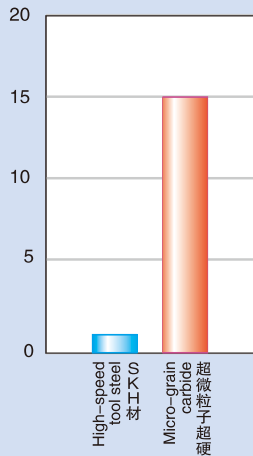


寿命测试对比 Life Evaluation Comparison

(单位: 倍率) Unit: Times

胶带 Adhesive tape



刃物形状: Gable刀具
Edge shape: Gable blade

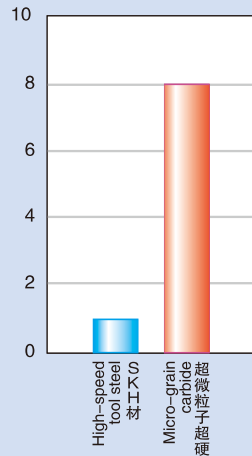
切断方法: 剪切
Cutting method: Shear-cut

材质: SKH→超微粒子
Material: High-speed tool steel→Micro-grain

效果: 15倍
Results: 15 times

其他: 减少黏刀
Others: Reduced blade sticking

复合薄膜+金属薄膜 Composite film + Metal foil



刃物形状: Gang形状
Edge shape: Gang blade

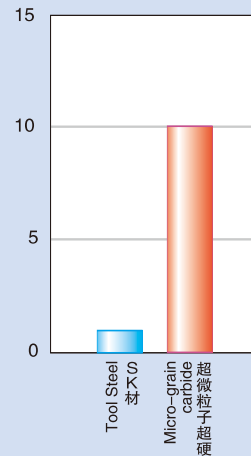
切断方法: 剪切
Cutting method: Shear-cut

材质: SKH→超微粒子
Material: High-speed tool steel→Micro-grain

效果: 8倍
Results: 8 times

其他: 切断面良好
Others: Good cutting surface

PET薄膜 PET Film



刃物形状: 长刀
Edge shape: Plate knife

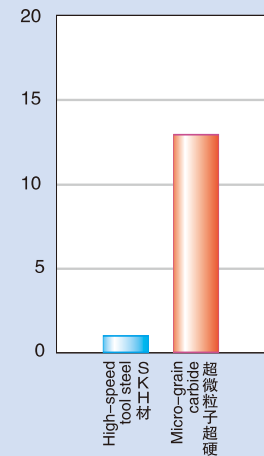
切断方法: 非接触式切削
Cutting method: Cut in the air (Non-contact)

材质: SK→超微粒子
Material: Tool Steel→Micro-grain

效果: 10倍
Results: 10 times

其他: 切断面良好
Others: Good cutting surface

铝膜 Aluminum foil



刃物形状: Gang形状
Edge shape: Gang blade

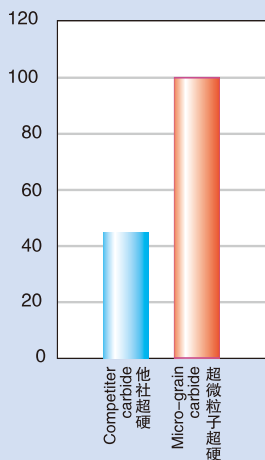
切断方法: 剪切
Cutting method: Shear-cut

材质: SKH→超微粒子
Material: High-speed tool steel→Micro-grain

效果: 13倍
Results: 13 times

其他: 品质稳定
Others: Stable quality

纸箱 Cardboard box



刃物形状: 圆形刀具
Edge shape: Round knife

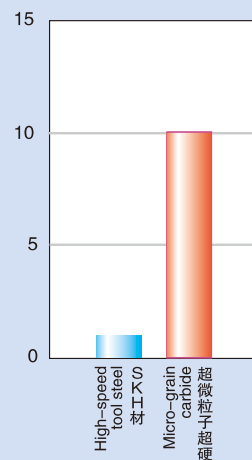
切断方法: 分切机
Cutting method: Slitter scorer

