ABRASIVE PRODUCTS CATALOGUE

Grinding Techniques (Pty) Ltd.

ON THE CUTTING EDGE OF TECHNOLOGY

ISO 9001:2000

Founded in 1981, Grinding Techniques (Pty) Ltd. is the largest privately owned abrasive manufacturer in Africa, operating under the principal business ethos of developing mutually beneficial business partnerships with our valued customers.

A wide spectrum of quality Bonded Abrasives are manufactured to ISO 9001:2000 standards; the company also converts Coated Abrasives, and markets Tungsten Carbide Burrs, diamond products and other ancillary items. In addition, Grinding Techniques (Pty) Ltd. is the Southern African agent for Tyrolit abrasives. The company distributes through a network of branches in South Africa, and exports extremely successfully on a worldwide basis.

Grinding Techniques (Pty) Ltd. is an equal opportunity employer, committed to environmental protection and constant product improvement through ongoing research.

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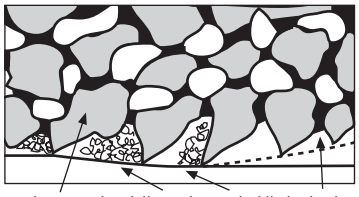
INTRODUCTION

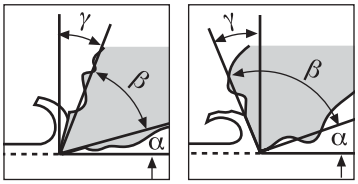
The range of abrasive products supplied by Grinding Techniques (Pty) Ltd. includes Bonded Abrasive, Coated Abrasives, Superabrasives (Diamond and CBN), Tungsten Carbide burrs, and other ancillary items to support these products.

BONDED ABRASIVES

"Bonded Abrasives" is the name given to the range of abrasive (cutting and grinding) products where abrasive grain is mixed with bonding materials, pressed and fired into various shapes (grinding wheels, segments, rubbing bricks, dressing sticks, mounted points, grinding cones, oilstones etc).

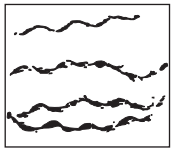
GRINDING: is the cutting action of thousands of sharp abrasive grains on the face of the grinding wheel, resembling a complex cutting tool with cutting angles and voids for chip clearance. When closely inspected, the cuttings are identical to those produced by a lathe tool.
A secondary process which takes place is a chemical reaction creating corrosion. This process is less noticeable on high corrosion resistant steels ie. stainless steel.
With the improvement in grinding technology, grinding machines and grinding wheels, grinding has developed into one of the most economic mechanical operations which not only has heavy metal removal rates, but with which accurate and close tolerances and fine surface finishes are achieved.
Specific grinding operations demand grinding wheels with particular qualities which necessitate a wide variety of shapes, sizes and compositions and also places stringent requirements on their manufacture.





α = clearance angle
β = wedge angle
γ = swarf angle

Discontinuous grinding chip obtained from grinding cast iron.



Continuous grinding chip obtained from grinding SAE 1112 steel and indicates the free chip formation possible under good grinding conditions.

COMPOSITION OF A GRINDING WHEEL

A grinding wheel has three main components:

- The abrasive grain that does the actual cutting.
- The bond that supports the abrasive grains while they cut.
- Fillers to promote the metal removing action.

The arrangement of the first two components in the abrasive product gives a definite characteristic known as **STRUCTURE (PORES)**. In order to provide chip clearance, air spaces or voids must be left between adjacent grains.
When considering whether a bonded abrasive product is suitable for the operation it has to perform, all of its components have to be taken into account.

These components are:

1. **ABRASIVE TYPE**
2. **GRIT SIZE**
3. **GRADE**
4. **STRUCTURE**
5. **BOND TYPE**
6. **ADDITIONAL COMPONENTS**

These components will be examined in greater detail.

1. ABRASIVE TYPE

There are two basic types of manufactured abrasives, the one is aluminium oxide and the other is silicon carbide. The ideal abrasive for a grinding operation is one which has the following two properties:

- Ability to fracture when a serious dullness is reached.
- Maximum resistance to pointware.

