

CATALOG



INDEX

DIAMOND AND CBN ELECTROPLATED EC TOOLS	-	page 1
- DIAMOND ELECTROPLATED EC FILES	-	page 2
- DIAMOND ELECTROPLATED EC DISCS	-	page 9
- DIAMOND AND CBN ELECTROPLATED EC WHEEL	-	page 10
- DIAMOND AND CBN ELECTROPLATED EC FOR INTERNAL GRINDING	-	page 11
- DIAMOND AND CBN ELECTROPLATED EC 12C9 TYPE	-	page 13
- DIAMOND ELECTROPLATED EC DIPROFIL FILES	-	page 14
- DIAMOND ELECTROPLATED EC CONICAL WHEELS	-	page 15
- DIAMOND ELECTROPLATED EC SPHERICAL WHEELS	-	page 16
- DIAMOND ELECTROPLATED EC VARIOUS FORMS WHEELS	-	page 17
- DIAMOND ELECTROPLATED EC WHEELS FOR FIBERGLASS	-	page 19
DIAMOND PASTE	-	page 20
- DIAMOND PASTE PLUS-LITD	-	page 21
POLYCRYSTALLINE AND NATURAL DIAMOND TOOLS	-	page 22
- NOT REVERSIBLE SINGLE POINT DRESSER	-	page 23
- REVERSIBLE SINGLE POINT DRESSER	-	page 24
- CHISEL SHAPED DIAMOND TOOLS	-	page 25
- DIAMONDS CLUSTER TOOLS	-	page 26
- MULTIPLE DRESSING DIAMOND WHEEL	-	page 27
- CIRCULAR MULTI-DIAMONDS DRESSING TOOLS	-	page 28
- DIAMOND PLATES	-	page 29
- GRINDING HAND TOOLS DIAMAX 3	-	page 31
- AGGLOMERATED GRAINS DRESSING TOOLS	-	page 33
ROTATING FRAMING ROLLS	-	page 34
DIAMOND AND CBN WHEEL RESIN OR METAL BOND	-	page 35
MECHANICAL HARD METAL WORKING	-	page 39



DIAMOND AND CBN ELECTROPLATED EC TOOLS

Technical specifications and recommendations for use

With a particular procedure, called EC, the LITD® produces a wide range of grinding wheels and abrasive tools, able to meet the demands of many sectors of industry. The EC allows great speed of removal, constant profile and low cost.

Granulometry

The particle sizes used in the construction of the diamond grinding wheels and CBN are classified according to the FEPA standards which are described below in comparison with other standards.

Comparative table of grain size and fields of use

USE	FEPA	DIN	MESH
FINISH	D64	D 50	230/270
MEDIA FINISHING	D107	D 100	140/170
ROUGHING	D151 D181	D 150	100/120 80/100
SPECIAL USES	D302 D502 D1181	-	56/60 35/45 16/20

Concentration

It is always the maximum, being the abrasive grains arranged with continuity on a single layer.

Coolants

In grinding operations with diamond or CBN wheels, it is advisable to use a liquid coolant. In this way you avoid the possible phenomena of clogging or the degradation of the abrasive band.

Installation of the grinding wheel

The mounting operation of the grinding wheel on the spindle is of the utmost importance to the effects of the quality of finish and performance. You need to check, with the aid of a comparator, that the flatness and concentricity errors on the axis of rotation are not more than 0.02 mm.

Dressing

In case of loss of sharpness, it is necessary to revive it with an abrasive stick.

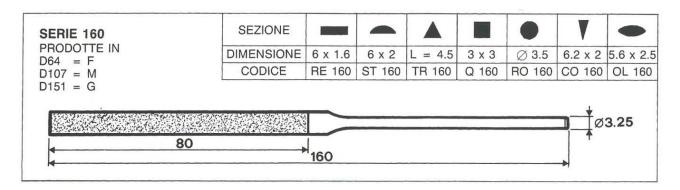
Cutting speed

The cutting speed is the relative speed of sliding between the diamond band and the workpiece surface to be machined. Generally this velocity is given by the single peripheral speed of the diamond wheel as the workpiece has a negligible movement with respect to the grindstone. The peripheral speed is expressed in meters per second (m / sec).

····· | ··· | ··· | ··· | ··· | ··· | ··· | ··· | ··· | ··· |



160 Series



RE160	Rectangular 6 x 1.6	
ST160	Semiround 6 x 2	
TR160	Triangular L = 4.5	
Q160	Squared 3 x 3	
RO160	Rounded Ø 3.5	
CO160	Knife 6.2 x 2	
OL160	Oliva 5.6 x 2.5	

ITEM IN STOCK

Available in stock grit D64 (Fine), D107 (Medium) and D151 (Big) Grain and / or dimensions available on request (minimum production)

All files ending in a tip, excluding rectangular.

The sheath color indicates the grain: BLUE = Fine, GREEN = Medium, RED = Big.

In case of order complete the code with F, M or G, corresponding to grain required. es: rounded diamond file, length 160 mm in coarse-grained: RO160G.

SERIES

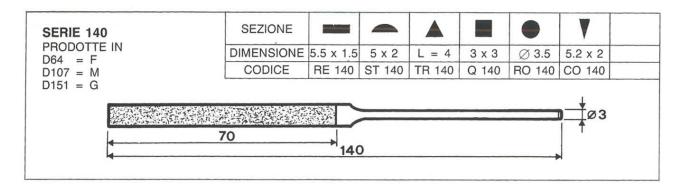
These products may also be sold in series:

SERIE5160	5 PZ (RE, ST, TR, Q, RO)		
SERIE6160	6 PZ (RE, ST, TR, Q, RO, CO)		
SERIE7160	PZ 7 (RE, ST, TR, Q, RO, CO, OL)		

In case of order, complete the code with F, M or G, corresponding to grain required. eg: diamond files 160 mm, 5 pcs set big-grained: SERIE5160G.



140 Series



RE140	Rectangular 5.5 x 1.5	
ST140	Semiround 5 x 2	
TR140	Triangular L = 4	
Q140	Squared 3 x 3	
RO140	Rounded Ø 3.5	
CO140	Knife 5.2 x 2	

ITEM IN STOCK

Available in stock grit D64 (Fine), D107 (Medium) and D151 (Big) Grain and / or dimensions available on request (minimum production)

All files ending in a tip, not including rectangular.

The sheath color indicates the grain: BLUE = Fine, GREEN = Medium, RED = Big.

In case of order, complete the code with F, M or G, corresponding to grain required. es: rounded diamond file, length 140 mm in fine-grained: RO140F.

SERIES

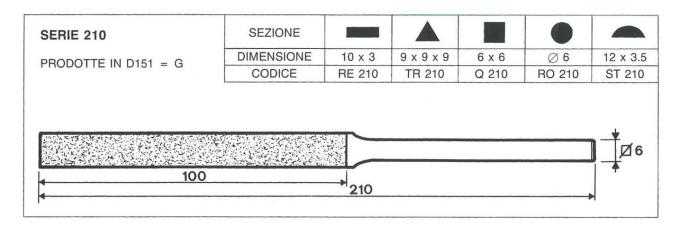
These products are also sold in series:

SERIE5140	5 PZ (RE, ST, TR, Q, RO)
SERIE6140	6 PZ (RE, ST, TR, Q, RO, CO)

In case of order, complete the code with F, M or G, corresponding to grain required. eg: diamond files 140 mm, 5 pcs set medium-grained: SERIE5140M.



210 Series



RE210	Rectangular 10 x 3
TR210	Triangular L = 9
Q210	Squareed 6 x 6
RO210	Rounded Ø 6
ST210	Half-rounded 12 x 3.5

ITEM IN STOCK

Available in stock grit D151 (Big)

Grain and / or dimensions available on request (minimum production)

All files ending in a tip, not including rectangular. The handle has a rectangular section.