材质: 其他公司超硬→超微粒子超硬
Material: Competitor→Micro-grain carbide

效果: 2.3倍
Results: 2.3 times

其他: 提高生产效率
Others: Productivity improvement

铜箔 Copper foil



刃物形状: Gang形状
Edge shape: Gang blade

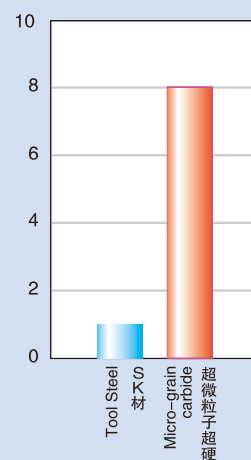
切断方法: 剪切
Cutting method: Shear-cut

材质: SKH→超微粒子
Material: High-speed tool steel→Micro-grain

效果: 10倍
Results: 10 times

其他: 品质稳定
Others: Stable quality

胶片 Rubber sheet



刃物形状: 圆形刀具哑光处理
Edge shape: Round knife with satin finished surface

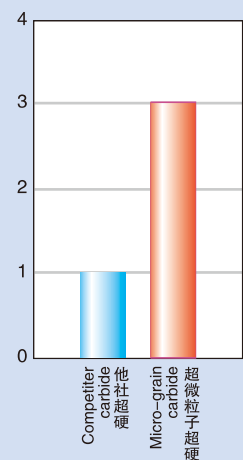
切断方法: 旋转式切削
Cutting method: Rotating cut

材质: SK→超微粒子
Material: Tool Steel→Micro-grain

效果: 8倍
Results: 8 times

其他: 减少对刀具的粘附力
Others: Decreased adhesion to blade

纤维 Fibers



刃物形状: 长刀
Edge shape: Plate knife

切断方法: 砍切
Cutting method: Chopped cut

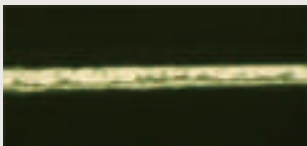
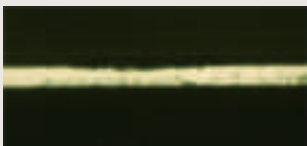
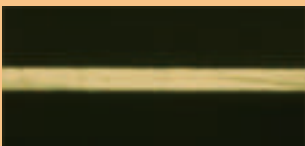
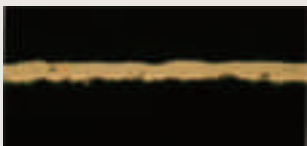
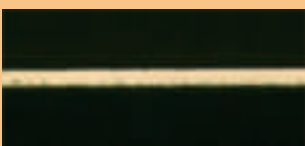
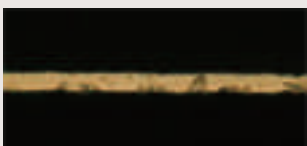
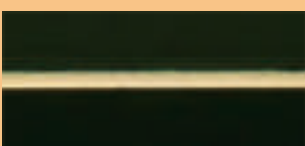
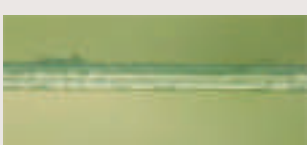
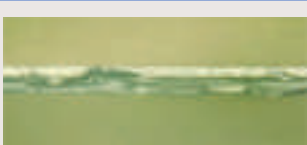
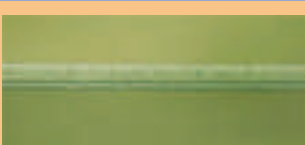
材质: 其他公司超硬→超微粒子超硬
Material: Competitor→Micro-grain carbide

效果: 3倍
Results: 3 times

其他: 提高生产效率
Others: Productivity improvement

(根据客户评价) User's evaluation

分切面比较图片 Comparison Photograph of Cut Surfaces

	金属刀具 Metallic blade	京瓷超微粒子硬质合金刀具 Kyocera micro-grain carbide blade	
对苯二甲酸乙二醇酯 Polyethylene-terephthalate (PET)	上刀 Upper blade 		降低毛须， 灰尘的产生！ Reduce whiskers and dust SEM
	下刀 Lower blade 		
金属刀具无法切断，并且会发生毛须和灰尘，但是使用超微粒子硬质合金刀具则会形成良好的切断面。 Metal blades can not cut and create whiskers and dust. Micro-grain carbide blades provide an excellent cut surface.			
铝箔 Aluminum foil	上刀 Upper blade 		抑制灰尘 产生以及 变形不良！ Prevent dust and deformation 数字示波器 Digital scope
	下刀 Lower blade 		
使用金属刀具，会产生上刀处灰尘和变形，但是使用超微粒子硬质合金刀具，则会形成良好的切断面。 Metal blades create dust and deformation by the upper blade. Micro-grain carbide blades provide an excellent cut surface.			
铜箔 Copper foil	上刀 Upper blade 		抑制灰尘 产生以及 变形不良！ Prevent dust and deformation 数字示波器 Digital scope
	下刀 Lower blade 		
使用金属刀具，会产生上刀处灰尘和变形，但是使用超微粒子硬质合金刀具，则会形成良好的切断面。 Metal blades create dust and deformation by the upper blade. Micro-grain carbide blades provide an excellent cut surface.			
粘性薄膜 Adhesive film	上刀 Upper blade 		抑制变形 和毛边的 形成！ Prevent deformation and burr 数字示波器 Digital scope
	下刀 Lower blade 		
使用金属刀具，在黏着层产生变形和毛边，使用超微粒硬质合金刀具，则会形成良好的切断面。 Metal blades create deformation of adhesive layer and burr. Micro-grain carbide blades provide an excellent cut surface.			

