



**PAI & PAI ENTERPRISES**

*Performance through Technological Excellence...*

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

## Introduction

The Pai and Pai Enterprises, the flagship company of Pai and Pai group was established in 1971 as the distribution firm for leading manufacturers of Metal finishing chemicals, electroplating plants and other allied equipment.

The Pai and Pai group comprising of a conglomerate of companies, is engaged in consulting, manufacture, distribution and support services of wide range of products to meet the specialized needs of various industries.

Pai & Pai Enterprises plays pivotal role in granite industry by manufacturing & marking Diamond Tool, Circular saws, Edge cutting Saws and Multi Blades. Diamond Segments supplied by us are mainly used for cutting all kinds of granite blocks and slabs. The advantages are fast cutting, speed, smooth cutting and has long life...



- High quality diamond saw cores for the stone processing industry using German technology. These steel blades have the highest quality of tolerance and flatness.
- All cores are Rockwell tested at various locations on the diamond core.
- We supply customized products - bore holes and PCD are machined for concentricity in the tolerance range of H7.
- For high stress applications the slots in circular saws are specially laser cut to prevent cracks and premature break down.
- We are committed to provide superior value-added service. Service means prompt response to customer inquiries and timely delivery.
- We are recognized as an approved supplier of wide variety of cutting saws for shaping variety of granites.
- Our service concept is ONE STOP SOURCE for immediate supply on call; supplying materials of global presence.
- We supply diamond wires for blocks squaring and also supply multi wire for slab cutting.



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## Rules for Saw Selection

In selecting a circular saw for cutting stones, rocks, refractories or other such materials, the following points must be carefully considered:

- The material to be cut
- Cutting quality and thickness desired
- Service life of the saw desired
- Machine characteristics

Only after properly considering the above, it is possible to correctly decide the saw dimensions (i.e. diameter, type of slot, segment thickness and depth of diamond impregnation) and the segment specifications (i.e. the bond, diamond grit size and its concentration). Primarily, the hardness and abrasivity of the stone or rock would decide the segment specifications. At the same time, however, one must also consider whether the saw is to provide basically a high output or a long service life.

Fast cutting saws naturally have a short life, since a softer bond and/or a lower concentration is used. This type of saw can be used satisfactorily only on sturdy and nearly vibration-free machines and that too at high peripheral speeds only. Conversely, saws for a long service life must operate at low cutting rates and require higher drive outputs. Machines susceptible to vibrations and having somewhat lower peripheral speeds could also be used with such saws. Briefly, a high cutting rate would result in high production output and also high cost of saws, but at the same time low wages and machine overheads. In contrast, a long saw life would result in low production output and also low cost of saws, but correspondingly high wages and machine overheads.

Obviously, maximum economic efficiency can only be achieved by a judicious balancing of high cutting rate with long blade life.

## Peripheral Speed

Optimum peripheral speed is closely related to the hardness and abrasivity of the material to be cut. Ideal selection will depend on the spindle speed, spindle drive output, saw diameter and specifications of the saw segments and will be definitely reflected in the cutting efficiency or the ultimate performance of the saw.

### Relation between Spindle Speeds and Peripheral Speeds for various Saw Diameters

Recommended peripheral speeds in m/s														
Materials	Standard peripheral speed										High speed			
											Machine power 100 to 130 HP		Machine power 120 to 180 HP	
Quartziferous granites	25 to 30													
Low quartziferous granites	30 to 40													
Mortles40 to 508090Trovertines	45 to 60										80		90	
Sandstones	40 to 65										80		90	
Spindle speed in relation to peripheral speed and saw diameter														
Peripheral speeds m/s														
∅	25	30	35	40	45	50	55	60	65	70	75	80	85	90
Spindle Speed RPM														
200	2390	2870	3340	3820	4300	4780	5250	5730	6210					
250	1910	2290	2670	3060	3440	3820	4200	4580	4970					
300	1590	1910	2230	2550	2870	3180	3500	3820	4140					
350	1360	1640	1910	2180	2460	2730	3000	3270	3550					
400	1190	1430	1670	1910	2150	2390	2630	2870	3100					
450	1060	1270	1490	1700	1910	2120	2330	2550	2760					
500	960	1150	1340	1530	1720	1910	2100	2290	2480					
550	870	1040	1220	1390	1560	1740	1910	2080	2260					
600	800	960	1110	1270	1430	1590	1750	1910	2070					
700	680	820	960	1090	1230	1380	1500	1640	1770	1910	2050	2180	2320	2460
800	600	720	840	960	1070	1190	1310	1430	1550	1670	1790	1910	2030	2150
900	530	640	740	850	960	1060	1170	1270	1380	1490	1590	1700	1800	1910
1000	480	570	670	760	860	960	1050	1150	1240	1340	1430	1530	1620	1720
1100	430	520	610	690	780	870	960	1040	1130	1220	1300	1390	1480	1560
1200	400	480	560	640	720	800	880	960	1040	1110	1190	1270	1350	1430
1300	370	440	510	590	660	740	810	880	960	1030	1100	1180	1250	1320
1400	340	410	480	550	610	680	750	820	890					
1500	320	380	450	510	570	640	700	760	830					
1600	300	360	420	480	540	600	660	720	780					
1750	270	330	380	440	490	550	600	660	710					
2000	240	290	330	380	430	480	530	570	620					
2200	220	260	300	350	390	430	480	520	560					
2300	200	250	290	330	370	420	460	500	540					
2500	190	230	270	310	340	380	420	480	500					
2700	180	210	250	280	320	350	390	420	460					
3000	160	190	220	260	290	320	350	380	410					

