



How to choose the right diamond blade

Before you get started

Decide which is most important to you: the initial price of the blade or the cost per cut. For smaller jobs or occasional use, a low priced blade may be preferable. For larger jobs or regular use, a higher priced blade will actually be less expensive to use because it will deliver the lowest cost per cut. For really big jobs, the lowest possible sawing cost (cost per foot) is usually much more important than the initial price. Piranha Diamond Products has a grading system to help you identify the different performance levels of blades. We also colour the blades to make it easy to know what the blade is best designed to cut.

Know the type and horsepower of the saw being used

A list of different types of equipment you may use diamond blades on is provided on page 7. There is a corresponding symbol for each, and these symbols are used throughout the catalogue to help you locate the right blade. Blades that are to be used on power cutters have to be rated at higher RPM's. Please refer to the chart on page 246. All Piranha Diamond Products high-speed cut-off blades are rated at the appropriate, higher rpms.

Correctly identify what you're cutting

Correctly identifying the material you are going to cut is the most important factor in choosing a blade. It directly affects the cutting speed and the life of the blade. You will find diamond blade recommendations charts throughout the catalogue to help you locate the proper blade for your job. Most Piranha Diamond Products cut a RANGE of materials. For maximum performance (cutting speed and life), the material should be matched to the blade as closely as

possible. As a general rule, determine the material which will be cut most often, or the material for which top blade performance is most important.

Choose wet or dry cutting

Choosing wet or dry may be a matter of user preference or job requirement. When using a power hand tool such as a power hand saw, it is not safe to use water because of the electrical power source. However for concrete saws, wet cutting is usually preferred because you can cut deeper when using water as a coolant. For tile and masonry saws, either wet or dry cutting blades can be used. For power cutters, dry blades are more popular, but they are often used wet to control dust. Wet blades MUST be used with

water. Dry blades may be used EITHER dry OR wet, as the job or equipment allows.

The Significance of Segment Height

Total segment heights may be misleading because of none diamond bearing segment bases necessary for the laser welding or brazing process. That is why Piranha Diamond Products shows you exactly how much of each segment has diamonds and can actually be used to cut.

Diamond blade segment height by itself is not a true measure of a blade's value. Many other factors affect a blade's performance and consequent value. Consider the diamond size, concentration and quality, the hardness of the bond, the cutting power (torque) of the saw, and how well the blade specification is matched to the material being cut.

Maximum Blade Cutting Depths

Diameter (Inches)

Cutting Depth

HS is for high-speed diamond blades.

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 above.

Blade shaft speeds (RPM's at no load) for most tools will be higher than the recommended operating speeds shown above. Under normal sawing conditions, the actual blade shaft speed of 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 (rpm)] at which each blade can be used. Before using any blade, make sure the blade shaft (arbor) speed or the tool is within the "maximum safe" limit of that blade.

Note: 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).

Diamond Blade Operating Speeds

Diameter		Recommended RPM*	Never Exceed RPM
4"	(102mm)	9,000	15,200
4-1/2"	(114mm)	8,000	13,500
5"	(127mm)	7,200	12,200
5-1/2"	(140mm)	6,500	11,090
6"	(152mm)	6,000	10,185
7"	(178mm)	5,100	8,730
8"	(203mm)	4,500	7,640
9"	(229mm)	4,000	6,700
10"	(254mm)	3,600	6,115
12"	(305mm)	3,000	5,095
12" (High Speed Blades)			6,300
14"	(356mm)	2,500	4,365
14" (High Speed Blades)			5,460
16"	(406mm)	2,200	3,800
18"	(457mm)	2,000	3,300
20"	(508mm)	1,800	3,000
22"	(559mm)	1,600	2,780
24"	(610mm)	1,500	2,550
26"	(660mm)	1,300	2,350
28"	(711mm)	1,200	2,185
30"	(762mm)	1,200	2,040
32"	(813mm)	1,100	1,910
36"	(914mm)	1,000	1,700
42"	(1067mm)	800	1,455
48"	(1219mm)	700	1,275

Recommended Operating Speed (RPM) or 80 meters per second

Maximum Safe Speed

Table 2 Speed conversion table for speed of rotation (rpm) vs peripheral operating speed (m/s) of various wheel diameters

