线切割用超硬合金WD20

CEMENTED CARBIDE FOR WEDM (WATER TYPE) - WD20

大幅提升线切割时之耐腐蚀性。

比起KD20的耐腐蚀性WD20得到了更好的改善

Excellent corrosion-resistance in the WEDM (WATER TYPE) process.

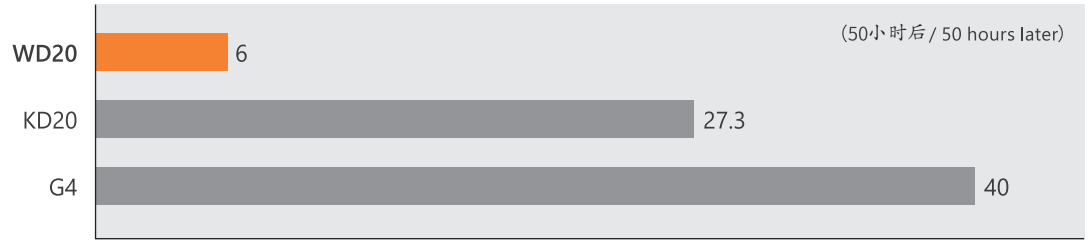
Improvement of corrosion-resistance against KD20 during dielectric water immersed WEDM (WATER TYPE) process over long operating hours.

产品说明 Explanation	通过提高耐腐蚀性成分，从而实现了优异的耐腐蚀性。 通过使用微粒子WC，获得了高硬度和高强度，使其具有良好的耐磨损性和耐剥落性。 WD实现了KX01不能加工厚的不锈钢的问题。 Excellent corrosion-resistance by the special component design. High hardness, toughness, wear-resistance and chipping-resistance by fine grain WC. Has succeeded for thick stainless sheet such as unsuitable for KX01.
用途/实例 Applications	适用于长时间水介质线切割放电加工模具、湿式加工时发生腐蚀现象的模具、以及在潮湿环境下贮存时易发生腐蚀的模具用，或者作为超硬合金制成的部件。 Mold parts concerned when WEDM (water type) in prolonged manufacturing. Mold parts concerned corrosion when wet type processing. Mold parts concerned corrosion under humidity environment at storage, etc.

耐腐蚀性比较
Comparison of corrosion-resistance

将试件（WD20、KD20、G4）浸泡在线切割加工液（水）中比较其腐蚀减少量。

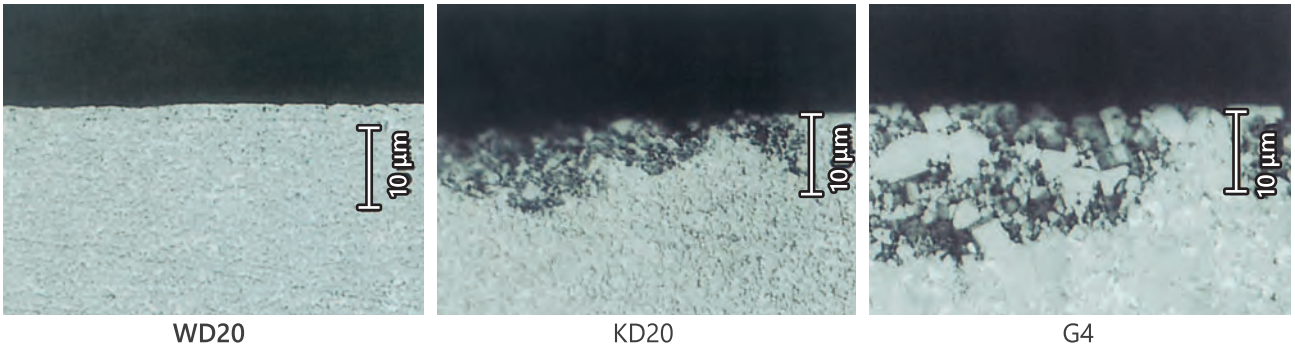
The test pieces of WD20, KD20 and G4, were tested to determine the loss in weight resulting from immersion during dielectric water WEDM (WATER TYPE) process.



在线切割加工液（水）中浸泡50小时后的腐蚀情况

Microstructure of test pieces showing depth of corrosion after 50 hours of immersion during dielectric water WEDM (WATER TYPE) process.

(×1500)



WD20　KD20　G4

腐蚀会导致Co结合剂溶出，从而使WC粒子发生脱落。

Corrosion causes elution of cobalt binder phase and loss of WC grain.