It is obviously difficult to obtain this in a single type of abrasive material. To grind glass, a material of low tensile strength must be used. In this instance silicon carbide abrasive stays sharp longer, and on hardened steel, a material of high tensile strength, aluminium oxide abrasive stays sharp longer. Therefore each abrasive works best when it is suited to the grinding operation.
The principle requirements which the abrasives must satisfy can be summarized as follows:

- extreme hardness
- either higher grain toughness or higher brittleness, dependent on the abrasive grain type
- suitable grain shape which guarantees a good cutting capacity

These requirements are fulfilled to a large extent by synthetic grinding abrasives. The abrasives which the majority of grinding wheels contain are **Aluminium Oxide (Al203)** or **Silicon Carbide (SiC)**.
In addition, diamond or Cubic Boron Nitride (CBN) are used principally for special applications.
The GRINDING TECHNIQUES manufacturing program currently embraces grinding products based on Aluminium Oxide and Silicon Carbide, which are further broken down into different types of Aluminium Oxide and Silicon carbide.
The reason for having various types of aluminium oxide and silicon carbide abrasives is that materials have different properties and therefore require a different type of grain to readily grind it. If looked at under a microscope, one will find that the various types of aluminium oxide grain are different in their structure, some are blocky in shape and are normally very tough and resist breaking down and dulling to a great degree, others will have sharp points which will break off when under pressure and expose new sharp edges continuously. Then we get to a third category that are reasonably sharp and do not break down as readily but are able to resist the dulling or blunting whilst in use. The most well known one is 31A or better known as RUBY grade. Silicon carbide on the other hand normally shows sharper edges and, when in use, breaks away more readily as it is a very friable but hard material.

ALUMINIUM OXIDE

Aluminium Oxide is generally used for grinding carbon steel, alloy steel, high speed steel, annealed malleable iron, wrought iron, hard bronzes and similar material. These are various different types of aluminium oxides and all abrasive manufacturers source these from the same suppliers. However they designate them to suit their own methods.

A – GREY BLUE
1A – GREY BLUE
5A - OFF-WHITE
9A – WHITE
11A – PINK
31A – RUBY

Mixtures of the above types are also used and in turn have doces relevant to them.

SILICON CARBIDE

This type of grain is used for grinding grey iron, chilled iron, brass, soft bronze, copper, aluminium, stone, marble, rubber, hard facing alloys, glass and cemented carbides. There are various types of silicon carbide as in the case of aluminium oxide.

8C – GREEN
C – BLACK
6C – BLACK (REFINED)

The chart below gives the abbreviated designations (symbols) in accordance with recommendations for the well known Grinding Techniques qualities as well as their characteristics

TYPES OF ABRASIVES

SYMBOL	GRAIN TYPE	CHARACTERISTICS	FIRED COLOUR
A	Regular Brown Aluminium Oxide	Blocky Tough	Blue Grey
1A	Semi Friable Aluminium Oxide	Sharp Edged	Blue Grey
5A	Mono Crystalline Aluminium Oxide	Sharp Edged BIZARRE	Off-white
9A	White Pure Aluminium Oxide	Sharp Edged	White
11A	Pink Aluminium Oxide	Sharp Edged BIZARRE	Pink
15A	Blended Aluminium Oxide	Sharp Edged	Grey
31A	Ruby Aluminium Oxide	Cubical BIZARRE	Ruby-Red
C	Black Silicon Carbide	Sharp Edged	Black
6C	Refined Black Silicon Carbide	Sharp Edged	Black
8C	Green Silicon Carbide	Sharp Edged	Green
ZA	Alumina Zirconia	Tough - Sharp	Dark Grey
ZZ	Eutectic Alumina Zirconia	Tough Microcrystalline	Dark Grey
SA	Sol Gel	Uniformly Sharp Edged	Blue

***Note:** With resin bonded grinding wheels, the colour of the finished products is not determined by the abrasive material but by the bond - usually brown to black.

2. GRIT SIZE

The number designation that follows the abrasive type on any specification represents the approximate number of openings per linear inch in the final screen used to size the grain. This ranges from a grit 8 up to a grit 1 200, grain 8 being the coarser. The internationally valid Grain Size Standard is contained in FEPA AND ANSI CODES respectively.

