

Non-coating.  
Ultrafine particle cemented carbide .  
Special cutting edge design with excellent geometric angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type                 | 尺寸(mm) Dimension |    |      |    |     |
|-------------------------|------------------|----|------|----|-----|
|                         | D                | d  | R    | L1 | L   |
| D1R0.5-2-50-D4-2F MN    | 1.0              | 4  | 0.5  | 2  | 50  |
| D1.5R0.75-3-50-D4-2F MN | 1.5              | 4  | 0.75 | 3  | 50  |
| D2R1-4-50-D4-2F MN      | 2.0              | 4  | 1.0  | 4  | 50  |
| D3R1.5-6-50-D4-2F MN    | 3.0              | 4  | 1.5  | 6  | 50  |
| D4R2-8-50-2F MN         | 4.0              | 4  | 2.0  | 8  | 50  |
| D4R2-8-75-2F MN         | 4.0              | 4  | 2.0  | 8  | 75  |
| D4R2-8-100-2F MN        | 4.0              | 4  | 2.0  | 8  | 100 |
| D6R3-12-50-2F MN        | 6.0              | 6  | 3.0  | 12 | 50  |
| D6R3-12-75-2F MN        | 6.0              | 6  | 3.0  | 12 | 75  |
| D6R3-12-100-2F MN       | 6.0              | 6  | 3.0  | 12 | 100 |
| D8R4-16-60-2F MN        | 8.0              | 8  | 4.0  | 16 | 60  |
| D8R4-16-75-2F MN        | 8.0              | 8  | 4.0  | 16 | 75  |
| D8R4-16-100-2F MN       | 8.0              | 8  | 4.0  | 16 | 100 |
| D10R5-20-75-2F MN       | 10.0             | 10 | 5.0  | 20 | 75  |
| D10R5-20-100-2F MN      | 10.0             | 10 | 5.0  | 20 | 100 |
| D12R6-24-75-2F MN       | 12.0             | 12 | 6.0  | 24 | 75  |
| D12R6-24-100-2F MN      | 12.0             | 12 | 6.0  | 24 | 100 |
|                         |                  |    |      |    |     |
|                         |                  |    |      |    |     |
|                         |                  |    |      |    |     |
|                         |                  |    |      |    |     |

### 推荐应用范围

### Recommended applications

■ 推荐应用      □ 扩展应用  
Main application    Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               |                     | ~45HRC  | ~55HRC | ~60HRC | ~65HRC | ~35HRC                  | ~350HB                                       |                      |                        |                |                        |                               |               |
|                      |                     |   |        |        |        |                         |  | ■                    | ■                      |                |                        |                               | □             |

➔ 推荐切削参数, 详见13页。  
Recommended cutting data, see page 13 for details.

## ● 整体硬质合金MN铣刀

推荐切削参数

Recommended Cutting Data

侧铣

| 工件材料                         | 切削量<br>(mm) | VC<br>(m/min) | 刃径(mm)       | 1     | 2     | 4     | 6     | 8     | 10   | 12   | 16   | 20   |
|------------------------------|-------------|---------------|--------------|-------|-------|-------|-------|-------|------|------|------|------|
| 锻造铝合金<br>铸造铝合金<br>(Si < 12%) | (ap ≤ 1.5D) | 150(60-350)   | 转速(r/min)    | 16000 | 12700 | 12000 | 10600 | 10000 | 9500 | 9280 | 7000 | 5600 |
|                              | (ae ≤ 0.2D) | 150(60-350)   | 进给速度(mm/min) | 650   | 850   | 1430  | 1530  | 1670  | 2050 | 2800 | 3000 | 3150 |
| 铜合金<br>(HB200)               | (ap ≤ 1.5D) | 150(60-350)   | 转速(r/min)    | 16000 | 12700 | 12000 | 10600 | 10000 | 9500 | 9280 | 7000 | 5600 |
|                              | (ae ≤ 0.2D) | 150(60-350)   | 进给速度(mm/min) | 720   | 900   | 1200  | 1200  | 1500  | 1800 | 2225 | 2500 | 3000 |

仿形铣

| 工件材料                         | 切削量<br>(mm) | VC<br>(m/min) | 刃径(mm)       | 1     | 2     | 4     | 6     | 8     | 10   | 12   |
|------------------------------|-------------|---------------|--------------|-------|-------|-------|-------|-------|------|------|
| 锻造铝合金<br>铸造铝合金<br>(Si < 12%) | (ap ≤ 0.3D) | 150(60-350)   | 转速(r/min)    | 16000 | 12700 | 12000 | 10600 | 10000 | 9500 | 9280 |
|                              | (ae ≤ 0.3D) | 150(60-350)   | 进给速度(mm/min) | 650   | 850   | 1430  | 1530  | 1670  | 2050 | 2800 |
| 铜合金<br>(HB200)               | (ap ≤ 0.3D) | 150(60-350)   | 转速(r/min)    | 16000 | 12700 | 12000 | 10600 | 10000 | 9500 | 9280 |
|                              | (ae ≤ 0.3D) | 150(60-350)   | 进给速度(mm/min) | 720   | 900   | 1200  | 1200  | 1500  | 1800 | 2225 |