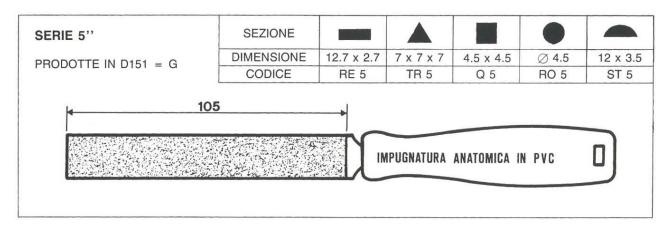
These products are also available in series of 5 pcs (1 for each code) with reference: SERIE5210G

In case the order indicate the code in the first column.

eg: half-rounded diamond file, length 210 mm in coarse-grained: ST210.



5 " Series



RE5	Rectangular 12.7 x 2.7
TR5	Triangular L = 7
Q5	Squareed 4.5 x 4.5
RO5	Rounded Ø 4.5
ST5	Half-rounded 12 x 3.5

ITEM IN STOCK

Available in stock grit D151 (Big)

Grain and / or dimensions available on request (minimum production)

All files ending in a tip, not including rectangular.

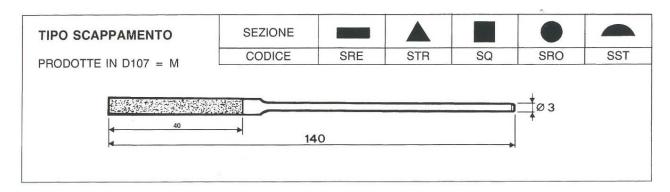
These products are also available in series of 5 pcs (1 for each code) with reference: SERIE5G.

In case the order indicate the code in the first column.

eg: triangular section diamond file, length 5 "in coarse-grained: TR5.



Escapement and Dies Series



SRE	Rectangular 4 x 1	
STR	Triangular L = 3.5	
SQ	Squared 2 x 2	
SRO	Rounded Ø 1.5	
SST	Half-rounded1.5 x 4	

ITEM IN STOCK

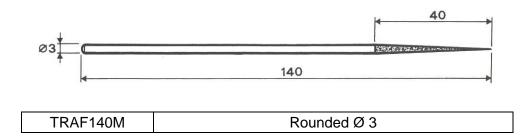
Available in stock grit D107 (Medium)
Grain and / or dimensions available on request (minimum production)

All files ending in a point, excluding rectangular files. The handle has a rectangular section.

These products are also available in series of 5 pcs (1 for each code) with reference: SERIE5SCM

In case the order indicate the code in the first column. eg: escapement series diamond file, round section Ø1,5 average-grain: SRO.

Trafile files



ITEM IN STOCK

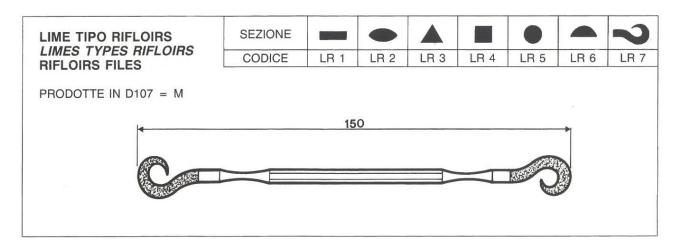
Available in stock grit D107 (Medium)

Grain and / or dimensions available on request (minimum quantities required)

In case the order indicate the code in the first column. eg: dies series file, length 140 mm in average grain: TRAF140M.



Rifloirs Series



LR1M	Form 1 - Rectangular
LR2M	Form 2 - Oliva
LR3M	Form 3 - Triangular
LR4M	Form 4 - Squared
LR5M	Form 5 - Rounded
LR6M	Form 6 - Half-rounded
LR7M	Form 7 - curved

ITEM IN STOCK

Available in grit D107 (Medium)

Grain and / or dimensions available on request (minimum production)

These products are also available in series of 7 pcs (1 for each code) with reference: SERIE7LRM.

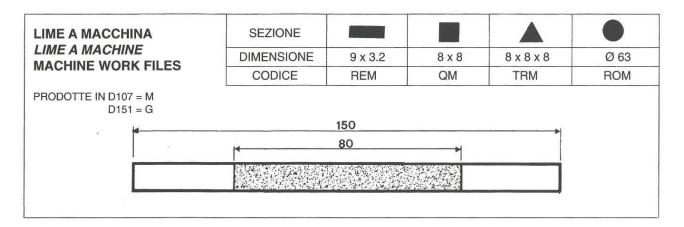
In case the order indicate the code in the first column.

es: Rifloirs files (form 6) medium grit: LR6M.



DIAMOND ELECTROPLATED EC MACHINE WORK FILE AND WIRE

Machine Work Files



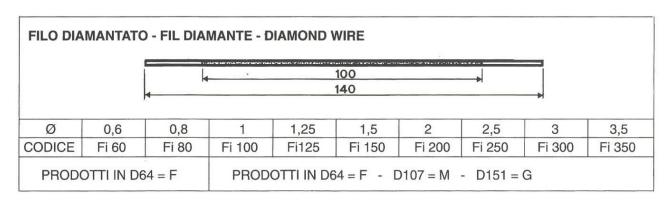
REM	Rectangular 9 x 3.2
QM	Square 8 x 8
TRM	Triangular L = 8
ROM	Round Ø 6.3

ITEM IN STOCK

Available in grit D107 (Medium) and D151 (Big)
Grain and / or dimensions available on request (minimum production)

In case of order, complete the code with M or G, corresponding to grain required. es: rectangular diamond machine work file in average grain: REMM

Diamond wires



ITEM IN STOCK

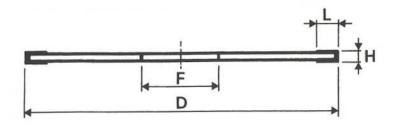
Available in grit D64 (Fine), D107 (Medium) and D151 (Big)
Grain and / or dimensions available on request (minimum production)

In case of order, complete the code with F, M or G, corresponding to grain required. eg: diamond wire \varnothing 1.00 in coarse-grained: F100G



DIAMOND AND CBN ELECTROPLATED EC DISCS TYPE 1A1R CONTINUOUS OR WASTE

1A1R Type DIAMOND or CBN



D050	Ø 50		L = 2
D075	Ø 75	Standard hole	L = 2
D100	Ø 100	Ø 20 Other available	L = 3
D150	Ø 150	on demand	L = 3
D200	Ø 200	on domain	L = 3

The discs can be produced in grits:

- 100: 100/120 mesh (D30, D46, D64, D107, D151)

- 60: 60/80 mesh (D181, D213, D252)

- 40: 40/60 mesh (D302, D427, D502)

Available also in CBN (B64, B107, B151, B181)

Dimension H (drawing) is a function of grain employed. The thickness of the steel body varies from 0.8 to 1.5 mm depending on the diameter of the disc.

In the case of band with discharges it is necessary to attach to the order a dimensioned drawing.

Other dimensions available on request.

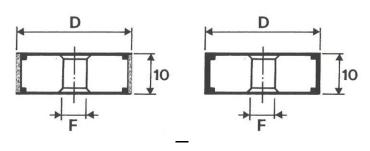
In case of order, complete the code with -40, -60 or -100, corresponding to grain required. Please also indicate the diameter of the hole if different from \emptyset 20. eg: diamond disc type 1A1R to continuous band 150 \emptyset hole 20 in fine-grained: D150-40 F = 20.



DIAMOND AND CBN ELECTROPLATED EC WHEEL

RF Type

DIAMOND and CBN



RF018	Ø 18	F = 6
RF020	Ø 20	F = 6
RF025	Ø 25	F = 6
RF030	Ø 30	F = 6
RF040	Ø 40	F = 6
RF050	Ø 50	F = 6

ITEM IN STOCK

Diamond: Available grit D107 (Medium) and D151 (Big) CBN (Borazon): Available grit B107 (Medium) and B151 (Large) Grain and / or dimensions available on request (minimum production)

Hole Standard diameter: 6. Production capability with optional hole.

