

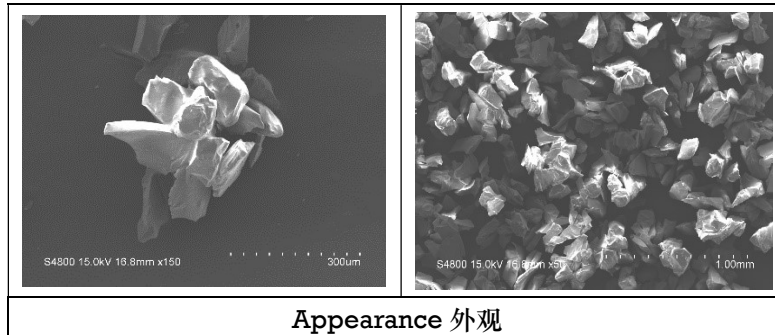
User Guide for CG Series

CG 系列磨料使用指南

1. Use 用途

CG series abrasive grains is several grains (WA or SG) bonded by vitrified binder. The connection is low strength.

CG 系列磨料是使用结合剂将几粒磨料颗粒堆积在一起，疏松粘结。



For grind tool, CG abrasives bring below benefits:

对磨具制作主要有如下意义：

- More open structure and natural create porosity. Porosity generate chemical not needed. 组织更加开放，自然产生气孔；不需要额外造孔剂
- More homogeneity of grinding tool. 磨具的均匀性更好
- Additional stiffness for resin bond wheel. 对树脂磨具提供额外的刚性

2. Product Catalog 产品系列

CG series CG 产品系列	CG-AO	CG-3X	CG-5X	CG-9X
Benchmark recipe 对标磨料配比	10%SG	30%SG	50%SG	100%SG

3. Application suggestion 应用方向

CG series abrasives mainly used for high efficiency and high roughness requirement application. Mainly on below:

CG 系列磨料主要应用于高效率，高表面质量要求的磨削应用：



- Typical high porosity boned wheel 大气孔砂轮
- Roll Grinding wheel for steel plant 钢厂轧辊磨砂轮
- Creep feeding application 深切缓进给应用
- Double flat grinding for coil spring 弹簧端面磨削

Detail application and suggestion of CG series see below table.

具体的应用以及匹配的 CG 磨料类型如下表所示:

产品种类 Wheel type	具体应用 Detail Application	经济型 Economic	最优性能 Best performance
陶瓷砂轮 Vitrified wheel	伞齿磨 Bevel gear	CG-AO F60-F120	CG-3X,CG-5X F60-F120
	成型磨 Form gear	CG-AO F60-F100	CG-3X,CG-5X F60-F100
	蜗杆磨 Worm gear	CG-AO F80-F120	CG-3X,CG-5X F80-F120
树脂磨具 Resin bond wheel	热轧轧辊 Hot Mill Roll	CG-AO F36-F60	CG-3X,CG-5X F36-F60
	冷轧轧辊 Cold Mill Roll	CG-AO F60-F100	CG-3X,CG-5X F60-F100
	打磨片 Grinding Disc	CG-AO F24-F36	CG-3X,CG-5X F24-F36
	树脂双端面 Double flat for spring	CG-AO F36-F80	CG-3X,CG-5X F36-F80

4. Specific Application Sample 具体应用案例

成型齿轮磨 Form Gear	
机床信息 Machine info:	Gleason - PFAUTER P2800/4000G
工件信息 Component.	18CrNiMo, HRC 58~62, M15, Teeth 72
磨削要求 Requirement	Ra 0.8, No burn mark 无烧伤
砂轮尺寸 Wheel dimension	400 x 50 x 127
通用选型 Benchmark recipe	3SG 60 G 12 VP
CG 经济型 CG Economic	CG-AO 60 F+ 13 V
CG 高性能 CG Better	CG-3X 60 F+ 13 V

深切缓进给应用-磨航空叶片 Creep feed-Aerospace/Turbine	
机床信息 Machine info:	ELB Microcut 320DS 840D
工件信息 Component.	镍基合金 Nickel Alloy HRB30~40