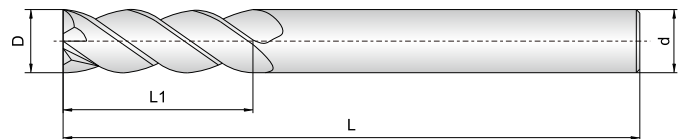
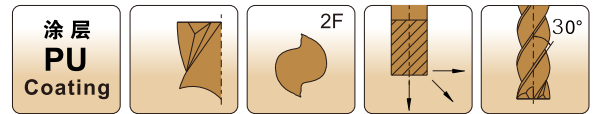


# ● 整体硬质合金铣刀

## 整体硬质合金立铣刀MH型 Solid Carbide End Mills MH

超细微粒硬质合金;  
高耐热及高润滑性涂层;  
优异的几何角度切削刃设计使排屑流畅。

Ultrafine particle cemented carbide .  
High heat resistance and high lubricity coating.  
Outstanding chip control by the design of geometric angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type             | 尺寸(mm) Dimension |    |    |     |
|---------------------|------------------|----|----|-----|
|                     | D                | d  | L1 | L   |
| D3-8-50-D4-2F MH    | 3.0              | 4  | 8  | 50  |
| D3-12-75-D4-2F MH   | 3.0              | 4  | 12 | 75  |
| D3-8-50-D6-2F MH    | 3.0              | 6  | 8  | 50  |
| D3.5-10-50-D4-2F MH | 3.5              | 4  | 10 | 50  |
| D4-11-50-2F MH      | 4.0              | 4  | 11 | 50  |
| D4-15-75-2F MH      | 4.0              | 4  | 15 | 75  |
| D4-11-50-D6-2F MH   | 4.0              | 6  | 11 | 50  |
| D4-15-75-D6-2F MH   | 4.0              | 6  | 15 | 75  |
| D4-15-100-D6-2F MH  | 4.0              | 6  | 15 | 100 |
| D5-13-50-D6-2F MH   | 5.0              | 6  | 13 | 50  |
| D5-20-75-D6-2F MH   | 5.0              | 6  | 20 | 75  |
| D6-16-50-2F MH      | 6.0              | 6  | 16 | 50  |
| D6-20-75-2F MH      | 6.0              | 6  | 20 | 75  |
| D6-20-100-2F MH     | 6.0              | 6  | 20 | 100 |
| D7-18-60-D8-2F MH   | 7.0              | 8  | 18 | 60  |
| D8-20-60-2F MH      | 8.0              | 8  | 20 | 60  |
| D8-20-75-2F MH      | 8.0              | 8  | 20 | 75  |
| D9-22-75-D10-2F MH  | 9.0              | 10 | 22 | 75  |
| D10-22-75-2F MH     | 10.0             | 10 | 22 | 75  |
| D10-30-100-2F MH    | 10.0             | 10 | 30 | 100 |
| D12-26-75-2F MH     | 12.0             | 12 | 26 | 75  |

### 推荐应用范围 Recommended applications

■ 推荐应用 Main application    □ 扩展应用 Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|--------|-------------------------|-----------------|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               |                     | ~45HRC  | ~55HRC | ~60HRC | ~65HRC | ~35HRC                  | ~350HB          |                      |                        |                |                        |                               |               |
| ■                    | ■                   | ■   | ■      | □      |        | □                       | □               |                      |                        |                | □                      | □                             |               |

➔ 推荐切削参数, 详见20页。  
Recommended cutting data, see page 20 for details.

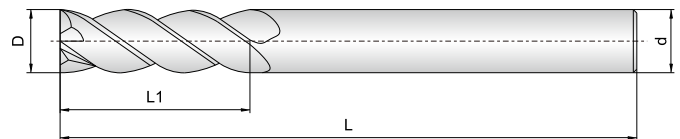
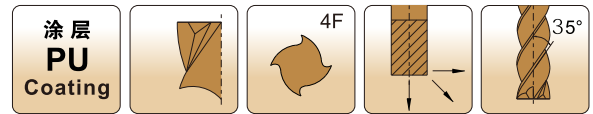


# ● 整体硬质合金铣刀

## 整体硬质合金立铣刀MH型 Solid Carbide End Mills MH

超细微粒硬质合金;  
高耐热及高润滑性涂层;  
优异的几何角度切削刃设计使排屑流畅。

Ultrafine particle cemented carbide .  
High heat resistance and high lubricity coating.  
Outstanding chip control by the design of geometric angle.