金属刀具和硬质合金刀具的比较

Comparison of Metal Knife and Micro-grain Knife

硬度不同! 《长寿命》

Different hardness <Long life>

FW35
HV1550



金属 metal (SKD,SKH)
HV770 ~ 800

FW35 硬度 2 倍 (金属比)

Double FW35 hardness (compared to metal)

材 质 Material	FW35 超微粒硬质合金 Micro-grain carbide	SKD 合金工具钢 Alloy Tool Steel	SKH 高速工具钢 (高速钢) High-Speed Tool Steel (High-speed steel)
用 途 Application	适用于工业用精密刀具 For Industrial Precision Knives	用于切削, 冲击部件, 模具, 拉丝模、冲压模具 For cutting tools, impact parts, wire drawing die, press die, etc.	切削工具用钢穴加工工具、齿切工具等 For cutting tools, drill, end mill, gear cutting tools and others
添加元素 Added chemical element	WC+10Co	C,W,Cr,Mo等 etc.	C,W,Cr,Mo,Co等 etc.
维氏硬度 Vickers hardness	1550 (HV)	770 (HV)	800 (HV)

硬质合金刀具 不同颗粒度刀具的刀尖比较

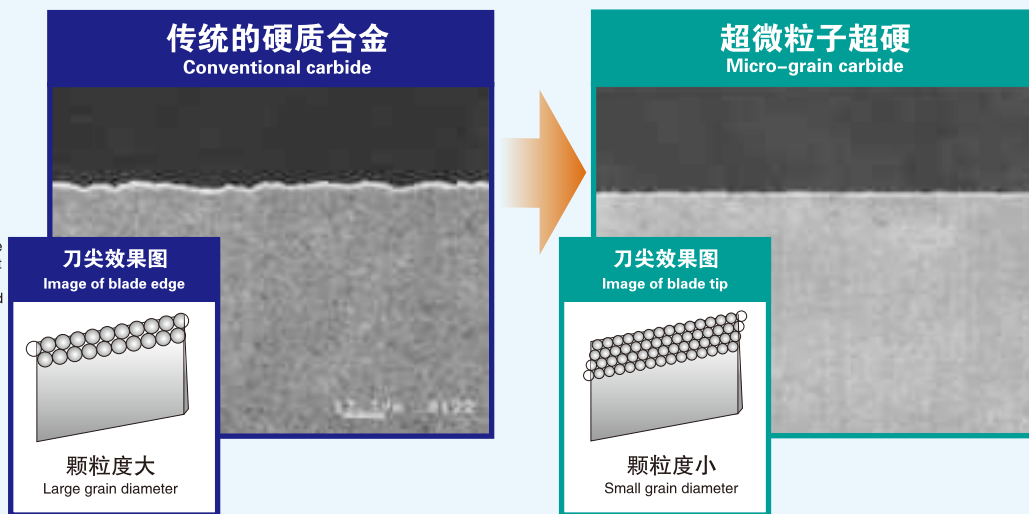
Blade comparison by grain diameters

小颗粒直径形成锐边!!

Smaller diameters create sharp edges

硬质合金材料由小颗粒的集体构成, 颗粒度的大小会直接影响刀具的锋利度, 并决定刀具刀尖的锐边。颗粒度越小, 则刀具的锋利度越好以及边线更稳定。

Micro-grain carbide is composed of an aggregate of micro grains. The grain size has a large effect to the sharpness of the blade edge. The smaller the grain diameter, the sharper and more stable blade edge line can be created.