Wheel diameter In millimeters	Maximum operating speed in m/s														
	10	12	16	20	25	32	35	40	45	50	63	80	100	125	
6	31 900	38 200	51 000	64 000	80 000	102 000	112 000	128 000	143 500	160 000	201 000	-	-	-	
8	24 000	29 000	38 200	48 000	60 000	76 500	84 000	95 500	107 500	120 000	150 500	191 000	191 000	-	
10	19 100	23 000	30 600	38 200	48 000	61 200	67 000	76 500	86 000	95 500	120 500	153 000	191 000	-	
13	14 700	17 700	23 550	29 500	36 600	47 100	51 500	58 800	66 200	73 500	92 600	118 000	147 000	184 000	
16	11 950	14 350	19 100	23 900	29 850	38 200	41 800	47 800	53 750	59 700	75 200	95 500	120 000	150 000	
20	9 550	11 500	15 300	19 100	23 900	30 600	33 500	38 200	43 000	48 800	60 200	76 500	95 500	120 000	
25	7 650	9 200	12 300	15 300	19 100	24 500	26 800	30 600	34 500	38 200	48 200	61 200	76 500	95 500	
32	6 000	7 200	9 550	11 950	14 950	19 100	20 900	23 900	27 000	30 000	37 600	48 000	60 000	75 000	
40	4 800	5 750	7 650	9 550	11 950	15 300	16 750	19 100	21 500	23 900	30 100	38 200	47 200	59 700	
50	3 850	4 600	6 150	7 650	9 550	12 250	13 400	15 300	17 200	19 100	24 100	30 600	38 200	47 750	
63	3 050	3 650	4 850	6 100	7 600	9 750	10 650	12 500	13 650	15 200	19 100	24 300	30 250	37 900	
80	2 400	2 900	3 850	4 800	6 000	7 650	8 400	9 550	10 750	12 000	15 100	19 100	23 900	29 850	
100	1 950	2 300	3 100	3 850	4 800	6 150	6 700	7 650	8 600	9 550	12 100	15 300	19 100	23 900	
115	1 700	2 000	2 700	3 350	4 200	5 350	5 850	6 650	7 500	8 350	10 500	13 300	16 650	20 800	
125	1 550	1 850	2 450	3 100	3 850	4 900	5 350	6 150	6 900	7 650	9 650	12 250	15 300	19 100	
150	1 300	1 550	2 050	2 550	3 200	4 100	4 500	5 100	5 750	6 400	8 050	10 200	12 700	16 000	
180	1 100	1 300	1 700	2 150	2 700	3 400	3 750	4 250	4 780	5 350	6 700	8 500	10 650	13 300	
200	955	1 150	1 550	1 950	2 400	3 100	3 350	3 850	4 300	4 800	6 050	7 650	9 550	11 950	
230	830	1 000	1 350	1 700	2 100	2 700	2 950	3 350	3 750	4 200	5 250	6 650	8 350	10 400	
250	765	920	1 250	1 550	1 950	2 450	2 700	3 100	3 450	3 850	4 850	6 150	7 650	9 550	
300	640	765	1 050	1 300	1 600	2 050	2 250	2 550	2 870	3 200	4 050	5 100	6 400	8 000	
350/356	550	655	875	1 100	1 400	1 750	1 950	2 200	2 460	2 750	3 450	4 400	5 500	6 850	
400/406	480	575	765	960	1 200	1 550	1 700	1 950	2 150	2 400	3 050	3 850	4 800	6 000	
450/457	425	510	680	850	1 100	1 400	1 500	1 700	1 910	2 150	2 700	3 400	4 250	5 350	
500/508	385	460	615	765	960	1 250	1 350	1 550	1 720	1 950	2 450	3 100	3 850	4 800	
600/610	320	385	510	640	800	1 050	1 150	1 300	1 450	1 600	2 050	2 550	3 200	4 000	
660	290	350	465	580	725	930	1 050	1 200	1 300	1 450	1 850	2 350	2 900	3 650	
750/762	255	310	410	510	640	820	895	1 050	1 150	1 300	1 650	2 050	2 550	3 200	
800/813	240	290	385	480	600	765	840	960	1 075	1 200	1 550	1 950	2 400	3 000	
900/914	215	265	340	425	535	680	750	850	955	1 100	1 350	1 700	2 150	2 700	
1 000/1 016	195	230	310	385	480	615	670	765	860	960	1 250	1 550	1 950	2 400	
1 050/1 067	185	220	295	365	455	585	640	730	820	910	1 150	1 500	1 850	2 300	
1 120	175	210	280	350	435	560	610	695	785	870	1 100	1 400	1 750	2 200	
1 220	160	195	255	320	400	510	560	640	720	800	1 050	1 300	1 600	2 000	
1 500	130	155	205	255	320	410	450	510	575	640	805	1 050	1 300	1 600	

Looking after your blades (longer life)

Keeping your diamond blade cool to extend its life and improve its performance

Dry cutting diamond blades may be used dry, eliminating the need for water tanks, water hoses or wet slurry cleanup. These blades depend on airflow around the blade to prevent excessive heat build-up during cutting.

Use dry diamond blades for "intermittent" sawing. After every 10 to 15 seconds of cutting, take pressure off the blade and allow it to run back up to full speed for several seconds. This "cooling" interval allows air to flow around the blade and dissipate the heat. Use dry diamond blades **ONLY** for shallow cutting (1-2" deep) or step cutting (making several shallow passes to reach the full depth required).

Piranha Diamond Products dry cutting diamond blades are also designed to cut equally well wet, if the job or equipment permits. Wet cutting diamond blades **MUST** be used with water to prevent excessive heat build-up during cutting. Using water on the blade also reduces dust and helps remove cuttings.

A continuous water flow is critical. Using "wet" blades without water, even for a few seconds, causes excessive heat and blade damage, and creates a safety hazard. Check the saw or tool carefully before using a wet cutting diamond blade. Make sure it is safe to use the saw or tool with water.