此图片仅供参考，请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type             | 尺寸(mm) Dimension |    |    |     |
|---------------------|------------------|----|----|-----|
|                     | D                | d  | L1 | L   |
| D3-8-50-D4-4F MH    | 3.0              | 4  | 8  | 50  |
| D3-8-50-D6-4F MH    | 3.0              | 6  | 8  | 50  |
| D3-12-75-D6-4F MH   | 3.0              | 6  | 12 | 75  |
| D3.5-10-50-D4-4F MH | 3.5              | 4  | 10 | 50  |
| D4-11-50-4F MH      | 4.0              | 4  | 11 | 50  |
| D4-11-50-D6-4F MH   | 4.0              | 6  | 11 | 50  |
| D4-15-75-D6-4F MH   | 4.0              | 6  | 15 | 75  |
| D4-15-100-D6-4F MH  | 4.0              | 6  | 15 | 100 |
| D5-13-50-D6-4F MH   | 5.0              | 6  | 13 | 50  |
| D5-20-75-D6-4F MH   | 5.0              | 6  | 20 | 75  |
| D6-16-50-4F MH      | 6.0              | 6  | 16 | 50  |
| D6-20-75-4F MH      | 6.0              | 6  | 20 | 75  |
| D6-25-100-4F MH     | 6.0              | 6  | 25 | 100 |
| D8-20-60-4F MH      | 8.0              | 8  | 20 | 60  |
| D8-20-75-4F MH      | 8.0              | 8  | 20 | 75  |
| D8-25-100-4F MH     | 8.0              | 8  | 25 | 100 |
| D10-22-75-4F MH     | 10.0             | 10 | 22 | 75  |
| D10-30-100-4F MH    | 10.0             | 10 | 30 | 100 |
| D12-26-75-4F MH     | 12.0             | 12 | 26 | 75  |
| D12-35-100-4F MH    | 12.0             | 12 | 35 | 100 |
| D14-32-100-4F MH    | 14.0             | 14 | 32 | 100 |

### 推荐应用范围

### Recommended applications

■ 推荐应用 Main application    □ 扩展应用 Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|--------|-------------------------|-----------------|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               | ~45HRC              | ~55HRC  | ~60HRC | ~65HRC | ~35HRC | ~350HB                  |                 |                      |                        |                |                        |                               |               |
| ■                    | ■                   | ■   | □      |        | □      | □                       |                 |                      |                        |                | □                      | □                             |               |

➔ 推荐切削参数，详见20页。  
Recommended cutting data, see page 20 for details.

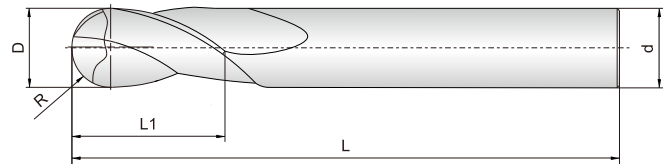
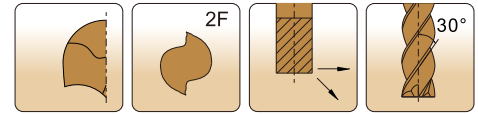


