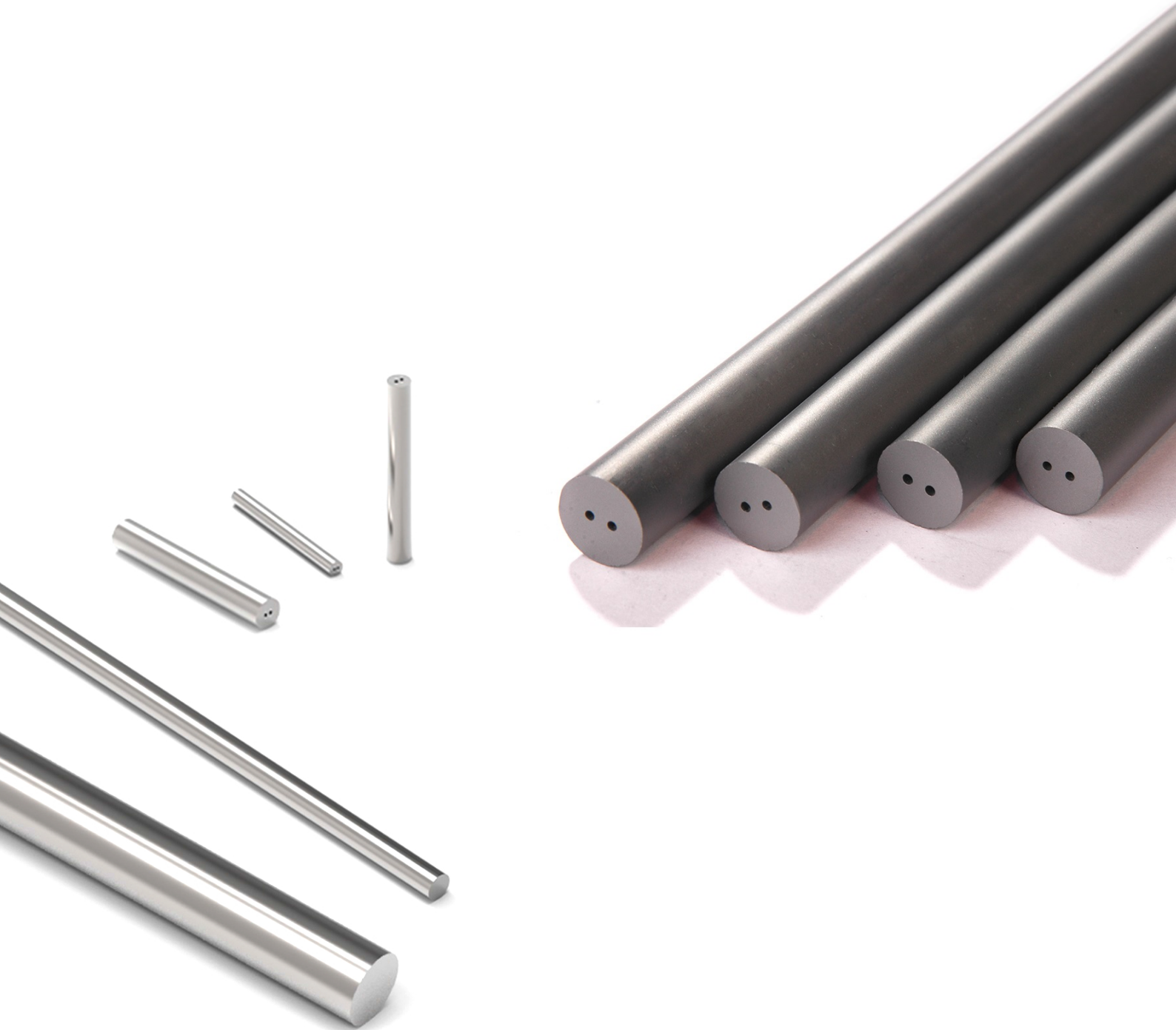


# TUNGSTEN CARBIDE RODS



# CEMENTED CARBIDE RODS

|                       |    |
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## Solid Rods

|                          |       |
|--------------------------|-------|
| • Solid Long Rods-Metric | 03-05 |
|--------------------------|-------|

## Rods with Coolant Holes

|                                             |       |
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## 牌号介绍

### Grade Introduction

| 牌号<br>Grade   | ISO牌号ISO<br>Grade | 晶粒度<br>Grain Size | 钴含量<br>Cobalt<br>Content | 硬度<br>Hardness |      | 密度<br>Density     | 抗弯强度<br>TRS       | 牌号应用<br>Application                                                                                                                                                                                    |
|---------------|-------------------|-------------------|--------------------------|----------------|------|-------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                   | um                | %                        | HRA            | HV30 | g/cm <sup>3</sup> | N/mm <sup>2</sup> |                                                                                                                                                                                                        |
| <b>YU092</b>  | K05-K10           | 0.2               | 9                        | 94             | 2050 | 14.44             | 4100              | 适用于高硬材料（HRC58以上）精加工，不锈钢、铝合金等高光表面处理。<br>Special ultrafine carbide grade for finishing high hardened materials (above HRC58), high light surface treatment of stainless steel, aluminum alloy and so on. |
| <b>YU10UF</b> | K05-K10           | 0.4               | 6                        | 94             | 2050 | 14.8              | 3800              | 适用于高硬材料、复合材料精加工，PCB刀具、雕刻刀。<br>Suitable for high hardened materials and finish-machining of composite material; also application for PCB tools and gravers.                                             |
| <b>YU15UF</b> | K10-K20           | 0.4               | 8.5                      | 93.5           | 1940 | 14.52             | 3800              | 适用于高硬材料、复合材料加工，PCB铣刀、钻头。<br>Suitable for processing high hard materials, composite materials, PCB milling cutter and drills.                                                                           |
| <b>YU25UF</b> | K20-K40           | 0.4               | 12                       | 92.6           | 1750 | 14.1              | 4200              | 适用于不锈钢、有色金属、钛合金、高温合金、高硬材料（HRC50-58）的铣削加工。<br>Suitable for milling of stainless steel, nonferrous metal, titanium alloy, high temperature alloy and high hard material (HRC50-58).                      |
| <b>YU20F</b>  | K20-K40           | 0.6               | 10                       | 92.3           | 1700 | 14.37             | 4000              | 适用于合金钢、不锈钢、有色金属、高温合金等材料的切削加工。<br>Suitable for cutting alloy steel, stainless steel, non-ferrous metal, high temperature alloy and so on.                                                               |
| <b>YU20</b>   | K20-K40           | 0.7               | 10                       | 91.9           | 1630 | 14.4              | 3800              | 通用型铣刀、钻头材质，适用于合金钢、不锈钢、有色金属、高温合金等材料的切削加工。<br>For general use of milling and drilling, suitable for cutting alloy steel, stainless steel, non-ferrous metal, high temperature alloy and so on.           |
| <b>YK05A</b>  | K15               | 1.0               | 6                        | 92.5           | 1740 | 14.9              | 2450              | 适用于有色金属、高硅铝合金和石墨制品（金刚石涂层）。<br>Suitable for machining non-ferrous metal, aluminium with a high silicon content and graphite (with diamond coating).                                                     |

