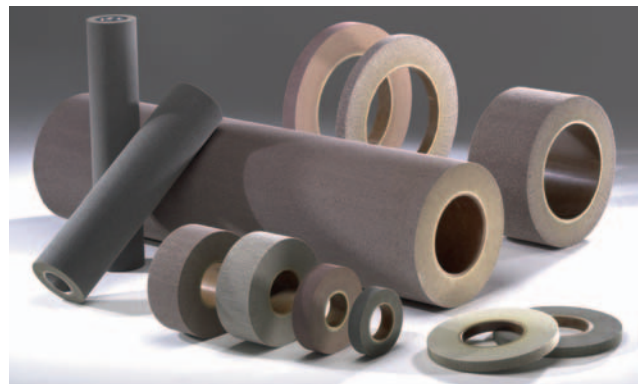


Product Range

Grinding and Polishing Tools



Grinding, Satin finishing,
Brushing, Polishing,
Hi-gloss finishing, Colouring

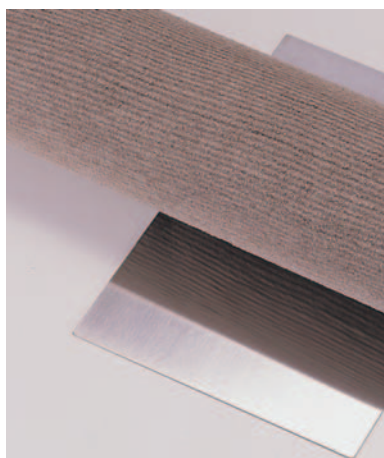
**YOUR PARTNER FOR
IMPROVED SURFACE FINISHING**

Surface conditioning and LIPPERT-UNIPOL

Surface conditioning is an extensive field in which mechanical treatment and polishing technology play a leading part, hence the major role of LIPPERT-UNIPOL. Our comprehensive range of tools have been used for decades, by major companies around the globe.

Since 1916 the name LIPPERT-UNIPOL has stood for quality tools. Automation and new technologies have raced ahead and modern surface processing owes much to CNC and Hi-Tech machines, which have become standard equipment world-wide. Due to the increased customers' requirements and the increasing pressure of the competition, top quality and performance have become determining factors for success.

First rate raw materials and modern machinery complemented by perfectly matched, high performance tools are an absolute must.



Special tools are available for every surface treatment operation, combining the long term experience of our engineers with the results of latest developments.

Due to long and intensive co-operation with machine builders and leading manufacturers, we have a team of experts available to offer advice and carry out service trials without placing you under any obligation. Our in-house trials department offers the facility to simulate all common industrial processing methods, in a variety of fields.

Our applications engineers can complete valuable preparation so as to avoid impeding your manufacturing process and are in turn able to make projections on establishing the perfect operating parameters. Our tools are evaluated according to the continuously

increasing demands of our customers. In pursuing our tradition, LIPPERT UNIPOL always endeavours to propel surface conditioning technology forward, with product ideas intended to lead the way.

The introduction of our revolutionary polishing material NOTIFLEX® is another world-wide first for LIPPERT-UNIPOL.



This catalogue is intended to show you our basic product range. We manufacture a total of 20,000 different items, some of which are standard products to be found in this catalogue.

Additional products and specialist applications on different materials can be found in separate data sheets.

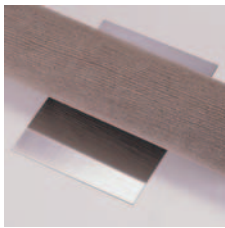
Please request the leaflet that is applicable to your requirements.

Be one step ahead of the competition with our innovative range of polishing tools.

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Typical applications

The following examples are only an indication of the wide range of applications covered by the LIPPERT-UNIPOL product range. There are several alternative products for almost every process. For more details please feel free to contact our Customer Service Engineers, they are always at your disposal to help with your surface finishing needs.



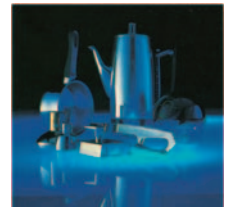
a) Sheet metal finishing

Steel strip is mechanically cleaned and roughened on a conveyor line using

- LIPPERT-UNIPOL abrasive bristle spiral brushes
- LIPPERT-UNIPOL non abrasive spiral rollers
- LIPPRITE® non-woven flap rollers

b) Finishing pots and pans

- Grinding with LIPPERT-UNIPOL coated abrasive flap wheels (SLK)
- Pre-polishing with LIPPERT-UNIPOL impregnated sisal/cloth buffs
- Polishing with LIPPERT-UNIPOL un-impregnated sisal/cloth buffs, cloth or NOTIFLEX® buffs
- Hi-gloss finishing with LIPPERT-UNIPOL cloth or NOTIFLEX® buffs

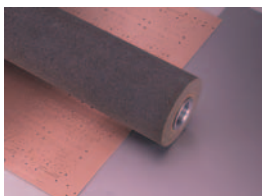


c) Cutlery processing

- Pre-polishing with LIPPERT-UNIPOL impregnated sisal/cloth or sisal cord buffs
- Polishing with LIPPERT-UNIPOL un-impregnated sisal/cloth, sisal cord or NOTIFLEX® buffs
- Finishing with LIPPERT-UNIPOL cloth or NOTIFLEX® buffs
- Satin finishing with LIPPRITE® flap wheels or impregnated tampico fibre brushes

d) Sanitary fittings and builders hardware

- Polishing with LIPPERT-UNIPOL cloth or NOTIFLEX® buffs
- Finishing with LIPPERT-UNIPOL cloth or NOTIFLEX® buffs
- Satin finishing with LIPPRITE® flap wheels

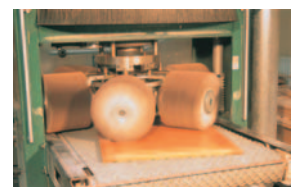


e) Mechanical processing of Printed Circuit Boards

- Deburring with LIPPROX®
- Cleaning and deoxidising with LIPPRITE® rollers
- Cleaning, deoxidising, scrubbing with NAB and pumice
- Finishing with LIPPRITE® rollers
- Re-conditioning pressplates with LIPPRITE® or LIPPROX® rollers

f) Wood industry

- Fine sanding with LIPPRYLL® coated abrasive rollers
- De-nibbing with LIPPRITE® or LIPPRYLL® rollers
- Antique finishing with LIPPERT-UNIPOL abrasive bristle spiral rollers
- Profile sanding with LIPPROX® wheels
- Glossing varnished parts with LIPPERT-UNIPOL NOTIFLEX® buffs



More detailed application examples can be found in our separate leaflets, available on request.

