



GRINDING AND POLISHING  
(with bonded tools)

# GRINDING AND POLISHING

(with bonded tools)

3.2 Polishing points

1-14

## GENERAL INFORMATION AND PRODUCT INFORMATION

## Polishing tools from LUKAS – groups P1 to P7

Whether you need to achieve certain technical surface values for your product or just want to make it shine, there are many good reasons to choose polishing tools from LUKAS.

In sectors such as the automotive industry, aerospace, and pump and turbine engineering, there are plenty of sealing surfaces and fits that must be produced with high precision to achieve the right result. In the food and pharmaceutical industries, polished surfaces ensure hygienic clean working conditions. In mould and die industry, surfaces are polished to a mirror finish, the result is that every casting produces a perfect end product.

In response to the growing importance of fine machining, LUKAS has developed a wide range of polishing tools, featuring a variety of raw materials, grain combinations and hardness levels. LUKAS polishing tools are categorised into groups P1 to P7 according to the respective application. These tools include polishing wheels, points and sticks to cover a wide variety of applications. The diagram on the next page provides an overview.

Bonding type	Properties
P1	Polishing points consist of a hard rubber bonding with size 100 abrasive grains. They are suitable for fine finishing applications and the preparation of surfaces that require further polishing.
P2	Polishing points and wheels are manufactured using a soft rubber bond in grit sizes 46 to 800. These tools are perfect for creating grained to dash-dot matted finishes on small surface areas. To achieve the required result, tools with different grit sizes should be used one after the other.
P3	Felt polishing tools are used in combination with SIC or diamond polishing paste to achieve the best results, even up to a mirror finish.
P5	Polishing points contain a fibre reinforcement for a longer tool life. The surface finish achieved lies between group P1 and P2.
P6	Polishing tools are available in various forms – polishing points, marbling points, rolls for satin finishes, polishing wheels and polishing discs. The hardness of the polyurethane bonding (PU) can be divided into seven grades, from soft to hard, with available grit sizes of SIC 24 to F1200. This makes the tools suitable for many different uses, including larger surfaces. The main application with polishing wheels is on stationary polishing machines, e.g. cylindrical polishing of tubes.
P7	Polishing points with a 2.35 mm shank diameter use SIC grain in sizes 240 or 400 in a silicon bond. These small tools are very soft and are ideal for polishing jewellery and other small parts.

## SAFETY INSTRUCTIONS AND AREAS OF APPLICATION

# Safe polishing with tested tools

## SAFETY INSTRUCTIONS

The LUKAS polishing points in groups P1 and P5 are manufactured according to EN 12413 and have a maximum permitted peripheral speed of 50 m/s. Products in group P2 may be operated up to a maximum speed of 16 m/s. The maximum permitted peripheral speed of product group P6 depends on the tool hardness. For MWP, for example, this is 20 m/s.

The ideal speed generally lies below the maximum permitted speed, however. This reduces the generated heat and

prolongs the increased tool life. LUKAS polishing points are delivered with a safety ticket indicating the maximum speeds for the various shank overhangs.

To ensure safe use of polishing points and wheels, please observe the following operating instructions:

- FEPA safety recommendations for the correct use of abrasive products
- FEPA safety code for bonded abrasives

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## FIND THE RIGHT POLISHING TOOL FOR YOUR PROCESS STEP

The LUKAS range of polishing tools covers a variety of shapes and sizes. Specially developed for fine processing and polishing on surfaces, we offer a broad spectrum of polishing tools to help you achieve the desired result every time. Made from premium raw materials, our polishing points, wheels, sticks and rollers let

you polish in a way that's best suited to the application, all the way to a gloss or high-gloss finish. Simply choose your desired polishing finish from the table below and find the right LUKAS polishing tool group (P1 – P7) to achieve it.