# 牌号推荐

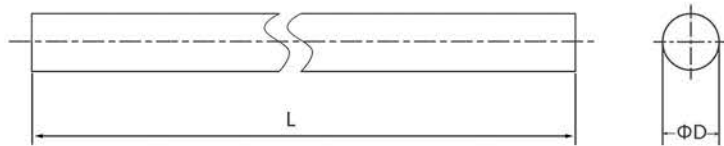
## Grade Selection Guide

| 加工材料<br>Workpiece                                                                   |                                  | 刀具种类<br>Type of Cutting Tools |                  | YU092 | YU10UF | YU15UF | YU25UF | YU20F | YU20 | YK05A |
|-------------------------------------------------------------------------------------|----------------------------------|-------------------------------|------------------|-------|--------|--------|--------|-------|------|-------|
|    | 钢<br>Steel                       | 立铣刀<br>Endmill                | 粗加工<br>Roughing  |       |        |        |        | ●     | ★    |       |
|                                                                                     |                                  |                               | 精加工<br>Finishing |       |        |        | ★      | ●     | ●    |       |
|                                                                                     |                                  | 钻头<br>Drill                   |                  |       |        |        |        | ●     | ★    |       |
|    | 不锈钢<br>Stainless steel           | 立铣刀<br>Endmill                | 粗加工<br>Roughing  |       |        |        |        | ●     | ★    |       |
|                                                                                     |                                  |                               | 精加工<br>Finishing | ●     |        |        | ●      | ★     |      |       |
|                                                                                     |                                  | 钻头<br>Drill                   |                  |       |        |        |        | ●     | ★    |       |
|    | 铸铁<br>Cast Iron                  | 立铣刀<br>Endmill                | 粗加工<br>Roughing  |       |        |        |        |       | ★    |       |
|                                                                                     |                                  |                               | 精加工<br>Finishing |       |        |        |        | ★     | ●    | ▲     |
|                                                                                     |                                  | 钻头<br>Drill                   |                  |       |        |        |        | ●     | ★    |       |
|  | 有色金属<br>Nonferrous Material      | 立铣刀<br>Endmill                | 粗加工<br>Roughing  |       |        |        |        | ●     | ★    |       |
|                                                                                     |                                  |                               | 精加工<br>Finishing | ●     |        |        | ★      | ●     | ●    | ▲     |
|                                                                                     |                                  | 钻头<br>Drill                   |                  |       |        |        |        |       |      | ★     |
|  | 耐热合金<br>Heat Resistance Material | 立铣刀<br>Endmill                | 粗加工<br>Roughing  |       |        | ●      |        |       | ★    |       |
|                                                                                     |                                  |                               | 精加工<br>Finishing |       |        |        | ★      |       | ●    |       |
|                                                                                     |                                  | 钻头<br>Drill                   |                  |       |        |        |        | ●     | ★    |       |
|  | 高硬材料<br>Hardened Material        | 立铣刀<br>Endmill                | 粗加工<br>Roughing  | ●     |        | ★      | ●      |       |      |       |
|                                                                                     |                                  |                               | 精加工<br>Finishing | ★     | ●      | ●      |        |       |      |       |
|                                                                                     |                                  | 钻头<br>Drill                   |                  |       |        | ●      |        | ●     | ★    |       |
| Others                                                                              | 石墨Graphite                       |                               |                  |       |        |        |        |       |      | ▲     |
|                                                                                     | 碳纤维增强塑料CFRP                      |                               |                  | ●     | ●      | ●      |        |       |      | ▲     |
|                                                                                     | 印刷电路板PCB                         |                               |                  | ●     | ★      | ●      |        |       |      |       |

|   |                       |
|---|-----------------------|
| ★ | 优选 First Choice       |
| ● | 备选 Second Choice      |
| ▲ | 金刚石涂层 Diamond Coating |

# 实心硬质合金毛坯棒

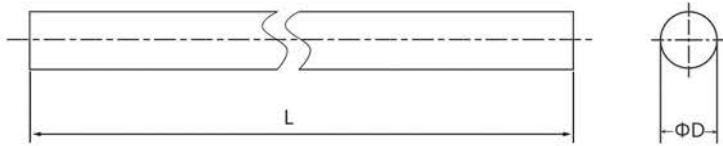
UNGROUND SOLID CARBIDE ROD



| 型号<br>TYPE | 直径<br>Diameter(mm) | 外径公差Tol.of<br>Diameter(mm) | 长度<br>L(mm) | 长度公差Tol.of<br>Length(mm) |
|------------|--------------------|----------------------------|-------------|--------------------------|
| Φ0.7x330   | 0.7                | +0.40/+0.15                | 330/310     | -0~+5.0                  |
| Φ0.9x330   | 0.9                | +0.40/+0.15                | 330/310     | -0~+5.0                  |
| Φ1.0x330   | 1.0                | +0.40/+0.15                | 330/310     | -0~+5.0                  |
| Φ1.2x330   | 1.2                | +0.40/+0.20                | 330/310     | -0~+5.0                  |
| Φ1.5x330   | 1.5                | +0.40/+0.20                | 330/310     | -0~+5.0                  |
| Φ1.6x330   | 1.6                | +0.40/+0.20                | 330/310     | -0~+5.0                  |
| Φ1.8x330   | 1.8                | +0.40/+0.20                | 330/310     | -0~+5.0                  |
| Φ2.0x330   | 2.0                | +0.40/+0.20                | 330/310     | -0~+5.0                  |
| Φ2.3x330   | 2.3                | +0.40/+0.20                | 330/310     | -0~+5.0                  |
| Φ2.5x330   | 2.5                | +0.40/+0.20                | 330/310     | -0~+5.0                  |
| Φ2.8x330   | 2.8                | +0.40/+0.20                | 330/310     | -0~+5.0                  |
| Φ3.0x330   | 3.0                | +0.50/+0.20                | 330/310     | -0~+5.0                  |
| Φ3.5x330   | 3.5                | +0.50/+0.20                | 330/310     | -0~+5.0                  |
| Φ4.0x330   | 4.0                | +0.50/+0.20                | 330/310     | -0~+5.0                  |
| Φ4.5x330   | 4.5                | +0.50/+0.20                | 330/310     | -0~+5.0                  |
| Φ5.0x330   | 5.0                | +0.50/+0.20                | 330/310     | -0~+5.0                  |
| Φ5.5x330   | 5.5                | +0.50/+0.20                | 330/310     | -0~+5.0                  |
| Φ6.0x330   | 6.0                | +0.50/+0.20                | 330/310     | -0~+5.0                  |
| Φ6.5x330   | 6.5                | +0.50/+0.20                | 330/310     | -0~+5.0                  |
| Φ7.0x330   | 7.0                | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ7.5x330   | 7.5                | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ8.0x330   | 8.0                | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ8.5x330   | 8.5                | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ9.0x330   | 9.0                | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ9.5x330   | 9.5                | +0.60/+0.20                | 330/310     | -0~+5.0                  |

# 实心硬质合金毛坯棒

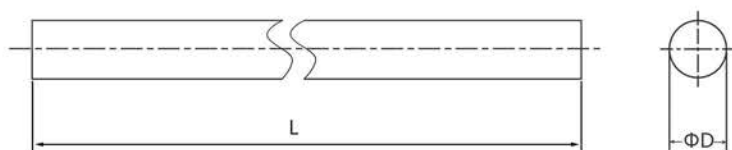
UNGROUND SOLID CARBIDE ROD



| 型号<br>TYPE | 直径<br>Diameter(mm) | 外径公差Tol.of<br>Diameter(mm) | 长度<br>L(mm) | 长度公差Tol.of<br>Length(mm) |
|------------|--------------------|----------------------------|-------------|--------------------------|
| Φ10.0x330  | 10.0               | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ10.5x330  | 10.5               | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ11.0x330  | 11.0               | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ11.5x330  | 11.5               | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ12.0x330  | 12.0               | +0.60/+0.20                | 330/310     | -0~+5.0                  |
| Φ12.5x330  | 12.5               | +0.70/+0.30                | 330/310     | -0~+5.0                  |
| Φ13.0x330  | 13.0               | +0.70/+0.30                | 330/310     | -0~+5.0                  |
| Φ14.0x330  | 14.0               | +0.70/+0.30                | 330/310     | -0~+5.0                  |
| Φ15.0x330  | 15.0               | +0.70/+0.30                | 330/310     | -0~+5.0                  |
| Φ16.0x330  | 16.0               | +0.70/+0.30                | 330/310     | -0~+5.0                  |
| Φ17.0x330  | 17.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ18.0x330  | 18.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ19.0X330  | 19.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ20.0X330  | 20.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ21.0X330  | 21.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ22.0X330  | 22.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ23.0X330  | 23.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ24.0X330  | 24.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ25.0X330  | 25.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ26.0X330  | 26.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ27.0X330  | 27.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ28.0X330  | 28.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ29.0X330  | 29.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ30.0X330  | 30.0               | +0.80/+0.30                | 330/310     | -0~+5.0                  |
| Φ31.0X330  | 31.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |

# 实心硬质合金毛坯棒

UNGROUND SOLID CARBIDE ROD

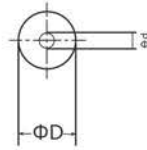
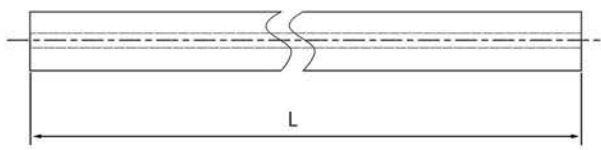


| 型号<br>TYPE | 直径<br>Diameter(mm) | 外径公差Tol.of<br>Diameter(mm) | 长度<br>L(mm) | 长度公差Tol.of<br>Length(mm) |
|------------|--------------------|----------------------------|-------------|--------------------------|
| Φ32.0X330  | 32.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ33.0X330  | 33.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ34.0X330  | 34.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ35.0X330  | 35.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ36.0X330  | 36.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ37.0X330  | 37.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ38.0X330  | 38.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ39.0X330  | 39.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ40.0X330  | 40.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ41.0X330  | 41.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ42.0X330  | 42.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ43.0X330  | 43.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ44.0X330  | 44.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ45.0X330  | 45.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ46.0X330  | 46.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ47.0X330  | 47.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ48.0X330  | 48.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ49.0X330  | 49.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |
| Φ50.0X330  | 50.0               | +1.20/+0.60                | 330/310     | -0~+5.0                  |