Cutting Speed as a function of RPMs and diameter

Dia. RPM	100	125	150	175	200	250	300	350	400	450	500	600	1000 mm
300													15 m/sec.
600								11	12	14	15	18	31 m/sec.
800					8	10	12	14	16	18	20	25	41 m/sec.
1400			11	12	14	18	22	25	29	33	36	44	m/sec.
1600			12	14	16	20	25	29	33	37	41	50	m/sec.
1800		12	14	16	18	23	28	33	37	42	47	56	m/sec.
2000	10	13	15	18	21	26	31	36	41	47	52		m/sec.
2200	12	14	17	20	23	28	34	40	46	51	57		m/sec.
2400	13	15	19	22	25	31	37	44	50	56			m/sec.
2600	14	17	20	23	27	34	40	47	53				m/sec.
2800	15	18	22	25	29	36	43	51	58				m/sec.
3000	16	20	23	27	31	39	47	55	63				m/sec.

The correct cutting speed needs to be determined on a case by case basis, as a starting point we recommend:

- Grinding: approx. 30 m/sec.
- Deburring: approx. 25 m/sec.
- Satin finishing: approx. 20 m/sec.
- Pre-polishing: approx. 35 m/sec.
- Polishing: approx. 30 m/sec.

Impregnation improves:

■ cut

■ compound adhesion

■ service life

LIPPERT-UNIPOL offers an extensive range of impregnation for sisal, tampico fibre, cloth, non-woven and coated abrasive. Impregnation has developed during decades of experience and continues to be improved and extended to suit new materials and the ever-changing needs of the market. At all LIPPERT-UNIPOL facilities impregnation is constantly subjected to strict quality control procedures. All impregnation used is non-toxic, free of solvents and environmentally friendly.

Impregnation descending in hardness

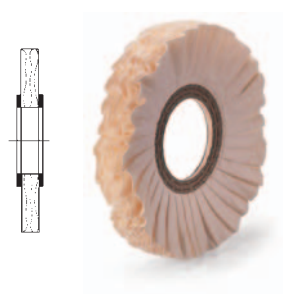
Sisal Cord	Sisal/Cloth	Sisal Web	Cotton Cloth	Tampico-Fibre	LIPPRITE®	Coated Abrasive
H6 (colourless) H2 (green)	VI4 (brillant green)	VI4 (brillant green)		F61 (red)	PH210 (colourless) PH90 (colourless)	
V66 (colourless) H5A (pale blue)	H5 (yellow) V66 (colourless) H5A (pale blue)	V66 (colourless)				
			8S (honey gold)	8S (honey gold)		8S (honey gold) C1 (colourless)
K5 (brown)		K5 (brown)		K5 (brown)		

Ring Fasteners



Type 1 - Ring with a card flange

The trim material is fixed to a card core and also held in place by cardboard flanges on both sides. Rings are supplied with the bore size requested by the customer, according to the size of the shaft. Hexagonal bore also available.



Type 2 - Ring clamp (RK)

Trimming material is held by cardboard flanges or a metal ring. The rings are mounted using metal centreplates.



Type 3 - Clinch Ring (EK)

A toothed metal ring holds the material in place. Rings are mounted using metal centreplates.

Mounting Systems



Aluminium or plastic external flanges

Quick changes and trouble free mounting with re-usable flanges, for:

- Buffs
- Coated abrasive, LIPPROX® und LIPPRITE® wheels
- Spirals and other rollers



Standard sizes for centreplates (CP):

Inside diameter of the ring = Dia. of CP: (mm)

55	80	130	180
60	100	150	230
3"	5"	7"	

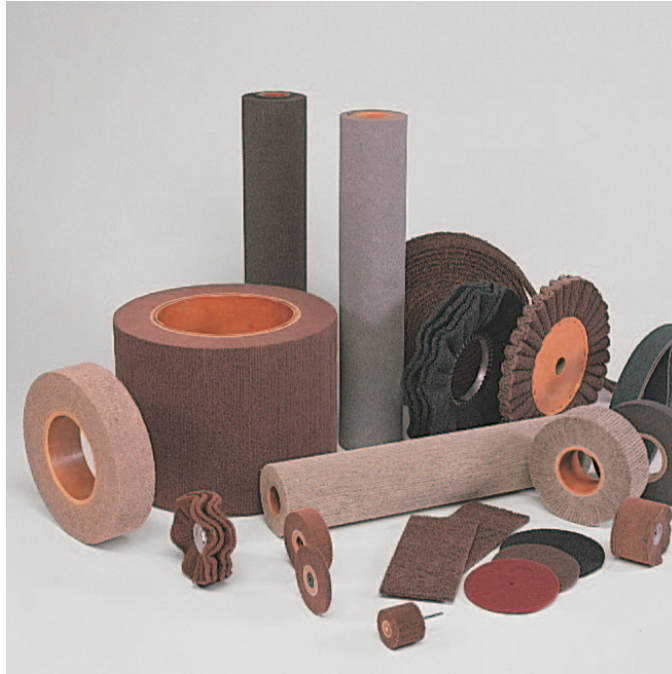
Bore size of the centreplates: 20 mm to 80 mm available, including keyways.

Non-woven Abrasive Tools

Material:

Various grades of synthetic fibre and abrasive grit are combined and bonded with special resin, firmly fixing the grit particles to the nonwoven fibres. The result is a flexible open structure, with no tendency to clog. The material is self-dressing and suitable for wet and dry processes.

LIPPERT-UNIPOL offers a wide range of materials purchased from selected suppliers world-wide. Extensive testing ensures that every material is ideally suited to a particular application.



Typical applications:

- light grinding processes
- cleaning
- satin finishing
- light deburring work
- on**
- steel
- stainless steel
- non-ferrous metals
- high-alloy metals
- plastic
- wood, ceramic and glass

Aluminium Oxide Al ₂ O ₃				Silicon Carbide SiC			
A1	extra coarse	XCRS	grit 36	S4	medium	MED	grit 100
A2	coarse	CRS	grit 80	S6	fine	FN	grit 180 (240)
A4	medium	MED	grit 100	S7	very fine	VFN	grit 280 (320)
A6	fine	FN	grit 180 (240)	S8	super fine	SFN	grit 500
A7	very fine	VFN	grit 280 (320)	S9	ultra fine	UFN	grit 800
				S10	micro fine	MFN	grit 1500

Typical roughness values R_t:

A4 (coarse) = 3,3 - 3,9 μm
 A6 (fine) = 2,9 - 3,6 μm
 A7 (very fine) = 1,1 - 1,8 μm

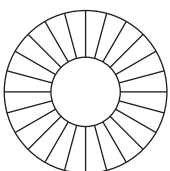
Roughness values vary depending on diameter, pressure, material, cutting speed, density etc.

Density for LIPPRITE® flap wheels:		Hardness for LIPPROX® convolute wheels	
103N - soft	107N - hard	5 - soft	7 - hard
105N - medium	109N - very hard	6 - medium	8 - very hard

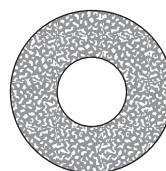
LIPPRITE® Impregnation: to increase service life and abrasion.