## Mini Multi Steel Cores

### Set of 4 Blanks : (2000 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
1994 Dia			128
1594 Dia	4.5mm / 5.5mm /6.5mm / 7.2mm	100 mm / 150mm	108
1194 Dia			92
794 Dia			88

### Set of 5 Blanks : (2200 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
2194 Dia			132
1794 Dia			120
1394 Dia	4.5mm / 5.5mm /6.5mm / 7.2mm	100 mm / 150mm	96
994 Dia			92
594 Dia			58

### Set of 5 Blanks : (2300 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
2294 Dia			132
1894 Dia			120
1494 Dia	4.5mm / 5.5mm /6.5mm / 7.2mm	100 mm / 150mm	100
1094 Dia			92
694 Dia			80



### Set of 6 Blanks : (2200 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
2194 Dia			132
1894 Dia			120
1594 Dia	4.5mm / 5.5mm /6.5mm / 7.2mm	100 mm / 150mm	108
1294 Dia			96
994 Dia			92
694 Dia			80

### Set of 6 Blanks : (2300 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
2294 Dia			132
1994 Dia			128
1694 Dia	4.5mm / 5.5mm /6.5mm / 7.2mm	100 mm / 150mm	108
1394 Dia			96
1094 Dia			92
794 Dia			88

### Set of 7 Blanks : (2300 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
2294 Dia			132
2015 Dia			128
1730 Dia	6.5mm / 7.2mm	100 mm / 150mm	108
1445 Dia			96
1160 Dia			92
875 Dia			88
590 Dia			64

### Set of 9 Blanks : (2200 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
2194 Dia			132
1994 Dia			128
1794 Dia			120
1394 Dia	4.5mm / 5.5mm / 65.mm / 7.2mm	100 mm / 150 mm	96
1194 Dia			92
994 Dia			92
794 Dia			88
594 Dia			58

### Set of 9 Blanks : (2300 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
2294 Dia			132
2094 Dia			132
1894 Dia			120
1694 Dia			108
1494 Dia	4.5mm / 5.5mm / 65.mm / 7.2mm	100 mm / 150 mm	100
1294 Dia			96
1094 Dia			92
894 Dia			92
694 Dia			80





### Set of 10 Blanks : (2400 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
2394 Dia			136
2194 Dia			132
1994 Dia			128
1794 Dia			120
1594 Dia	5.5mm / 6.5mm / 7.2mm	100 mm / 150 mm	108
1394 Dia			96
1194 Dia			92
994 Dia			92
794 Dia			88
594 Dia			58

### Set of 5 Blanks : (3000 Dia)

Blanks Size	Blanks Thickness	Bore Size	No. of Slots
3000 Dia			160
2480 Dia			140
1960 Dia	7.2mm / 8.1mm	100 mm / 150 mm	128
1440 Dia			100
920 Dia			92



## Normal Saw Blank

Dia of blade	Dia of blank	Hole	Thickness	Teeth No.	Depth of slot	Width of slot	Flatness	Side run out	Testing flange
300	290	50	2.2	18	19	10	0.10	0.15	100
350	340		2.4	21	19	10	0.10	0.15	100
400	390		2.4/2.6/2.8	24	19	10	0.15	0.20	100
450	440		2.8	26	19	10	0.15	0.20	125
500	490		2.8/3.0/3.2	30	19	10	0.20	0.25	125
550	540		3.0/3.2	21	19	10	0.20	0.25	125
600	590		3.4/3.5/3.6	36	19	10	0.20	0.25	150
650	640		3.4/3.5/3.6	40	19	10	0.25	0.25	150
700	690		4	40	19	10	0.25	0.30	175
750	740		4.2/4.5	46	19	10	0.28	0.30	175
800	790		4.2/4.5	46	19	10	0.28	0.30	200
900	890		5.0/5.5	64	220	18	0.28	0.30	200
1000	990		5.0/5.5	70	20	20	0.30	0.35	250
1100	1090		5.0/5.5	74	20	20	0.35	0.40	250
1200	1194	80	5.5/6.0	80	22	20	0.35	0.40	250
1300	1264		6.0/6.5	88	22	20	0.35	0.40	250
1400	1394	100	6.5/7.2	92	22	20	0.40	0.45	300
1500	1494	120	6.5/7.2	100	22	20	0.40	0.45	300
1600	1594	150	5.5/6.5/7.2	104/108	22	20	0.50	0.50	300
1800	1794		5.0/7.2/8.0	120	22	20	0.60	0.70	300
2000	1994	150	8.0	128	26	22	0.70	0.85	300
2200	2194		8.0	132	26	22	0.70	0.85	400
2300	2294		8	138	26	22	0.70	0.85	400
2500	2494		8.0/9.0	140	26	22	0.80	0.85	400
2700	2694		9.0	140	26	22	0.80	1.00	400
2800	2794		9.0	148	28	22	0.80	1.20	450
3000	2994		9.25	160	30	30	1.00	1.20	450