In case of order of DIAMOND grinding wheels complete the code with MD or GD. In case of order of CBN grinding wheels complete the code with BM or BG.

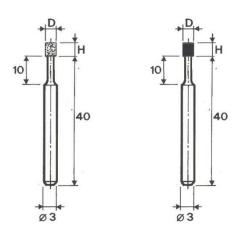
eg: RF type Ø 25 with hole Ø 6 medium grit diamond: RF025MD.



DIAMOND AND CBN ELECTROPLATED EC FOR INTERNAL GRINDING

Type R 340 (stem Ø 3)

DIAMOND and CBN



R3005	Ø 0.50	H = 4
R3006	Ø 0.60	H = 4
R3007	Ø 0.70	H = 4
R3008	Ø 0.80	H = 4
R3009	Ø 0.90	H = 4

<u>ITEM IN STOCK</u> Diamond: Available grit D64 (Fine)

R3100	Ø 1.00	H = 4
R3150	Ø 1.50	H = 4
R3200	Ø 2.00	H = 5
R3250	Ø 2.50	H = 6
R3300	Ø 3.00	H = 6
R3350	Ø 3.50	H = 6
R3400	Ø 4.00	H = 6
R3450	Ø 4.50	H = 6
R3500	Ø 5.00	H = 6
R3600	Ø 6.00	H = 7

ITEM IN STOCK

Diamond: Available in grit D107 (Medium) and D151 (Big)
CBN (Borazon): Available grit B107 (Medium) and B151 (Big)
Grain and / or dimensions available on request (minimum production)

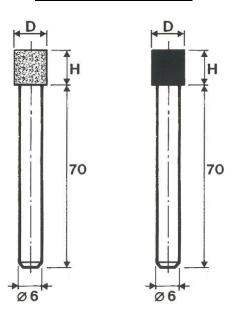
In case of order of DIAMOND grinding wheels complete the code with MD or GD. In case of order of CBN grinding wheels complete the code with BM or BG. es: EC grinding wheel stem Ø 3 for internal grinding Ø 2,50 medium grit diamond: R3250MD.



DIAMOND AND CBN ELECTROPLATED EC FOR INTERNAL GRINDING

Type R 670 (stem Ø 6)

DIAMOND and CBN



R6060	Ø6	H = 7
R6070	Ø 7	H = 8
R6080	Ø 8	H = 9
R6090	Ø9	H = 10
R6100	Ø 10	H = 10
R6120	Ø 12	H = 10
R6140	Ø 14	H = 10
R6150	Ø 15	H = 10
R6160	Ø 16	H = 10

ITEM IN STOCK

Diamond: Available grit D64 (Fine), D107 (Medium) and D151 (Big) CBN (Borazon): Available grit B107 (Medium) and B151 (Large) Grain and / or dimensions available on request (minimum production)

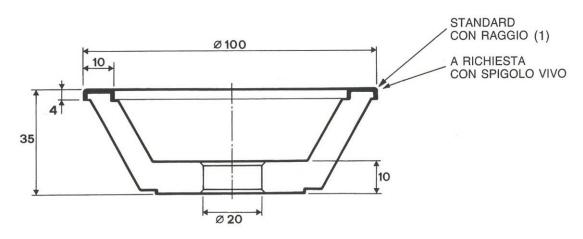
In case of order of DIAMOND, complete the code with FD, MD or GD. In case of order of CBN, complete the code with BM or BG, corresponding to grain required. eg: EC grinding wheel stem \emptyset 6 for internal grinding \emptyset 16 in average diamond grain: R6160MD.



DIAMOND AND CBN ELECTROPLATED EC 12C9 TYPE

12C9 type

DIAMOND and CBN



	DIAMOND range Ø 100 + 10 + 4corner radius (R = 1 to 0.5	
12C9100	DIAMOND range Ø 100 + 10 + 4 SHARPED EDGE	
	CBN range Ø 100 + 10 + 4 corner radius (R = 1 to 0.5)	

ITEM IN STOCK

Diamond: Available grit D64 (Fine), D107 (Medium) and D151 (Big)
Diamond sharped edge: Available in grit D107 (Medium) and D151 (Big)
CBN (Borazon): Available grit B107 (Medium) and B151 (Large)
Grain and / or dimensions available on request (minimum production)

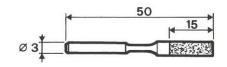
The wheel body is made of steel.

In case of order of DIAMOND complete the code with FD, MD or GD. In case of order of DIAMOND SHARPED EDGE, complete the code with MDSV or GDSV. In case of order of CBN grinding wheels complete the code with BM or BG. eg: standard grinding wheel type 12C9 Ø100 fine-grained diamond: 12C9100FD.



DIAMOND ELECTROPLATED EC DIPROFIL FILES

Diamond files for Diprofil equipment (Ø stem 3)





DRE2	Rectangular 2 x 1
DRE3	Rectangular 3 x 1
DRE4	Rectangular 4 x 1
DRE5	Rectangular 5 x 2
DRO1	Rounded Ø 1
DRO2	Rounded Ø 2
DRO3	Rounded Ø 3
DRO4	Rounded Ø 4
DRO5	Rounded Ø 5
DRO6	Rounded Ø 6

ITEM IN STOCK

Available in grit D107 (Medium) and D151 (Big)
Grain and / or dimensions available on request (minimum production)

In case of order, complete the code with M or G, corresponding to grain required. eg: diamond file for round Diprofil equipment Ø 4 in average grain: DRO4M.



DIAMOND ELECTROPLATED EC CONICAL WHEELS

MC Types (15°, 30°, 60° and 90° Total degree)

MC15°

Mola Conical 15 ° Total

MC30 °

Mola Conical 30 ° Total

MC60°

Mola Conical 60 ° Total

MC90°

Mola Conical 90 ° Total



MC153	Conical 15° total Ø 3 x 13
MC303	Conical 30° total Ø 3 x 5,6
MC304	Conical 30° total Ø 4 x 7.5
MC305	Conical 30° total Ø 5 x 9.5
MC306	Conical 30° total Ø 6 x 11.5
MC603	Conical 60° total Ø 3 x 2.6
MC604	Conical 60° total Ø 4 x 3.5
MC605	Conical 60° total Ø 5 x 4.5
MC606	Conical 60° Total Ø 6 x 5.5
MC608	Conical 60° Total Ø 8 x 7
MC903	Conical 90° Total Ø 3 x 1.5
MC904	Conical 90° total Ø 4 x 2
MC905	Conical 90° total Ø 5 x 2.5
MC906	Conical 90° total Ø 6 x 3
MC908	Conical 90° total Ø 8 x 4

ITEM IN STOCK
Available in grit D107 (Medium) and D151 (Big) Grain and / or dimensions available on request (minimum production)

In case of order, complete the code with M or G, corresponding to grain required. es: conical diamond wheel 90 ° total Ø 4 in average grain: DRO4M.



DIAMOND ELECTROPLATED EC SPHERICAL WHEELS

Type: MS in Diamond

MS Mola Spherical



MS2	Spherical Ø 2	
MS3	Spherical Ø 3	
MS4	Spherical Ø 4	
MS5	Spherical Ø 5	
MS6	Spherical Ø 6	
MS7	Spherical Ø 7	
MS8	Spherical Ø 8	
MS9	Spherical Ø 9	
MS10	Spherical Ø 10	
MS12	Spherical Ø 12	

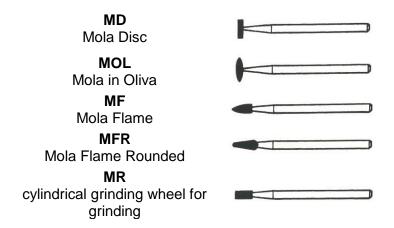
ITEM IN STOCK
Available in grit D107 (Medium) and D151 (Big) Grain and / or dimensions available on request (minimum production)

In case of order, complete the code with M or G, corresponding to grain required. es: spherical grindstone 5 Ø Ø shank 3 in average grain: MS5M.