- PH90 - standard
- PH210 - very hard, for special applications

Construction:



LIPPRITE® rollers and wheels:
Non-woven flaps arranged radially around a core.



LIPPROX® rollers and wheels:
Non-woven abrasive wound around a core and polymer bonded.

LIPPROX® Convolute Rollers and Wheels

Specifications

Outside dia. (mm)	Width* (mm)	Bore (mm/")
90	10-770	25 - 1"
100	10-770	25 - 35
110	10-770	25 - 35 - 40
125	10-770	1"-50 - 2"-60
150	10-770	1"-50 - 2"-60
150	10-770	70 - 3" - 80
200	10-610	70 - 3" - 80
250	25-610	90 - 100 - 5"
300	25-610	140 - 150 - 5"
350	25-610	200 - 8"
400	25-410	240 - 250 - 10"
450	25-410	270 - 10"
500	25-410	12"

(*) max. width may vary depending on diameter and hardness. Minimum ordering quantities apply to widths up to 300 mm. See page 6 for materials available and various densities. Large LIPPROX® rollers can be dynamically balanced per DIN ISO 1940-1, G40



Typical applications:

- light deburring
- PCB processing
- light grinding work
- centreless grinding/polishing
- woodworking
- glass processing
- metal finishing
- blending

LIPPROX® Types available

Special formulas together with the polymerisation process determine the performance of LIPPROX®. To cover many requirements, LIPPERT-UNIPOL has developed a complete range of bonding, with various characteristics, increasing in hardness as follows:

- LIPPROX® C1 - soft, porous bonding
- LIPPROX® C2 - medium hard
- LIPPROX® C3 - hard
- LIPPROX® C5 - very hard, dense bonding

To absorb a high level of stock removal (dust, chippings etc.), the following types are recommended:

- LIPPROX® W1 - very open structure, medium hardness
- LIPPROX® W3 - open structure, very hard



LIPPRITE® Flap Rollers and Wheels

Specifications:

Outside dia. (mm)	Width* (mm)	Bore (mm/")
90	25-1000	25 - 35
100	25-1000	25 - 35
110	25-1000	25 - 35 - 40
125	25-1000	50 - 2"
150	25-1000	50 - 2"
150	25-1250	70 - 3" - 80
200	25-1250	3" - 80-90-100
250	25-2000	140 - 150 - 5"
300	25-2000	200 - 8"
350	25-2000	240 - 250 - 10"
400	25-2000	270 - 10"
450	25-2000	12"

(*) max. width may vary depending on diameter and density. Minimum ordering quantities apply to widths up to 400 mm. See page 6 for materials available and various densities. Large LIPPRITE® rollers can be dynamically balanced per DIN ISO 1940-1, G40

Typical applications:

- PCB processing
- decorative surface
- woodworking
- metal finishing
- profile finishing
- edge radiusing
- sheet metal processing
- satin finishing
- fine grinding
- cleaning



LIPPRITE® MLV Rollers

Specifications:

Outside dia. (mm)	Width* (mm)	Bore (mm)
200	1000	70,0
220	1000	90,0
250	1000	90,0
300	1500	160,0
350	1500	160,0
400	1500	220,0

Due to the excellent balancing properties of this product dynamic balancing is not necessary.

Advantages: very high density, extended service life due to new form of construction.

See page 6 for materials available and various densities.

Typical applications:

- re-conditioning pressplates
- sheet metal processing
- coil processing



LIPPRITE® EKK Rollers

Specifications:

Outside dia. (mm)	Bore (mm)
160	19/6, 20
180	24/6, 25
200	32/6
230	32/6

Construction:

several folded wheels assembled together to a required width.

Advantages:

very high density and hardness comparable to assembled and pressed discs.

Typical applications:

- specific surface structure
- fine grinding of aluminium
- satinising operations

Non-woven Abrasive Tools



LIPPRITE® EKK and EK Buffs

Specifications:

Outside dia. (mm)	Width (mm)	Bore (mm/")
80	20	19/6, 20
100	20	19/6, 20
120	20	19/6, 20
150	20	19/6, 24/6, 20, 25
180	20	24/6, 25
200	25	32/6, 50
250	25	60, 3", 80
300	30	80, 100, 5", 130
350	30	100, 5", 130
400	30	150, 7", 180
450	30	7", 180

Construction:
several layers of non-woven abrasive are corrugated and fixed together by a ring clamp or a clinch ring.

Accessories:
metal flanges and centre-plates available to reduce inside diameter.

Typical applications:

- blending weld seams
- fine grinding of cast parts
- satin finish on profiled parts.

see page 6 for materials available



LIPPRITE® WR and WR-EK-Buffs

Specifications:

Outside dia. (mm)	Width (mm)	Bore (mm/")
300	30	130
350	30	130
400	30	150, 180

Construction:
several layers of non-woven abrasive are corrugated and fixed together by a ring clamp or a clinch ring.

Accessories:
metal flanges and centre-plates available to reduce inside diameter.

Typical applications:

- fine grinding of cast parts

see page 6 for materials available



Non-woven Abrasive Discs

Specifications:

outside diameter* mm.: 50, 100, 115, 150, 200, 250, 330, 400.
See page 6 for material available.

* other diameters on request.

Construction:
round discs with or without bore. Please indicate bore size if necessary.

Typical applications:

- metal finishing
- woodworking
- tool manufacturing



Non-woven Abrasive Rolls

Specifications:

width mm.: 100, 120, 150, 200, 250, 300, 500. See page 6 for material available.

Construction:
loose coil of material to be cut to width as required, standard length: 10m

Typical applications:

- manual jobs
- blending weld seams
- repair work



LIPPRITE® Flap Side Brushes

Specifications:

Outside dia. (mm)	Width (mm)	Shaft
60	50-80	
80	50-80	M6, M8
100	50-80	M10, M12
120	50-80	
150	50-80	

Construction:
non-woven abrasive flaps fixed around a core with a shaft.

Typical applications:

- finishing the inside of cups and trophies
- satin finishing pots and pans
- finishing containers after grinding

see page 6 for materials available



Typical applications:

- grinding formed parts
- steel tubes for the furniture industry
- household goods (saucepans, iron soles etc.)
- external grinding of pots and pans
- appliances industry, machine construction
- pre-grinding for polishing work
- blending welds

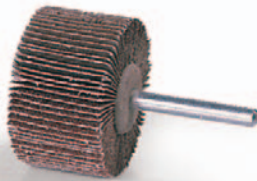
Coated Abrasive Flap Wheels SLK, SLK-M

The unique wheel construction allows for operating speeds up to 35m/sec.
To mount coated abrasive SLK wheels, re-useable aluminium flanges are available.

