

# HOW DO I CHOOSE WHICH DIAMOND BLADE TO USE?

Diamond blades are regularly used throughout construction and related industries. Available in a huge range of designs and differing qualities, it can be very hard for a general tradesman to know which blade to buy which offers the most economical decision, but also ultimately the correct one for the material being cut.

Here are a few pointers to help you chose the right blade for the right job!

## What is a Diamond Blade?

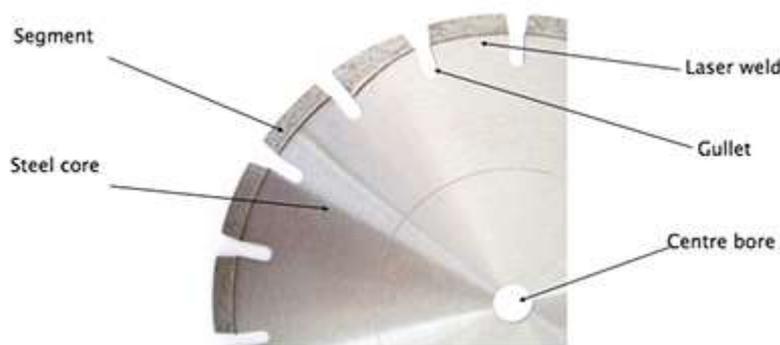
Diamond tools offer the cleanest, safest and most efficient way of cutting, drilling, grinding or polishing construction materials ranging from extremely hard products such as baked clay, all the way through to extremely abrasive products such as asphalt.

If selected & used correctly, they will offer the user:

- longer tool life
- faster cutting and therefore increased productivity
- reduced exposure to HAV

## The Structure of a Diamond Blade

A diamond blade is made up of a high alloy, heat treated steel core or blank, which is tipped with diamond impregnated, metal bonded segments. They come in a variety of grades and bonds which are designed to cut specific materials.



## The Segment

The various ingredients that go into the segment determine how the blade will perform and what materials it is most suitable for cutting. It is made up with a mixture of diamond grit and metal powders which form the bond that holds the diamond grit. Segments come in different depth, from 5mm up to 17mm in some cases. The depth of the segment however may not be an indicator of life as a good quality 10mm segment may contain a higher concentration of diamond than a lower quality 15mm segment.

## Laser Weld or Sintered

There are several ways of fixing the segment to the blade but the most common methods are sintering or by laser weld. A sintered blade is made in a similar way as a laser welded blade & complies with all necessary safety requirements, however a laser welded blade

has the additional safety feature of the weld and is accepted as being the safest method of attaching segments to the blank.

Sintering is a considerably less expensive manufacturing process than laser welding and for this reason it tends to be the fixing method used on cheaper blades.

### The Diamond

The diamond can be natural or synthetic, but synthetic diamonds are generally stronger and more uniform in their characteristics, resulting in a blade that will perform more consistently.

Normally a segment would contain a mixture of grit sizes and grade, determined by their shape, quality and strength. Better quality blades have a higher grade and concentration of diamond which is why they cost more. As the blade is used the diamond grit breaks up or is pulled out of the bond. The bond then wears back to reveal subsequent layers of diamond.

### The Metal Bond

The metal bond is a mixture of metals (known as powders) creating a bond of varying hardness which dictates how fast a segment will wear down. If you are cutting something very abrasive, such as asphalt, then the segment must be hard or it will wear too quickly. If you are cutting something hard such as clay pavers, then the segment needs to be soft or it will not wear down and reveal subsequent layers of diamond and will eventually stop cutting.

### The Steel Core

In good quality blades, the tensioned steel core is made of high alloy, heat treated laminated steel. They may contain various features such as cooling holes which may be required when cutting very hard materials.

In cheaper blades the steel core may be made of sheet metal and may be susceptible to tension loss.