BONDED FEPA CODE 32 F-1971

ANSI B74.12-1976

COATED FEPA CODE 30 F-1971

ANSI B74.18-1977

The block shaped crude abrasives are reduced to abrasive grain size by crushing and milling. The abrasive grains are then graded, the range of sizes being internationally standardised according to the sieve mesh size. The grain numeral gives the number of meshes per linear inch. Very fine grains (micro grains) are obtained by sifting and sedimentation.

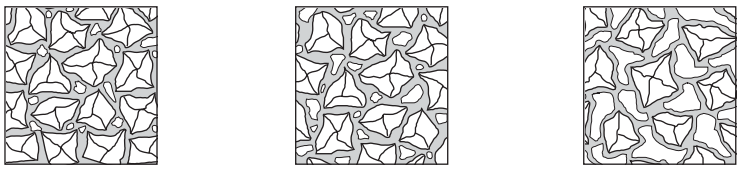
GRAIN SCALE

Grain Size Numeral		Dimension mm	Grain Size Numeral		Dimension mm
8		2,83-2,0	90		0.18-0,13
10	very	2,38-1,68	100		0,15-0,11
12	coarse	2,0-1,41	120		0,13-0,09
14		1,68-1,19	150	fine	0,11-0,06
16		1,41-1,0	180		0,09-0,05
20		1,19-0,84	220		0,075-0,045
24	coarse	0,84-0,60	240		0,047-0,043
30		0,71-0,50	280		0,038-0,035
36		0,60-0,42	320		0,031-0,028
46		0,42-0,30	400		0,018-0,016
54		0,35-0,25	500	very fine	0,014-0,012
60	medium	0,30-0,21	600		0,010-0,008
70		0,25-0,18	800		0,008-0,006
80		0,21-0,15	1000		0,005-0,004
			1200		0,004-0,003

Coarser grits remove stock more rapidly, but do not leave a good finish. Conversely, finer grits give a better finish, but slower stock removal rates.

3. GRADE (Strength of Bonding)

The grade indicates the relative strength (holding power) of the bond which holds the abrasive grains in place. When the amount of bond is increased the size of the bond postes connecting each abrasive grain to its neighbours is increased. This larger bond poste is naturally stronger therefore increasing the hardness of the wheel. Hardness grades range from "A" to "Z" in the order of increasing hardness.



The size of the 'postes' of bond supporting each grain of abrasive is a measure of the hardness of the grade. From left to right these grades are: Hard; Medium; Soft.

Symbols for hardness grade	Hardness Grade
A B C D	extremely soft
E F	very soft
G H J	soft
K L M	medium
N O P Q	hard
R S T	very hard
U V W X Y Z	extremely hard

HARDNESS (Grades)

The expression "wheel hardness" does not refer to the grinding abrasive, but to the "degree of strength" with which the abrasive grains are held in the bond setting of the wheel. The wheel hardness is a measure of the resistance of the bond to the grains being torn out during the grinding process ie. the grain particles will break out of a soft wheel more readily than out of a hard one. As a general rule of thumb, hard workpieces normally necessitate softer grades, and vice-versa. When grinding a hard workpiece with a hard grade, the grain will not be released timeously; it will become blunt, and will not cut freely; the face of the wheel will glaze, generating heat and burning the workpiece.

4. STRUCTURE

The total volume of the grinding wheel is made up from the abrasive grains, the bonding material and the pore volume. The pore volume characterises the structure and is of considerable importance for the grinding process. The pores form chip chambers and assist cooling during grinding.

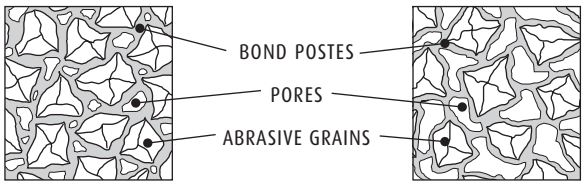
The proportions of abrasive grains, bonding material and pores can be varied and the structure of the wheels is designated by structure numbers.

Every grinding wheel has a natural porosity. This is expressed in structure numbers 1-9 which are considered to be normal structures.