	SLK-M			SLK						
Material	Coated abrasive									
Outside dia. (mm)	100	150	160 165 180	200	250	300	350	400	450	480
Bore (mm)	15-25	15-32 35	32-35 54-68	68-32 54	94	108	164	198	230	230
Width (mm)	30 - 40 - 50			20 - 25 - 30 - 40 - 50 - 60 - 75 - 100 - 120						
Grit	80, 100, 120, 150, 180, 220, 240, 320, 360, 400.									
Flange	PPN or aluminium									

SLK can be profiled to match the contour of the work piece.
Other sizes on request. Available with intersecting leaves and if required the flaps can be slit.

Fan-grinder SLK-K with 6 mm shaft



Material	Coated abrasive					
Outside dia. (mm)	30	40	50	60	80	100
Width (mm)	10	10	10	15-20	15-20	15-20
	15	15-20	15-20	30-40	30-40	30-40
	20	30	30	50	50	50
Grit	60, 80, 100, 120, 150, 180, 220, 240, 320, 360, 400.					
Recommended RPMs	15000	12000	9500	8000	6000	4800

SLK-K are especially suitable for grinding inaccessible areas or shaped parts.



LIPPRYLL® Wheels and Rollers

Material	Coated abrasive, fully slit or staggered, stearat coated					
Outside dia. (mm)	175	200	250	300	350	
Bore dia. (mm)	50	50	50	100	140	
Width (mm)	max. 2000					
Grit	100, 120, 150, 180, 220, 240, 320.					

If required please request separate leaflet on woodworking.

Typical applications:

Woodworking

- smooth and profiled surfaces
- panels
- sanding
- removing varnish runs

Metal finishing

- edge rounding
- surface cleaning

Coated Abrasive EK Buffs



Material	Slitted coated abrasive in widths 7 mm or 10 mm				
Outside dia. (mm)	200	250	300	350	400
Bore dia. (mm/")	60-3"	80-100	5"-130-150	130-150-7"	150-180
Layers	8, 10, 12.				
Grit	60, 80, 100, 120, 150, 180, 220, 240.				

Typical applications:

- components for automotive industry
- deburring
- metal finishing
- processing aluminium rims

Coated Abrasive V Buffs

Material	Coated abrasive							
Outside dia. (mm)	180	200	250	300	350	400	450	960*
Bore dia. (mm)	100	100	120	150	190	220	220	500
Width (mm)	ca. 15 - 25							
Density	1, 2.							
Grit	80, 100, 120, 150, 180, 220, 240, 320.							

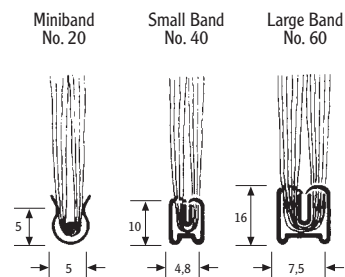
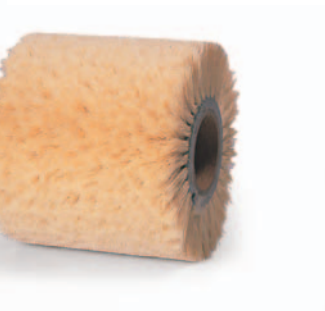
A combination of non-woven abrasive and coated abrasive is also available.

Spiral Brushes and Rollers

with Abrasive Bristles, Non Abrasive Bristles (NAB), Tampico Fibre, Sisal Cord and Coated Abrasive Trim (LIPPRYLL®)

Typical applications:

- deburring nibbled, punched and milled parts
- sheet metal and coil processing
- deburring tool inserts
- Printed Circuit Board processing
- re-conditioning pressplate
- sink manufacturing
- ceramics, cleaning die extrusions and profiles
- processing car parts and frames
- woodworking



Spiral strip (band)
(steel, zinc-plated or stainless steel)



Materials available

• Abrasive bristles:

Polyamide bristles with silicon carbide grit (SiC)

Grit sizes:
60, 80, 120, 180, 240, 320, 500, 600

Polyamide bristles with aluminium oxide grit (AL₂O₃)

Grit sizes:
120, 320, 500, 600, 800

Diameter of bristles is dependent on grit size. Please ask for further details.

• Polyamide bristles (NAB):

Natural, straight, dia.: 0.08 - 0.20 - 0.30

Natural, crimped, dia.: 0.15 - 0.20 - 0.30 - 0.35 - 0.40 - 0.50

Black, crimped, dia.: 0.30

• Tampico-Fibre

Selected natural Mexican fibre

• Coated abrasive LIPPRYLL®

• Sisal cord

Double twisted threads

On request, certain brushes available in wire and hair.



Notes on mounting:

• Loose spirals

easily mounted on existing sleeve or shaft

• Welded types

matching reduction flanges with shoulder available

• Spiral brushes and rollers on HP tube or metal tube

mount using flanges with shoulder

Notes on use:

• Stripes do not appear on the work piece, even when there is no oscillation.

• On request, dynamic balancing is available.

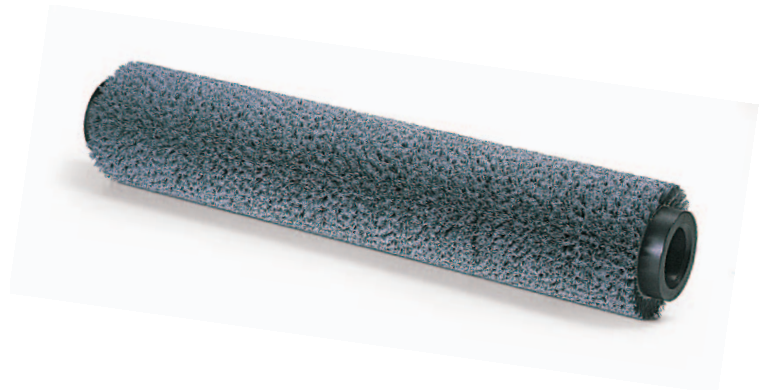
• Spiral available in stainless steel if caustic or alkaline solutions

Spiral Rollers on phenolic (HP) tube

(suitable for wet or dry processing)

Standard outside dia. (mm)	Tube Inside dia. (mm/")	Max. roller width (mm)
70 - 80 - 90	25 - 1"	1600
100 - 125 - 150	35-50 - 2"	1600
150 - 175 - 200	50-3"-90	1700
250 - 275 - 300	100-5"-140	2000
350 - 375 - 400	140-160-200	2000
400 - 425 - 450	8"-240-10"-270-12"	2000

- Standard density 2 and 3. Other densities on request.
- Spiral rollers are also available on steel tube
- On request larger spiral rollers can be dynamically balanced per DIN ISO 1940-1, G40



Materials available

• Abrasive bristles:

Polyamide bristles with silicon carbide grit (SiC)

Grit sizes:

60, 80, 120, 180, 240, 320, 500, 600

Polyamide bristles with aluminium oxide grit (AL₂O₃)

Grit sizes:

120, 320, 500, 600, 800

Diameter of bristles is dependent on grit size. Please ask for further details

• Polyamide bristles (NAB):

Natural, straight, dia.: 0.08 - 0.20 - 0.30

Natural, crimped, dia.: 0.15 - 0.20 - 0.30 - 0.35 - 0.40 - 0.50

Black, crimped, dia.: 0.30

• Tampico-Fibre

Selected natural Mexican fibre

• Coated abrasive LIPPRYLL®

• Sisal cord

Double twisted threads (mat.32)

On request certain brushes available in wire and hair.