DIAMOND ELECTROPLATED EC VARIOUS FORMS WHEELS

Types: MD, MOL, MF, MFR, MR Diamond



MD5	Disc Ø 5 x 1	
MD6	Disc Ø 6 x 1.5	
MD8	Disc Ø 8 x 2	
MD10	Disc Ø 10 x 2.5	
MOL8	Oliva 8 x 3	
MF3	Flame Ø 3 x 15	
MFR5	Rounded Flame Ø 5 x 12	
MR6	Cylindrical Ø 6 x 12	

ITEM IN STOCK

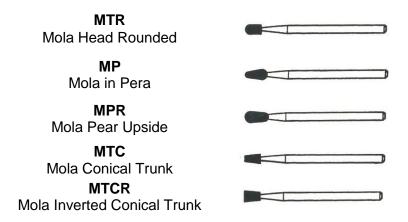
Available in grit D107 (Medium) and D151 (Big)
Grain and / or dimensions available on request (minimum production)

In case of order, complete the code with M or G, corresponding to grain required. eg: disc form grinding wheel \varnothing 6 x 1.5 shank \varnothing 3 in average grain: MD6M.



DIAMOND ELECTROPLATED EC VARIOUS FORMS WHEELS

MTR, MP, MPR, MTC, MTCR Types



MTR2	Rounded Head 2 x 4	
MTR3	Rounded Head 3 x 6	
MTR4	Rounded Head 4 x 8	
MP6	Pear 6 x 12	
MPR6	Upturned Pear 6 x 12	
MTC2	Truncated Cone 2 x 6	
MTC3	Truncated Cone 3 x 6	
MTCR3	Upturned Truncated Cone 3 x 5	
MTCR4	Upturned Truncated Cone 4 x 5	
MTCR5	Upturned Truncated Cone 5 x 5	
MTCR6	Upturned Truncated Cone 6 x 5	

ITEM IN STOCK

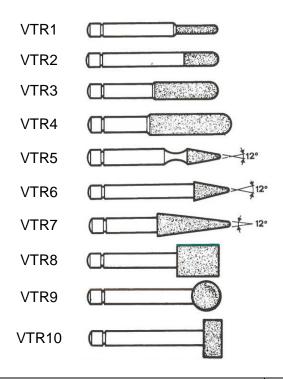
Available in grit D107 (Medium) and D151 (Big)
Grain and / or dimensions available on request (minimum production)

In case of order, complete the code with M or G, corresponding to grain required. es: rounded head grinding wheel 4×8 shank \emptyset 3 in average grain: MTR3M.



DIAMOND ELECTROPLATED EC WHEELS FOR FIBERGLASS

VTR Type



VTR1	Form 1 - Cylindrical rounded	Ø 4	H = 20
VTR2	Form 2 - Cylindrical rounded	Ø 6	H = 16
VTR3	Form 3 - Cylindrical rounded	Ø7	H = 30
VTR4	Form 4 - Cylindrical rounded	Ø 9	H = 38
VTR5	Form 5 - Conical 12th rounded	Ø 6	H = 15
VTR6	Form 6 - Conic 12 ° rounded	Ø7	H = 12
VTR7	Form 7 - Conic 12 ° rounded	Ø 9	H = 35
VTR8	Form 8 - Cylindrical	Ø 16	H = 25
VTR9	Form 9 - Spherical	Ø 12	-
VTR10	Form 10 - Cylindrical	Ø 20	H = 8

ITEM IN STOCK

Available in grit D502

Grain and / or dimensions available on request (minimum production)

Mole shank for processing plastic materials, reinforced plastics and fiberglass grit D502.

The total length of the grinding wheels is 60 mm, the diameter of the stem is Ø 6 mm.

In case the order is sufficient to indicate the code in the first column. eg: grinding wheel form VTR 6 (12 $^{\circ}$ conical rounded) diamond part Ø 9 H = 12 grit D502: VTR6.

19



DIAMOND PASTE

PLUS LITD®

The L.I.T.D.® diamond paste, recognized by our customers as PLUS, is a high quality product. The constant increase in labor costs has made the use diamond abrasive economically advantageous for all those roughing, lapping and polishing operations where other systems were used. Today the industry requires consistent, high quality products, with low times of shrinking processes. The diamond despite being a product of natural origin, turns out to be the most suitable technological answer for long durations and uniformity of the treated surface.

Technical features

Our diamond paste exploits the exclusive dispersion technology of diamond powders, which allows an exact dosage of the diamond necessary to the mechanical processing of superfinishing. It is a high quality product with a unique composition on the market. The formulation has been specially designed by our engineering department in collaboration with experts in the cosmetics industry. The PLUS pastes are not volatile, they have a good thermal capacity, they are not chemically aggressive and table to high temperatures. Made with pure products, harmless to the skin and eyes, the PLUS does not develop bacteria or molds capable of damaging over time its structure and its use.

Thinners and coolants

To improve the quality of machining of steels and metals, in general, you should use refrigerants. The L.I.T.D.® diamond paste should only be diluted with vegetable oils or water, and not with chemical diluents or other additives.

Use

The procedure for a more correct use provides the succession of the following operations:

- Thoroughly clean the work area and the workpiece.
- Wash with alcohol in the particular processing being careful to remove any residue of diamond paste employed previously.
- Replace the tool support of the pasta in the various steps to avoid contamination.

Grits

The paste PLUS is composed of diamond powder with different dimensions, depending on the grain, expressed in microns: 1 micron = 1/1000 of a millimeter (or 0.001 mm).

The particle size can be identified by different colors, according to the table.

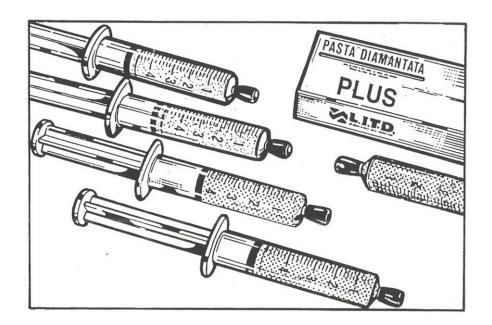
Formats

The diamond paste PLUS-LITD is available in standard 5 gram syringe format. Also available in different formats.



DIAMOND PASTE PLUS-LITD

PLUS - LITD®



PLUS1/4	1/4 Micron	GREY	LAPPING	
PLUS1	1 Micron	BLUE	LAPPING	
PLUS3	3 Micron	GREEN	POLISHING	
PLUS6	6 Micron	YELLOW	POLISHING	
PLUS8	8 Micron	PINK	PRE-POLISHING	
PLUS14	14 Micron	BEIGE	PRE-POLISHING	
PLUS25	25 Micron	MAHOGANY		
PLUS45	45 Micron	VIOLET	ROUGHING	
PLUS60	60 Micron	ORANGE	ROUGHING	
PLUS90	90 Micron	WHITE		

ITEM IN STOCK Available in 5 g syringes

Grain and / or dimensions available on request (minimum production)

In case the order of 5g syringes is sufficient to indicate the code in the first column. In case of order of syringes sizes different from 5g, complete the code with .10g or .20g. eg: 14 micron diamond paste PLUS-LITD from 5 grams syringe: PLUS14.



POLYCRYSTALLINE AND NATURAL DIAMOND TOOLS

Technical features

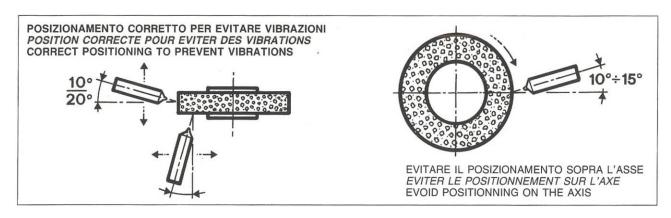
Chioose of diamond quality is subordinate to the type of gringing wheel (diameter, band and grain), on the operation performed and the diamond cost per workpiece.