	Polishing tool hardness					
	hard	medium	soft			
Mirror finish			P3 Felt and paste	2,000	Grit sizes (to ISO 525)	
				1,200		
				800		
Matt finish	P6 Polyurethane	P2 Soft rubber	P4 Polyurethane	P7 Soft elastomer		400
						280
						220
Dash-dot matting	P1 Hard rubber	P5 Rubber with fibre reinforcement				150
						120
						80
Marbling				46		
Polishing				24		
				18		

Grit sizes (to ISO 525)

## TECHNICAL INFORMATION

## Speeds for polishing tools

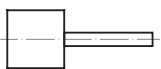
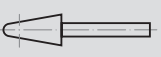

		Recommended cutting speed $v_c$ (m/s)								
		2	5	8	10	16	20	25	32	50
Polishing group (Bonds)		P1								
		P2 / P4 / P6 WP / P7								
		P3								
		P5								
		P6 MWP								
Tool diameter (mm)	4	9,500	23,800	38,100	47,700	76,300	95,400	119,300	152,700	238,700
	6	6,300	15,900	25,400	31,800	50,900	63,600	79,500	101,800	159,100
	8	4,700	11,900	19,000	23,800	38,100	47,700	59,600	76,300	119,300
	10	3,800	9,500	15,200	19,000	30,500	38,100	47,700	61,100	95,400
	16	2,300	5,900	9,500	11,900	19,000	23,800	29,800	38,100	59,600
	20	1,900	4,700	7,600	9,500	15,200	19,000	23,800	30,500	47,700
	25	1,500	3,800	6,100	7,600	12,200	15,200	19,000	24,400	38,100
	32	1,100	2,900	4,700	5,900	9,500	11,900	14,900	19,000	29,800
	40	900	2,300	3,800	4,700	7,600	9,500	11,900	15,200	23,800
	50	700	1,900	3,000	3,800	6,100	7,600	9,500	12,200	19,000
	75	500	1,200	2,000	2,500	4,000	5,000	6,300	8,100	12,700
	100	300	900	1,500	1,900	3,000	3,800	4,700	6,100	9,500
	150	200	600	1,000	1,200	2,000	2,500	3,100	4,000	6,300
	200	100	400	700	900	1,500	1,900	2,300	3,000	4,700
	250	100	300	600	700	1,200	1,500	1,900	2,400	3,800
		Speed (rpm)								

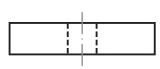



The ideal/recommended speed for polishing tools is usually lower than the maximum speed. Excessively high speeds generate more heat.