### The Gullet

The gullets improve air flow which in turn dissipates heat and also removes swarf from the cut. Swarf in the cut has a wearing effect on the blade, therefore the faster the swarf is removed the longer the blade will last. There are different shaped gullets; blades for asphalt tend to have wider, U shaped gullets and concrete blades tend to have narrower U-shaped gullets.



## Cooling Holes

Cooling holes in the steel core may be required for blades used to cut very hard materials such as porcelain tiles or very hard concrete. They are also used on continuous rim blades because they do not have the air cooling effect of gullets and can therefore be prone to overheating which may lead to tension loss in the steel core.

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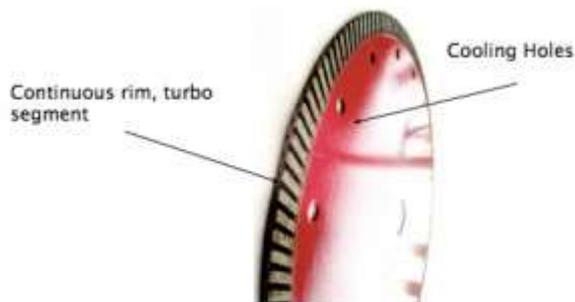
## Different Types of Segment

### Segmented

This is the most common type and has individual segments separated by gullets of various shapes and sizes as explained above.

### Continuous Rim Turbo Segment

These blades tend to have less surface area in contact with the material allowing them to cut slightly more quickly. Generally continuous turbo rim blades are used for harder materials but there are some available that are designated general purpose. As they have no gullets they sometimes tend to get hot (particularly when cutting hard materials) and therefore require cooling holes in the blank. This type of blade does not have a laser weld.



### Continuous Rim

A smooth, continuous rim blade is generally for use in hard materials where minimal chipping is desirable, such as porcelain tiles.

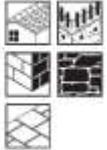
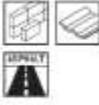
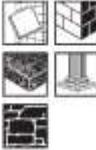


## Turbo Segments

Many modern segmented blades come with turbo segments which theoretically give the blade longer life as they increase the speed in which swarf is removed from the cut. Turbo segments also have less surface area in contact with the material to be cut and this allows them to cut more quickly.

## The DART RED TEN Blade Application Chart

This chart shows the range of Diamond Blades that DART Red Ten offers and which applications they are most suited for.

	<b>Universal Blade</b> <small>Identified with <b>MI</b> in the code</small>	<b>Concrete Blade</b> <small>Identified with <b>GP</b> in the code</small>	<b>Abrasive Blade</b> <small>Identified with <b>AC</b> in the code</small>	<b>Asphalt Blade</b> <small>Identified with <b>AS</b> in the code</small>	<b>Tile Blade</b> <small>Identified with <b>RT/ST</b> in the code</small>	<b>Mortar Blade</b> <small>Identified with <b>MR</b> in the code</small>
<b>TRADE PERFORMANCE</b>	<b>SMI-7</b>	<b>MGP-10</b>			<b>RT-10</b>	
<b>PRO PERFORMANCE</b>	<b>BMI-10</b>	<b>SGP-15</b>	<b>AC-DUO</b>	<b>AS-10</b>	<b>ST-10</b>	<b>MR-6</b>
<b>ULTRA PERFORMANCE</b>	<b>LMI-15 LANDSCAPER</b>	<b>BGP-15 (BM-15)</b>				
	Hard Materials, Natural Stone, Clay, Engineering Bricks & Metal. Fast Cutting 	Concrete, General Purpose & Unabrasive Building Products 	Abrasive Materials, Concrete & Asphalt, Dual Purpose 	Asphalt and Extremely Abrasive Materials including Cement Screed & Lignacite Blocks 	Porcelain, Ceramic Tiles, Natural Stone, Granite & Marble 	Mortar & Brick Raking, Abrasive Materials 

For more information on each of the blades, including blade specifications, visit <https://www.darttoolgroup.com/diamond-blade-range> or call DART's Customer Service on +44(0)1592 652900.