## ● 整体硬质合金铣刀

### 整体硬质合金球头立铣刀MH型 Solid Carbide Ball End Mills MH

超细微粒硬质合金;  
高耐热及高润滑性涂层;  
优异的几何角度切削刃设计使排屑流畅。

Ultrafine particle cemented carbide .  
High heat resistance and high lubricity coating.  
Outstanding chip control by the design of geometric angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type                | 尺寸(mm) Dimension |   |     |     |     |
|------------------------|------------------|---|-----|-----|-----|
|                        | D                | d | R   | L1  | L   |
| D3R1.5-4.5-50-D4-2F MH | 3.0              | 4 | 1.5 | 4.5 | 50  |
| D3R1.5-4.5-75-D4-2F MH | 3.0              | 4 | 1.5 | 4.5 | 75  |
| D3R1.5-4.5-50-D6-2F MH | 3.0              | 6 | 1.5 | 4.5 | 50  |
| D3R1.5-6-50-D6-2F MH   | 3.0              | 6 | 1.5 | 6   | 50  |
| D4R2-6-50-2F MH        | 4.0              | 4 | 2.0 | 6   | 50  |
| D4R2-6-75-2F MH        | 4.0              | 4 | 2.0 | 6   | 75  |
| D4R2-6-50-D6-2F MH     | 4.0              | 6 | 2.0 | 6   | 50  |
| D4R2-6-75-D6-2F MH     | 4.0              | 6 | 2.0 | 6   | 75  |
| D4R2-6-100-2F MH       | 4.0              | 6 | 2.0 | 6   | 100 |
| D4R2-8-50-D6-2F MH     | 4.0              | 6 | 2.0 | 8   | 50  |
| D5R2.5-7.5-50-D6-2F MH | 5.0              | 6 | 2.5 | 7.5 | 50  |
| D5R2.5-7.5-75-D6-2F MH | 5.0              | 6 | 2.5 | 7.5 | 75  |
| D5R2.5-10-50-D6-2F MH  | 5.0              | 6 | 2.5 | 10  | 50  |
| D6R3-9-50-2F MH        | 6.0              | 6 | 3.0 | 9   | 50  |
| D6R3-9-75-2F MH        | 6.0              | 6 | 3.0 | 9   | 75  |
| D6R3-9-100-2F MH       | 6.0              | 6 | 3.0 | 9   | 100 |
| D6R3-12-50-2F MH       | 6.0              | 6 | 3.0 | 12  | 50  |
| D8R4-12-60-2F MH       | 8.0              | 8 | 4.0 | 12  | 60  |
| D8R4-12-75-2F MH       | 8.0              | 8 | 4.0 | 12  | 75  |
| D8R4-12-100-2F MH      | 8.0              | 8 | 4.0 | 12  | 100 |
| D8R4-16-60-2F MH       | 8.0              | 8 | 4.0 | 16  | 60  |

### 推荐应用范围 Recommended applications

■ 推荐应用 Main application □ 扩展应用 Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               | ~45HRC              | ~55HRC  | ~60HRC | ~65HRC | ~35HRC                  | ~350HB                                       |                      |                        |                |                        |                               |               |
| ■                    | ■                   | ■   | □      |        | □                       | □  |                      |                        |                | □                      | □                             |               |

➔ 推荐切削参数, 详见20页。  
Recommended cutting data, see page 20 for details.



## ● 整体硬质合金MH铣刀

推荐切削参数

Recommended Cutting Data

### 侧铣

| 工件材料              | 切削量<br>(mm) | VC<br>(m/min) | 刃径(mm)       | 3    | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-------------------|-------------|---------------|--------------|------|------|------|------|------|------|------|------|
| 合金钢<br>(30-45HRC) | (ap≤1.2D)   | 90            | 转速(r/min)    | 9500 | 7200 | 4800 | 3600 | 2900 | 2400 | 1800 | 1400 |
|                   | (ae≤0.08D)  | 90            | 进给速度(mm/min) | 950  | 900  | 1000 | 1100 | 1050 | 1000 | 750  | 580  |
| 淬硬钢<br>(<45HRC)   | (ap≤1.0D)   | 80            | 转速(r/min)    | 8500 | 6400 | 4200 | 3200 | 2500 | 2100 | 1600 | 1250 |
|                   | (ae≤0.04D)  | 80            | 进给速度(mm/min) | 610  | 600  | 700  | 800  | 700  | 640  | 480  | 380  |
| 淬硬钢<br>(45-55HRC) | (ap≤0.8D)   | 70            | 转速(r/min)    | 7400 | 5600 | 3700 | 2800 | 2000 | 1400 | 1400 | 1100 |
|                   | (ae≤0.02D)  | 70            | 进给速度(mm/min) | 520  | 500  | 580  | 630  | 570  | 400  | 400  | 300  |

### 仿形铣

| 工件材料              | 切削量<br>(mm) | VC<br>(m/min) | 刃径(mm)       | 3     | 4     | 6    | 8    | 10   | 12   | 16   | 20   |
|-------------------|-------------|---------------|--------------|-------|-------|------|------|------|------|------|------|
| 合金钢<br>(30-45HRC) | (ap≤0.1D)   | 90            | 转速(r/min)    | 13500 | 10300 | 6900 | 5100 | 4100 | 3400 | 2500 | 2100 |
|                   | (ae≤0.02D)  | 90            | 进给速度(mm/min) | 1800  | 1650  | 1650 | 1700 | 1700 | 1750 | 1300 | 1100 |
| 淬硬钢<br>(<45HRC)   | (ap≤0.1D)   | 80            | 转速(r/min)    | 8500  | 8000  | 5300 | 4000 | 3200 | 2600 | 1600 | 1250 |
|                   | (ae≤0.02D)  | 80            | 进给速度(mm/min) | 1350  | 1300  | 1300 | 1350 | 1350 | 1400 | 850  | 650  |
| 淬硬钢<br>(45-55HRC) | (ap≤0.1D)   | 70            | 转速(r/min)    | 7200  | 6000  | 4000 | 2900 | 2400 | 2100 | 1350 | 1100 |
|                   | (ae≤0.02D)  | 70            | 进给速度(mm/min) | 1050  | 960   | 960  | 920  | 920  | 900  | 550  | 450  |