## SHAPE

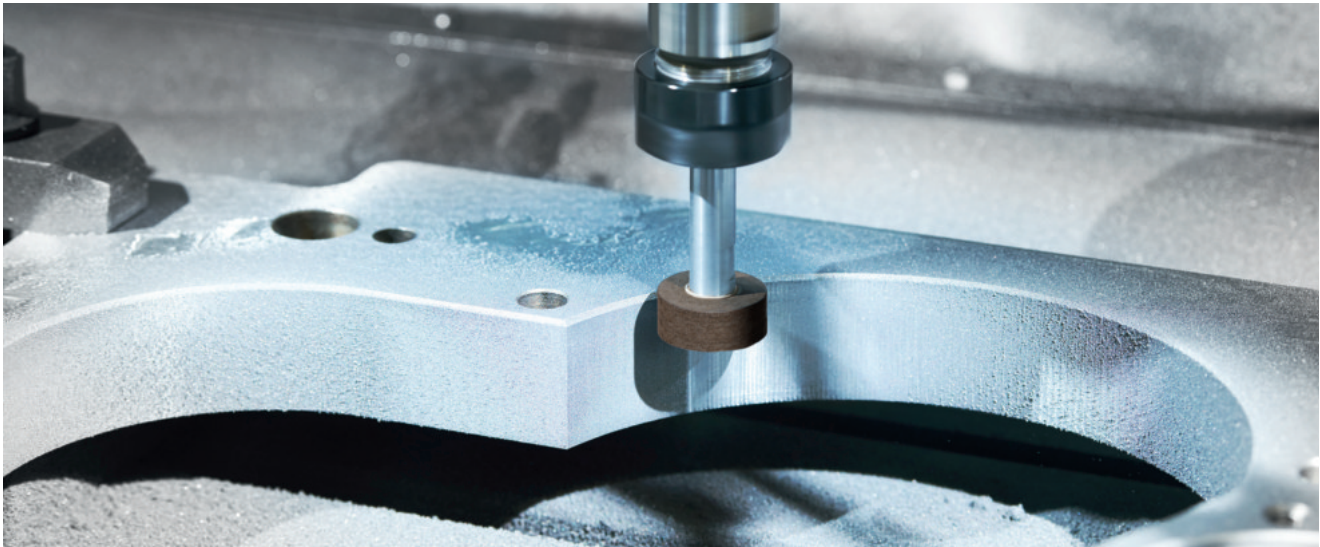
## Summary of available shapes

Shape	Available in following product groups	
	Cylindrical, type 1	P1, P2, P3, P5,
	Conical	P3
	Arch pointed nose	P3

Shape	Available in following product groups	
	Wheel	P6
	Flap disc	P6

## POLISHING GROUP P1

## Hard-rubber polishing points

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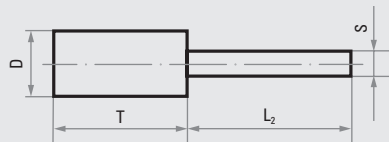
These polishing points are available in one grit combination only. The surface finish is similar to a finish with grit size 100. The hard rubber bond makes these points particularly suitable

for finishing cast materials, hard and soft steels, as well as alloyed and unalloyed steel. They do not clogg and have a long and efficient tool life when used with moderate pressure.



## P1 polishing point

- ideal for finishing cast materials, hardened and unhardened, alloyed and non-alloyed steel
- manufactured as per DIN 69170



★★☆

Product number	Description	Shape	D mm	T mm	S mm	L <sub>2</sub> mm	Pack contains
7GM011080024	P1 0408.03		4	8	3	30	20
7GM021080024	P1 0610.03		6	10	3	30	20
7GM031080024	P1 0810.03		8	10	3	30	20
7GM041080024	P1 1010.03		10	10	3	30	20
7GG111080024	P1 2032.06		20	32	6	60	20

Recommended for: ● Inox/Steel ● Steel ● Cast material ● Titanium

## POLISHING GROUP P2

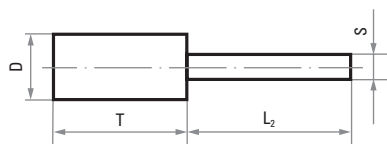
# Matt finish even on small surfaces

The polishing points in this group are available in the three grit sizes shown below, and in a variety of shapes and sizes. They are colour-coded to prevent any confusion and to avoid any errors in the polishing process. The soft rubber bonding allows for a very soft grinding effect. Polishing points in the P2 group are mainly used on a pre-machined surface where a fine to gloss polished finish is required. Polishing wheels in this group are also available with a max. diameter of 200 mm in the indicated grit sizes. Exact dimensions and prices are available on request.



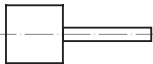






Product image			
Colour	red	brown	green
Grit size	120	220	280

## P2 polishing point (as per DIN 69170)



★★☆

■ manufactured as per DIN 69170

Product number	Description	Shape	Grit size	D mm	T mm	S mm	L <sub>2</sub> mm	Pack contains
7GM012280024	P2 0408.03		280	4	8	3	30	20
7GM022200024	P2 0610.03		220	6	10	3	30	20
7GM022280024	P2 0610.03		280	6	10	3	30	20
7GM032200024	P2 0810.03		220	8	10	3	30	20
7GM032280024	P2 0810.03		280	8	10	3	30	20
7GM042120024	P2 1010.03		120	10	10	3	30	20
7GM042200024	P2 1010.03		220	10	10	3	30	20
7GM042280024	P2 1010.03		280	10	10	3	30	20
7GM062280024	P2 1616.03		280	16	16	3	40	20
7GG112120024	P2 2032.06		120	20	32	6	40	20
7GG112280024	P2 2032.06		280	20	32	6	40	20
Recommended for:  Inox/Steel  Steel  Aluminium  Cast material  Titanium  Plastic								