The natural porosity of a wheel can be artificially increased by mixing in a foreign material which then produces additional porous space. This artificially increased porosity (induced porosity) is expressed in structure numbers 11-12 and is then referred to as porous structure.

The structure number indicates the structure of grain spacing in the wheel. When the abrasive grains are close together, relative to their size, the wheel has a denser structure as indicated by a lower structure number such as 4 or 5. Usually you will not have to be concerned with a structure number in wheel selection. Experience has proved that for each grit size and grade, there is a best or standard structure. The structure number is omitted from certain types of wheels which are supplied in the standard structure only.

Diagrammatic illustration of grinding wheel structure



STRUCTURE NUMBERS

Natural porosity Normal porosity	Induced porosity Porous structure
1 2 3 4 5 6 7 8 9 10	11 12

The higher the structure number, the more open the structure.

Grinding products with porous structure are marked with the letter P and can be further classified as follows:

P1	Coarse pores
P2 **P3**	Medium pores
P5 **P8**	Fine pores
P12	Very fine pores

5. BOND TYPES

There are four basic types of bonds used in making grinding wheels.

1. **VITRIFIED BOND**
2. **RESINOID BOND**
3. **RUBBER BOND**
4. **SHELLAC BOND**

For our purpose, we only look at the following two bonds:

VITRIFIED BOND - which is used for over 75% of grinding wheels manufactured. Porosity and strength of wheels made with this bond give high stock removal and their rigidity helps in the attainment of high precision. They are not affected by water, acid, oil or ordinary temperature variations.

Vitrified bond symbol: V

Vitrified bonded grinding wheels are fired at a temperature of approximately 1250-1325 °C. They are not sensitive to chemical influences and can be stored indefinitely. Sudden changes in temperature, shocks or blows should however be avoided.

RESINOID BOND - used for high speed wheels in foundries, welding and billet shops; also used in cut-off and thread grinding operations.

Resinoid bond symbol: B

The resinoid bond is made from phenolic resins and various fillers which help to determine the characteristics of the bond. Resinoid bonded grinding wheels are cured at a temperature of approximately 180°C. They are less sensitive to sudden temperature changes, shocks or blows than vitrified bonded wheels. Chemical influences and lengthy storage should be avoided.

Resin bonds can be broadly categorised into two types; one for rough grinding, and the other for precision grinding.

6. ADDITIONAL COMPONENTS

These components are added to perform specific functions, and can consist of special porosities, fibreglass reinforcement, steel reinforcing rings, etc.

WHEEL MARKINGS

31A	60	I	12	V86	P
Abrasive Type	**Grit Size**	**Grade**	**Structure**	**Bond Type Symbols**	**Additional**
Vitrified Bond	**Very coarse**	**Extremely soft**	**Dense**		
A	8	A	0		**P - Porous**
1A	10	B	1		
7A	12	C	2		
9A	14	D	3		
11A	**Coarse**	**Very Soft**	**Normal**		
15A	16	E	4		
31A	20	F	5		
91A	24	G	6		
C	30	**Soft**	7		
6C	36	H	8		
8C	**Medium**	**I**	9		
Resinoid Bond	46	J	**Porous**		
A	54	**Medium**	10		
11A	**60**	K	11		
9A	70	L	**12**		
A/C	80	M			
C/A	90	**Hard**		**V - Vitrified**	
ZA	**Fine**	N		B - Resinoid	
ZZ	100	O		BF - Resin reinforced	
C	120	P		E - Shellac	
6C	150	Q		R - Rubber	
Resinoid Bond Reinforced	180	**Very Hard**			
	220	R			
AS	**Very Fine**	S			
CS	240	T			
A/C	280	**Extremely Hard**			
C/A	320	U			
ZA	400	V			
	500				
	600				

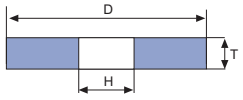
MINIMUM SIZES OF FLANGES FOR STANDARD BORE SIZE WHEELS
(Machine must be equipped with sufficient guard)