Loose Spirals

(Mounting on existing shaft)

Standard outside dia. (mm)	Inside dia. (mm)	Max. roller width (mm)
60 - 80	20 - 37 - 45	up to 2300
100 - 125 - 150	37 - 52 - 60	
150 - 175 - 200	50 - 60 - 70	
250 - 275 - 300	90 - 110 - 140	
350 - 375 - 400	150 - 180 - 220	
400 - 425 - 450	270 - 290 - 320	

- Standard density 2 and 3.
- Material holder: steel strip, zinc plated strip or stainless steel strip

Welded Spirals

Standard outside dia. (mm)	Inside dia. (mm)	Max. roller width (mm)
150 - 175 - 200	100 - 120 - 140	120
250 - 275 - 300	150 - 180 - 200	
350 - 375 - 400	220 - 230 - 250	
400 - 425 - 450	280 - 320 - 360	

- Standard density 2 and 3.
- Material holder: steel strip

Typical applications:

- deburring nibbled, punched and milled parts
- sheet metal and coil processing
- deburring tool inserts
- Printed Circuit Board processing
- re-conditioning pressplate
- sink manufacturing
- ceramics, cleaning die extrusions and profiles
- processing car parts and frames
- woodworking

Punched and Compressed Brushes

LIPPERT-UNIPOL manufactures a range of punched and compressed brushes in numerous shapes and sizes.

Abrasive bristle:

Polyamide bristle with silicon carbide grit (SiC)

Grit size: 60, 80, 120, 180, 240, 320, 500, 600

Polyamide bristle with aluminium oxide grit (AL₂O₃):

Grit size: 120, 320, 500, 600, 800

Tampico fibre

Selected natural Mexican fibre.

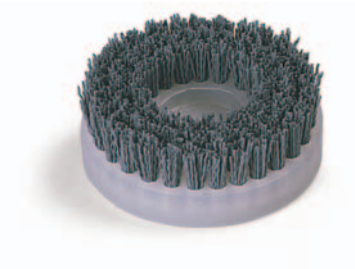
Sisal cord

Twisted and braided threads

Diameter of bristles is dependent on grit size. Please ask for further details.

Punched Brushes

Abrasive Bristle Cup Brushes



Material	Abrasive bristle							
Outside dia. (mm)	80	95	125	150	165	200	250	300
Bore (mm)	Standard: 25							
Height of trim (mm)	20 - 25 - 30 - 35 - 40							
Grit sizes	80 - 120 - 180 - 240 - 320 - 500							

Typical applications:

- finishing flat metal parts
- deburring punched and milled parts
- fine blanking

Cup Brushes and Round Brushes on wooden core



Material	Tampico fibre												
Outside dia. (mm)	40	50	60	70	80	90	100	110	130	150	160	200	240
Bore (mm)	Standard: 20 - 130												
Impregnation	F61, 8S, K5 (decreasing in hardness)												

Typical applications:

- sink processing
- cups and trophy finishing
- hollowware manufacturing

Compressed Brushes

EK Brushes on steel tube



Material	Tampico fibre		
Outside dia. (mm)	50 - 65	50 - 65	85 - 95
Width (mm)	10 - 30	10 - 50	15 - 50
Bore (mm)	12/6-14/6	14/6-19/6	19/6
Impregnation	8S, K5 (decreasing in hardness)		

Typical applications:

- cutlery finishing
- sink and tray manufacturing

Round Brushes on wooden core



Material	Tampico fibre								
Outside dia. (mm)	200	250	300	300	350	350	400	450	500
Core (mm)	100	120	150	170	160	190	200	200	230
Width per layer (mm)	5 - 7		7 - 8				7 - 9		
Layers	3, 4, 5, 6, 8, 10 or 12.								
Impregnation	8S, K5 (decreasing in hardness)								

Typical applications:

- manual finishing of profiled parts
- sink manufacturing
- cutlery processing

Sisal Web

Sisal fibres are very effective when used to make thread, which in turn is woven to sisal web.

The LIPPERT-UNIPOL range includes 4 different types of sisal web:

- | | | (g/m ²) |
|-------|-----------------|---------------------|
| • 28 | open structure | 1100 |
| • 81 | dense structure | 950 |
| • 82 | dense structure | 1000 |
| • 82B | dense structure | 1145 |

Sisal web is frequently combined with cotton cloth 101B to obtain a stable sandwich effect, as required for certain buffs.



Sisal Buffs are often impregnated to provide greater cut, more stability, longer service life and improved composition adhesion.

Sisal buffs are used mainly for aggressive buffing. Hard, impregnated sisal buffs can be an economic alternative to sanding belts, with the added advantage that the surface is simultaneously semi-polished.

If the buffs are sorted according to hardness, the following sequence results:

- Sisal EK buffs (stitched)
- Sisal/cloth MEK buffs
- Sisal/cloth WR buffs
- Sisal/cloth folded EK buffs

Sisal Cord

Sisal cord is manufactured from sisal thread. The LIPPERT-UNIPOL range includes 3 types of cord:

- 31 single thread, twisted
- 32 double thread, twisted
- 48 eight threads, braided.

Sisal cord no. 48 is the most common type and this is generally impregnated, as are types 31 and 32 - alternatives for brushes in smaller diameters.

The application of sisal cord buffs and brushes is similar to the sisal web products. Sisal cord buffs are particularly suitable for finishing contoured parts and for cutlery processing, due to their greater flexibility in comparison to sisal web.