## POLISHING GROUP P3

## Excellent results all the way to a mirror finish



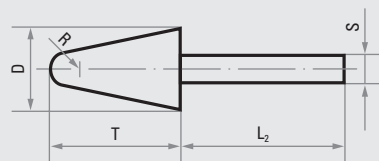
LUKAS felt polishing points are available in two qualities:

- H3 as per DIN 61200
- H3-S super hard and particularly effective when used in combination with diamond paste

**The ideal peripheral speed for LUKAS felt polishing points is 2 to 8 m/s.**

The LUKAS range of felt polishing tools reflects our many years of experience in this field and covers all the most common shapes and sizes. Thanks to their extreme flexibility, felt polishing points used together with LUKAS diamond paste are ideally suited for polishing highly complex shapes like pressure and injection moulds, drawing, press and cutting tools, dies, bearings, spindles, rolls, gauges, etc.

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## P3 polishing point



- perfect for polishing highly complex shapes
- manufactured as per DIN 69170

★★☆

Product number	Description	Shape	Quality	D mm	T mm	S mm	L <sub>2</sub> mm	R mm	Pack contains
7PM01024	P3 0610.03		H3	6	10	3	40	–	20
7PM02024	P3 0810.03		H3	8	10	3	40	–	20
7PM04024	P3 1012.03		H3	10	12	3	38	–	20
7PM06024	P3 1215.03		H3	12	15	3	40	–	20
7PG21024	P3 2025.06		H3	20	25	6	40	–	10
7PM05024	P3 1012.03		H3	10	12	3	40	–	20
7PG22024	P3 2025.06		H3	20	25	6	40	–	20
7PM03124	P3 1012.03		H3	10	12	3	38	2.5	20


Recommended for: ● Inox/Steel ● Steel ● Cast material ● Titanium ● Aluminium

POLISHING GROUP P5

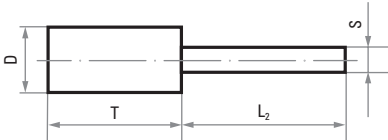
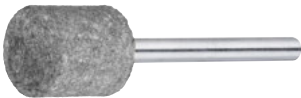
Fibre reinforced for wear resistance

The polishing points in this group are characterised by their special fibre-reinforced structure and bonding. This makes them ideally suited for the fine finishing of aluminium and associated alloys, non-ferrous metals and low and high-alloyed steels. The

fibre reinforcement gives these tools exceptional edge-fray resistance and stability. Polishing points in group P5 are available in the grit sizes shown below, and are identified with a red marking on the shank.

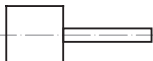
Product image	
Colour	red
Grit size	120

P5 polishing points



★★☆

- ▀ ideally suited for the fine finishing of non-ferrous metals and low- and high-alloyed steels

Product number	Description	Shape	Grit size	D mm	T mm	S mm	L <sub>2</sub> mm	Pack contains
7GM015120024	P5 0408.03 Red		120	4	8	3	30	20
7GM035120024	P5 0810.03 Red		120	8	10	3	30	20
7GM045120024	P5 1010.03 Red		120	10	10	3	30	20
7GM055120024	P5 1313.03 Red		120	13	13	3	30	20
7GM075120024	P5 1604.03 Red		120	16	4	3	30	20
7GG115120024	P5 2032.06 Red		120	20	32	6	30	20
Recommended for: <span>Inox/Steel</span> <span>Steel</span> <span>Aluminium</span> <span>Cast material</span> <span>Titanium</span>								



## POLISHING GROUP P6

## Polishing with polyurethane bonding

Products in group P6 are manufactured with a polyurethane bond (PU) in different hardnesses.

These tools:

- can be easily profiled
- quickly generate an excellent surface finish
- do not tend to clog
- require no dressing
- contain no softeners
- do not increase in hardness after long storage
- are ideal for both stationary and manual application

These polishing tools are used to improve the surface finish and dimensional accuracy of polishing and finishing steel, brass, precious metals, sintered metals and plastic, as well as for very fine and effect grinding. The spectrum ranges from polishing and marbling points to rolls for satin finishes and polishing wheels measuring 60 to 300 mm in diameter. They can be used for dry and wet grinding. Only use ph-neutral coolant for wet grinding. Use handstones or diamond dressing tools for dressing.