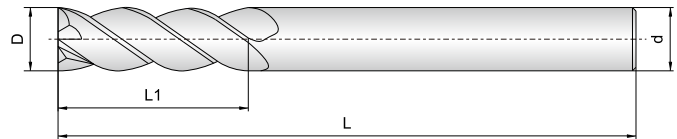
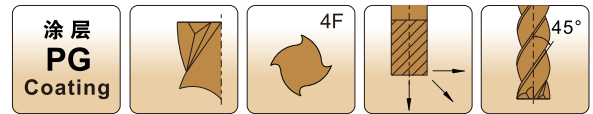


# ● 整体硬质合金铣刀

## 整体硬质合金立铣刀ME型 Solid Carbide End Mills ME

极超细微粒硬质合金;  
高润滑、高耐磨涂层, 有很好的韧性、耐磨性和耐崩性;  
高刚性截面及45°螺旋角设计;  
适合侧面精加工。

Ultrafine particle cemented carbide .  
High lubrication,high wear-resistance coating provide great toughness,wear resistance and anticollapse.  
The design of high rigidity section and 45° spiral angle.  
For the side finish milling.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type            | 尺寸(mm) Dimension |    |    |     |
|--------------------|------------------|----|----|-----|
|                    | D                | d  | L1 | L   |
| D3-8-50-D4-4F ME   | 3.0              | 4  | 8  | 50  |
| D3-8-50-D6-4F ME   | 3.0              | 6  | 8  | 50  |
| D3-12-75-D6-4F ME  | 3.0              | 6  | 12 | 75  |
| D4-11-50-D6-4F ME  | 4.0              | 6  | 11 | 50  |
| D4-15-75-D6-4F ME  | 4.0              | 6  | 15 | 75  |
| D4-20-100-D6-4F ME | 4.0              | 6  | 20 | 100 |
| D5-13-50-D6-4F ME  | 5.0              | 6  | 13 | 50  |
| D5-20-75-D6-4F ME  | 5.0              | 6  | 20 | 75  |
| D6-16-50-4F ME     | 6.0              | 6  | 16 | 50  |
| D6-25-75-4F ME     | 6.0              | 6  | 25 | 75  |
| D6-25-100-4F ME    | 6.0              | 6  | 25 | 100 |
| D8-20-60-4F ME     | 8.0              | 8  | 20 | 60  |
| D8-35-100-4F ME    | 8.0              | 8  | 35 | 100 |
| D10-22-75-4F ME    | 10.0             | 10 | 22 | 75  |
| D10-30-100-4F ME   | 10.0             | 10 | 30 | 100 |
| D12-26-75-4F ME    | 12.0             | 12 | 26 | 75  |
| D12-35-100-4F ME   | 12.0             | 12 | 35 | 100 |
| D14-32-100-4F ME   | 14.0             | 14 | 32 | 100 |
| D16-38-100-4F ME   | 16.0             | 16 | 38 | 100 |
| D16-50-150-4F ME   | 16.0             | 16 | 50 | 150 |
| D20-45-100-4F ME   | 20.0             | 20 | 45 | 100 |
| D20-55-150-4F ME   | 20.0             | 20 | 55 | 150 |
| D25-50-150-4F ME   | 25.0             | 25 | 50 | 150 |

### 推荐应用范围

### Recommended applications

■ 推荐应用 Main application □ 扩展应用 Extended application

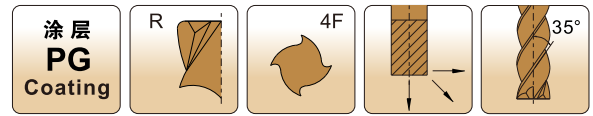
| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               |                     | ~45HRC  | ~55HRC | ~60HRC | ~65HRC | ~35HRC                  | ~350HB                                       |                      |                        |                |                        |                               |               |
|                      |                     | ■   | ■      | □      | □      | □                       |  |                      |                        | □              | □                      |                               |               |

推荐切削参数, 详见26页。  
Recommended cutting data, see page 26 for details.

