

a cut above the rest

**edge**<sup>®</sup>  
diamond

the cutting edge of technology

information & safety

**edge**<sup>®</sup>

Technical Hotline / Application Queries  
Freephone: 0808 173 EDGE (3343)

OR Visit. [www.edgediamond.com](http://www.edgediamond.com)

For Sales contact your local authorised distributor  
or Freephone 0808 173 EDGE (3343)

Please consult the application chart on the  
reverse of each box for the most suitable  
application for the blade.

edge tools & equipment limited • PO Box 5767, derby DE72 3ZE U.K.  
tel: +44(0)1332 210212 • fax: +44(0)1332 210211 • e.mail: [sales@edgediamond.com](mailto:sales@edgediamond.com)



[www.edgediamond.com](http://www.edgediamond.com)



**edge** **C<sub>6</sub>** (Pure Carbon)

"A new transparent concept in product procurement".  
Patent Pending. Online Affiliate Network Processing.

**C** how edge business intelligence can affect  
your business for the better!

Increasing demand for our products has led us to simplify the supply of diamond products to our customers, which will be carried out in the following way.

Edge diamond have constructed an interactive B2B2C website called C6, specifically designed to enable our loyal trading partners and new customers alike to purchase on line 24/7, 365 days a year. C6, also allows our distributors customers to purchase online and return a benefit from the sale. C6, allows the user to connect and view their personal net prices on all the edge product range and also view special promotions posted onto the site from time to time. The viewer is able to interactively search for a particular product they want by tool type, product type, application, quality, price level, product dimension, bore type and guides them through the search process in a step by step manner therefore decreasing the possibility of purchasing the wrong product by error. There is also an online search engine for ease of use. C6, will have much vital information and is the most concise site of its kind in the industry as a whole.

Past purchase history for each individual online user can also be browsed onsite allowing you access to your favourites.

The C6 card, a totally unique concept, designed to incorporate an individual log on procedure. Existing and new customers alike will receive an exclusive personal plastic card with an unique authenticated 16-digit alphanumeric security code that will automatically allow them to log on and allow access to personal discount structure and online mechanisms once the user has been placed on the system. This will be entered in conjunction with an 8-16 digit authenticated secure password.



## Introduction

**This section should help to identify some of the challenges that are inevitable when using Diamond products.**

This section presents the possible causes of the problems then proceeds to guide you through any necessary action to identify and eliminate them.

It is of paramount importance that all Diamond product specifiers, supervisors and operators are aware of the best practice in the use of products contained within this brochure that will enhance the product's life, along with operational performance and efficiency.

## Brazed segments

Diamond segments are attached to the core by brazing with the use of solder positioned between the segment and the core. This is then heated to approximately 2000°C until the solder melts and makes a bond between the two pieces.

## High frequency welding

By the action of a high frequency electronic current the binder melts and bonds the two parts together.

## Laser welded segments

Laser welding represents the latest advancements in Diamond blade fabricating technology. Diamond segments are attached to the core by laser beam. The transitional area of laser weld is even stronger than the segment or the core. Laser welded blades can be used wet or dry. The requirements of the application or equipment involved in using Diamond products may at times necessitate the use of water for cooling the product or maximising blade performance, despite the blade being laser welded.

## Wet cutting

Wet cutting products must be used with water to keep the segments cool during the cutting operation. Water also assists the product to perform at its maximum efficiency. Under no circumstances should you use the product without adequate water flow (see page 33 for recommended flow rate chart for wet cutting).

Cutting without water on these products will cause excessive heat build up, resulting in poor performance and blade damage in the form of cracks

in the steel centre. The braze transitional area holding the segment onto the centre may melt, resulting in segment loss.

## Dry cutting

Dry cutting is possible with low horsepower machines for high speed and intermittent use. Although no water is required, blades must be cooled with airflow around the blade to dissipate the heat. Dry cutting blades are only recommended for intermittent cutting. Every 10 - 15 seconds the blade should be allowed to rotate out of the cut at maximum rpm for several seconds to allow the blade to cool. Operators should not use dry Diamond blades for long continuous full depth sawing in one single pass. Any cuts deeper than 4 cm should be step cut - ie make several shallow passes until the required depth of cut is reached.

On asphalt, operators should avoid cutting into the sub-base of roads as this will cause rapid wear of the segments. Do not force the blade into the material, remember to let the tool do the work, any undue force will cause vibration and overheating which will adversely affect the life and the performance of the product.