★ Φ4-Φ25可定制1000mm长

# 单直孔棒

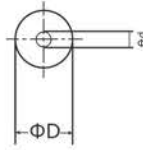
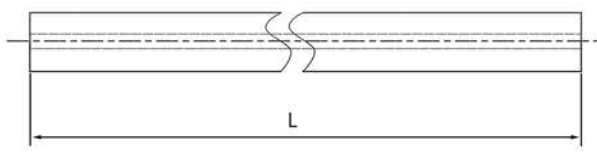
RODS WITH CENTRAL COOLANT HOLE



| 型号<br>TYPE    | 直径<br>Diameter(mm) | 外径公差Tol.of<br>Diameter(mm) | 孔径<br>D(mm) | 孔径公差<br>Dol.of.d(mm) | 长度<br>L(mm) | 长度公差Tol.of<br>Length(mm) |
|---------------|--------------------|----------------------------|-------------|----------------------|-------------|--------------------------|
| Φ2.0XΦ0.2X330 | 2.0                | +0.50/+0.25                | 0.2         | ±0.10                | 330         | -0~+5.0                  |
| Φ2.0XΦ0.3X330 | 2.0                | +0.50/+0.25                | 0.3         | ±0.10                | 330         | -0~+5.0                  |
| Φ2.0XΦ0.4X330 | 2.0                | +0.50/+0.25                | 0.4         | ±0.10                | 330         | -0~+5.0                  |
| Φ2.0XΦ0.5X330 | 2.0                | +0.50/+0.25                | 0.5         | ±0.10                | 330         | -0~+5.0                  |
| Φ2.0XΦ0.6X330 | 2.0                | +0.50/+0.25                | 0.6         | ±0.10                | 330         | -0~+5.0                  |
| Φ2.0XΦ0.8X330 | 2.0                | +0.50/+0.25                | 0.8         | ±0.10                | 330         | -0~+5.0                  |
| Φ2.0XΦ1.0X330 | 2.0                | +0.50/+0.25                | 1.0         | ±0.15                | 330         | -0~+5.0                  |
| Φ3.0XΦ0.1X330 | 3.0                | +0.50/+0.25                | 0.1         | ±0.10                | 330         | -0~+5.0                  |
| Φ3.0XΦ0.2X330 | 3.0                | +0.50/+0.25                | 0.2         | ±0.10                | 330         | -0~+5.0                  |
| Φ3.0XΦ0.3X330 | 3.0                | +0.50/+0.25                | 0.3         | ±0.10                | 330         | -0~+5.0                  |
| Φ3.0XΦ0.4X330 | 3.0                | +0.50/+0.25                | 0.4         | ±0.10                | 330         | -0~+5.0                  |
| Φ3.0XΦ0.5X330 | 3.0                | +0.50/+0.25                | 0.5         | ±0.10                | 330         | -0~+5.0                  |
| Φ3.0XΦ0.6X330 | 3.0                | +0.50/+0.25                | 0.6         | ±0.10                | 330         | -0~+5.0                  |
| Φ3.0XΦ0.7X330 | 3.0                | +0.50/+0.25                | 0.7         | ±0.10                | 330         | -0~+5.0                  |
| Φ3.0XΦ0.8X330 | 3.0                | +0.50/+0.25                | 0.8         | ±0.10                | 330         | -0~+5.0                  |
| Φ3.0XΦ0.9X330 | 3.0                | +0.50/+0.25                | 0.9         | ±0.10                | 330         | -0~+5.0                  |
| Φ3.0XΦ1.0X330 | 3.0                | +0.50/+0.25                | 1.0         | ±0.15                | 330         | -0~+5.0                  |
| Φ3.0XΦ1.1X330 | 3.0                | +0.50/+0.25                | 1.1         | ±0.15                | 330         | -0~+5.0                  |
| Φ3.0XΦ1.2X330 | 3.0                | +0.50/+0.25                | 1.2         | ±0.15                | 330         | -0~+5.0                  |
| Φ3.0XΦ1.3X330 | 3.0                | +0.50/+0.25                | 1.3         | ±0.15                | 330         | -0~+5.0                  |
| Φ3.0XΦ1.4X330 | 3.0                | +0.50/+0.25                | 1.4         | ±0.15                | 330         | -0~+5.0                  |
| Φ3.0XΦ1.5X330 | 3.0                | +0.50/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |
| Φ3.0XΦ1.6X330 | 3.0                | +0.50/+0.25                | 1.6         | ±0.15                | 330         | -0~+5.0                  |

# 单直孔棒

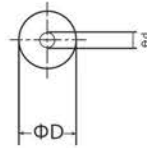
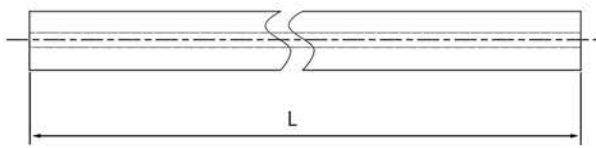
RODS WITH CENTRAL COOLANT HOLE



| 型号<br>TYPE    | 直径<br>Diameter(mm) | 外径公差Tol.of<br>Diameter(mm) | 孔径<br>D(mm) | 孔径公差<br>Dol.of.d(mm) | 长度<br>L(mm) | 长度公差Tol.of<br>Length(mm) |
|---------------|--------------------|----------------------------|-------------|----------------------|-------------|--------------------------|
| Φ3.0XΦ1.7X330 | 3.0                | +0.50/+0.25                | 1.7         | ±0.15                | 330         | -0~+5.0                  |
| Φ3.0XΦ1.8X330 | 3.0                | +0.50/+0.25                | 1.8         | ±0.15                | 330         | -0~+5.0                  |
| Φ3.0XΦ2.0X330 | 3.0                | +0.50/+0.25                | 2.0         | ±0.20                | 330         | -0~+5.0                  |
| Φ4.0XΦ0.1X330 | 4.0                | +0.50/+0.25                | 0.1         | ±0.10                | 330         | -0~+5.0                  |
| Φ4.0XΦ0.2X330 | 4.0                | +0.50/+0.25                | 0.2         | ±0.10                | 330         | -0~+5.0                  |
| Φ4.0XΦ0.3X330 | 4.0                | +0.50/+0.25                | 0.3         | ±0.10                | 330         | -0~+5.0                  |
| Φ4.0XΦ0.4X330 | 4.0                | +0.50/+0.25                | 0.4         | ±0.10                | 330         | -0~+5.0                  |
| Φ4.0XΦ0.5X330 | 4.0                | +0.50/+0.25                | 0.5         | ±0.10                | 330         | -0~+5.0                  |
| Φ4.0XΦ0.6X330 | 4.0                | +0.50/+0.25                | 0.6         | ±0.10                | 330         | -0~+5.0                  |
| Φ4.0XΦ0.8X330 | 4.0                | +0.50/+0.25                | 0.8         | ±0.10                | 330         | -0~+5.0                  |
| Φ4.0XΦ1.0X330 | 4.0                | +0.50/+0.25                | 1.0         | ±0.15                | 330         | -0~+5.0                  |
| Φ4.0XΦ1.2X330 | 4.0                | +0.50/+0.25                | 1.2         | ±0.15                | 330         | -0~+5.0                  |
| Φ4.0XΦ1.3X330 | 4.0                | +0.50/+0.25                | 1.3         | ±0.15                | 330         | -0~+5.0                  |
| Φ4.0XΦ1.4X330 | 4.0                | +0.50/+0.25                | 1.4         | ±0.15                | 330         | -0~+5.0                  |
| Φ4.0XΦ1.5X330 | 4.0                | +0.50/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |
| Φ4.0XΦ1.6X330 | 4.0                | +0.50/+0.25                | 1.6         | ±0.15                | 330         | -0~+5.0                  |
| Φ4.0XΦ1.9X330 | 4.0                | +0.50/+0.25                | 1.9         | ±0.15                | 330         | -0~+5.0                  |
| Φ4.0XΦ2.0X330 | 4.0                | +0.50/+0.25                | 2.0         | ±0.20                | 330         | -0~+5.0                  |
| Φ4.0XΦ2.5X330 | 4.0                | +0.50/+0.25                | 2.5         | ±0.25                | 330         | -0~+5.0                  |
| Φ5.0XΦ0.3X330 | 5.0                | +0.50/+0.25                | 0.3         | ±0.10                | 330         | -0~+5.0                  |
| Φ5.0XΦ0.4X330 | 5.0                | +0.50/+0.25                | 0.4         | ±0.10                | 330         | -0~+5.0                  |
| Φ5.0XΦ0.5X330 | 5.0                | +0.50/+0.25                | 0.5         | ±0.10                | 330         | -0~+5.0                  |
| Φ5.0XΦ0.6X330 | 5.0                | +0.50/+0.25                | 0.6         | ±0.10                | 330         | -0~+5.0                  |