A	B	C		s	E
Wheel diameter	Minimum O.D. of flanges	Adjust ring width		Minimum flange thickness at the bore	Minimum flange thickness with recessed wheels
		min. mm	max. mm		
50	20	5	2,5	3	2,5
75	25	6	3	4	2,5
100	35	10	3	5	3
150	50	12	5	10	5
200	70	12	6	10	5
250	90	16	6	10	6
300	100	16	8	12	7
350	120	20	8	13	8
400	140	25	10	14	9
450	150	25	13	15	10
500	170	32	13	16	11
600	200	32	16	17	12
700	240	38	20	19	14
800	270	45	22	21	16
900	300	50	24	23	19

REMARKS: 1. The inner face of the flanges must be tapered for a minimum depth of 2 to 5mm depending upon the wheel diameter.
2. We suggest the use of flanges thicker than the recommended size, to allow their re-grinding after wear.

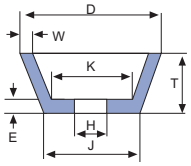
DIMENSIONS AND SHAPES

Shape 1



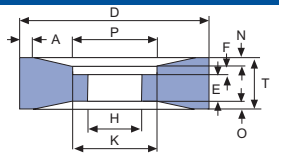
Straight grinding wheel

Shape 11



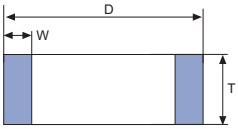
Flaring cup wheel

Shape 25



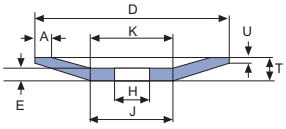
Grinding wheel recessed one side and relieved both sides

Shape 2



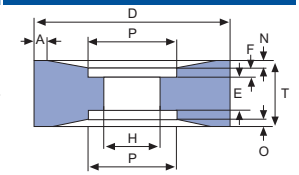
Grinding cylinder

Shape 12



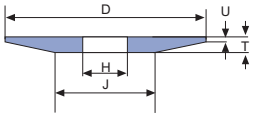
Dish wheel

Shape 26



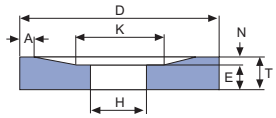
Grinding wheel recessed and relieved both sides

Shape 3



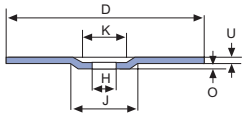
Grinding wheel tapered one side

Shape 20



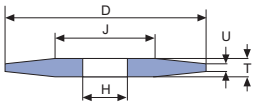
Grinding wheel relieved one side

Shape 27



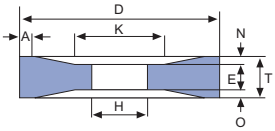
Depressed centre wheel

Shape 4



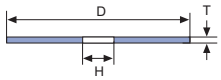
Grinding wheel tapered both sides

Shape 21



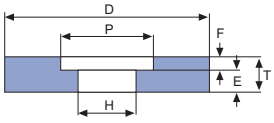
Grinding wheel relieved both sides

Shape 41



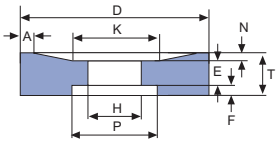
Straight cutting wheel

Shape 5



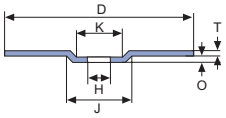
Straight grinding wheel recessed one side

Shape 22



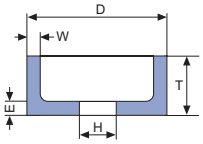
Grinding wheel recessed one side and relieved other side

Shape 42



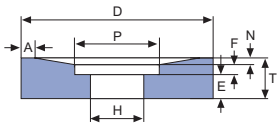
Cutting wheel depressed centre

Shape 6



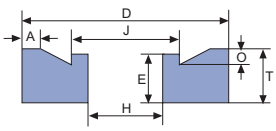
Straight cup wheel

Shape 23



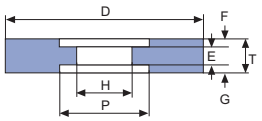
Grinding wheel recessed and relieved one side