Overheating should be avoided particularly when cutting steel reinforced materials such as lintels. Forcing the product into the application is the most common cause of overheating.

If signs of overheating are present, such as blue discolouration under each segment of the core, then the blade will require redressing. Forced cutting of hard aggregates, or hard low abrasive materials can reduce the cutting ability of the blade. The operator should dress the Diamond blade by using it in a soft abrasive material such as sandstone or abrasive blocks which will then restore the cutting properties.

## Blade performance

The most common problem encountered by diamond blade users is blade wear. It is also the most difficult to accurately evaluate. It is impossible to predict the life performance of a blade that is operating in conditions with so many variables.

To consistently monitor the life and performance of the blade it is essential to calculate the variables including the material, inch metres cut, depth of cut, water supply, water quality and quantity used, and the amount of pressure applied by the operator, rather than the hours, days or weeks that the blade has been used. Trying to compare the performance of a blade with another is almost impossible due to the large amount of variables encountered.

## General

- 1 The correct specification blade has been selected for the application.
- 2 The machine selected for the operation is of the correct specification and has been serviced to a standard that complies to the manufacturer's service recommendations.
- 3 That the machine complies or exceeds all relevant health and safety regulations.
- 4 That the area of operation is clean and tidy and complies with any need for barriers, signs, warning notices etc.
- 5 That the operator has been properly trained and certified for machine operation and health and safety regulations.
- 6 That in the case of electrically powered machines, the machine is of the correct voltage and that the site supply is adequate both in terms of power supply and compliance to site electricity supply regulations.
- 7 Always ensure that when fitting a blade the machine is disconnected from the power source and the correct tools are used.
- 8 That the site is free of pets and children.

## Using the Diamond product ensure that:

- 1 The blade or bit is operating at the manufacturer's recommended speed.
- 2 The blade or bit is being fed into the work at a suitable rate.
- 3 In the case of wet cutting an adequate supply of water is available.
- 4 The blade or bit is in a suitably undamaged condition.
- 5 The blade is never twisted or forced in the cut.
- 6 The blade is gradually lowered into the material being cut.

- 7 The material being cut is not hand or foot restrained.
- 8 The blade and machine are periodically inspected for wear or damage.

## For your personal safety always ensure that you:



- 1 Wear suitable ear defenders.



- 2 Wear suitable foot wear.



- 3 Wear suitable eye protection.



- 4 Wear suitable protection against dust.

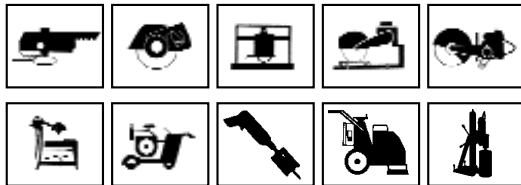


- 5 Wear suitable clothing.



- 6 Read the instructions carefully.

## Types of equipment used in construction with diamond products



## edge<sup>®</sup> recommended peripheral cutting speeds

wet cutting masonry bench saw blades			dry cutting masonry bench saw blades		
blade Ø (mm)	average (rpm)	optimum cutting speed m/second	blade Ø (mm)	average (rpm)	optimum cutting speed m/second
100	9072	48	100	15300	80
105	8891	48	105	15300	80
115	8063	48	115	13300	80
125	7257	48	125	12300	80
150	6048	48	150	10185	80
180	5184	48	180	8730	80
200	4536	48	200	7600	80
230	4032	48	230	6650	80
250	3629	48	250	6415	80
300	3024	48	300	6360	80
350	2592	48	350	5450	80
400	2268	48	400	3820	80
450	2016	48	450	3395	80
500	1814	48	500	3055	80
600	1512	48	600	2550	80

the above speeds should be treated as a guide only.

## edge<sup>®</sup> recommended peripheral cutting speeds

wet cutting floorsaw blades			note: the across are the average recommended cutting speeds, to obtain maximum performance the specific speeds for each application should be adhered to. wet cutting concrete 35-45m/sec dry cutting concrete 60-100m/sec wet cutting asphalt 50-65m/sec dry cutting asphalt 60-100m/sec wet cutting green concrete 50-60m/sec
blade Ø (mm)	average (rpm)	optimum cutting speed m/second	
350	2592	48	
400	2268	48	
450	2016	48	
500	1814	48	
600	1512	48	
700	1296	48	
750	1210	48	
800	1134	48	
900	1008	48	
1000	864	48	
1100	810	48	
1200	756	48	
1300	698	48	
1450	648	48	
1500	605	48	
1600	567	48	
1800	504	48	