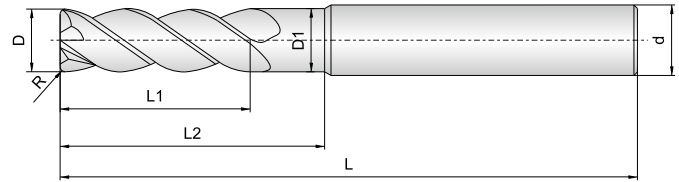
# ● 整体硬质合金铣刀

## 整体硬质合金圆角立铣刀ME型 Solid Carbide Round End Mills ME

极超细微粒硬质合金;  
高润滑、高耐磨涂层, 有很好的韧性、耐磨性和耐崩屑;  
高刚性截面及35°螺旋角设计;



Ultrafine particle cemented carbide .  
High lubrication,high wear-resistance coating provide great toughness,wear resistance and anticollapse.  
The design of high rigidity section and 35° spiral angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.

| 型号 Type              | 尺寸(mm) Dimension |    |     |    |     |
|----------------------|------------------|----|-----|----|-----|
|                      | D                | d  | R   | L1 | L   |
| D3R0.2-3-50-D4-4F ME | 3.0              | 4  | 0.2 | 3  | 50  |
| D3R0.5-3-50-4F ME    | 3.0              | 4  | 0.5 | 3  | 50  |
| D4R0.2-4-50-4F ME    | 4.0              | 4  | 0.2 | 4  | 50  |
| D4R0.2-4-75-D6-4F ME | 4.0              | 6  | 0.2 | 4  | 75  |
| D4R0.5-4-50-4F ME    | 4.0              | 4  | 0.5 | 4  | 50  |
| D4R1-4-50-4F ME      | 4.0              | 4  | 1.0 | 4  | 50  |
| D4R0.5-4-75-D6-4F ME | 4.0              | 6  | 0.5 | 4  | 75  |
| D6R0.2-6-50-4F ME    | 6.0              | 6  | 0.2 | 6  | 50  |
| D6R0.5-6-50-4F ME    | 6.0              | 6  | 0.5 | 6  | 50  |
| D6R0.5-6-75-4F ME    | 6.0              | 6  | 0.5 | 6  | 75  |
| D6R1-6-50-4F ME      | 6.0              | 6  | 1.0 | 6  | 50  |
| D6R1-6-75-4F ME      | 6.0              | 6  | 1.0 | 6  | 75  |
| D8R0.5-8-60-4F ME    | 8.0              | 8  | 0.5 | 8  | 60  |
| D8R0.5-8-100-4F ME   | 8.0              | 8  | 0.5 | 8  | 100 |
| D8R1-8-60-4F ME      | 8.0              | 8  | 1.0 | 8  | 60  |
| D8R1-8-100-4F ME     | 8.0              | 8  | 1.0 | 8  | 100 |
| D10R0.5-10-75-4F ME  | 10.0             | 10 | 0.5 | 10 | 75  |
| D10R0.5-10-100-4F ME | 10.0             | 10 | 0.5 | 10 | 100 |
| D10R1-10-75-4F ME    | 10.0             | 10 | 1.0 | 10 | 75  |
| D10R1-10-100-4F ME   | 10.0             | 10 | 1.0 | 10 | 100 |
| D12R0.5-12-75-4F ME  | 12.0             | 12 | 0.5 | 12 | 75  |
| D12R0.5-12-100-4F ME | 12.0             | 12 | 0.5 | 12 | 100 |
| D12R1-12-75-4F ME    | 12.0             | 12 | 1.0 | 12 | 75  |

## 推荐应用范围 Recommended applications

■ 推荐应用 Main application □ 扩展应用 Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               |                     | ~45HRC  | ~55HRC | ~60HRC | ~65HRC | ~35HRC                  | ~350HB                                       |                      |                        |                |                        |                               |               |
|                      |                     | ■   | ■      | □      | □      | □                       |  |                      |                        | □              | □                      |                               |               |

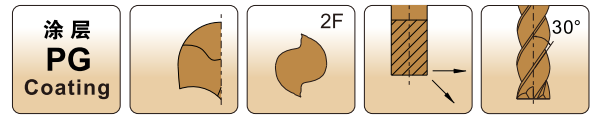
▶ 推荐切削参数, 详见26页。  
Recommended cutting data, see page 26 for details.



# ● 整体硬质合金铣刀

## 整体硬质合金球头立铣刀ME型 Solid Carbide Ball End Mills ME

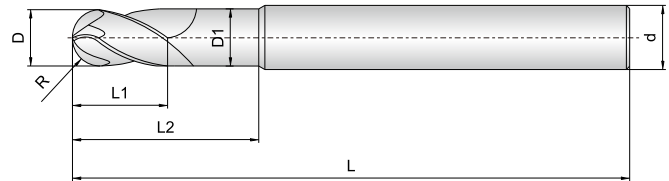
极超细微粒硬质合金;  
高润滑、高耐磨涂层, 有很好的韧性、耐磨性和耐崩性;  
高刚性截面及30°螺旋角设计;



Ultrafine particle cemented carbide .  
High lubrication,high wear-resistance coating provide great toughness,wear resistance and anticollapse.  
The design of high rigidity section and 30° spiral angle.