SIGLA QUALITÀ		US	WA	SAN	SAS	SAX	BN	
	FOTERNA	SGROS.						
RETTIFICA PIANA	ESTERNA	FINIT.						
1 1/4//	-	INTERNA MOLE MAX Ø 80						
SENZA		MOLA RETT.						
CENTRI		RULLO TRASCIN.						
SAGOMATURA SEMPLICE								
LAPIDELLI TANGENZIALI USO MANUALE								
					1			

Recommendations for use

For proper use of the tool we recommend the following:

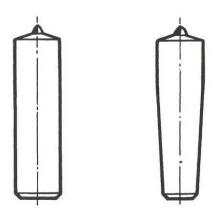
- open the jet of the coolant before the diamond-grinding wheel contact;
- ranging of spark-out depth average: 0.03 mm;
- maximum depth of pass: 0.05 mm;
- coarse feed during roughing;
- slow feed during super-finishing on hard grinding wheel.





NOT REVERSIBLE SINGLE POINT DRESSER

Quality US



US025	0.25 kt.		
US035	0.35 kt.	Wheel diameter to be ground mm Ø100-125	
US050	0.50 kt.		
US075	0.75 kt.	Wheel diameter to be ground mm (4150, 350	
US100	1.00 kt.	Wheel diameter to be ground mm Ø150-250	
US125	1.25 kt.	Wheel diameter to be ground from (X250, 200	
US150	1.50 kt.	Wheel diameter to be ground mm Ø250-300	
US175	1.75 kt.	Wheel diameter to be ground mm (\$400,600	
US200	2.00 kt.	Wheel diameter to be ground mm Ø400-60	
US250	2.50 kt.	Wheel diameter to be ground mm (600, 700	
US300	3.00 kt.	Wheel diameter to be ground mm Ø600-70	

ITEM IN STOCK

Available on stem Ø 10 and conical CM1 (in carats: from 0.50 to 1.00 - 1.50 to 2.00) Carat weights and dimensions available on request (minimum production)

Standard Stems: Stem Ø 10 mm (ST10) and conical morse stem (CM1). Specials on request.

In case of an order to complete the code with ST10 or CM1, depending on the desired stem. es. single diamond tool US quality 1,00 kt. Stem Ø 10 mm: US100ST10.

Quality WA

Quality WA	not reversible	high quality Diamonds
------------	----------------	-----------------------

Dresser of high quality, with only one usable tip. The tool is not reversible. For dresser WA quality, the type and size of the stem is at the customer's request.

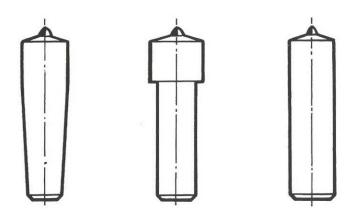
In case of order, the code is composed of the quality followed by carat weight (expressed in cents). Please indicate the desired stem if different from \emptyset 10. es. single stone tool with quality WA 1,00 kt: WA100.

23



REVERSIBLE SINGLE POINT DRESSER

Superior quality SAN, SAS, SAX and BN



SAN Quality	Up to 3 usable tips	
SAS Quality	Up to 4 usable tips	superior quality diamonds with
SAX Quality	Up to 5 usable tips	different tips usable
BN Quality	Up to 6 usable tips	

Dressing pointy single with natural diamond not work superior.

In reversible dresser, the type and size of the stem is on customer's request.

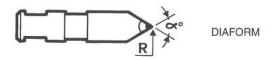
In case of order, the code is composed of the quality followed by carat weight (expressed in cents). Indicate the desired stem if different from Ø10.

es. single stone tool with quality SAX 1,00 kt. Stem with Ø12: SAX100 with Ø12 stem.



CHISEL SHAPED DIAMOND TOOLS

Type: Diaform (Diamond "chisel")



	Degrees		Size range	
DIAF40	40°			
DIAF60	60°	0,125	0.25	0.50
DIAF90	90°			

ITEM IN STOCK

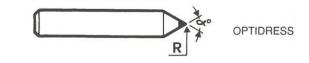
Special sizes on request (minimum production)

Stones of superior quality with sharp corner and carefully controlled radius.

Available with natural diamond and synthetic.

When ordering complete the code in the first column with the desired radius. es. tool Diaform to natural diamond worked angle 60° R = 0.25: DIAF60-0,25.

Type: Optidress (Diamond "cone")



OPT	60°	900	000
OPT	00	00	90°

Special sizes on request (minimum production)

Stones of superior quality with sharp corner and carefully controlled radius.

Available with natural diamond and synthetic (OPT-SINT).

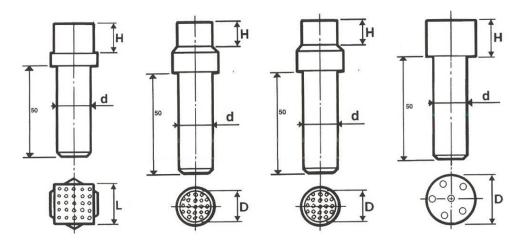
In case of an order to complete the code in the first column with the desired angle. es. natural diamond tool OPTIDRESS worked angle 60°: OPT60.

25



DIAMONDS CLUSTER TOOLS

Type MTQ, LM, MS and LMS



MTQ2	2.00 kt.	D = 12	4 lovere	MTO Turno
MTQ3	3.00 kt.	D = 14	4 layers	MTQ Type Squared head
MTQ5	5.00 kt.	D = 16	5 layers	Squared flead
LM24	2.00 kt.	D = 13		
LM36	2.00 kt.	D = 14	3 layers	
LM50	2.00 kt.	D = 13		LM Type
LM60	2.00 kt.	D = 13	4 lovere	Diamonds 1st choice
LM100	3.00 kt.	D = 15	4 layers	
LM150	3.00 kt.	D = 15	6 layers	
MS24	2.00 kt.	D = 13	2 lovere	MS Type
MS36	2.00 kt.	D = 14	3 layers	Diamonds 2 nd choice
LMS61	1.00 kt.	D = 16	1 layer	
LMS62	1.50 kt.	D = 16	i layei	LMS Type
LMS121	1.75 kt.	D = 16	2 lavore	Cylindrical head
LMS122	2.50 kt.	D = 16	2 layers	6 diamond
LMS182	2.00 kt.	D = 16	2 lavore	grindstone contact
LMS183	3.00 kt.	D = 16	3 layers	

Dressing for external grinding and tangential.

MTQ Type: Tool with manually positioned grain diamonds on more layers.

LM Type: Tool with quality selected diamonds, manually placed on one or more layers. MS Type: tool with 2nd choice diamonds, manually positioned on one or more layers. LMS Type: tool with selected diamonds for large size grain or very porous structure.

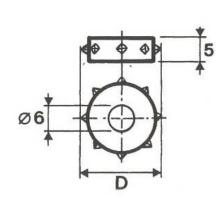
Performance and returns deviates between them are possible because they are related to technological, technical and human factors that often change during use and tool life.

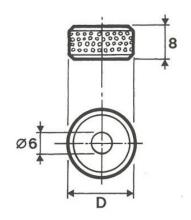
In case the order is sufficient to indicate the code in the first column. es. LMS type multiple dressing tool 2.50 kt. D = 16 H = 8 d = 10: LMS122.