Sisal, Sisal/Cloth Buffs



Typical applications:

- flat part processing, typically iron or stainless steel
- processing aluminium, non-ferrous metals
- external polishing of pots and pans
- brushing steel tubes

Sisal EK Buffs

Material	28, 81						
Outside dia. (mm)	200	250	300	350	400	450	500
Bore dia. (mm)	60	3"-80	100-5"-130	5"-130	150-180	7"-180	7"-180-230
Fastener	clinch ring EK or card flange possible						
Stitching	standard: every 7.5 mm						
Impregnation	VI4 - V66 - K5 (decreasing in hardness)						



Typical applications:

- flat part processing typically iron or stainless steel
- processing aluminium, non-ferrous metals
- household appliance manufacturing

Sisal/Cloth MEK Buffs

Material	81/101B						
Outside dia. (mm)	250	270	300	350	400	450	500
Bore dia. (mm)	3"-80-100	100	5"-100-130	5"-130	150-180	7"-180	7"-180-230
Fastener	clinch ring EK or card flange possible						
Stitching	standard: every 10 mm (no stitching on request)						
Impregnation	VI4 - H5 - V66 - H5A (decreasing in hardness)						



Typical applications:

- household goods, pots and pans, appliances
- polishing aluminium
- brushing steel tubes
- car parts

Sisal/Cloth WR Buffs

Material	82/101B						
Outside dia. (mm)	300	350	400	400	450	500	500
Bore dia. (mm)	130	5"-130	52-130-160	7"-150-180	7"-180	7"-180	230
Fastener	RK	clinch ring EK, ring clamp RK (card flange possible)					RK
Impregnation	VI4 - H5 - V66 - H5A (decreasing in hardness)						



Typical applications:

- polishing aluminium, non-ferrous metals
- builders hardware
- car parts
- household appliance manufacturing

Sisal/Cloth folded EK Buffs

Material	81/101B						
Outside dia. (mm)	160	250	300	350	400	450	500
Bore dia. (mm)	55-60	3"-60-80	3"-80-100	5"-80	5"-130-150	7"	180
			5"-130	100-130	7"-180	180	230
Fastener	clinch ring EK (=airflow) or card flange possible						
Impregnation	VI4 - H5 - V66 - H5A (decreasing in hardness)						

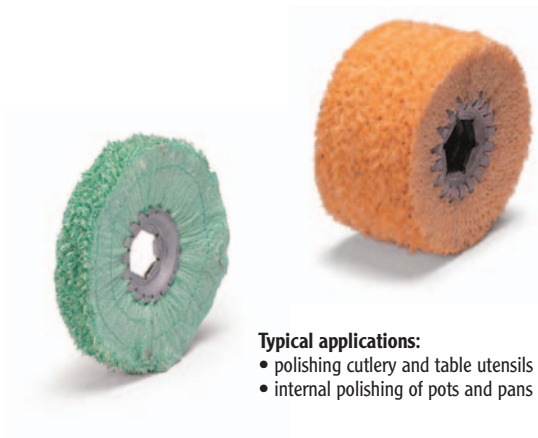
Sisal/Cloth Maxi LM Buffs

Material	81/101B, other combinations on request					
Outside dia. (mm)	700	800	960	980	1000	
Flange (mm)	290	400	500	600	600	
Core (mm)	230	300	400	500	500	
No. of plies	standard: 4					
Fastener	cardboard flange					
Width (mm)	approx. 25					
Stitching	all seam combinations possible					
Impregnation	8S (available on request)					



Typical applications:

- sanitary fittings processing
- builders hardware
- round parts polishing



Typical applications:

- polishing cutlery and table utensils
- internal polishing of pots and pans



Typical applications:

- sink finishing
- cutlery processing



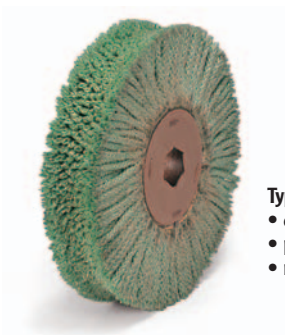
Typical applications:

- cutlery processing
- polishing pots and pans
- polishing steel tubes
- processing steel surfaces



Typical applications:

- cutlery processing
- manufacturing household goods



Typical applications:

- cutlery processing
- polishing pots and pans
- manufacturing household goods

Sisal - Sisal/Cloth folded EKK Buffs

Material	81, 81/101B		
Outside dia. (mm)	75-130	130	180-230
Core dia. (mm)	43	48-58	68
Bore (mm)	10-20 19/6	20-25-19/6-24/6	20-25-19/6-24/6-32/6
No. of plies	4		
Impregnation	Vl4 - H5 -V66 - H5A (decreasing in hardness)		

For more details please request our catalogue for the cutlery industry.
Also available pre-mounted. Please indicate required width.
Sisal and sisal/cloth folded EKK buffs can be used as an alternative to sisal cord brushes.

Sisal Cord ER Rollers

Material	48 (Mat. 32 on request)							
Outside dia. (mm)	100	110	120	130	140	150	180	200
Bore (mm)	30	40	40	50	50	60	60	60
Width (mm)	50 - 180							
Fastener	steel tube							
Impregnation	H6 - H2 -V66 - H5A - K5 (decreasing in hardness)							

Bore can be reduced to shaft diameter (also hexagonal) with welded steel adapter or wood insert.

Sisal Cord EK Buffs

Material	48							
Outside dia. (mm)	200	250	300	350	400	450	500	
Bore (mm)	60	80	130	130	150	180	230	
Layers	2 oder 4							
Fastener	clinch ring EK, cardboard flange possible							
Impregnation	H6 - H2 -V66 - H5A - K5 (decreasing in hardness)							

Sisal Cord EK Brushes

Material	31-32-48				
Outside dia. (mm)	50 - 70	70 - 120	120 - 180		
Width (mm)	10 - 30	15 - 60	15 - 60		
Bore (mm)	12/6 - 14/6	19/6	24/6		
Fastener	clinch ring EK, cardboard flange possible				
Impregnation	H6 - H2 -V66 - H5A - K5 (decreasing in hardness)				

Brushes can be supplied straight, convex or concave. Further details in our catalogue for the cutlery industry.

Sisal Cord Brushes*

Material	31-32-48				
Outside dia. (mm)	50-60	65-100	110-150	160-200	210-340
Width (mm)	12-40	12-60	15-60	20-50	20-50
Bore (mm)**	12/6	12/6, 14/6	19/6	24/6	32/6
		19/6	24/6	32/6	
Impregnation	H6 - H2 -V66 - H5A - K5 (decreasing in hardness)				

* Core dia. 64, in steel tube welded steel adapter

** Bore available round and with keyways

Brushes can be supplied straight, convex or concave. Further details in our catalogue for the cutlery industry.

Cloth, NOTIFLEX® Bufs and Mops

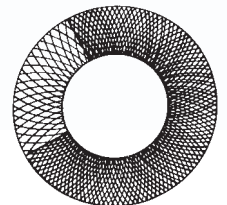
LIPPERT-UNIPOL polishing buffs are made from different types of cotton cloth, often manufactured specifically for the surface treatment industry.



Typical Features:

- the number of warp and weft threads
- strength and diameter of the individual threads
- correct impregnation (when necessary)

This diagram shows the arrangement of the warp and weft threads at a 45° angle to the tangent, a result of the previous biasing process. This hinders fraying and increases service life.