此图片仅供参考, 请以实物为准。  
If there is discrepancy, please refer to the actual products.



| 型号 Type                | 尺寸(mm) Dimension |    |     |     |     |
|------------------------|------------------|----|-----|-----|-----|
|                        | D                | d  | R   | L1  | L   |
| D3R1.5-3-50-D6-2F ME   | 3.0              | 6  | 1.5 | 3   | 50  |
| D3R1.5-4.5-75-D6-2F ME | 3.0              | 6  | 1.5 | 4.5 | 75  |
| D3R1.5-3-50-D4-2F ME   | 3.0              | 4  | 1.5 | 3   | 50  |
| D4R2-4-50-2F ME        | 4.0              | 4  | 2.0 | 4   | 50  |
| D4R2-4-60-D6-2F ME     | 4.0              | 6  | 2.0 | 4   | 60  |
| D4R2-6-75-D6-2F ME     | 4.0              | 6  | 2.0 | 6   | 75  |
| D5R2.5-5-60-D6-2F ME   | 5.0              | 6  | 2.5 | 5   | 60  |
| D5R2.5-7.5-75-D6-2F ME | 5.0              | 6  | 2.5 | 7.5 | 75  |
| D6R3-6-60-2F ME        | 6.0              | 6  | 3   | 6   | 60  |
| D6R3-9-75-2F ME        | 6.0              | 6  | 3   | 9   | 75  |
| D6R3-9-100-2F ME       | 6.0              | 6  | 3   | 9   | 100 |
| D8R4-8-60-2F ME        | 8.0              | 8  | 4   | 8   | 60  |
| D8R4-8-75-2F ME        | 8.0              | 8  | 4   | 8   | 75  |
| D8R4-12-100-2F ME      | 8.0              | 8  | 4   | 12  | 100 |
| D10R5-10-75-2F ME      | 10.0             | 10 | 5   | 10  | 75  |
| D10R5-15-100-2F ME     | 10.0             | 10 | 5   | 15  | 100 |
| D12R6-12-75-2F ME      | 12.0             | 12 | 6   | 12  | 75  |
| D12R6-18-100-2F ME     | 12.0             | 12 | 6   | 18  | 100 |
| D16R8-16-100-2F ME     | 16.0             | 16 | 8   | 16  | 100 |
| D16R8-24-150-2F ME     | 16.0             | 16 | 8   | 24  | 150 |
| D20R10-20-100-2F ME    | 20.0             | 20 | 10  | 20  | 100 |
| D20R10-30-150-2F ME    | 20.0             | 20 | 10  | 30  | 150 |

### 推荐应用范围 Recommended applications

■ 推荐应用 Main application □ 扩展应用 Extended application

| 碳素钢<br>Carbon steels | 合金钢<br>Alloy steels | 预硬钢/淬硬钢<br>Prehardened steels/Hardened steels |        |        | 不锈钢<br>Stainless steels | 铸铁<br>Cast iron<br>球墨铸铁<br>Ductile cast iron | 铜合金<br>Copper alloys | 铝合金<br>Aluminum alloys | 石墨<br>Graphite | 钛合金<br>Titanium alloys | 耐热合金<br>Heat resistant alloys | 塑料<br>Plastic |
|----------------------|---------------------|---|--------|--------|-------------------------|--|----------------------|------------------------|----------------|------------------------|-------------------------------|---------------|
| ~40HRC               |                     | ~45HRC  | ~55HRC | ~60HRC | ~65HRC                  | ~35HRC                                       | ~350HB               |                        |                |                        |                               |               |
|                      |                     | ■   | ■      | □      | □                       | □  |                      |                        |                | □                      | □                             |               |

▶ 推荐切削参数, 详见26页。  
Recommended cutting data, see page 26 for details.



