

高亲和性金属加工模具用超硬合金MC20



CEMENTED CARBIDE FOR STAMPING OF METALS HIGH AFFINITY TO COBALT - MC20

高亲和性金属加工用超硬合金
(耐凝着磨损·耐烧结)

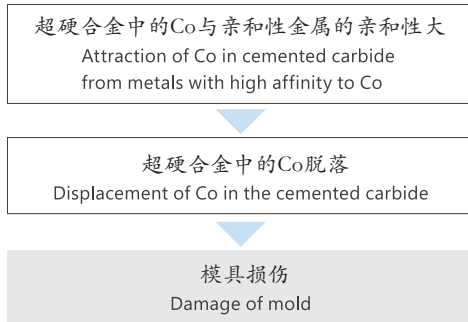
优化了对纯铁·纯铜等易发生烧结的材料加工寿命。
具有良好地耐放电性和耐腐蚀性。

Cemented carbide for stamping of metals
high affinity to cobalt
(Adhesive wear-resistance by seizure)

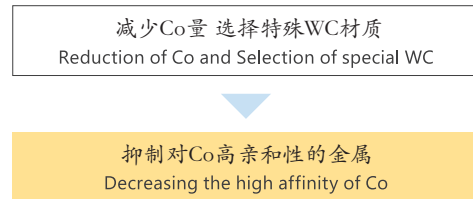
Excellent product life against manufacturing for pure iron or copper which are easy to be seizure.
Excellent performance for EDM and corrosion-resistance.

 <p>产品说明 Explanation</p>	<p>通过减少硬质合金的粘结剂相的Co量，并使用特殊的WC，从而抑制凝着磨损和烧结的发生。通过优化粒子设计和组成设计，既保持了高硬度，同时又具有良好地耐放电加工性和耐腐蚀性。</p> <p>Adhesive wear and seizure resistance by adopting special WC and reducing binder phase of Co. Excellent high hardness, performance of EDM and corrosion resistance by optimizing WC particle and composition design.</p>
 <p>用途/实例 Applications</p>	<p>用于引线框架和铜制连接器的冲压模具，SPC型铁冲压模具，需要硬度的模具如果有放电加工的地方，可以抑制破损。</p> <p>Press mold for lead frame and connector made of copper. Press mold for SPC type steels. Breakage resistance for mold demanded high hardness when EDM, etc.</p>

常用材料的问题 Usual material problem

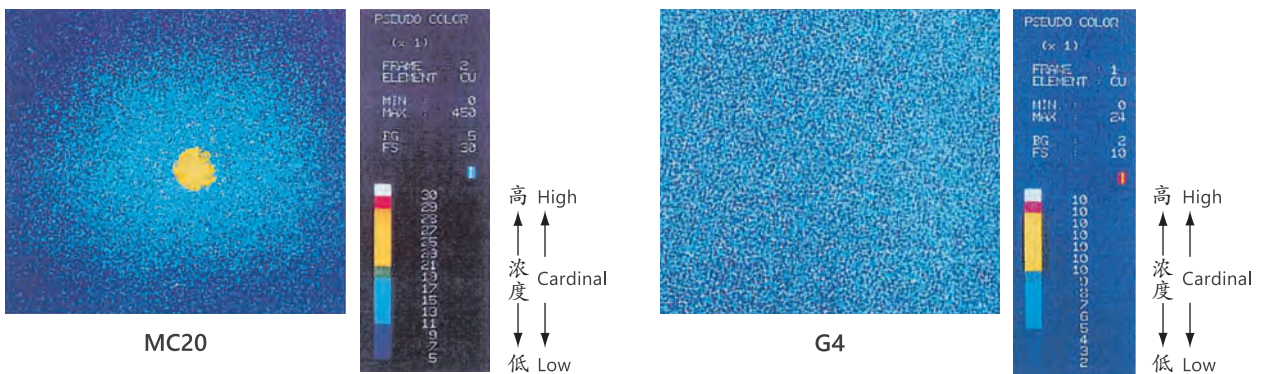


MC20特点 Characteristic of MC20



与铜的反应性能比较 (利用EPMA进行面分析)

Comparison of reaction to copper (Analysis of EPMA)



在 MC20 和 G4 类压制粉体中心部位放入铜线，烧结后施予 HIP 处理之试片剖面。MC20 中代表铜成分黄色部分仍存在于原来的位置，没有扩散，而 G4 类中铜成份黄色部分因扩散而不存在，与 G4 类比较之下，MC20 较能抑制铜的扩散。

Comparative reaction test between MC20 and G4 grade.
Above-shown photos are the cross-section surface of the test pieces which are compacted wire copper in center of MC20 and G4 after sintering and treated by HIP.
Result;
MC20: Copper wire remains in the original position without diffusing.
G4: Copper wire has diffused in the material.