Cloth

Types	Characteristics	Process
101A	soft, normal quality	high gloss finishing
101B	very soft, only used in combination with sisal web	
215	medium hard, normal quality, also impregnated (8S)	polishing
290	medium hard, high warp and weft count	polishing
293	hard, high warp and weft count	polishing and pre-polishing
308	hard, high warp and weft count, special cloth	pre-polishing and polishing (mush)
DF 590	mill treated cloth, pale green, flexible, high warp and weft count	pre-polishing
301J	harder mill treated cloth, yellow colour, high warp and weft count	pre-polishing
264J	hard mill treated heavy cloth, yellow colour	pre-polishing
304A	very hard, mill treated cloth, natural colour, high warp and weft count	pre-polishing
CB	hard mill treated cloth with mixed polyester and cotton threads, blue	pre-polishing (mush)
CL 2	medium hard, mixed threads consisting of polyester and cotton fibres	polishing (mush)
MO 1	molton, very soft	high gloss finishing and colouring
MO 4	molton, soft, brushed on one side	high gloss finishing and colouring
MO 5	molton, soft, brushed on both sides	high gloss finishing and colouring

NOTIFLEX® Polishing Web

NOTIFLEX® is a new generation non-woven material, specially developed for the polishing industry and only available from LIPPERT-UNIPOL. Outstanding polishing results and excellent economy cannot fail to convince.

NOTIFLEX®

- 914 Polishing stainless steel and non-ferrous metals. Also suitable for finishing, if high gloss surfaces are not necessary. Excellent service life.
- 934 Polishing and colouring steel and non-ferrous metal. Long life, medium gloss finish.
- 925 Mirror finishing and colouring of all metals and plastics. Best gloss finishing of all NOTIFLEX® types.



EK and LM-EK Buffs



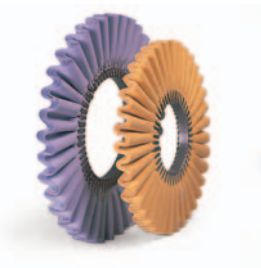
Typical applications:

- pots and pans finishing
- hollowware
- sanitary fittings finishing
- car parts processing
- builders hardware processing

Material	All cloth types, NOTIFLEX®						
Outside dia.(mm)	150	250	300	350	400	450	500
Core dia. (mm/")	55-60	55-60-3" 80 - 100	3"-80 100-5"-130	5"-80-100 130-150-180	5"-130 150-7"-180	5"-130 7"-180-230	7" 180-230
No. of plies	standard EK 2 x 8 **, LM-EK 6 x 2						
Fastener	clinch ring EK						
Width (mm)	approx. 15 - 20						
Impregnation	8S (available for materials 215 and 290 on request)						
Features	• stands well • abrades well • cools well • irregular gathers						

** extra specifications 2 x 7 - 2 x 9 - 2 x 10 ply

WR Buffs



Typical applications:

- pots and pans finishing
- hollowware and flat parts

Material	All cloth types, NOTIFLEX®					
Outside dia. (mm)	250	300	350	400	450	500
Core dia. (mm/")	80-100	100-130	100-130-150	150-180-7"	7"-180-230	7"-230-180
No. of plies	standard 16 - 12 - 14 - 22					
Fastener	• ring clamp RK (all sizes) • clinch ring EK 130mm, 150mm, 7", 180mm					
Width (mm)	approx. 15 - 20					
Features	• stands well • abrades well					

L Buffs



Typical applications:

- pots and pans finishing
- hollowware processing
- sanitary fittings finishing
- car parts
- builders hardware processing
- woodworking

Material	All cloth types, NOTIFLEX®							
Outside dia. (mm)	150	200	250	300	350	400	450	500
Flanges dia. (mm)	80	100	130-150	180	200	230	250	280
Core dia. (mm)	50	60	80-100	80-100-130	130-150	130-150-180	180-200	180-230
No. of plies	standard: 4 x 4							
Fastener	• ring clamp (RK) • cardboard core							
Width (mm)	approx. 18 - 20							
Impregnation	8S (available for materials 215 and 290 on request)							
Features	• flexible trim • good ventilation • good cut							

To process a shaped part (e.g. spoons), several buffs can be pre-mounted and given a convex or concave trim.

Mini L Buffs



Typical applications:

- sanitary fittings
- builders hardware
- profiled parts

Material	All cloth types, NOTIFLEX®							
Outside dia. (mm)	300	400	400	430	450	500	600	
Bore dia. (mm)	80	130	150	130	150	180	230	
No. of plies	standard: 8 x 2							
Fastener	• ring clamp (RK) • cardboard flange							
Width (mm)	approx. 18 - 24							
Impregnation	8S (available for materials 215 and 290 on request)							
Features	• flexible							

EKK Buffs



Typical applications:

- cutlery and utensil finishing
- dental use
- D.I.Y.
- jewellery and watchmaking
- knife blade finishing

Material	All cloth types, NOTIFLEX®						
Outside dia. (mm)	55-70	60-130	100-140	150-160	170-200	160-230	
Bore dia. (mm)	28	38-43	43-48	48-58	58	68	
Bore dia. (mm)	12/6 14/6	10-20 19/6	20-25 19/6-24/6	20-25 9/6-24/6	20-25 19/6-24/6	20-25-19/6 24/6-32/6	
No. of plies	6 - 8 - 10 - 12 - 14						
Width (mm)	approx. 10 - 15						
Impregnation	8S (available for materials 215 and 290 on request)						
Features	• stands well • abrades well						

To process a shaped part (e.g. spoons), several buffs can be pre-mounted and given a convex or concave trim.

Cloth and NOTIFLEX® Buffs and Mops



Z Buffs

Material	All cloth qualities, NOTIFLEX®					
Outside dia. (mm)	200	250	300	350	400	450
Core dia. (mm)	60	80	100	130	160	180
No. of plies	12, each individually folded					
Fastener	• ring clamp (RK) • cardboard flange					
Width (mm)	approx. 22					
Features	• very flexible • abrades well • cools well					

Typical applications:

- shaped and profiled parts processing
- ornament finishing
- sanitary fittings processing
- builders hardware manufacturing



Maxi LM and EK Buffs

	Maxi-LM				Maxi-EK		
Material	All cloth qualities, NOTIFLEX®						
Outside dia. (mm)	700	800	960	980	960	980	
Flange (mm)	290	400	500	600			
Core dia. (mm)	230	300	400	500	430	430	
No. of plies	standard: 12, 16, 20, 24						
Fastener	• ring clamp RK • cardboard flange • clinch ring EK						
Width (mm)	approx. 25						
Stitching	all seam combinations possible						
Impregnation	8S available on request for materials 215 and 290						

Typical applications:

- sanitary fittings processing
- builders hardware manufacturing
- profiled parts finishing
- round parts finishing



Mops

Material	All cloth qualities, NOTIFLEX®
Outside dia. (mm)	80 - 980
Width (mm)	max. 35 for stitched types
Stitching	all seam combinations possible

Typical applications:

- sanitary fittings processing
- builders hardware manufacturing
- finishing profiled parts

NOTIFLEX® - our hi-tech non-woven!