Shape 115



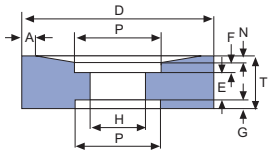
Grinding wheel relieved one side raised boss

Shape 7



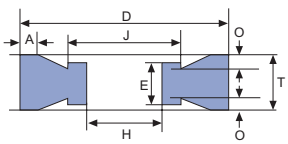
Straight grinding wheel recessed both sides

Shape 24



Grinding wheel recessed both sides and relieved one side

Shape 116



Grinding wheel relieved both sides raised boss

Dimension Symbols

Principal dimensions:

D Diameter (o.d.)
T Thickness
H Hole size (see also general dimensions, letter H)

General dimensions:

A Width of flat spot.
Minor width dimension on trapezoidal shaped grinding segments.
Minor height dimensions of carving tool stone.
B Width of grinding segments, abrasive sticks and stones.
E Base thickness of cup and dish wheels.
Thickness at hole for recessed wheels, shapes 5, 6, 7, 11, 12, 20 to 26.
F, G Depth of recess.
H Height of grinding segments, abrasive sticks and stones.
Thread diameter for shapes 16 to 19.
(see also principal dimensions)
J Diameter of outside flat of cup and dish wheels, shapes 11 and 12.
Flange contact areas for shapes 3 and 4.
Outside diameter of offset, shape 27.
K Diameter of inside flat for cup and dish wheels, shapes 11 and 12.
Minor diameter of bevel for cup, shapes 20, 21, 22 and 25.
Inside diameter of offset, shape 27.
L Length of grinding segment, abrasive sticks and stones.
Free length of mandrel of mounted wheels.
Length of thread for shapes 16 to 19.
N, O Depth of bevel, shapes 21, 25 and 26.
O Height of offset, shape 27.
P Diameter of recess for straight grinding wheels, shapes 5, 7, 22 to 26.
R Radius.
S Diameter of mandrel of mounted wheels.
U Width of edge.
V Angle for wheel face N.
W Wall thickness.
X Width of face for wheel face N.

U = 3mm; if other widths required, state on the order.

V and X must be stated on the order.

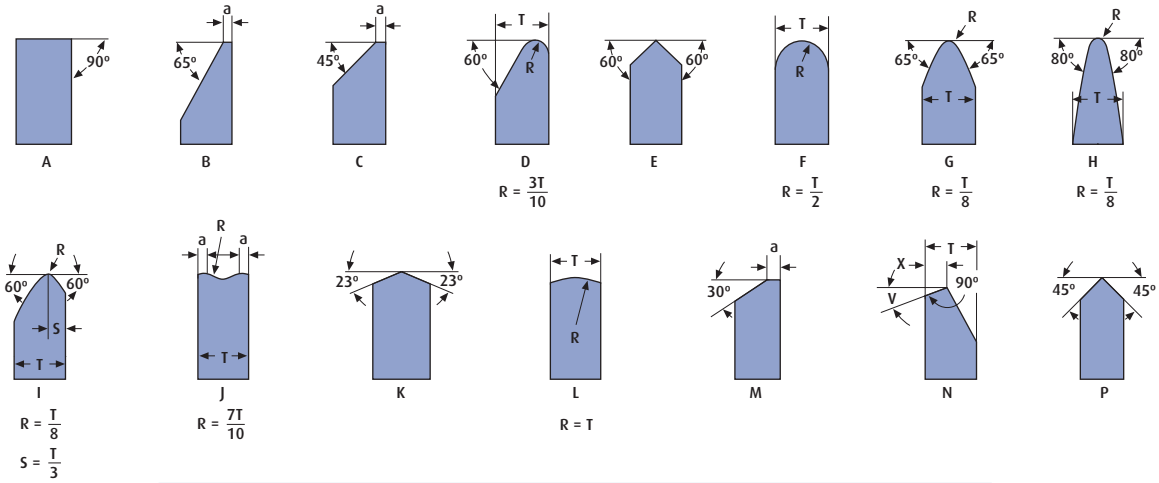
For orders of wheels shapes 5 and 7, with wheel faces B, C, D, M or N, a drawing is required.

Examples of how to designate:
Grinding Wheels with inserted nuts shape 16, 17, 18, 18R, 19.