# 单直孔棒

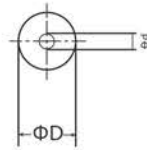
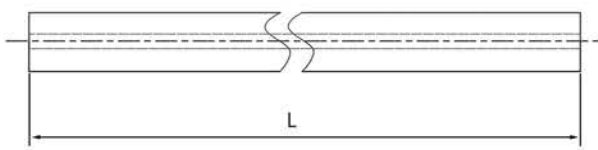
RODS WITH CENTRAL COOLANT HOLE



| 型号<br>TYPE    | 直径<br>Diameter(mm) | 外径公差Tol.of<br>Diameter(mm) | 孔径<br>D(mm) | 孔径公差<br>Dol.of.d(mm) | 长度<br>L(mm) | 长度公差Tol.of<br>Length(mm) |
|---------------|--------------------|----------------------------|-------------|----------------------|-------------|--------------------------|
| Φ5.0XΦ0.8X330 | 5.0                | +0.50/+0.25                | 0.8         | ±0.10                | 330         | -0~+5.0                  |
| Φ5.0XΦ0.9X330 | 5.0                | +0.50/+0.25                | 0.9         | ±0.10                | 330         | -0~+5.0                  |
| Φ5.0XΦ1.0X330 | 5.0                | +0.50/+0.25                | 1.0         | ±0.15                | 330         | -0~+5.0                  |
| Φ5.0XΦ1.1X330 | 5.0                | +0.50/+0.25                | 1.1         | ±0.15                | 330         | -0~+5.0                  |
| Φ5.0XΦ1.2X330 | 5.0                | +0.50/+0.25                | 1.2         | ±0.15                | 330         | -0~+5.0                  |
| Φ5.0XΦ1.5X330 | 5.0                | +0.50/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |
| Φ5.0XΦ1.6X330 | 5.0                | +0.50/+0.25                | 1.6         | ±0.15                | 330         | -0~+5.0                  |
| Φ5.0XΦ2.0X330 | 5.0                | +0.50/+0.25                | 2.0         | ±0.20                | 330         | -0~+5.0                  |
| Φ6.0XΦ0.2X330 | 6.0                | +0.50/+0.25                | 0.2         | ±0.10                | 330         | -0~+5.0                  |
| Φ6.0XΦ0.3X330 | 6.0                | +0.50/+0.25                | 0.3         | ±0.10                | 330         | -0~+5.0                  |
| Φ6.0XΦ0.5X330 | 6.0                | +0.50/+0.25                | 0.5         | ±0.10                | 330         | -0~+5.0                  |
| Φ6.0XΦ0.6X330 | 6.0                | +0.50/+0.25                | 0.6         | ±0.10                | 330         | -0~+5.0                  |
| Φ6.0XΦ0.8X330 | 6.0                | +0.50/+0.25                | 0.8         | ±0.10                | 330         | -0~+5.0                  |
| Φ6.0XΦ1.0X330 | 6.0                | +0.50/+0.25                | 1.0         | ±0.15                | 330         | -0~+5.0                  |
| Φ6.0XΦ1.2X330 | 6.0                | +0.50/+0.25                | 1.2         | ±0.15                | 330         | -0~+5.0                  |
| Φ6.0XΦ1.5X330 | 6.0                | +0.50/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |
| Φ6.0XΦ1.6X330 | 6.0                | +0.50/+0.25                | 1.6         | ±0.15                | 330         | -0~+5.0                  |
| Φ6.0XΦ1.8X330 | 6.0                | +0.50/+0.25                | 1.8         | ±0.15                | 330         | -0~+5.0                  |
| Φ6.0XΦ2.0X330 | 6.0                | +0.50/+0.25                | 2.0         | ±0.20                | 330         | -0~+5.0                  |
| Φ7.0XΦ0.5X330 | 7.0                | +0.60/+0.25                | 0.5         | ±0.10                | 330         | -0~+5.0                  |
| Φ7.0XΦ0.6X330 | 7.0                | +0.60/+0.25                | 0.6         | ±0.10                | 330         | -0~+5.0                  |
| Φ7.0XΦ1.0X330 | 7.0                | +0.60/+0.25                | 1.0         | ±0.15                | 330         | -0~+5.0                  |
| Φ7.0XΦ1.5X330 | 7.0                | +0.60/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |

# 单直孔棒

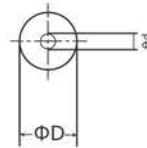
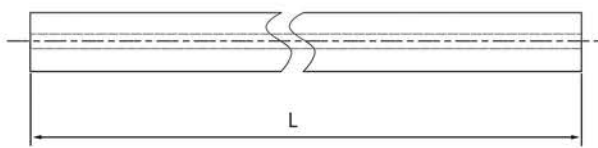
RODS WITH CENTRAL COOLANT HOLE



| 型号<br>TYPE     | 直径<br>Diameter(mm) | 外径公差Tol.of<br>Diameter(mm) | 孔径<br>D(mm) | 孔径公差<br>Dol.of.d(mm) | 长度<br>L(mm) | 长度公差Tol.of<br>Length(mm) |
|----------------|--------------------|----------------------------|-------------|----------------------|-------------|--------------------------|
| Φ7.0XΦ3.0X330  | 7.0                | +0.60/+0.25                | 3.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ8.0XΦ0.5X330  | 8.0                | +0.60/+0.25                | 0.5         | ±0.10                | 330         | -0~+5.0                  |
| Φ8.0XΦ0.6X330  | 8.0                | +0.60/+0.25                | 0.6         | ±0.10                | 330         | -0~+5.0                  |
| Φ8.0XΦ0.8X330  | 8.0                | +0.60/+0.25                | 0.8         | ±0.10                | 330         | -0~+5.0                  |
| Φ8.0XΦ1.0X330  | 8.0                | +0.60/+0.25                | 1.0         | ±0.15                | 330         | -0~+5.0                  |
| Φ8.0XΦ1.2X330  | 8.0                | +0.60/+0.25                | 1.2         | ±0.15                | 330         | -0~+5.0                  |
| Φ8.0XΦ1.5X330  | 8.0                | +0.60/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |
| Φ8.0XΦ1.8X330  | 8.0                | +0.60/+0.25                | 1.8         | ±0.15                | 330         | -0~+5.0                  |
| Φ8.0XΦ2.0X330  | 8.0                | +0.60/+0.25                | 2.0         | ±0.20                | 330         | -0~+5.0                  |
| Φ8.0XΦ2.5X330  | 8.0                | +0.60/+0.25                | 2.5         | ±0.25                | 330         | -0~+5.0                  |
| Φ8.0XΦ3.0X330  | 8.0                | +0.60/+0.25                | 3.0         | ±0.25                | 330         | -0~+5.0                  |
| Φ8.0XΦ3.5X330  | 8.0                | +0.60/+0.25                | 3.5         | ±0.25                | 330         | -0~+5.0                  |
| Φ8.0XΦ4.0X330  | 8.0                | +0.60/+0.25                | 4.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ9.0XΦ0.5X330  | 9.0                | +0.60/+0.25                | 0.5         | ±0.10                | 330         | -0~+5.0                  |
| Φ9.0XΦ1.5X330  | 9.0                | +0.60/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |
| Φ9.0XΦ2.0X330  | 9.0                | +0.60/+0.25                | 2.0         | ±0.20                | 330         | -0~+5.0                  |
| Φ9.0XΦ2.5X330  | 9.0                | +0.60/+0.25                | 2.5         | ±0.25                | 330         | -0~+5.0                  |
| Φ10.0XΦ0.5X330 | 10.0               | +0.60/+0.25                | 0.5         | ±0.10                | 330         | -0~+5.0                  |
| Φ10.0XΦ1.0X330 | 10.0               | +0.60/+0.25                | 1.0         | ±0.15                | 330         | -0~+5.0                  |
| Φ10.0XΦ1.2X330 | 10.0               | +0.60/+0.25                | 1.2         | ±0.15                | 330         | -0~+5.0                  |
| Φ10.0XΦ1.5X330 | 10.0               | +0.60/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |
| Φ10.0XΦ1.8X330 | 10.0               | +0.60/+0.25                | 1.8         | ±0.15                | 330         | -0~+5.0                  |
| Φ10.0XΦ2.0X330 | 10.0               | +0.60/+0.25                | 2.0         | ±0.20                | 330         | -0~+5.0                  |
| Φ10.0XΦ2.5X330 | 10.0               | +0.60/+0.25                | 2.5         | ±0.25                | 330         | -0~+5.0                  |