## ● 整体硬质合金ME铣刀

推荐切削参数

Recommended Cutting Data

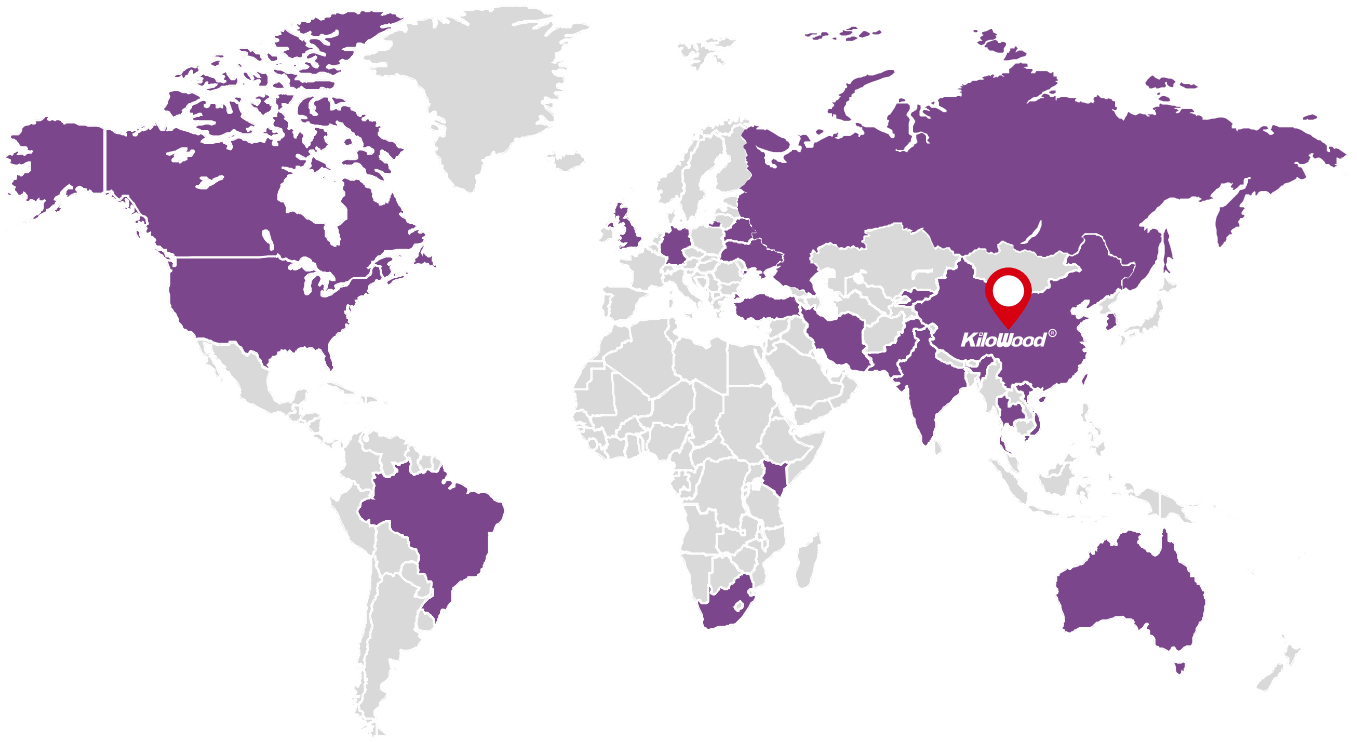
侧铣

| 工件材料              | 切削量<br>(mm)         | VC<br>(m/min) | 刃径(mm)       | 3    | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-------------------|---------------------|---------------|--------------|------|------|------|------|------|------|------|------|
| 淬硬钢<br>(45-55HRC) | ( $ap \leq 0.1D$ )  | 70            | 转速(r/min)    | 7400 | 5600 | 3700 | 2800 | 2000 | 1900 | 1400 | 1100 |
|                   | ( $ae \leq 0.02D$ ) | 70            | 进给速度(mm/min) | 520  | 500  | 580  | 630  | 570  | 550  | 400  | 300  |
| 淬硬钢<br>(55-60HRC) | ( $ap \leq 0.1D$ )  | 60            | 转速(r/min)    | 6300 | 4700 | 3100 | 2400 | 1900 | 1600 | 1200 | 950  |
|                   | ( $ae \leq 0.02D$ ) | 60            | 进给速度(mm/min) | 1600 | 1200 | 800  | 620  | 500  | 420  | 320  | 250  |

仿形铣

| 工件材料              | 切削量<br>(mm)         | VC<br>(m/min) | 刃径(mm)       | 3    | 4    | 6    | 8    | 10   | 12   | 16   | 20   |
|-------------------|---------------------|---------------|--------------|------|------|------|------|------|------|------|------|
| 淬硬钢<br>(45-55HRC) | ( $ap \leq 0.1D$ )  | 70            | 转速(r/min)    | 7200 | 6000 | 4000 | 2900 | 2400 | 2100 | 1350 | 1100 |
|                   | ( $ae \leq 0.02D$ ) | 70            | 进给速度(mm/min) | 1050 | 960  | 960  | 920  | 920  | 900  | 550  | 450  |
| 淬硬钢<br>(55-60HRC) | ( $ap \leq 0.1D$ )  | 60            | 转速(r/min)    | 6300 | 4700 | 3100 | 2400 | 1900 | 1600 | 1200 | 950  |
|                   | ( $ae \leq 0.02D$ ) | 60            | 进给速度(mm/min) | 1600 | 1200 | 800  | 620  | 500  | 420  | 320  | 250  |





# KiloCut®

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