Due to their long tool life and a good edge-fray resistance, the tools are ideally suited for automated processes such as cylindrical polishing of tubes or marbling of high-alloyed steel plates.

## RECOMMENDED FOR

# The right polishing tool for every job

Find the perfect tool for your application! Simply find your process and the corresponding material in the table to discover the perfect grit size for your LUKAS P6 polishing tool.

	Removing rust, cleaning, tarnish removal			Cylindrical and surface grinding			Sharpening, dressing		Marbling, dash-dot matting		Deburring, fettling, rounding off				Fine grinding				Pre-finishing				Polishing		
	MWP	MP	SHP CG	SHP	SHP CG	SHP+	SHP	SHP+	WP	MWP	WP	MWP	MP	HP	WP	MWP	MP	HP	WP	MWP	MP	HP	WP	MWP	
Gold, silver, nickel, aluminium, brass														410						240	240			400	400
																			240	240			800		
																	150		150				1,200		
																120	120								
										80			80	80		80									
									46	46				46		46									
Structural steel		150	120		120	36																			
	46		60		60	30																			
Stainless steel, titanium							400																400	400	
							240													240	240			800	240
		150												150			150			150	150			1,200	
			120		120		120									120	120			120					
					60		80			80	80	80		80	80	80	80	80							
			60					36		46		46			46	46	46	46							
Hardened steel, tungsten carbide				240																		240	400		
				150														150					800		
				120	120													120					1,200		
				80	60	36		36				80													
						30		30				46													
Glass																				400					
																		100		240					
																		80		150					
Rubber			60															46							
Wood																	80								
Paint	46	150																							
Solder	240				120																				
Tin						36											80								
						30											46								
Grit sizes																									

The following grades are available:

- WP** = soft, very flexible
- MWP** = medium to soft
- MP** = medium for general application
- HP** = hard and resilient, mainly for flat surfaces
- SHP** = super hard, for stationary applications
- SHP CG** = super hard, with compact grain
- SHP+** = super hard, for manual applications

The bonding is mixed with silicon carbide "SIC", aluminium oxide white "EKW" or aluminium oxide "A" as abrasive in the FEPA grit sizes 24 to 1,200.

## COMPACT GRAIN

## Many cutting edges combined in one grain

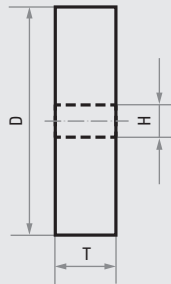


The compact grain (CG) consists of many abrasive grains and reactive filler, which are bonded to each other before adding them to the tool. During grinding, individual worn particles break out of the compact grain, exposing the underlying abrasive particles with new, sharp cutting edges. As a result, tools with compact grain do not clog even with softer or smearing materials.

Due to the double adhesive bonding in the compact grain and abrasive layer, the grinding particles adhere better than with just a single adhesive bonding. This means a longer useful life without premature tool changes. The high density of the cutting edges within the compact grain guarantees the very high stock removal rate, while the filler ensures a cool cut.

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- very hard PU bonding
- can be used on a variety of materials
- contains compact grain (CG)
- suitable for removing irregularities and defects before polishing
- produces good surfaces
- incredible tool life



