



# 北京金煤创业科技股份有限公司

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## DJM 马氏体钢陶瓷复合铸造锤头技术介绍

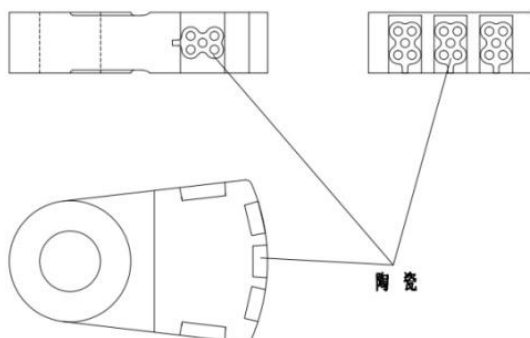
DJM Martensite steel matrix ceramic composite casting Hammer technology introduction

锤头是建材，矿山，化工等行业使用的锤式破碎机的关键配件，传统锤头多以高锰钢铸造，利用高锰钢在受到冲击载荷下发生加工硬化的特点来提高耐磨性，锤头的工作状况具有高冲击，高频率，高耐磨等特点，以 WC-1000 型锤破为例，转速 900r/min，线速度 40m/s，单锤负荷 4.5T/h，锤头结构由头（工作部），柄两部分组成。因两部分的作用不同，所以对材质性能的要求也不一样，头部材质要求既有高耐磨性，又具备抗冲击性，这两点决定了其使用寿命，柄部材质对耐磨性要求不高，但要具有较高韧性，以保证锤头工作时不断裂。为了提高锤头的耐磨及抗冲击性能，DJM 选用马氏体钢基体高铬复合陶瓷铸造制作锤头，采用粉末冶金制芯结合铸造烧结工艺，在浇铸过程中利用高铬复合陶瓷材料降低马氏体钢钢水温度，利用高铬复合陶瓷材料中的合金元素细化马氏体钢晶粒，提高马氏体钢基体性能，充分发挥马氏体钢的高硬度高强度且耐冲击的特点，提高锤头的抗冲击能力；结合高铬复合陶瓷材料的高耐磨特性，提高锤头工作面的抗磨性能，从而获得即耐磨且抗冲击的锤头。

Hammer is the key part of hammer crusher which is used in the field of building materials, mining, chemical etc. Most of the traditional hammer is casted out from high manganese steel, to improve the wear resistance by its self hardening capacity under the impact. The working condition of Hammerhead is with high impact, high-frequency, and high wear resistance. Take the WC-1000 hammer crusher for example, rotating speed 900r / min, line speed 40m / s, single hammer load 4.5T / h. The hammerhead is composed of head (Working section) and handle. Due to the different roles of the two parts, so the material performance requirements are different. the material of the head require both high wear resistance and impact resistance, both of them determines its life span. The handle doesn't require high resistance, but it should have a high toughness to avoid breaking during working. In order to improve the wear resistance and impact resistance of the hammer, DJM use the composite of high Cr cast iron and ceramic on martensite steel base. We adopt the powder metallurgy core making and casting sintering, during pouring the composite of high cr and ceramic is put to reduce the temperature of molten manganese steel, the alloy element in the composite are used to refine the high manganese steel grain to improve the performance of high-manganese steel, give full play to the capacity of self hardening under impact and improve the ability of impact resistance; High wear-resistant properties of composite of high Cr and ceramic will greatly improve the wear resistance of hammer surface, thus resulting in hammer of both high impact and wear resistance.

附图-1 陶瓷复合锤头示意图

Picture -1 external view of Hammer



Position-1 basis material Position-2 Ceramic composites



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附图-2 马氏体钢陶瓷复合锤头外观图

Picture -2 Hammer of Martensite steel and ceramic composite-external view



附图-3 马氏体钢陶瓷复合锤头外观局部放大图

Picture -3 partial enlargement of appearance