# 单直孔棒

RODS WITH CENTRAL COOLANT HOLE



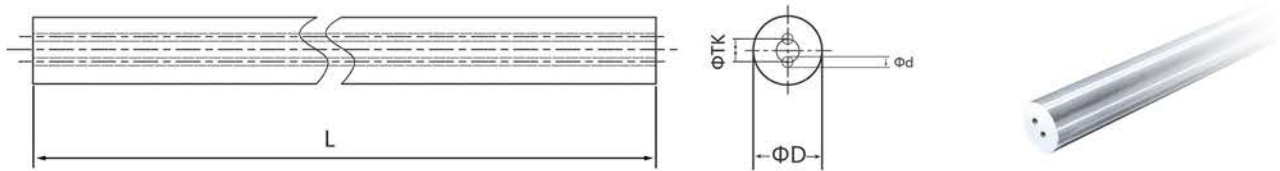
| 型号<br>TYPE     | 直径<br>Diameter(mm) | 外径公差Tol.of<br>Diameter(mm) | 孔径<br>D(mm) | 孔径公差<br>Dol.of.d(mm) | 长度<br>L(mm) | 长度公差Tol.of<br>Length(mm) |
|----------------|--------------------|----------------------------|-------------|----------------------|-------------|--------------------------|
| Φ10.0XΦ3.0X330 | 10.0               | +0.60/+0.25                | 3.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ10.0XΦ6.0X330 | 10.0               | +0.60/+0.25                | 6.0         | ±0.40                | 330         | -0~+5.0                  |
| Φ12.0XΦ1.5X330 | 12.0               | +0.60/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |
| Φ12.0XΦ2.0X330 | 12.0               | +0.60/+0.25                | 2.0         | ±0.20                | 330         | -0~+5.0                  |
| Φ12.0XΦ2.5X330 | 12.0               | +0.60/+0.25                | 2.5         | ±0.25                | 330         | -0~+5.0                  |
| Φ12.0XΦ3.0X330 | 12.0               | +0.60/+0.25                | 3.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ12.0XΦ6.0X330 | 12.0               | +0.60/+0.25                | 6.0         | ±0.40                | 330         | -0~+5.0                  |
| Φ12.0XΦ6.5X330 | 12.0               | +0.60/+0.25                | 6.5         | ±0.40                | 330         | -0~+5.0                  |
| Φ13.0XΦ3.5X330 | 13.0               | +0.70/+0.25                | 3.5         | ±0.20                | 330         | -0~+5.0                  |
| Φ14.0XΦ3.0X330 | 14.0               | +0.70/+0.25                | 3.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ15.0XΦ1.3X330 | 15.0               | +0.70/+0.25                | 1.3         | ±0.15                | 330         | -0~+5.0                  |
| Φ15.0XΦ1.5X330 | 15.0               | +0.70/+0.25                | 1.5         | ±0.15                | 330         | -0~+5.0                  |
| Φ16.0XΦ1.0X330 | 16.0               | +0.70/+0.25                | 1.0         | ±0.15                | 330         | -0~+5.0                  |
| Φ16.0XΦ2.0X330 | 16.0               | +0.70/+0.25                | 2.0         | ±0.20                | 330         | -0~+5.0                  |
| Φ16.0XΦ3.0X330 | 16.0               | +0.70/+0.25                | 3.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ18.0XΦ3.0X330 | 18.0               | +0.80/+0.30                | 3.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ20.0XΦ3.0X330 | 20.0               | +0.80/+0.25                | 3.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ20.0XΦ4.0X330 | 20.0               | +0.80/+0.25                | 4.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ22.0XΦ3.0X330 | 22.0               | +0.80/+0.25                | 3.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ24.0XΦ4.0X330 | 24.0               | +0.80/+0.25                | 4.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ25.0XΦ3.0X330 | 25.0               | +0.80/+0.25                | 3.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ26.0XΦ4.0X330 | 26.0               | +0.80/+0.30                | 4.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ28.0XΦ4.0X330 | 28.0               | +0.80/+0.25                | 4.0         | ±0.30                | 330         | -0~+5.0                  |
| Φ32.0XΦ5.0X330 | 32.0               | +1.20/+0.30                | 5.0         | ±0.40                | 330         | -0~+5.0                  |