## Polishing wheel, shape SE1 CG



★★★

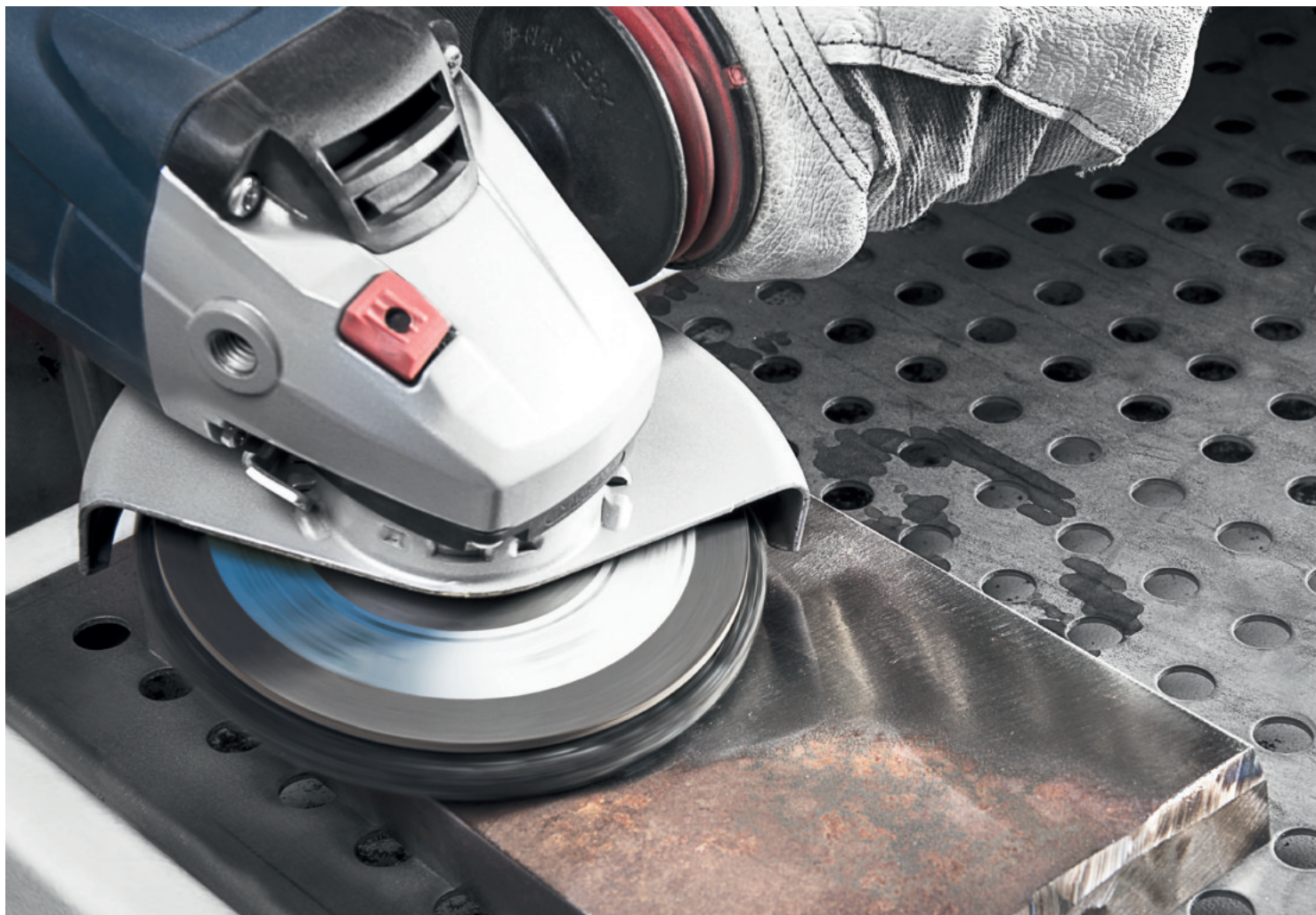
Product number	Description	Quality/grit size	Type/surface result	D mm	T mm	H mm	$n_{max}$ rpm	Pack contains
7PD080060612024	P6SE1 08006 B.06	EKW 120 SHP CG	coarse	80	6	6	19,000	1

Recommended for: ● Inox/Steel ● Steel ● Aluminium ● Cast material ● Titanium

The new tools in the P6 Compact Grain series let you remove scratches and irregularities on workpieces, whilst also creating a good surface. This helps you save time and removes the need for annoying tool changes. Their incredible tool life is down to the very hard PU bonding and the compact grain technology. P6 CG tools are perfect for grinding before polishing with other P6 tools with hardness ranging from WP to HP.

Ideal for:

- cleaning surfaces
- removing scratches
- removing paint and undercoats
- preparing surfaces for polishing



## FROM COARSE TO FINE – THE PERFECT POLISHING SET

TEST THE LUKAS POLISHING DISCS NOW!