磨削要求 Requirement	齿面 Gear Face: Ra 0.8 齿根 Gear Root: Ra 0.6 齿形公差 Gear tolerance: 0.005~0.01mm 无烧伤 No burn mark
砂轮尺寸 Wheel dimension	500 x 20 x 203.2
通用选型 Benchmark recipe	WA80F+12VP
CG 经济型 CG Economic	CG-AO 80 F13 V
CG 高性能 CG Better	CG-3X 80 F13 V

通用陶瓷大气孔砂轮 General Vitrified Open Structure Wheel 齿条磨削 rack gear	
机床信息 Machine info:	杭州机床厂 Hangzhou Machine
工件信息 Component.	40Cr, HRC22~26, 模数 Modules 2.1
磨削要求 Requirement	齿形公差达标, Gear Profile tolerance Qualified Ra 0.6~0.8
砂轮尺寸 Wheel dimension	500 x 200 x 305
通用选型 Benchmark recipe	WA 80 G 12 VP
CG 经济型 CG Economic	CG-AO 80 F+ 14 V

树脂轧辊磨-冷轧 Cold Mill Roll Grinding	
机床信息 Machine info:	Herkules
工件信息 Component.	3~5% Cr Steel 铬钢 HRC62~67
磨削要求 Requirement	Ra 0.25~0.5
砂轮尺寸 Wheel dimension	750 x 75 x 304.8
通用选型 Benchmark recipe	38A 80 F8B
CG 经济型 CG Economic	CG-AO 80 E+ 13 B
CG 高性能 CG Better	CG-3X 80 E+13 B

树脂端面磨-汽车连杆 Double Disc-Rod	
机床信息 Machine info:	Guistina
工件信息 Component.	45#钢 45# steel HRC30~35
磨削要求 Requirement	磨削余量 Stock Removal 0.4~0.5; Ra 0.6~0.8; 无毛刺 No burr, 无烧伤 No burn mark
砂轮尺寸 Wheel dimension	915 x 85 x 304.8
通用选型 Benchmark recipe	32A 46 M6 B
CG 经济型 CG Economic	CG-AO 46 M6 B



5. Process Requirement for CG series 磨具制作注意事项

5.1 BOM adjust and wheel hardness 砂轮配方及硬度调整

Use CG replace common abrasives, need reduce the binder content for CG already have 2% binder. And wheel hardness suggest to reduce half grade. Porosity inducer chemical no needed. Wheel structure need increase one grade, for example WA80J10V, need be adjust to CG-AO I+11V.

使用 CG 磨料制作磨具, 建议减少结合剂用量并且硬度降低半级, 由于 CG 中已经含约 2% 的结合剂。不需要额外添加造孔剂。砂轮组织建议提升一级, 比如 WA80J10V 变成 CG-AO I+11V。

5.2 Mixing process 混料工序

Reduce mixing rotation speed to avoid broken the bonded grains. Mix tooling also need be considered. Blade and rolling mix tool not suit for CG series material. Sieving mesh after mixing need be enlarge.

混料时降低混料速度, 避免打散粘结好的颗粒; 禁止使用飞刀以及轮碾的混料方式。混料后筛分需要更换网孔更大筛网。

5.3 Firing process 烧成工序

1250 °C is the highest suggestion sintering temperature for CG-AO. For CG-X series, below 950 °C is the suggestion sintering temp. Below is suggestion sintering temperature for all CG series.

CG-AO 磨料的最高烧成温度是 1250 °C; CG-X 磨料建议烧成温度为 950 °C 以下。下面是建议的烧成温度。

- CG-AO Series 950-1250 °C 6-10 hours. CG-AO 950-1250 °C 6-10 小时
- CG-X Series 900-950 °C, 6-10 hours CG-AO 900-950 °C 6-10 小时

If wheel need high sintering temperature (over 950 °C), need adjust binder content. 如果砂轮烧成温度超过 950 °C, 需要调整结合剂含量。

6. Remarks 备注

6.1 All the formulation design referring to ISO or GB standard.

本指南中的配方设计参考 ISO 标准或者 GB 标准。

6.2 Please contact Roy Material Technology when you have any questions.

在使用过程中如有任何问题, 请联系青岛雨荣研磨材料有限公司获得支持。