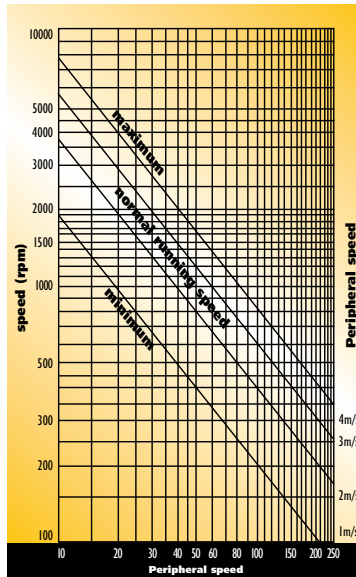
recommended water flow rate for wet cutting	
blade Ø (mm)	flow rate l/min
0-250	6
300-600	15
600-1000	30
1000-1200	50
1200-1500	65
1500-1800	75

# edge<sup>®</sup> recommended peripheral cutting speeds

speeds for rotational core bits				machine power for core bits	
core bit Ø (mm)	concrete soft aggregates	concrete medium aggregates	concrete hard aggregates	tool outside Ø (mm)	machine power kw/hp
20	3,900	2,900	1,900	5-10	0.35/0.5
30	2,700	2,000	1,300	10-50	1.0/1.4
40	1,800	1,400	1,000	50-60	1.2/1.7
50	1,500	1,150	800	60-70	1.2/1.7
60	1,250	950	650	70-80	1.5/2.0
70	1,050	800	550	80-90	2.0/1.7
80	950	700	450	90-100	2.0/1.7
100	760	570	380	100-110	2.0/1.7
120	640	480	320	110-120	2.0/1.7
140	540	410	280	190-230	2.5/3.4
160	480	360	240	230-260	2.5/3.4
180	440	330	220	260-280	2.8/3.8
200	360	270	180	280-300	3.1/4.2
250	300	225	150	300	3.4/4.6
300	250	180	125		
350	220	160	110		
400	180	135	90		
450	160	120	80		
500	150	110			

# edge<sup>®</sup> recommended peripheral cutting speeds

optimal rpm for diamond core bits



recommended coolant flow for wet core bits

mm Ø	flow L/M
20-52	3
65-78	4
82-102	5
107-127	6
152-187	8
200-212	9
225-250	10
300-350	12
350-400	18
500-600	24
600+	30



**edge<sup>®</sup>** recommended cutting depths & speeds

maximum blade cutting depths and operating speeds						
diameter Ø		cutting depth		recommended operating speed (rpm)*	maximum safe speed (rpm)**	
inch	mm	inch	mm			
<b>concrete saw blades</b>						
12	300	3 5/8	92	3024	5095	
14	350	4 5/8	117	2592	4365	
16	400	5 5/8	143	2268	3820	
18	450	6 5/8	168	2016	3395	
20	500	7 5/8	194	1814	3055	
24	600	9 5/8	244	1512	2550	
26	660	10 5/8	270	1396	2350	
30	760	11 3/4	300	1120	2040	
36	910	14 3/4	375	1008	1700	
<b>high speed saw blades</b>						
12	300	4	100	4300	6300	
14	350	5	125	4300	5400	
<b>wall saw blades</b>						
18	450	6 1/2	165	1500	3000	
24	600	9 1/2	240	1450	2250	
30	760	12 1/2	317	1400	1800	
36	910	15 1/2	394	1300	1500	

**edge<sup>®</sup>** recommended cutting depths & speeds

diameter Ø		cutting depth		recommended operating speed (rpm)*	maximum safe speed (rpm)**	
inch	mm	inch	mm			
<b>masonry saw blades</b>						
14	350	5	125	2550	3900	
18	450	7	178	2300	3000	
20	500	8	200	2300	2900	
<b>tile saw blades</b>						
6	150	1 3/4	45	6050	10175	
7	178	2 1/4	57	5175	8725	
8	200	2 3/4	70	4500	7650	
9	230	3 1/4	83	4025	6800	
10	250	3 3/4	95	3625	6125	
<b>power hand blades</b>						
4	100	1	25	9075	15000	
4 1/2	115	1 1/4	30	8065	13300	
5	125	1 1/2	40	7250	12000	
7	178	2 1/2	65	5175	8725	
8	200	3	75	5180	8730	
9	230	3 1/4	83	4540	7640	

Diamond blade cutting depths listed above are approximate. Actual cutting depth will vary with the exact blade diameter or saw type (or brand), or the exact diameter of the blade collars (flanges). Cutting depth will also be reduced if saw components (motor housing, blade guard) extend below the blade collars (flanges).