All dimensions in millimetres.

TECHNICAL INFORMATION

WHEEL FACES FOR SHAPES 1, 5 AND 7



ISO METRIC STANDARDS FOR GRINDING WHEELS

Diameter (o.d)	Thickness	Hole	
mm	mm	Inches	mm
6	1	1/16	1,59*
10	1,6		1,60
13	2,5	3/32	2,38*
16	3,2		2,50
20	4		3,00
25	5	1/8	3,18*
32	6	5/32	3,97*
40	8		4,00
50	10	3/16	4,76*
65	13		6,00
70	16	1/4	6,35*
80	20	3/8	9,53*
90	25		10,00
100	32	1/2	12,70*
125	40		13,00
150	50	5/8	15,88*
180	65		16,00
200	80	3/4	19,05*
230	90		20,00
250	100	7/8	22,23*

Diameter (o.d)	Thickness	Hole	
mm	mm	Inches	mm
300	125		25,00
350	160	1	25,40*
400	200	1 1/8	28,60*
450	250	1 1/4	31,75*
500	300		32,00
600	400	1 3/8	34,93*
650	500	1 1/2	38,10*
700			40,00
750		2	50,80
800		2 1/2	63,50*
900		3	76,20
1060		5	127,00
1250		6	152,40
1500		7	177.80*
		8	203,20
		9	228,60*
		10	254,00*
		12	304,80
		15	381,00*
		20	508,00

NOTE: Hole sizes marked thus* are considered as transitional standards which will ultimately become non-standard at some future date.

The specifications in this catalogue are recommendations only. For further information or special application specifications, please contact Grinding Techniques Technical Department (011) 271 6400 or email: info@grindtech.com

SAFETY IN GRINDING

Responsibilities

Grinding wheel manufacturer:

- Guarantee of safety factor X for the grinding wheel against breakage
- Test run in the factory at increased peripheral speed
- Destruction testing in the factory
- Designation and marking of the grinding wheel in accordance with regulations, including permissible speed The responsibility extends to perfect packing for despatch, not however to damage caused in transport or due to improper storage

Grinding machine manufacturer:

- Easy adjustment of the work rest and wheelguard to suit reducing wheel diameters
- Self-acting interlocking of the speed adjustment steps
- Limitation of stepless speed variators
- Suitable safety guard made of a ductile material which will withhold the pieces of the wheel in case of breakage

The user, operator:

Before mounting the grinding wheel:

- Check for external transport damage, ring test
- Check permissible speed
- Correct mounting
- Check out of balance, if necessary balancing the grinding wheel
- Readjustment of the work rest and wheelguard
- Allow the new wheel to run free at full speed for five minutes
- Chipping the grinding wheel is forbidden

For these reasons each GRINDING TECHNIQUES grinding wheel is marked with the maximum permissible speed:
Permissible r.p.m. =

Peripheral Speeds

In the international regulations, the maximum permissible peripheral speeds are defined as follows:

Normal peripheral speeds:

- Up to 33m/s for vitrified bonded grinding wheels
- Up to 48m/s for hard grade non-reinforced resinoid bonded grinding wheels, dependent on mounting conditions; soft, porous wheels should operate at slower speeds
- Up to 80m/s for cutting and angle grinding wheels used on standard portable machines
- Up to 100m/s for cutoff wheels mounted on floorstand machines

Increased peripheral speeds, which require a special technology:

- Higher than 33m/s for vitrified bonded grinding wheels
- Higher than 48m/s for resinoid bonded grinding wheels

The current practical values are:

- 45, 60 and 80m/s for vitrified bonded grinding wheels
- 60 and 80m/s for resinoid bonded grinding wheels

Wheels for operation at increased peripheral speeds are specially marked.
The mark follows the designation of the specification.

Example: 15A60 L5V86 - **60m/s**

Grinding wheels for operation at increased peripheral speeds are marked according to international standards with a diagonal stripe of at least 5mm width in one of the following colours:

Blue - 45m/s vitrified bond
Yellow - 60m/s
Red - 80m/s vitrified and resinoid bonds

Depressed centre grinding wheels, shape 27, as well as cutoff wheels shapes 41 (reinforced and non-reinforced) and 42, are excepted.
The grinding machines have to be marked accordingly by the user. In special cases, reduced peripheral speeds are fixed by the manufacturer for safety reasons. This concerns very soft and porous grinding wheels and especially thin-walled cup and cylinder wheels.

