Cemented carbide for WEDM (Water type)- WD20

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.

Explanation
O Applications

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.

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.

Comparison of corrosion-resistance

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.



Decrease in corrosiveness [mg/(m² • h)]

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



WD20

KD20

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

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Physical property of WD20

Our grade	WC grain size [µm]	Binder phase content [%]	Density [×10 ³ kg/m ³] {g/cm ³ }	Hardness HRA	TRS [GPa]
WD20	1.0 (less than)	13	14.1	90.5	3.7
KD20	1.0 (less than)	13	14.2	90.0	3.7
G4	2.5 - 5.0	10	14.2	89.0	2.9

(Typical figures)

Corrosion test method

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.

Fig. 1 Condition of corrosion test



Fig. 2 Magnified figure of a test piece





Micrographs of WD20



By metallurgical microscope (×1000)

Direction of observation