## recommended cutting depths & speeds

variables which affect performance			
variables	condition	cutting speed	blade life
Bond hardness	harder	slower	longer
	softer	faster	shorter
Diamond quality	lower	slower	shorter
	higher	faster	longer
Diamond concentration	lower	faster	shorter
	higher	slower	longer
Segment height	thinner	faster	shorter
	thicker	slower	longer
Horsepower	lower	slower	longer
	higher	faster	shorter
Blade rpm	lower	faster	shorter
	higher	slower	longer
Water flow	lower	faster	shorter
	higher	slower	longer
Cutting depth	shallow	faster	longer
	deep	slower	shorter
Material hardness	harder	slower	longer
	softer	faster	shorter
Abrasive ness	more	faster	shorter
	less	slower	longer
Aggregate size	larger	slower	shorter
	smaller	faster	longer
Steel reinforcement	less	faster	longer
	more	slower	shorter



## recommended cutting depths & speeds

\* Based on 9,500 SFPM (Surface Feet Per Minute) the general optimum performance range for cutting concrete and masonry products is = 10%.

For hard, dense materials such as stone and tile, the optimum performance speed is 10-25% less than the speeds shown on 'Maximum blade cutting depths and operating speeds' table.

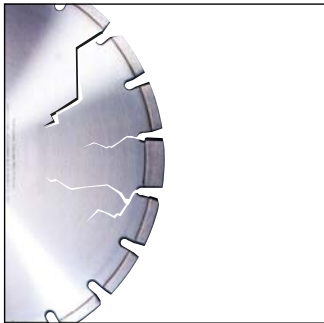
Blade shaft speeds (RPMs at no load) for most tools will be higher than recommended operating speeds shown on 'Maximum blade cutting depths and operating speeds' table. Under normal sawing conditions, the actual blade shaft speed or the tool will slow down under load, and should fall within the optimum speed range.

\*\* This speed RPM represents the maximum safe speed in revolutions per minute at which each blade can be used. Before using any blade, make sure the blade shaft speed of the tool is within the "maximum safe" limit of that blade.

## core cracks

### Possible Causes

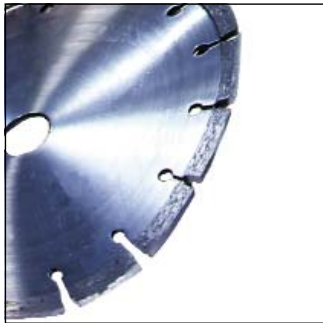
- Blade too hard for the material being cut.
- Excessive cutting pressure, caused by too high infeed results in the blade core bending and flexing. Metal fatigue will eventually cause core to crack.
- Worn shafts, damaged machine bearings, or blade incorrectly mounted.



## out of round

### Possible Causes

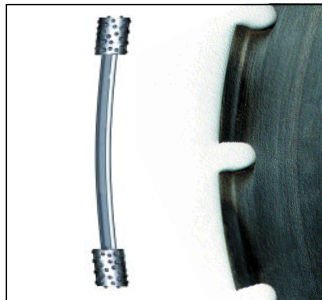
- Blade shaft bearing may possibly be worn. Fit new bearing and ensure regular lubrication.
- Blade too hard for the material being cut, this will result in the blade hammering and wearing out of round. Choose a blade with a softer bond system.
- Machine spindle may have groove scored in it as result of previous blade slipping on spindle.



## tension loss

### Possible Causes

- Blade core overheated. For wet cut blades ensure sufficient water supply.
- Check machine is running at correct rpm, that the flanges are of the correct and same size and that there is no wear on the machine bearing.
- The blade is deviating in the cut because it is too hard for the application.
- Ensure that the blade is not spinning on the spindle and that it is secure.
- Ensure that the blade is cutting in straight lines only



## overheating

Most common cause of blade failure. Overheating can cause many other problems such as core cracks, loss of tension, and segment loss. Overheating will usually cause black or bluish discoloration on the core.