★ 标准外径：Φ2-Φ32，其他规格可接受定制

★ 标准长度：330mm，其他长度可接受定制

# 双直孔棒

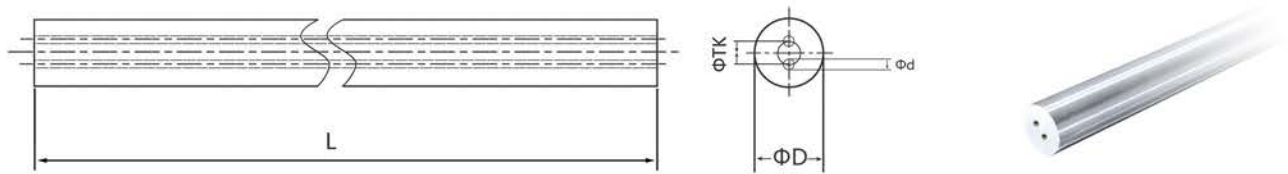
RODS WITH TWO STRAIGHT COOLANT HOLES



| 型号<br>TYPE           | 直径及公差<br>Diameter and Tol (mm) |           | 外径公差<br>D and Tol (mm) |       | 孔间距及公差<br>TK and Tol (mm) |          | 长度及公差<br>Length and Tol (mm) |          |
|----------------------|--------------------------------|-----------|------------------------|-------|---------------------------|----------|------------------------------|----------|
|                      | 直径ΦD                           | 公差Tol     | 直径Φd                   | 公差Tol | 孔间距TK                     | 公差Tol    | 长度L                          | 公差Tol    |
| Φ4.0x2Φ0.8x1.8x330   | 4.0                            | +0.5/+0.3 | 0.8                    | ±0.10 | 1.8                       | +0/-0.15 | 330                          | -0~+5.00 |
| Φ5.0x2Φ0.8x2.0x330   | 5.0                            | +0.5/+0.3 | 0.8                    | ±0.10 | 2.0                       | +0/-0.15 | 330                          | -0~+5.00 |
| Φ6.0x2Φ1.0x3.0x330   | 6.0                            | +0.5/+0.3 | 1.0                    | ±0.15 | 3.0                       | +0/-0.20 | 330                          | -0~+5.00 |
| Φ7.0x2Φ1.0x3.5x330   | 7.0                            | +0.6/+0.3 | 1.0                    | ±0.15 | 3.5                       | +0/-0.20 | 330                          | -0~+5.00 |
| Φ8.0x2Φ1.0x4.0x330   | 8.0                            | +0.6/+0.3 | 1.0                    | ±0.15 | 4.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ9.0x2Φ1.4x4.0x330   | 9.0                            | +0.6/+0.3 | 1.4                    | ±0.15 | 4.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ10.0x2Φ1.4x5.0x330  | 10.0                           | +0.6/+0.3 | 1.4                    | ±0.15 | 5.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ11.0x2Φ1.4x5.0x330  | 11.0                           | +0.6/+0.3 | 1.4                    | ±0.15 | 5.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ12.0x2Φ1.75x6.0x330 | 12.0                           | +0.6/+0.3 | 1.75                   | ±0.15 | 6.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ13.0x2Φ1.75x6.0x330 | 13.0                           | +0.7/+0.3 | 1.75                   | ±0.15 | 6.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ14.0x2Φ1.75x7.0x330 | 14.0                           | +0.7/+0.3 | 1.75                   | ±0.15 | 7.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ15.0x2Φ2.0x7.0x330  | 15.0                           | +0.7/+0.3 | 2.0                    | ±0.20 | 7.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ16.0x2Φ2.0x8.0x330  | 16.0                           | +0.7/+0.3 | 2.0                    | ±0.20 | 8.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ17.0x2Φ2.0x8.0x330  | 17.0                           | +0.8/+0.3 | 2.0                    | ±0.20 | 8.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ18.0x2Φ2.0x9.0x330  | 18.0                           | +0.8/+0.3 | 2.0                    | ±0.20 | 9.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ19.0x2Φ2.0x9.0x330  | 19.0                           | +0.8/+0.3 | 2.0                    | ±0.20 | 9.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ20.0x2Φ2.5x10x330   | 20.0                           | +0.8/+0.3 | 2.5                    | ±0.25 | 10                        | +0/-0.40 | 330                          | -0~+5.00 |
| Φ21.0x2Φ2.5x10x330   | 21.0                           | +0.8/+0.3 | 2.5                    | ±0.25 | 10                        | +0/-0.40 | 330                          | -0~+5.00 |
| Φ22.0x2Φ2.5x11x330   | 22.0                           | +0.8/+0.3 | 2.5                    | ±0.25 | 11                        | +0/-0.40 | 330                          | -0~+5.00 |
| Φ23.0x2Φ2.5x11x330   | 23.0                           | +0.8/+0.3 | 2.5                    | ±0.25 | 11                        | +0/-0.40 | 330                          | -0~+5.00 |
| Φ24.0x2Φ3.0x12x330   | 24.0                           | +0.8/+0.3 | 3.0                    | ±0.25 | 12                        | +0/-0.50 | 330                          | -0~+5.00 |
| Φ25.0x2Φ3.0x12x330   | 25.0                           | +0.8/+0.3 | 3.0                    | ±0.25 | 12                        | +0/-0.50 | 330                          | -0~+5.00 |
| Φ26.0x2Φ3.0x13x330   | 26.0                           | +0.8/+0.3 | 3.0                    | ±0.25 | 13                        | +0/-0.50 | 330                          | -0~+5.00 |

# 双直孔棒

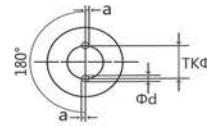
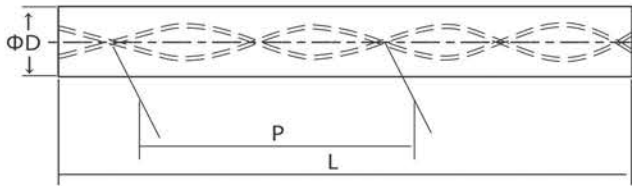
RODS WITH TWO STRAIGHT COOLANT HOLES



| 型号<br>TYPE          | 直径及公差<br>Diameter and Tol (mm) |           | 外径公差<br>D and Tol (mm) |       | 孔间距及公差<br>TK and Tol (mm) |          | 长度及公差<br>Length and Tol (mm) |          |
|---------------------|--------------------------------|-----------|------------------------|-------|---------------------------|----------|------------------------------|----------|
|                     | 直径ΦD                           | 公差Tol     | 直径Φd                   | 公差Tol | 孔间距TK                     | 公差Tol    | 长度L                          | 公差Tol    |
| Φ6.0x2Φ0.8x1.5x330  | 6.0                            | +0.5/+0.3 | 0.8                    | ±0.15 | 1.5                       | +0/-0.20 | 330                          | -0~+5.00 |
| Φ7.0x2Φ0.8x1.5x330  | 7.0                            | +0.6/+0.3 | 0.8                    | ±0.15 | 1.5                       | +0/-0.20 | 330                          | -0~+5.00 |
| Φ8.0x2Φ1.0x1.5x330  | 8.0                            | +0.6/+0.3 | 1.0                    | ±0.15 | 1.5                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ9.0x2Φ1.0x2.6x330  | 9.0                            | +0.6/+0.3 | 1.0                    | ±0.15 | 2.6                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ10.0x2Φ1.0x2.6x330 | 10.0                           | +0.6/+0.3 | 1.0                    | ±0.15 | 2.6                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ11.0x2Φ1.2x3.6x330 | 11.0                           | +0.6/+0.3 | 1.2                    | ±0.15 | 3.6                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ12.0x2Φ1.2x3.6x330 | 12.0                           | +0.6/+0.3 | 1.2                    | ±0.15 | 3.6                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ13.0x2Φ1.2x3.6x330 | 13.0                           | +0.7/+0.3 | 1.2                    | ±0.15 | 3.6                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ14.0x2Φ1.5x5.0x330 | 14.0                           | +0.7/+0.3 | 1.5                    | ±0.15 | 5.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ15.0x2Φ1.5x5.0x330 | 15.0                           | +0.7/+0.3 | 1.5                    | ±0.15 | 5.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ16.0x2Φ1.5x5.0x330 | 16.0                           | +0.7/+0.3 | 1.5                    | ±0.15 | 5.0                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ17.0x2Φ2.0x6.2x330 | 17.0                           | +0.8/+0.3 | 2.0                    | ±0.20 | 6.2                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ18.0x2Φ2.0x6.2x330 | 18.0                           | +0.8/+0.3 | 2.0                    | ±0.20 | 6.2                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ19.0x2Φ2.0x6.2x330 | 19.0                           | +0.8/+0.3 | 2.0                    | ±0.20 | 6.2                       | +0/-0.30 | 330                          | -0~+5.00 |
| Φ20.0x2Φ2.0x6.2x330 | 20.0                           | +0.8/+0.3 | 2.0                    | ±0.25 | 6.2                       | +0/-0.40 | 330                          | -0~+5.00 |
| Φ21.0x2Φ2.0x6.2x330 | 21.0                           | +0.8/+0.3 | 2.0                    | ±0.25 | 6.2                       | +0/-0.40 | 330                          | -0~+5.00 |
| Φ22.0x2Φ2.0x6.2x330 | 22.0                           | +0.8/+0.3 | 2.0                    | ±0.25 | 6.2                       | +0/-0.40 | 330                          | -0~+5.00 |
| Φ23.0x2Φ2.0x7.5x330 | 23.0                           | +0.8/+0.3 | 2.0                    | ±0.25 | 7.5                       | +0/-0.40 | 330                          | -0~+5.00 |
| Φ24.0x2Φ2.0x7.5x330 | 24.0                           | +0.8/+0.3 | 2.0                    | ±0.30 | 7.5                       | +0/-0.50 | 330                          | -0~+5.00 |
| Φ25.0x2Φ2.0x7.5x330 | 25.0                           | +0.8/+0.3 | 2.0                    | ±0.30 | 7.5                       | +0/-0.50 | 330                          | -0~+5.00 |
| Φ26.0x2Φ2.0x7.5x330 | 26.0                           | +0.8/+0.3 | 2.0                    | ±0.30 | 7.5                       | +0/-0.50 | 330                          | -0~+5.00 |

## 30°双螺旋孔棒

RODS WITH 2 HELICAL COOLANT HOLES (30°)