MULTIPLE DRESSING DIAMOND WHEEL

ROP Type





ROP66	0.50 kt.	D = 18		6 Diamonds
ROP61	1.00 kt.	D = 18	Diaman da aman na d	6 Diamonds
ROP62	1.50 kt.	D = 18	Diamonds arranged 1 single-layer row	6 Diamonds
ROP81	1.00 kt.	D = 18	1 Siligle-layer low	8 Diamonds
ROP82	2.00 kt.	D = 18		8 Diamonds
ROP482	2.00 kt.	D = 18		48 Diamonds
ROP602	2.00 kt.	D = 18		60 Diamonds
ROP802	2.00 kt.	D = 18	Diamonds arranged	80 Diamonds
ROP1003	3.00 kt.	D = 18	4 single-layer rows	100 Diamonds
ROP1005	5.00 kt.	D = 21		100 Diamonds
ROP1006	6.00 kt.	D = 21		100 Diamonds

Diamonds grain positioned on 1 or 4 single-layer rows.

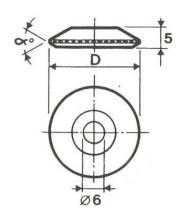
In case the order is sufficient to indicate the code in the first column.

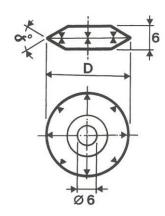
es. ROP type multiple dressing diamond wheel 2.00 kt. D = 18 with diamonds on 4 rows: ROP802.



CIRCULAR MULTI-DIAMONDS DRESSING TOOLS

ROPF Type





ROPF211	1.00 kt.	Ø 21		
ROPF212	1.50 kt.	Ø 21	notural Diamonds	
ROPF251	1.00 kt.	Ø 25	natural Diamonds	
ROPF252	2.00 kt.	Ø 25		
ROPF8	1.00 kt.	Ø 25	8 selected natural diamonds (natural angles)	
ROPF8 / SF	SINT-8 DIAM	Ø 25	Synthetic diamond sharp worked to 70-75 °	

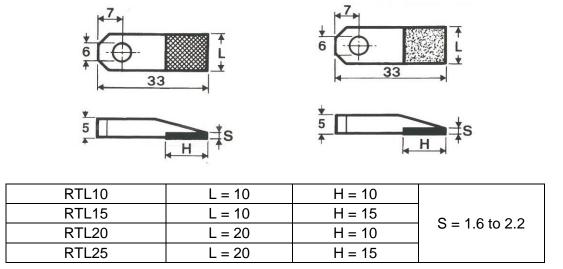
Needlelike diamonds manually positioned and accurately aligned on one row.

In case the order is sufficient to indicate the code in the first column. es. ROPF type circular dressing tool $D = 25 \ 2.00 \ kt$.: ROPF252.



DIAMOND PLATES

RTL Type: positioned diamonds (P) or agglomerated grains (A)



Positioned diamonds: diamonds manually positioned according to pre-established pattern.

Agglomerated granules: natural grains arranged uniformly and randomly over the entire surface.

All types can be provided rigid (braised) or suitable for mechanical fastening (swiveling).

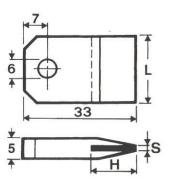
In orders to complete the code with P for positioned diamonds or with A for agglomerated granules. es. diamond plate type RTL positioned stones L = 20 H = 15: RTL25A.

29



DIAMOND PLATES

RTC Type: positioned diamonds (P) or agglomerated grains (A)



RTC10	L = 10	H = 10	
RTC15	L = 10	H = 15	0 116
RTC20	L = 20	H = 10	S = 1-1.6
RTC25	L = 20	H = 15	

Positioned diamonds: diamonds manually positioned according to pre-established pattern.

Agglomerated granules: natural grains arranged uniformly and randomly over the entire surface.

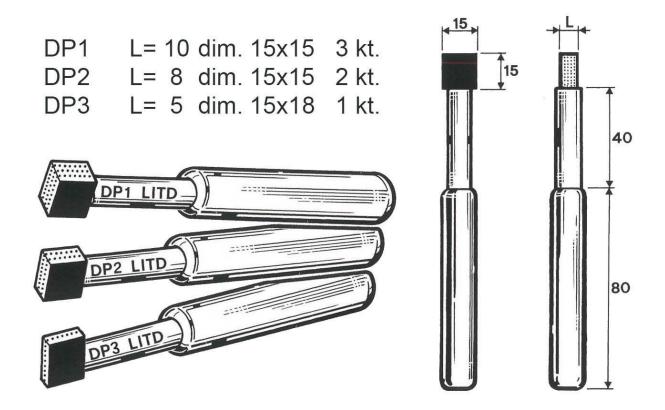
All types can be provided rigid (braised) or suitable for mechanical fastening (swiveling).

In orders to complete the code with P for positioned diamonds or with A for agglomerated granules. es. diamond plate RTC type agglomerated granules L = 20 H = 15: RTC25A.



GRINDING HAND TOOLS DIAMAX 3

DP Type: positioned diamonds



DP1	3.00 kt.	15x15	L = 10
DP2	2.00 kt.	15x15	L = 8
DP3	1.00 kt.	15x18	L = 5

<u>ITEM IN STOCK</u>

Special sizes on request (minimum production)

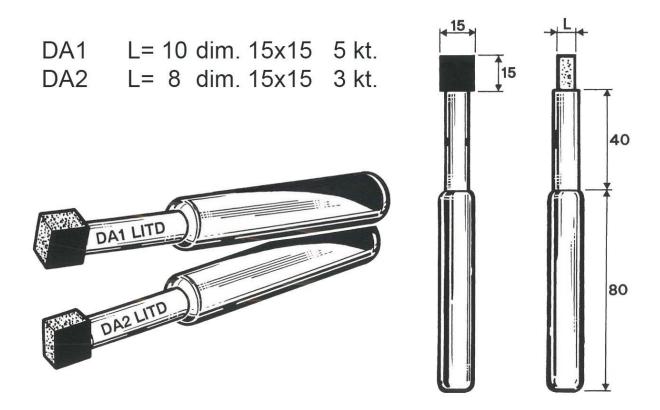
The main characteristics that diversify the DIAMAX 3 from what has been presented on the market are: handling, accident-prevention safety, great cutting capacity and long service life. These qualities make indispensable the DIAMAX 3 in replacement of inefficient sticks of silicon carbide.

In case of order is sufficient to indicate the code in the first column. es. dressing manual tool DP type with positioned stones 2.00 kt L = 8 : DP2.



GRINDING HAND TOOLS DIAMAX 3

DA Type: agglomerated grains



DA1	5.00 kt.	15x15	L = 10
DA2	3.00 kt.	15x15	L = 8

ITEM IN STOCK Special sizes on request (minimum production)

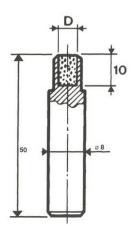
The main characteristics that diversify the DIAMAX 3 from what has been presented on the market are: handling, accident-prevention safety, great cutting capacity and long service life. These qualities make indispensable the DIAMAX 3 in replacement of inefficient sticks of silicon carbide.

In case the order is sufficient to indicate the code in the first column. es. dressing manual tool DA type with agglomerated granules 3.00 kt L = 8 .: DA2.



AGGLOMERATED GRAINS DRESSING TOOLS

RP Type



		GRAIN TYPE	WHEEL		
RP5	D = 5	L50	320-600		
RP5	D = 5	L70	220-320		
RP6	D = 6	L100	180-220		
RP6	D = 6	L150	140-180		
RP8	D = 8	L200	100-140		
RP8	D = 8	L250	80-100		
RP10	D = 10	L300	70-80		
RP10	D = 10	L400	60-70		
RP12	D = 12	L500	56-60		
RP12	D = 12	L700	46-56		

Special sizes on request (minimum production)

Dresser for external and tangential grinding. Natural granules sintered in a metal matrix.

In case of an order to indicate the desired grain type. es. dressing tool agglomerate type RP D = 10 L700 Grain Type: RP12 / L700.