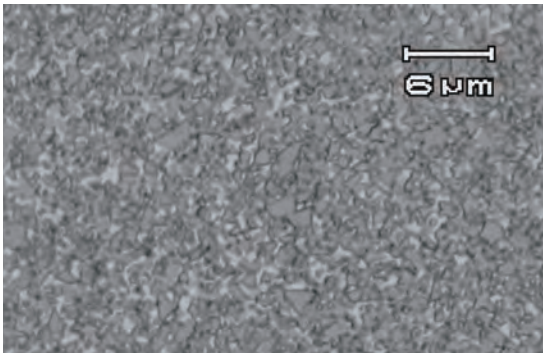
线切割用超硬合金WD20
CEMENTED CARBIDE FOR WEDM (WATER TYPE) - WD20

WD20物理性能
Physical property of WD20

本公司产品代号 Our grade	硬度 Hardness HRA	抗弯强度 TRS [GPa]	破坏韧性值 Fracture toughness values [MPa・m$^{1/2}$]
WD20	90.5	3.7	16
参考 KD20 Reference KD20	90.0	3.7	16
参考 G4 Reference G4	89.0	2.9	22

(代表值/ Typical figures)

WD20组织图片
Micrographs of WD20



金属显微镜（X1000）
By metallurgical microscope (×1000)

腐蚀实验方法
Corrosion test method

如图1般将试件排列于线切割加工（50小时）中的超硬合金上并浸泡于加工液中。
试件已预先在线切割机进行精加工（单面），使加工面与加工物件呈现垂直配置的状态。

A test was carried out with the following procedure :
- One surface of each test piece of WD20, KD20 and G4(8 mm × 10 mm × 20 mm) was prepared by WEDM (WATER TYPE).
- The test pieces were placed on a cemented carbide workpiece with their WEDM prepared surface facing upwards while the workpiece was subject to dielectric water immersed WEDM process as shown in the figure below (Fig. 1). The surfaces of the test pieces were then observed through a microscope.

图1　腐蚀试验的状态
Fig. 1 Condition of corrosion test

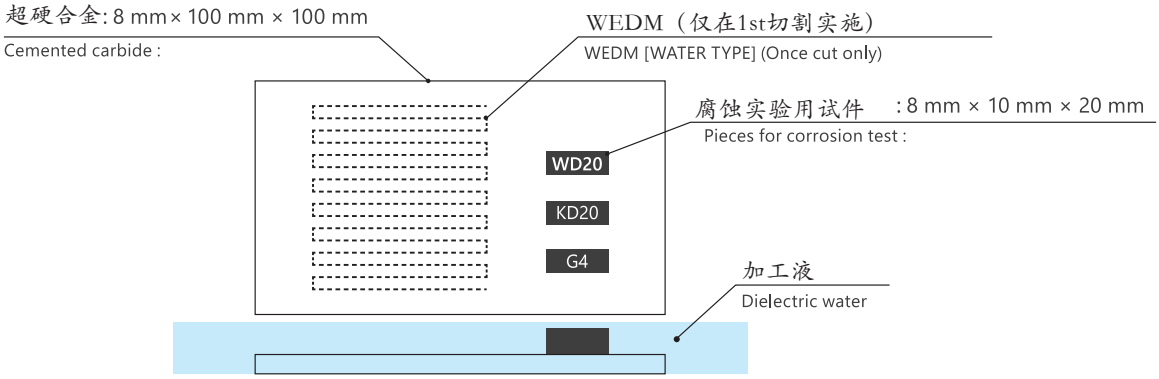
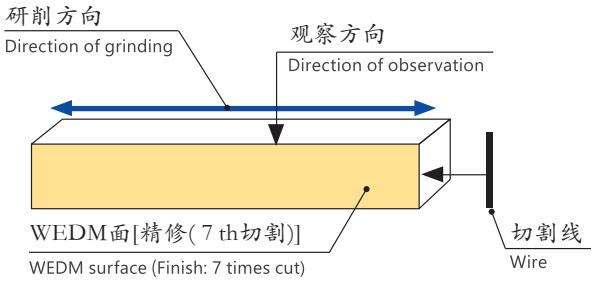


图2　试件放大图
Fig. 2 Magnified figure of a test piece



■加工条件 Cutting condition

线 Wire type	0.1 mm / Brass
工作物件 Workpiece	超硬合金（厚度：8 mm） Cemented carbide (Thichness : 8 mm)
加工液 Dielectric	离子交换水（电阻率：8×10^4 Ω·m） Ion exchange water (Water resistivity : 8×10^4 Ω·m)
加工速度 Cutting speed	600 μm/min