The P6PT polishing disc makes improving the surface quality and dimensional accuracy of your workpiece easy. This disc with silicon carbide grinds cool and generates few sparks, making it suitable for use in aerospace engineering. Even hard materials like stone, glass and high-alloyed materials can be processed efficiently. The hard and sharp abrasive grain ensures a long tool life. Whether it's cleaning, grinding or polishing – this LUKAS polishing disc takes care of any job with flying colours. It is perfectly suited for working with a standard controlled angle grinder.

The polishing disc can be used for both wet and dry grinding and requires no additional grinding paste.

Its light, stable and flexible design lets you achieve outstanding surface results. The glass fibre carrier plays no role here. The disc is highly resistant to breakage and generates little vibration when working. Combined with its easy handling, it is ideal for manual use. The P6 group of polishing discs are perfect for quickly processing large metal surfaces.

### THE LUKAS POLISHING DISC SET

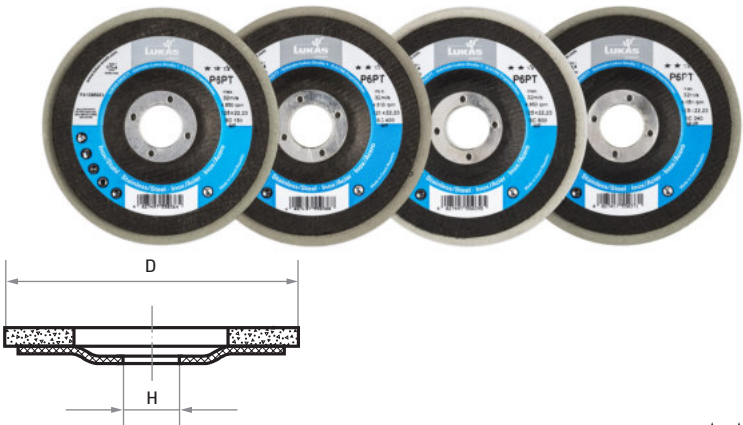
Get the polishing result you want quickly with the polishing disc set from LUKAS. Simply use the various polishing discs in the set one after another. Go from rusty to a mirror finish quickly and easily with just a few tool changes and one machine.





### P6PT polishing disc set

- polishing a wide range of surfaces
- cleaning and derusting
- removing paint and coatings
- replaces cloth discs, felt discs and polishing pastes
- for standard controlled angle grinders
- clean working conditions, as no grinding paste is required
- quicker work progress
- from rusty to a mirror finish with the LUKAS polishing disc set
- use these tools one after another to achieve the finish you want



★★☆

Product number	Description	Shape	Quality	D mm	H mm	n <sub>max</sub> rpm	n <sub>recom</sub> rpm	Contents 1 per pack	Pack contains
7FL115220040024	P6PT 115 (flat) SET		P6PT	115	22.23	4,800	2,700	P150, 240, 400, 800	1
7FL125220040024	P6PT 125 (flat) SET		P6PT	125	22.23	4,800	2,700	P150, 240, 400, 800	1

Recommended for: ● Inox/Steel ● Cast material ● Titanium ● Steel ● Aluminium

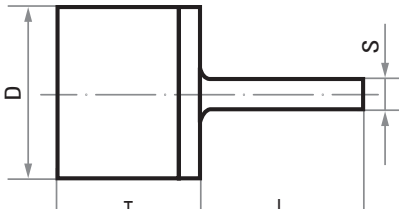
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Marbling point



- cylindrical marbling point
- LUKAS marbling points let you marble non-rusting steels, aluminium and non-ferrous metal (peacock eye, clouds). The marbling points do not clog with abrasive dust and their abrasive capability is retained all the way to the plastic cap.

Product number	Description	Quality/grit size	D mm	T mm	S mm	L <sub>2</sub> mm	n <sub>max</sub> rpm	Pack contains
5PM0504061024	P6 Marbling point	SIC 46 MWP	50	40	6	35	3,800	1
Recommended for: <span>●</span> Inox/Steel <span>●</span> Steel <span>●</span> Aluminium <span>●</span> Cast material <span>●</span> Titanium								