ROTATING FRAMING ROLLS

Technical features

L.I.T.D.® s.r.l., having operated in the diamond tool market and being present in all the applications of the diamond industry for seventy years, has developed an advanced technology in the construction of the diamond roller. Throught intensive researches aimed at obtaining the maximum anchorage of the diamond and therefore optimum performance and durability, have enabled our technicians the realization of a process of chemical-physical interaction by which diamonds are actually bounded and welded to the matrix and not simply trapped in it. With this technology, the durability of the roller is higher than those made with conventional sintering techniques.

Types

Our production consists of the followings: DDS units, made with selected diamond granules, distributed statically on the working surface; the distance among diamonds is dictated by their granulometry size. PMD units, made by manual positioning of diamonds to specific layouts, according to the profile of the roller; size and shape of the diamond are selected depending on the complexity of the profile.

Technical and economic benefits

The technical and costs-benefit advantages of using dressing-forming diamond rollers are several:

- Finish grinding operations can be made by automatic operations.
- Dressing can be done without drastic reduction of reject rate
- Elimination of downtime for dressing.
- Uniformity of production with considerable waste reduction.
- Reproducible profiles
- · Reduced of the highly skilled workforce.

These and other technical-economic aspects lead to using diamond rollers, whenever the following requirements apply:

- High production output rates
- Rigid machine and dressing-forming device

Assistance and projects

Our technical service is available to customers for insights and help to determing the the most suitable roller for each specific need.



DIAMOND AND CBN WHEEL RESIN OR METAL BOND

Technical specifications and recommendations for use

Over the last years, technological progress has made new ultra-hard materials resistant to wear and abrasion: consequently there has been the need to design grinding wheels suitable for their processing. The schedule suggests what kind of super-abrasive to use. Both CBN and diamond wheels have similar standardized shapes, that's the reason why we have grouped them together.

TIPI DI SUPERABRA	SIVO DA UTILIZZARE
CON DIAMANTE:	CON NITRURO DI BORO CUBICO (CBN)
Metalli duri - Cermet - Vetroresine - Grafiti - Materiali ossiceramici - Vetro - Ferrite - Materiali refrattari - Porcellana - Compositi di carboniovetro - Kevlar - Materiali d'attrito.	Acciai rapidi Acciai da cementazione Acciai al cromo Ghise

Granulometry

Grains of CBN and diamond wheels are classified according to FEPA standards, shown hereinafter in comparison with those ones commonly used.

Designazione FEPA	Nórma inglese	Norma U.S.A.	Norma tedesca DIN 848			
della grana	BS 1987			Serie 1		
D 1181	14/16	16/18	-	D1100		
D 1001	16/18	18/20	-	D 900		
D 851	18/22	20/25	-	D 700		
D 711	22/25	25/30	-	D 700		
D 601	25/30	30/35	D 550	D 500		
D 501	30/36	35/40	D 450	D 500		
D 426	36/44	40/45	-	D 350		
D 356	44/52	45/50	-	D 350		
D 301	52/60	50/60	D 280	D 250		
D 251	60/72	60/70	D 220	D 250		
D 213	72/85	70/80	D 180	D 150		
D 181	85/100	80/100	D 180	D 150		
D 151	100/120	100/120	D 140	D 150		
D 126	120/150	120/140	D 110	D 100		
D 107	150/170	140/170	D 90	D 100		
D 91	170/200	170/200	D 90	D 70		
D 76	200/240	200/230	D 65	D 70		
D 64	240/300	230/270	D 55	D 50		
D 54	300/350	270/325	D 45	D 50		
D 46	350/400	325/400	D 45	D 50		
D 1182	14/18	16/20	-	-		
D 852	18/25	20/30	-	D 700		
D 602	25/36	30/40	-	D 500		
D 427	36/52	40/50	-	D 350		
D 252	60/85	60/80	-	=		



Concentration

The choice of the concentration depends on several considerations such as: cutting speed, use of refrigerants or less, profile resistance, type of processed material, grain used, etc. High performance of the wheel isn't always ensured by high concentration.

SIMBOLO	ct./cm ³
C50	2,2
C75	3,3
C100	4,4
C150	6,6
	C50 C75 C100

Coolants

In grinding operations with diamond grinding wheels and CBN, where possible, it is advisable to use coolants, in order to prevent obstructions in diamond band: in this way you can avoid the possible phenomena of clogging of the abrasive band with thermal degradation of the grinding wheel.

Installation of the grinding wheel

The mounting operation of the grinding wheel on the spindle is of utmost importance to the effects of the quality of finish and performance. Furthermore, you need to check by a gauge, that the flatness and concentricity errors on the axis of rotation don't exceed 0,02 mm.

Dressing

In the event of loss of sharpness of the grinding wheel is necessary to revive it through a stone of common abrasive by a slight pressure in order not to damage the diamond or CBN crystals.

Grain and roughness

The drawing schematically illustrates the roughness values obtained with the use of various grain sizes. These directions should be considered approximate, being guessed that the actual roughness is influenced not only by the grain, the working conditions, the rigidity of the machine, the characteristics of the refrigerant fluid, the extent of the contact surfaces.

GRAIN FEPA	Ra (uM)	CLA (µ ")
181	1.8 to 3.2	63-126
107	0.8 - 1.6	32-63
76	0.4 - 0.8	16-32
54	Of 0.2 - 0.4	8-16
15	0.1 - 0.2	4-8
7	0.005 - 0.1	2-4



Peripheral speed

The peripheral speed is the relative speed of sliding between the diamond band and the workpiece surface to be machined. The peripheral speed is expressed in meters per second (m / sec):

$$Vp. = \frac{3.14 \times D \times n}{60 \times 1000}$$
 (M / sec)

D = diameter of the grinding wheel in mm - n = number of revolutions per minute

The peripheral speed for the grinding wheels with metallic binder has to be comprised between 15 and 20 m / sec (metal bonds have to work only wet).

The peripheral speed for resinoid wheels, which can work both wet and dry is generally as follows:

WET TO 25-30 m / sec DRY 10-15 m / sec

Lower peripheral speed in dry machining avoid a dangerous increase of the contact temperature due to the friction between the workpiece and the diamond band.

A peripheral speed too low gives a surface with a low degree of finish and can accelerate the wear of the grinding wheel.

A too high peripheral speed can cause burns on the worked piece and make the wheel harder.

DIAMETRO mm	2 m/sec	4 m/sec	6 m/sec	8 m/sec	10 m/sec	15 m/sec	20 m/sec	25 m/sec	30 m/sec	35 m/sec
5	7.600	15.300	22.900							
10	3.800	7.700	11.500	15.400	19.000					
15	2.500	5.100	7.600	10.100	12.600	19.100				
20	1.900	3.800	5.700	7.600	9.500	14.300	19.100			
25	1.500	3.000	4.600	6.100	7.600	11.500	15.300	19.100		
30	1.250	2.500	3.800	5.000	6.300	9.500	12.700	15.900	19.000	
40	960	1.900	2.900	3.800	4.800	7.200	9.600	11.900	14.300	16.700
50	760	1.500	2.300	3.100	3.800	5.700	7.600	9.500	11.400	13.400
75	500	1.000	1.500	2.000	2.500	3.800	5.100	6.400	7.700	9.000
100	380	770	1.150	1.550	1.900	2.900	3.800	4.800	5.700	6.700
125		600	900	1.200	1.500	2.300	3.000	3.800	4.600	5.300
150		500	750	1.000	1.260	1.900	2.500	3.200	3.800	4.500
175			650	870	1.080	1.600	2.200	2.700	3.300	3.800
200			570	760	950	1.400	1.900	2.400	2.900	3.400
250			450	600	750	1.150	1.500	1.900	2.300	2.700
300				510	640	950	1.300	1.600	1.900	2.200
350					545	820	1.100	1.400	1.600	1.900
400					480	725	960	1.200	1.450	1.700

Spark-out depth

This parameter is related to the particle size of the diamond and influence the state of surface finish of the machined workpiece. Usually in roughing operations, for which endeavor medium to coarse grain sizes can be made increased from 0.03 to 0.06 mm or more. In the finish, with fine grains, it should not exceed 0.006 mm per pass. From the spark-out depth also it depends on the more or less rapid consumption of the grinding wheel.