HV-HRA比较表

Hardness comparison

维氏硬度 (HV)

Vickers hardness

700 800 900 1000 1100 1200 1300 1400 1500 1600 1700

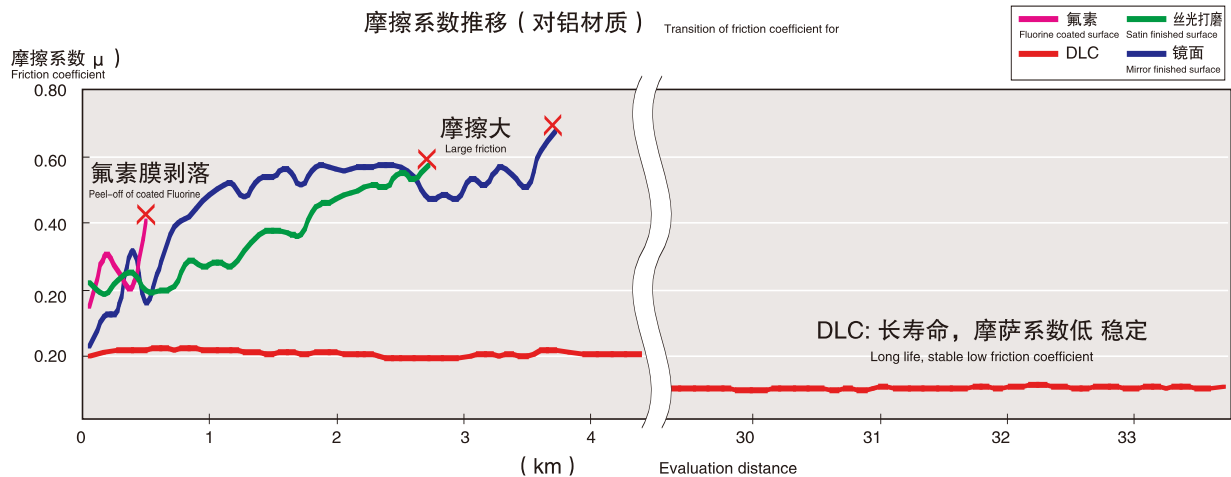
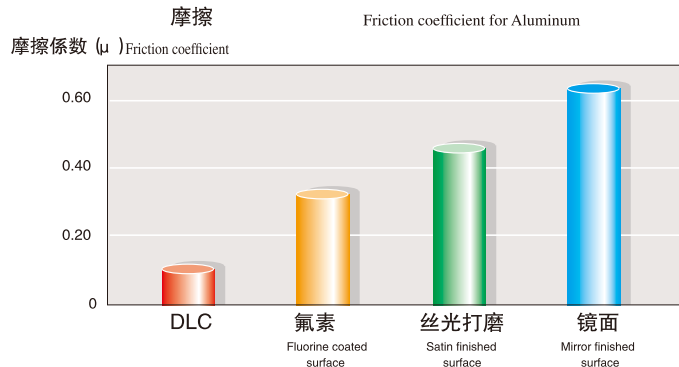
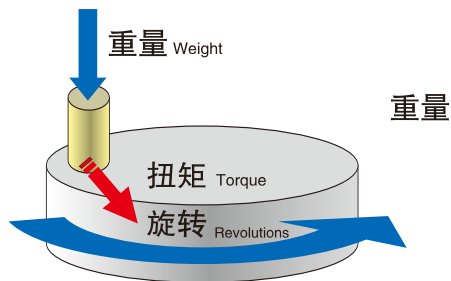
洛氏硬度 (HRA)

Rockwell hardness (A)

81 82 83 84 85 86.2 87 88 89 90.5 91 92

销盘式摩擦磨损试验

Pin on disc friction test



社内评估结果 Internal evaluation

各种表面处理

Surface Treatment Variation

DCL 涂层 ※ DLC (Diamond-like Carbon) Coated Treatment

耐磨性增强, 耐附着性增强, 耐药性增强 (Wear resistance, adhesion resistance and chemical resistance improved)

丝光打磨处理 Satin finished surface treatment

切屑减少、耐附着性加强 (Reduced cut off dust, improved adhesion resistance)

PVD涂层 PVD (Physical Vapor Deposition) Coated Treatment

耐药性加强、平滑性加强 (Chemical resistance and smoothness improved)

※DLC涂层类似金刚石涂层 DLC Coating: Diamond-like Carbon Coating

表面处理 Surface treatment

	寿命 Life	耐粘着性 Adhesion resistance	平滑性 Smoothness	耐腐蚀性 Corrosion resistance
DCL 涂层 DLC (Diamond-like Carbon) Coated Treatment	◎	○	◎	◎
丝光打磨处理 Satin finished surface treatment	○	◎	◎	△
PVD涂层 PVD (Physical Vapor Deposition) Coated Treatment	◎	△	○	◎

◎ : 1st choice, ○ : 2nd choice, △ : 3rd choice