RECOMMENDED SPEED IN M/SEC FOR GRINDING WHEELS

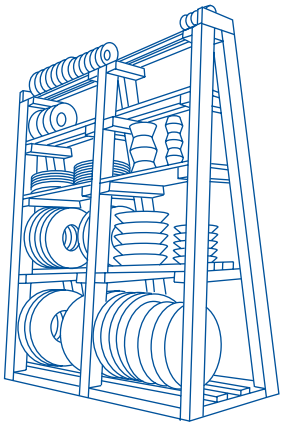
Application	m/sec
Tool sharpening	25-30
Saw gumming	18-25
Knife sharpening (large diameter wheel)	20-25
Surface grinding	20-25
Cylindrical grinding	30-45
Centreless grinding	30-45
Snagging	48-80
Cutting off	80-100

For speed conversions please refer to page 83.

STORAGE & MOUNTING

Check each delivery for any possible transport damage (ring test).
Grinding wheels should be stored in a manner that they cannot be damaged.
The store room must be dry, frost-free and protected against unsuitable heating or vibration.

Resinoid bonded grinding wheels should not be stored longer than 2-3 years, otherwise they will become brittle and therefore reduced in strength.
Vitrified bonded grinding wheels can be stored indefinitely.



Suggested practical wooden racks for storing grinding wheels.

MOUNTING GRINDING WHEELS

Before mounting, every grinding wheel must be checked for damage (ring test). The clamping surfaces of the wheel flanges must be clean. Grinding wheels must be an easy fit on the grinding spindle or clamping device and must be firmly secured to them. After mounting the grinding wheel has to be balanced.

THE RING TEST

The ring test should be carried out immediately before mounting a new or used grinding wheel. The wheel should be lightly tapped to the right and to the left of the vertical centreline. Light wheels should be held on the finger or on a mandrel, heavier wheels tilted on edge of the floor. The wheel must be dry for the ring test. A crack-free wheel will emit a clear ringing sound; a damaged wheel will sound cracked. Resinoid bonded wheels do not emit the same clear metallic ring as do vitrified wheels.

COATED ABRASIVES

Coated Abrasives are abrasive grains which are attached to various types of backings, and then converted to specific product types such as rolls, sheets, discs, flap discs, flapwheels, evenrun bands etc.
As for Bonded Abrasives, there are different **types of abrasive grain** with specific characteristics, and **grit sizes** follow the same pattern (grit 16: extremely coarse; grit 1200: extremely fine).
The grain is electro coated to the backing to ensure a uniform, upright, sharp grain position, and can be applied as a full coverage (closed coat) or a partial coverage (open coat).
Backings can be of paper, light, medium or heavy weights; cloth, in various weights to provide greater support or flexibility; polyesters or polycottons; or vulcanised fibre.
Adhesion of the grain to the backing is done in two stages; the maker coat adheres the grain to the backing, and the size coat - applied over the abrasive surface - locks the grains in place to prevent grain shedding.
Combinations of glues or resins are used to adhere the grain to the backing.
Before converting, the jumbo roll of abrasive is **flexed** to aid conformability. This process can be a single flex, double flex, or triple flex.
Finally, coated abrasives can have specific **treatments** added to them. These treatments include Zinc Stearate as an anti-clogging agent; latex to waterproof the product; P.S.A glues or velcro backings.

The Coated Abrasive range of products supplied by Grinding Techniques (Pty) Ltd. is of excellent quality, and provides optimum performance.

SUPERABRASIVES

"Superabrasives" consist mainly of specially shaped grinding wheels with diamond or CBN (cubic boron nitride) abrasive, and cutting wheels with diamond abrasive on their periphery.
Basically, diamond is used to grind tungsten carbide, or cut through bricks, concrete or natural stoneware, while CBN is used on hard to grind steels.
For further information, please consult the relevant pages in the catalogue.