NOTIFLEX® is a compressed, hydro-entangled material, developed according to the most modern technology. The performance is beyond competition and incomparable with any results seen before. This material can replace many traditional cotton cloths used in the past, on all common polishing equipment, in a range of applications.

Advantages:

- long service life
- improved gloss on all surfaces
- shorter cycle time
- drastic savings in compound
- less residue
- no interfering biased seams
- reduced pressure and power savings
- free of bonding, hence environmentally friendly

Typical applications

- All polishing and finishing operations with high quality demands.

LIPPERT Unipol produces a very wide range of compositions in both solid bar and liquid paste form. These top quality compositions fully compliment the diverse surface finishing tools in the LIPPERT-UNIPOL range.

To meet all possible customer demands, LIPPERT-UNIPOL subsidiaries can all supply polishing compound.

Germany LIPPERT-UNIPOL

see back page for addresses.

The various subsidiaries allow great flexibility, complete market coverage and also combine a vast wealth of experience both on production, development and the practical application of the compositions with tradenames more than familiar to the world-wide market:

**AUTOLIN - ATHOS - CHRYSOPHOR - HELIOPHOR - UNIPOL - LUSTRE® - HYFIN - CARBRAX®
VONAX® - AA Rouge - COLDAX - VORNEX® - DIALUX.**

These are only a few of the compositions LIPPERT-UNIPOL can supply. At all sites, engineers are available to offer advice and assistance on the composition best suited to a given application. Please request separate catalogue.

LIPPERT-UNIPOL closely controls all raw materials as well as the finished product. Only the best quality raw materials (vegetable and animal based fatty acids, synthetic abrasives, aluminium oxide, tripoli powder and various chemicals etc.), are used to ensure a homogeneous and easily cleaned product.



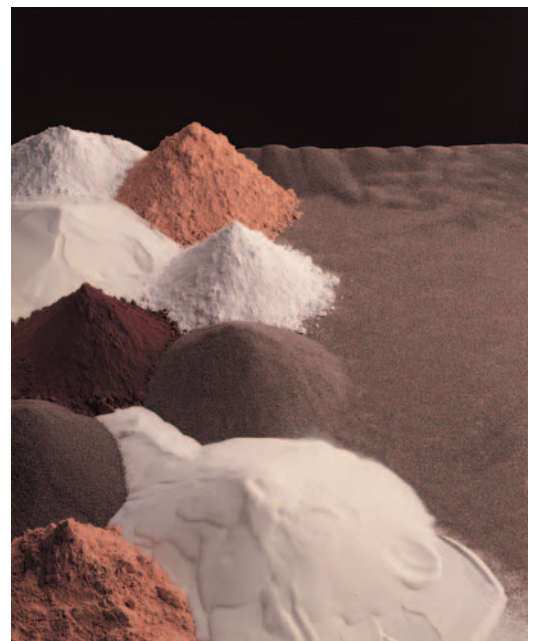
Solid Bar Compositions

Solid bar compositions are available for both manual polishing and automatic feed applications. The compositions cover the entire surface finishing process from rough polishing to mirror finishing.



Liquid Paste Compositions

Liquid paste compositions are available to suit all applications from rough polishing to mirror finishing on all base materials from metals to plastic and wood. Considerable progress has been made in the field of liquid compositions and the spray system used. LIPPERT-UNIPOL offers liquid compositions suitable for low pressure spray guns, high velocity spray guns and the airless spray systems requiring special high viscosity compositions. Compositions are available to suit the individual spray system from 25 Kg tubs through 250 Kg drums to refillable plastic containers. Engineers are available to advise and assist in finding the best composition for a given application. This product range is so vast that this help can be of great benefit.



Typical base materials processed:

- ferrous metals
- non ferrous metals
- plastic
- wood
- glass
- leather
- stone

Equipment and accessories used with LIPPERT-UNIPOL compositions are also available.

ROTIFIX® Polishing Tools for Watchmakers, Goldsmiths and Dental Laboratories



Tools:

Bristle brushes
Wire round brushes
Cup brushes
Cloth round brushes
NOTIFLEX® polishing buffs
Cloth polishing buffs
Ring buffs
Felt buffs
Collet brushes
Hand brushes
Felts and felt buffs
Mini tools

Small polishing felts
LIPPRITE® wheels

Trim material:

chungking bristle, goats hair
brass, steel, german silver
chungking bristle, tampico fibre, brass, steel
cotton thread
NOTIFLEX®
cotton cloth
chungking bristle, brass, cotton thread
merino felt
chungking bristle
chungking bristle, goats hair, brass
merino felt
chungking bristle, goats hair, brass, steel,
LIPPROX®, LIPPRITE®, NOTIFLEX®
merino felt
non-woven abrasive



ROTIFIX® grinding and polishing buffs are available in various diameters, with all common bore sizes for applications with drills, flexible shafts, angled polishers and small polishing machines. Please ask for separate catalogue.

For processing stainless steel, brass, plastic and lacquers.



The maximum speed for
ROTIFIX® EKK grinding
and polishing tools is
4000 RPM.

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LIPPERT-UNIPOL GMBH
Eschelbronner Straße 35
74925 Epfenbach, GERMANY
Tel. +49-72 63-91 24-0
Fax +49-72 63-91 24-91
E-Mail sales.lippert
@lippert-unipol.de

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LIPPERT-UNIPOL (F) S.A.S.
Parc d'Activités de la Fringale
27100 Val de Reuil, FRANCE
Tel. +33-2 32 09 50 50
Fax +33-2 32 25 06 92
E-Mail contact@lippert-unipol.fr

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LIPPERT-UNIPOL (UK) LTD.
Argyle Works
Great Barr Street, Bordesley
Birmingham B9 4BB UK
Tel. +44-121 2 24 45 00
Fax +44-121 7 66 63 44
E-Mail: sales@lippert-unipol.co.uk

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**LIPPERT UNIPOL (INDIA)
PRIVATE LTD.**
Plot no. E66, M.I.D.C. Area
Waluj, Aurangabad 431 136, INDIA
Tel. +91-240 255 2530
E-Mail lippert@sancharnet.in

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LIPPERT-UNIPOL (P) LDA.
Lugar da Cruz-Brito
4800 Guimares, PORTUGAL
Tel. +351-253 47 95 50
Fax +351-253 57 67 57
E-Mail sales@lippert-unipol.pt

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LIPPERT ABRASIVES INC.
6915 Americana Parkway
Reynoldsburg, Ohio 43068 USA
Tel. +1-614 7 59 77 11
Fax +1-614 7 59 77 27
E-Mail lippert.abrasives
@lippert-unipol.de