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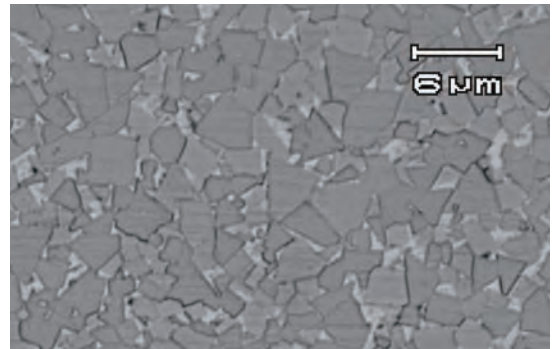
MC20物理性能

Physical property of MC20

本公司产品代号 Our grade	硬度 Hardness HRA	抗弯强度 TRS [GPa]	Co量 Co content [%]
MC20	90.0	2.8	6
参考G3 Reference G3	90.0	2.7	8

MC20组织照片

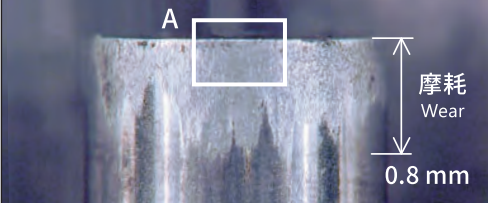
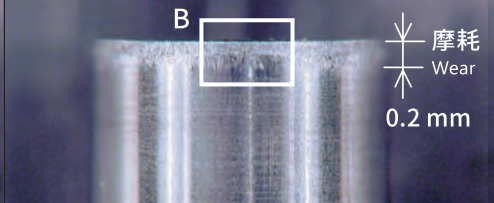
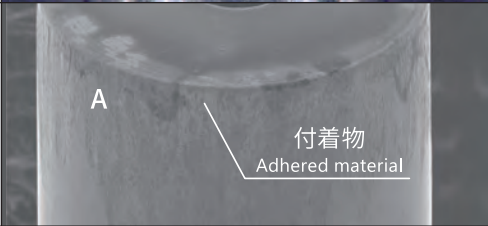
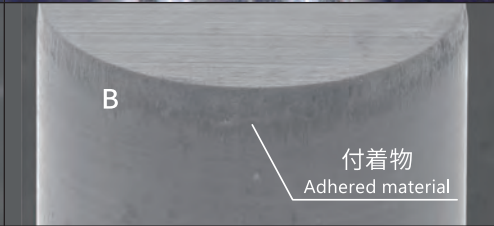
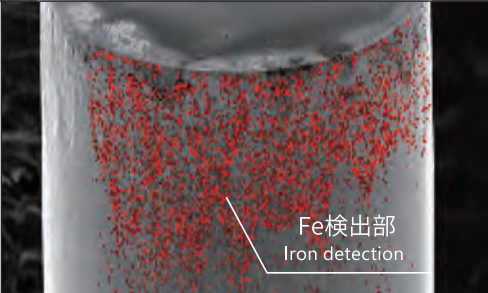
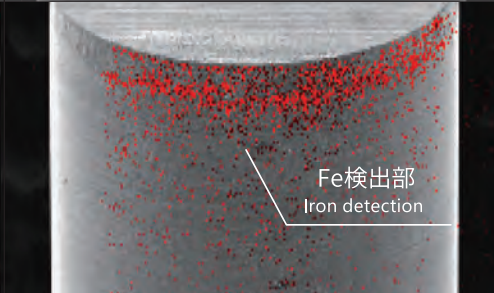
Micrographs of MC20



金属显微镜 (X1000)
By metallurgical microscope (x1000)

磨损比较实例

Wear comparative example

比较项目 Compare item	G3	MC20
加工条件 Manufacturing condition	被加工材质: S65C 被加工材质厚度: 1.3mm 冲压方法: 冲裁	
冲压数 Stroke number	5~15万 50-150 thousand	18万 180 thousand
冲头前端磨损状态 (用显微镜) Wear condition of punch edge (with microscope)		
冲头前端磨损状态 (用SEM像) Wear condition of punch edge (with SEM)		
被加工材质 粘附状态 (铁元素映像) Work adhesive condition (Mapping of iron element)		
	<p>上图为SEM观测的合成像和铁元素的映像，红点为铁元素。 粘附物的位置与铁元素检测出的一致。 (Upper pictures are composition of SEM observation and mapping of Iron element. The red points show Iron.) Position of adhered material accord with Iron detection.</p>	
评论 Comment	虽然用MC20的冲压次数比G3多，但MC20上的粘附物比G3少。 Even though the stroke number of MC20 is larger than G3, the amount of adherence to MC20 is smaller than G3.	