## Coolant Capacity

Sufficient quantity of coolant is very important and it must be given properly into the area of contact between the saw and the material cut. Clean cooling water with coolant additives, should be used to reduce the wear & tear.

## Running-IN

Running-in period for a Circular Saw on any machine is quite normal. Therefore it is necessary to take the first few cuts rather slowly and then gradually increase the cutting speed and depth of cut which in turn increases the efficiency of the saw. A blade used to cut very hard stones like Ilkal Red & Tan Brown needs a longer running-in period.

## Stocking

On receipt of the saw blank, kindly handle the blades by the handling holes and not by the centre bore. Kindly note it can create damage to the bore if done so. It is advisable to store the segmented saw on a flat surface or hung by its bore on a wall. Do not rest it on the ground against a wall as it will tend to bend.

## Brazing

The brazing of the segments is very critical and the following parameters should be strictly followed:-

Always use silver brazing foil of 43% purity.

While brazing, the temperature should remain between 600 degree C - 675 degree C. Exceeding the temperature damages the segments and the blanks resulting in lower life.



## Trouble Shooting

### Uneven Blade Wear

Cause	Shaft bearing are worn
Remedy	Install new blade shaft bearings of blade shaft, as required
Cause	Blade bore is damaged
Remedy	Replace blade body

### Wear on the Saw Body

Cause	Wear of steel body due to slurry
Remedy	Use as much coolant as possible to remove the slurry

### Blade Wobbles

Cause	Blade runs at improper speed
Remedy	Check for bad bearings, bent or worn shaft, Belt might be loose, Blade might need to be re-tensioned and straightened
Cause	Blade flange diameters are not identical
Remedy	Check blade flanges to make sure they are clean, flat and of correct diameter
Cause	Blade is bent as a result of dropping or being twisted in the cut 'during operation'
Remedy	Blade might need to be re-tensioned and straightened



### Cracks in Steel Center

Casue	Blade flutters in cut as a result of blade losing tension
Remedy	Tighten the blade shaft nut, Make sure blade is running at proper speed and is properly tensioned
Cause	Blade specification is too hard for the material being cut
Remedy	Use a softer bond to eliminate stresses that create cracks

### Blade will not cut

Cause	Blade is too hard for material being cut
Remedy	Use a softer bonded blade. Select proper blade specification for material being cut
Cause	Blade becomes reportedly glazed or dull during use
Remedy	Improper blade specification; blade is too hard for the material being cut. Use a softer bonded blade to reduce operating stresses

### Short Blade Life

Cause	Blade bond too soft
Remedy	Use a harder bond
Cause	Overheating due to lack of coolant
Remedy	Check coolant pipes and make sure flow is adequate on both sides of blade



## Our Allied Activities

The company has strategically positioned itself as the leading distributor of best breed of total packaging solutions.

### The Supreme Industries Ltd.

Pai & Pai Enterprises undertakes design and fabrication of foam fitments and distributes these protective packaging products :

- Air Bubble Sheets
- Antistatic Expanded Poly Propylene Foam
- Expanded Poly Ethylene Foam
- Cross Linked Poly Ethylene Foam

### Signode India Limited

Manufacturers of world-class packaging system and consumables configured specifically for Indian product lines and markets

### Equipment

- Automatic Packaging System
- Automatic, Semi Automatic Strapping System
- Automatic, Semi Automatic Portable Carton Sealing System
- Pneumatic Nailers
- Container Lashing

### Consumables

BOPP Tapes, Strapping Rolls, Stretch Films and Angle Boards



## Pai & Pai Chemicals India Pvt. Ltd.

Pioneers in industrial waste water treatment with state of the art facility at Bangalore

### Contact us for :

- Total Environmental Audit
- Consultancy on handling, disposal of solid, liquid, gaseous and oil waste
- Air and Sound Pollution consultancy
- Techno-economic feasibility for common effluent treatment plants
- Design and fabrication of custom built effluent, metal finishing, phosphating, pickling and waste water recovery plants
- Auditing of metal finishing process
- Auditing of waste water treatment plants
- Environment impact assessment





## PAI & PAI ENTERPRISES

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