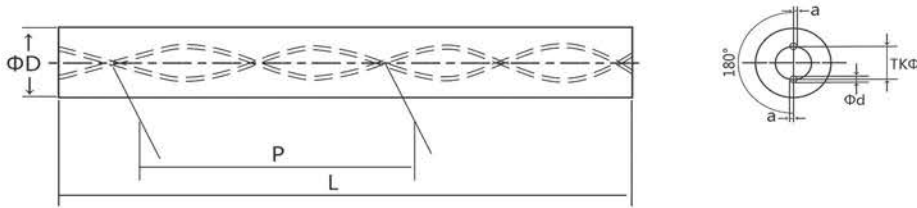


| 直径ΦD | 长度L<br>(公差 Tol 0/+5) | 内孔径<br>Φ d | 孔间距<br>Bolt Circle TK | 螺距 (±0.5°) Pitch |             | 孔中心偏离<br>Hole Deviation<br>a |
|------|----------------------|------------|-----------------------|------------------|-------------|------------------------------|
|      |                      |            |                       | P                | Tol         |                              |
| 3    | 330                  | 0.4        | 1.7                   | 16.32            | -0.32/+0.33 | 0.15                         |
| 4    | 330                  | 0.6        | 2.2                   | 21.77            | -0.43/+0.45 | 0.15                         |
| 5    | 330                  | 0.7        | 2.6                   | 27.21            | -0.54/+0.56 | 0.15                         |
| 6    | 330                  | 0.7        | 2.6                   | 32.65            | -0.65/+0.67 | 0.15                         |
| 7    | 330                  | 1.0        | 3.7                   | 38.09            | -0.76/+0.78 | 0.15                         |
| 8    | 330                  | 1.0        | 4.0                   | 43.53            | -0.86/+0.89 | 0.15                         |
| 9    | 330                  | 1.4        | 4.8                   | 48.97            | -0.97/+1.00 | 0.20                         |
| 10   | 330                  | 1.4        | 4.8                   | 54.41            | -1.08/+1.11 | 0.20                         |
| 11   | 330                  | 1.4        | 5.3                   | 59.86            | -1.19/+1.22 | 0.30                         |
| 12   | 330                  | 1.4        | 6.25                  | 65.30            | -1.30/+1.34 | 0.30                         |
| 13   | 330                  | 1.75       | 6.5                   | 70.74            | -1.40/+1.45 | 0.37                         |
| 14   | 330                  | 1.75       | 7.1                   | 76.18            | -1.51/+1.56 | 0.40                         |
| 14   | 330                  | 1.90       | 6.7                   | 76.18            | -1.51/+1.56 | 0.40                         |
| 15   | 330                  | 1.75       | 7.7                   | 81.62            | -1.62/+1.67 | 0.40                         |

| 毛坯 Unground ΦD(mm) |           | 内孔径 Φd (mm)    |        | 孔间距 Bolt Circle TK(mm) |         |
|--------------------|-----------|----------------|--------|------------------------|---------|
| 范围 range           | 公差 Tol    | 范围 range       | 公差 Tol | 范围 range               | 公差 Tol  |
| 3 ≤ ΦD ≤ 6         | +1.0/+0.6 | 0.4 ≤ Φd ≤ 0.9 | ±0.10  | TK ≤ 4                 | +0/-0.4 |
| 6 ≤ ΦD ≤ 16        | +1.1/+0.7 | 0.9 ≤ Φd ≤ 1.7 | ±0.15  | 4 < TK ≤ 5             | +0/-0.6 |
| 16 ≤ ΦD ≤ 24       | +1.1/+0.7 | Φd = 1.75      | ±0.20  | 5 < TK ≤ 10.1          | +0/-0.8 |
| ΦD = 25            | +1.2/+0.8 | Φd = 1.75      | ±0.25  | 10.1 < TK ≤ 13.3       | +0/-1.0 |

## 30°双螺旋孔棒

RODS WITH 2 HELICAL COOLANT HOLES (30°)

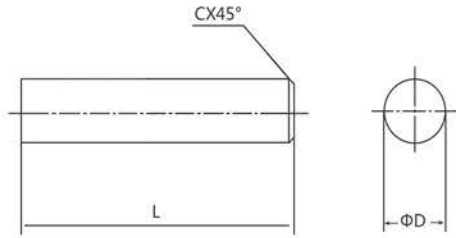


| 直径ΦD | 长度L<br>(公差 Tol 0/+5) | 内孔径<br>Φ d | 孔间距<br>Bolt Circle TK | 螺距 (±0.5°) Pitch |             | 孔中心偏离<br>Hole Deviation<br>a |
|------|----------------------|------------|-----------------------|------------------|-------------|------------------------------|
|      |                      |            |                       | P                | Tol         |                              |
| 16   | 330                  | 1.75       | 8.3                   | 87.06            | -1.73/+1.78 | 0.40                         |
| 16   | 330                  | 2.1        | 8.0                   | 87.07            | -1.73/+1.78 | 0.45                         |
| 16   | 330                  | 2.5        | 8.8                   | 87.06            | -1.73/+1.78 | 0.45                         |
| 17   | 330                  | 1.75       | 8.9                   | 92.50            | -1.84/+1.89 | 0.45                         |
| 18   | 330                  | 2.0        | 9.55                  | 97.95            | -1.94/+2.00 | 0.50                         |
| 18   | 330                  | 2.8        | 9.90                  | 97.95            | -1.95/+2.00 | 0.50                         |
| 19   | 330                  | 2.0        | 10.10                 | 103.39           | -2.05/+2.21 | 0.50                         |
| 20   | 330                  | 2.0        | 10.40                 | 108.83           | -2.16/+2.23 | 0.50                         |
| 20   | 330                  | 2.5        | 10.00                 | 108.83           | -2.16/+2.23 | 0.50                         |
| 21   | 330                  | 2.0        | 11.15                 | 114.27           | -2.27/+2.34 | 0.50                         |
| 22   | 330                  | 2.0        | 11.60                 | 119.71           | -2.38/+2.45 | 0.50                         |
| 23   | 330                  | 2.0        | 12.20                 | 125.15           | -2.48/+2.56 | 0.50                         |
| 24   | 330                  | 2.0        | 12.80                 | 130.59           | -2.59/+2.67 | 0.50                         |
| 25   | 330                  | 2.0        | 13.30                 | 136.03           | -2.70/+2.87 | 0.50                         |

| 毛坯 Unground ΦD(mm) |           | 内孔径 Φd (mm)    |        | 孔间距 Bolt Circle TK(mm) |         |
|--------------------|-----------|----------------|--------|------------------------|---------|
| 范围 range           | 公差 Tol    | 范围 range       | 公差 Tol | 范围 range               | 公差 Tol  |
| 3 ≤ ΦD ≤ 6         | +1.0/+0.6 | 0.4 ≤ Φd ≤ 0.9 | ±0.10  | TK ≤ 4                 | +0/-0.4 |
| 6 ≤ ΦD ≤ 16        | +1.1/+0.7 | 0.9 ≤ Φd ≤ 1.7 | ±0.15  | 4 < TK ≤ 5             | +0/-0.6 |
| 16 ≤ ΦD ≤ 24       | +1.1/+0.7 | Φd=1.75        | ±0.20  | 5 < TK ≤ 10.1          | +0/-0.8 |
| ΦD=25              | +1.2/+0.8 | Φd=1.75        | ±0.25  | 10.1 < TK ≤ 13.3       | +0/-1.0 |

## 公制精磨倒角短棒(h5/h6)

GROUND CARBIDE RODS WITH CHAMFER-METRIC



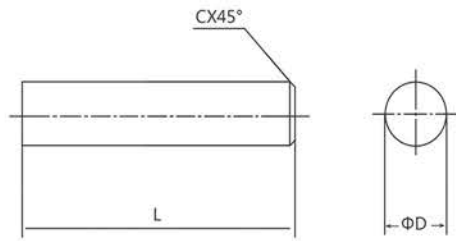
| 型号TYPE  | 尺寸Dimension(mm) |     |       |
|---------|-----------------|-----|-------|
|         | 直径ΦD            | 长度L | 倒角尺寸C |
| Φ3x50   | 3               | 50  | 0.4   |
| Φ3x100  | 3               | 100 | 0.4   |
| Φ4x50   | 4               | 50  | 0.4   |
| Φ4x75   | 4               | 75  | 0.4   |
| Φ4x100  | 4               | 100 | 0.4   |
| Φ5x50   | 5               | 50  | 0.5   |
| Φ5x100  | 5               | 100 | 0.5   |
| Φ6x50   | 6               | 50  | 0.5   |
| Φ6x75   | 6               | 75  | 0.5   |
| Φ6x100  | 6               | 100 | 0.5   |
| Φ7x100  | 7               | 100 | 0.6   |
| Φ8x60   | 8               | 60  | 0.6   |
| Φ8x75   | 8               | 75  | 0.6   |
| Φ8x100  | 8               | 100 | 0.6   |
| Φ10x75  | 10              | 75  | 0.6   |
| Φ10x100 | 10              | 100 | 0.6   |
| Φ12x75  | 12              | 75  | 0.8   |
| Φ12x100 | 12              | 100 | 0.8   |
| Φ14x75  | 14              | 75  | 0.8   |
| Φ14x100 | 14              | 100 | 0.8   |
| Φ16x100 | 16              | 100 | 0.8   |
| Φ18x100 | 18              | 100 | 0.8   |
| Φ18x150 | 18              | 150 | 0.8   |
| Φ20x100 | 20              | 100 | 1.0   |
| Φ20x150 | 20              | 150 | 1.0   |