37

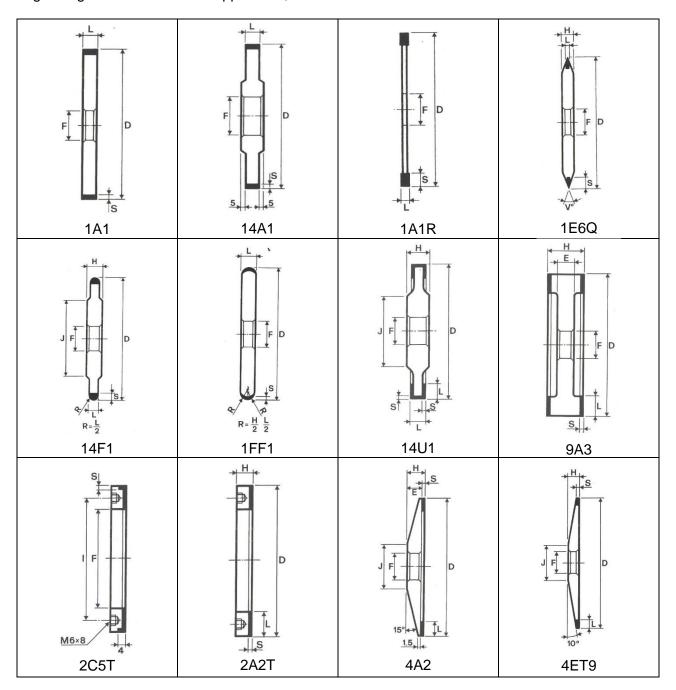


Choice of super-abrasive (diamond or CBN)

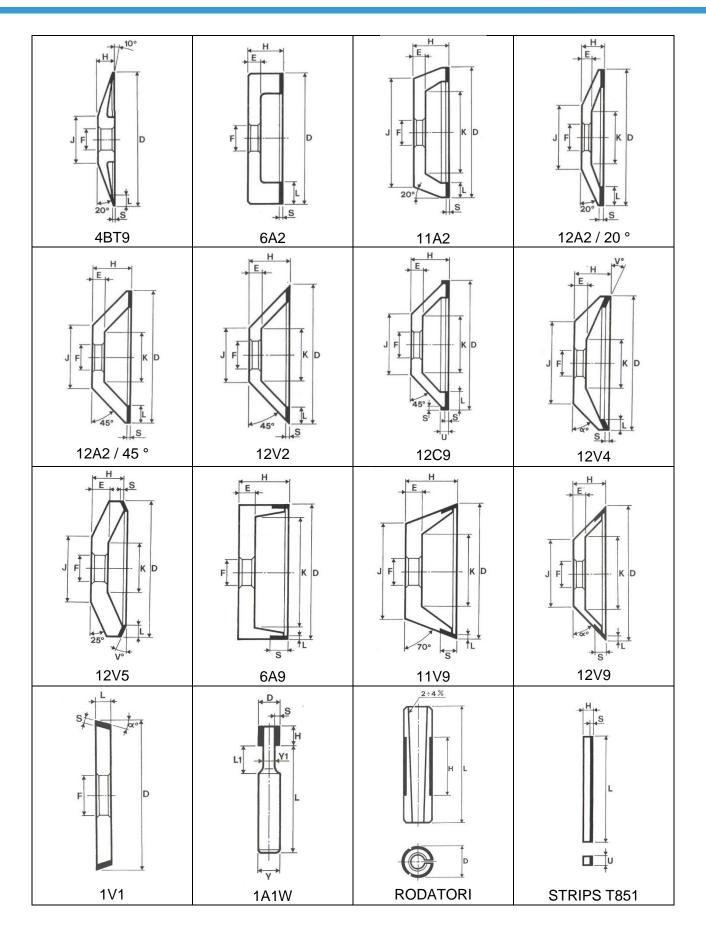
The diamond can be used to work any type of material. The CBN is also an high hardness material, particularly suitable for steel. In the resinoid wheels is used super-abrasive "armored", coated with metallic materials, which increase its performance.

<u>Form</u>

The L.I.T.D.® srl produces any type of grinding wheel, according to customer specifications, with diameters ranging from 20 mm up to 500 mm of various thicknesses and shapes of wing. The shapes of grinding wheel varies on its application, below are some of the most common forms.









RESINOID BONDS - DIAMOND

Resinoid bonds contain a percentage of polyamide resin that polymerize around 150-200°C. In order to prevent overheating and provide higher toughness, the diamond is usually metal-coated.

RCS - peripheral wheels

The RCS bond is a resinoid binder mainly used for peripheral band (1A1 or 14A1 type). It is specially studied for diamond, but can also be used with CBN. It is used for traditional, tangential and "center-less" grinding. This bond is also used for frontal wheels, used in specific works where a strong removal is required.

The use of this binder involves the use of a refrigerant to prevent the burning of the grinding band.

RSF - frontal wheels and cutting discs

The RSF bond is a resinoid binder used for frontal grinding wheels (6A2, 12C9 or 11V9 type) and very narrow peripheral band (1A1R or 14A1R discs). It is used for sharpening, lapping, splitting and processing of hard metal. In the mixture there is a special lubricant material, which helps keeping the wheel cooler during the cutting process, avoiding burns.

This binder allows you to work dry, even though wet conditions are always recommended.

R5R – shaped bands

The R5R bond is a hybrid resin-type binder, designed for particular shaped bands, with the use of both frontal and peripheral bands. This binder, which contains a very fine specific metal powder, is particularly suitable for hard metal profiling as well as for sharpening it. This powder acts as a heat collector, avoiding burns. The use of this binder involves the use of a refrigerant to prevent burns.

RLS - lapping tools

The RLS bond is a resinoid binder mainly used for peripheral lapping bands. It is studied in particular for wheels that contain fine diamond (micrometric powder). It is used for low removal, especially on hard metal. It can also be used with fine grained CBN.

The use of this binder involves the use of a refrigerant.

SBR70 - Hagaton

The SBR70 bond is a resinoid binder mainly used for Hagaton wheel type. It is used on Hagaton type machines, for sharpening hard metal plaques.

The use of this binder involves the use of a refrigerant to prevent burning of the grinding wheel.

RESINOID BONDS - CBN

RSU - CBN

The RSU bond is a resinoid binder mainly for CBN, both peripheral and frontal wheels. It is specifically studied for CBN. It is used for steel grinding, sharpening and cutting.

This binder allows you to work dry, even though wet work is always recommended.

AUN - CBN small wheels

The AUN bond is a resinous binder used for small sized wheels, with or without stem, both frontal and peripheral (type 1A1W, 1A8W and 1A1F). It is specifically designed for wheels that contain CBN. It is used for steel sharpening and grinding (internal and external).

The use of this binder involves the use of a refrigerant to prevent burning of the grinding wheel.



MECHANICAL HARD METAL WORKING

General overview

L.I.T.D.® srl is an ISO certified company that deals with the production of specific equipment for molding since 1947. This activity offers a wide range of applications.

Machining

The L.I.T.D.® srl is able to provide precision machining, such as turning, milling and grinding, also thanks to recent investments for lathes and CNC machining centers. It's already present as leader in the field of molds and mold holders.

Special processing

We are able to satisfy all your special requests on drawing on: steel, aluminum and hard metals.

Testing

Thanks to a metrology lab equipped with advanced measuring instruments, is able to provide you a proven product.

Assistance

Our technicians are always at the customer's disposal, to resolve any technical problems and useful tips to a better application of our products.







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