Understanding Diamond Blades

1. Diamond Blade Fabrication

Diamond blades consist of four components: diamond crystals, a bonding system, a segment, and a metal core.

Diamond Crystals

The diamond crystals in MK blades are synthetic (man-made) rather than natural. This gives them a consistency that can be relied upon during the enormous stresses they encounter while grinding. The foremost performance factor in diamond-blade sawing is the type, concentration and size of these diamond crystals. The extensive diamond aptitude and sawing expertise MK has acquired goes into the selection of the proper diamond crystals for our wide range of blades

Bonding Matrix

Diamond crystals are held in place by a sintering process of specially blended metal powders. This bonding matrix is crucial to the overall performance of the MK diamond blade and serves several vital functions:

Disperses and supports the diamonds
Provides controlled wear while allowing diamond protrusion
Prevents diamond “pull-out”
Acts as a heat sink
Distributes impact and load as the diamond attacks the cutting surface
During the sawing action, the wearing away of the matrix exposes new diamond crystals providing fresh cutting points for the blade.

Metal Bonds

The diamond crystals and bonding matrix are heated and shaped into specially engineered rims / segments. These rims / segments are wider than the blade core to which they will be attached, and provide the clearance to promote material discharge and discourage blade binding. The rims / segments are specifically designed to wear at a rate appropriate to the material being cut. Large particles of soft, abrasive materials wear down the matrix faster than the small particles removed from hard dense materials. Therefore, softer, more abrasive materials require a “tough to wear” (hard) bond; less abrasive materials require an “easy wear” (soft) bond.

Premium Steel Core

The diamond saw blade cores are made from high alloy, heat-treated steel. Depending on the type of blade selected, the steel cores are specifically designed to support the appropriate rim or segment. About the periphery of the core, the various rims or segments are affixed through a brazing or laser welding process. An arbor hole is precisely bored in the center, and the entire core is “tensioned” or tuned so that the stresses of centripetal force are minimized, permitting the blade to spin true on the spindle.

2. Understanding Diamond Blades As Cutting Tools

In general, a diamond blade's performance is measured in two ways. The first is how proficiently the blade grinds through the material; the second is the life of the blade or total footage yielded by the blade. There are a variety of MK diamond blade models and designs from which to choose. Each blade is meticulously engineered to provide cutability, longevity and safety. When you select the best-suited diamond blade for the job / application / material, you will ensure peak performance and maximum investment return.

How the Diamond Blade Works

Diamond blades do not really cut, instead they grind material through an action of friction with the synthetic diamond-bonding matrix. The diamond crystals, often visible at the leading edge and sides of the

rim / segment, remove material by scratching out particles of hard, dense materials, or by knocking out larger particles of loosely bonded abrasive material. This process eventually cracks or fractures the diamond particle, breaking it down into smaller pieces. As a result of this phenomenon, a diamond blade for cutting soft, abrasive material must have a hard metal matrix composition to resist this erosion long enough for the exposed diamonds to be properly utilized. Conversely, a blade for cutting a hard, non-abrasive material must have a soft bond to ensure that it will erode and expose the diamonds embedded in the matrix. These simple principles are the foundation of “controlled bond erosion.”

Types of Diamond Blade Cutting
There are two basic types of cutting – dry or wet. The best choice of blade depends upon:

The requirements of the job
The machine / tool utilizing the diamond blade
The preference of the operator
In the case of DRY cutting, the overwhelming popularity and quantity of hand-held saws and the flexible nature of MK Diamond blades to professionally handle most ceramic, masonry, stone and concrete materials, make the DRY cutting blade a very attractive tool.

When using a DRY blade, the user must be aware of distinct operating practices to ensure optimum performance. DRY cutting blades require sufficient airflow about the blade to prevent overheating of the steel core. This is best accomplished by shallow, intermittent cuts of the material along with periods of “free-spinning” for several seconds to maximize the cooling process.

For WET cutting applications, MK has the exact blade to complement both the material to be cut and the wet-cutting machine to be used. During cutting operations, liberal amounts of water act as a coolant to support the cutting effectiveness and longevity of the WET blade. Additionally, using water adds to the overall safety of cutting

operations by keeping the dust signature down.

Different grades of diamond tool & diamond blade are designed and manufactured according to different market demands, ChinShine sales&marketing department Ⅱ is in charge of the marketing & sales business towards Europe, America and other areas where high grade tools are needed .

Due to the specific focus on high-grade diamond tools, our department wouldn't accept low-grade products order and low-price OEM order. With the support of senior professors in local university, we have established a super hard material lab specializing in researches in diamond and all sorts of metal powder, keeping refining the diamond mixture to manufacture diamond segments. In

addition, we are a member of the diamond saw blade association and the stone association where we have the opportunity to gain acquaintance with the newest and the best diamond tools technique and stone from all over the world. Based on this advantage, ChinShine is striving to become the best cost-effect manufacturer of stone cutting tools and diamond tools.

By forceful technical support and scientific research, we have been experimenting new cutting materials and new diamond formula to lower the cost on the premise of high quality. As a member of the China(Xiamen) stone association, we have many opportunities to use diamond blades, diamond segments and other diamond grinding abrasive tools to test hundreds of stones from all over the world.

Various stones technical information provided by customers is also highly appreciated to help our researches.

Another advantage is that we are adept in producting special & complex tools including diamond saw blades and diamond segments which are applicable to concrete and stone industry. If you have special demands, Chinshine II is the best Choice.

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- Marble Diamond Segment
- Gang Saw Segment
- Andesite Slate Limestone
- Sandstone Basalt
- Concrete Segments
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