★ 标准外径：Φ3~Φ20，其他直径可定制

★ 标准长度：公制长度，其他长度可定制

# DIN精磨倒角短棒(h5/h6)

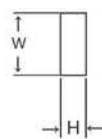
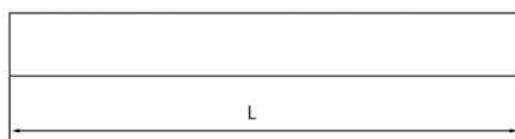
GROUND CARBIDE RODS WITH CHAMFER-DIN



| 型号TYPE  | 尺寸Dimension(mm) |     |       |
|---------|-----------------|-----|-------|
|         | 直径ΦD            | 长度L | 倒角尺寸C |
| Φ3.0x39 | 3.0             | 39  | 0.4   |
| Φ3.5x51 | 3.5             | 51  | 0.4   |
| Φ4.0x51 | 4.0             | 51  | 0.4   |
| Φ4.5x51 | 4.5             | 51  | 0.4   |
| Φ5.0x51 | 5.0             | 51  | 0.5   |
| Φ5.5x58 | 5.5             | 58  | 0.5   |
| Φ6.0x51 | 6.0             | 51  | 0.5   |
| Φ6.0x55 | 6.0             | 55  | 0.5   |
| Φ6.0x58 | 6.0             | 58  | 0.5   |
| Φ6.5x61 | 6.5             | 61  | 0.6   |
| Φ7.0x61 | 7.0             | 61  | 0.6   |
| Φ8.0x59 | 8.0             | 59  | 0.6   |
| Φ8.0x64 | 8.0             | 64  | 0.6   |
| Φ8.5x68 | 8.5             | 68  | 0.6   |
| Φ9.0x68 | 9.0             | 68  | 0.6   |
| Φ10x67  | 10              | 67  | 0.6   |
| Φ10x73  | 10              | 73  | 0.6   |
| Φ11x84  | 11              | 84  | 0.8   |
| Φ12x74  | 12              | 74  | 0.8   |
| Φ12x84  | 12              | 84  | 0.8   |
| Φ13x84  | 13              | 84  | 0.8   |
| Φ14x76  | 14              | 76  | 0.8   |
| Φ14x84  | 14              | 84  | 0.8   |
| Φ15x93  | 15              | 93  | 0.8   |
| Φ16x83  | 16              | 83  | 0.8   |
| Φ16x93  | 16              | 93  | 0.8   |
| Φ18x85  | 18              | 85  | 0.8   |
| Φ18x93  | 18              | 93  | 0.8   |
| Φ20x93  | 20              | 93  | 1.0   |
| Φ20x105 | 20              | 105 | 1.0   |

# 硬质合金长条

TUNGSTEN CARBIDE STRIP



| 型号TYPE         | 尺寸Dimension(mm) |    |     |
|----------------|-----------------|----|-----|
|                | L               | W  | H   |
| 2.0X330X(2-5)  | 330             | 2  | 2-5 |
| 4.0X330X(2-5)  | 330             | 4  | 2-5 |
| 6.0X330X(2-5)  | 330             | 6  | 2-5 |
| 8.0X330X(2-5)  | 330             | 8  | 2-5 |
| 10.0X330X(2-5) | 330             | 10 | 2-5 |
| 12.0X330X(2-5) | 330             | 12 | 3-5 |
| 15.0X330X(2-5) | 330             | 15 | 3-5 |
| 18.0X330X(2-5) | 330             | 18 | 3-5 |
| 20.0X330X(2-5) | 330             | 20 | 3-5 |
| 22.0X330X(2-5) | 330             | 22 | 3-5 |
| 24.0X330X(2-5) | 330             | 24 | 3-5 |
| 26.0X330X(2-5) | 330             | 26 | 3-5 |

## 公差等级

CARBIDE ROD TOLERANCE

## 精磨外径公差

TOL.OF GROUND RODS'S DIAMETER

| 直径ΦD                               | 公差Tol                |                      |                      |                      |
|------------------------------------|----------------------|----------------------|----------------------|----------------------|
|                                    | h4                   | h5                   | h6                   | h7                   |
| 0-3.0mm<br>0-0.1181in              | 0.003mm<br>0.00012in | 0.004mm<br>0.00015in | 0.006mm<br>0.00024in | 0.010mm<br>0.00039in |
| 3.001-6.0mm<br>0.118212-0.23622in  | 0.004mm<br>0.00015in | 0.005mm<br>0.00020in | 0.008mm<br>0.00031in | 0.012mm<br>0.00047in |
| 6.001-10.0mm<br>0.23623-0.3937in   | 0.004mm<br>0.00015in | 0.006mm<br>0.00024in | 0.009mm<br>0.00035in | 0.015mm<br>0.00059in |
| 10.001-18.0mm<br>0.39371-0.70866in | 0.005mm<br>0.00020in | 0.008mm<br>0.00031in | 0.011mm<br>0.00043in | 0.018mm<br>0.00071in |
| 18.001-30.0mm<br>0.90867-1.1811in  | 0.006mm<br>0.00024in | 0.009mm<br>0.00035in | 0.013mm<br>0.00051in | 0.021mm<br>0.00083in |
| 30.001-50.0mm<br>1.8111-1.9685in   | 0.007mm<br>0.00028in | 0.011mm<br>0.00043in | 0.016mm<br>0.00063in | 0.025mm<br>0.00098in |

★ "h" 的公差均为 +0.0/-  
★ "h" Tolerance is +0.0/-

# 材质性能名词解释

## DEFINITIONS OF PHYSICAL PROPERTIES

### ◆ 硬度 Hardness

金属材料抵抗其它更硬物体压入表面的能力称为硬度，主要采用洛氏或维氏硬度测量法，两种硬度值转换时需要注意换算。

The Hardness of material is defined as the ability to fight against the hard pressed into surface of the object, mainly using measurements of Rockwell and Vickers. As the principles of the Vickers and Rockwell tests are different, care must be taken when converting from one system to the other.

### ◆ 矫顽磁力 Coercive Field Strength

矫顽磁力测量的是合金试样完全去磁化所需的反向磁场大小，它可用来评定合金的组织状况，矫顽力随钴含量降低而增大，当钴含量一定时，碳化钨晶粒越细，钴相分散程度越高，矫顽力也越大。

Coercive Field Strength is a measure of the residual magnetism in the hysteresis loop when the Cobalt (Co) binder in grade of cemented carbide is magnetized and then demagnetized. It can be used to assess the status of alloy organization. The finer the grain size of the carbide phase the higher will be the coercive force value.

### ◆ 磁饱和Magnetic Saturation

磁饱和是最大磁化强度与质量的比值。通过测定硬质合金中具有磁性的钴 (Co) 粘结相的磁饱和，可以评定合金组份。低磁饱和值表示合金含碳量低，或者含有 $\eta$ 相碳化物，高磁饱和值表示存在“游离碳或石墨”。

Magnetic Saturation: is the ratio of magnetic intensity to quality. Magnetic Saturation measurements on the Cobalt (Co) binder phase in cemented carbide are used by the industry to evaluate its composition. Low Magnetic Saturation values indicate a low carbon level and/or the presence of Eta-Phase Carbides. High Magnetic Saturation values indicate the presence of 'free-carbon' or Graphite.

### ◆ 密度Density

材料的密度(比重)是材料质量与其体积的比率，使用液体置换法进行测定，硬质合金密度随WC Co相中钴含量增加而减小。

The Density (specific gravity) of a material is the ratio of its mass to its volume. It is measured using a water displacement technique. Cemented carbide density decreases linearly with increasing Cobalt content for the Wc-Co grades.

### ◆ 抗弯强度Transverse Rupture Strength

抗弯强度是表征材料抵抗弯曲断裂的能力，即试样跨距中点加载负荷至断裂时，单位面积上所受的力大小。

Transverse Rupture Strength (TRS) is the ability of material to resist bending, measured at the breaking point of a material in a standard three point bend test.

### ◆ 金相Metallographic Analysis

硬质合金烧结钴相粘结后，过量钴可能在某些结构区域中存在，形成“钴池”；而当粘结相不完全粘结，则将形成一些少量残余孔隙，合金中钴池及孔隙率使用金相显微镜检验得到。

Cobalt Lakes will bond after sintering, excess cobalt may exist in certain area of the structure, forming the cobalt pool; If bonding phase is incompletely adhesive, there will form some residual pores. Cobalt pools and porosity can be detected by using metallographic microscope.



## **JIANGXI YATECH MATERIALS CO., LTD.**

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