### Possible Causes

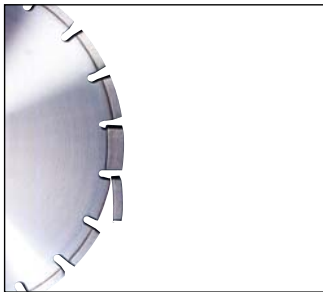
- In wet cutting - inadequate water supply due to low water pressure, blocked or damaged water tubes or dust suppression systems being inadequate for wet cut blades.
- In dry cutting - excessive cutting pressure results in heat build up. Allow blade to do work. With hand held machines, use gentle reciprocating action and avoid cutting too deep in a single pass.



## segment loss

### Possible Causes

- Blade has twisted or jammed in the cut because the material was not held firmly.
- Machine has been twisted or turned while blade is in the cut.
- Blade core has undercut due to cutting below the asphalt into the sub-base.
- Blade is too hard for the material being cut, resulting in the blade hammering in the cut.
- Blade is deflected in the cut due to the blade flanges being worn or deformed and failing to provide proper support.
- Inadequate water supply.

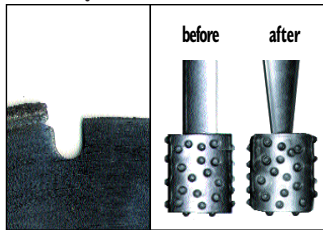


## undercutting

The effect of premature wear of the steel core is a particular problem in asphalt, fresh concrete and other highly abrasive materials. Segment loss may result from the steel core wearing to a knife edge just below the segment.

### Possible Causes

- Make sure that the blade specification has offset segments to assist removal of the slurry from the cut.
- Make sure that the blade is not cutting below the asphalt into the sub-base. Constant rubbing of the loose material causes premature wear and has no beneficial effect on the cut surface.
- Make sure that the water supply is correct as increased water flow will wash slurry from the contact area and reduce undercutting.



## segment cracks

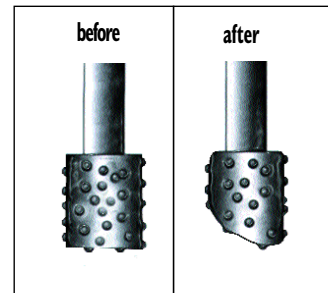
- Use a blade with a softer bond system, as the blade specification may be too hard for the material being cut, causing hammering in the cut.



## uneven segment wear

### Possible Causes

- Wet cutting - insufficient water.
- Excessive cutting pressure, caused by too high infeed, results in the blade core bending and flexing. Metal fatigue will eventually cause the core to crack.
- Worn shafts, damaged machine bearings, or blade incorrectly mounted.



## damaged arbor hole

### Possible Causes

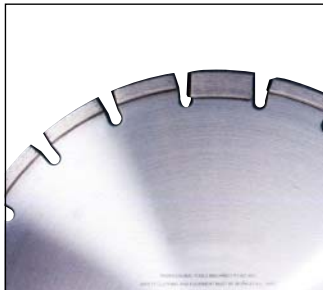
- Blade will hammer if it is incorrectly aligned when mounted. Make sure that the blade is mounted on the correct diameter spindle before tightening. Make sure that the pin holes slide over the drive pin.
- The blade will spin or vibrate on the spindle if the flanges are not properly tightened.
- The blade will pound if the saw shaft is badly worn or grooved.



## blade not cutting

### Possible Causes

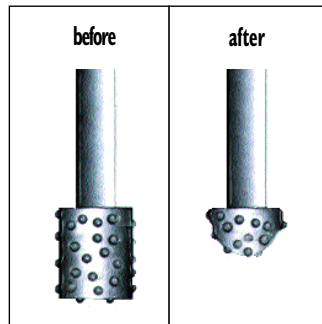
- Check that specification is correct for the material. Dull blades can be sharpened by cutting a soft abrasive material.
- Machine drive belts need retightening or the machine has insufficient horsepower for the specification being used.
- Check direction of rotation.



## rapid wear

### Possible Causes

- Blade specification is causing the diamond to be over-exposed. Use a blade with a harder bond system.
- If the blade wears out of round this will increase the wear normally due to bad bearing, worn shaft or the blade specification being too hard for the material.
- An inadequate water supply can cause damaged or blocked water tubes.
- Softening of the blade specification and low blade speed can be caused by loose drive belts.



If a product will not cut because the blade has "glazed over" then "open" the blade up by running it through abrasive materials.

If a blade is wearing prematurely then use a blade with a harder bond.