



Hermes LP-System

Fine sanding and polishing system
for automotive paintwork finishing

Online-version
with updated product data

General

The automotive industry is setting higher and higher standards for the surface of top paint coats. Nowadays it uses not only coated abrasives but increasingly also fine sanding and polishing systems, both in the body shop, engine building, and in the paint shop to machine the individual filler and paint layers.

This increase in surface requirements creates problems for the introduction of new paint systems and makes higher demands on sanding and polishing systems. It is not possible to completely avoid "pimples", which result from dust contamination and the drag-in of other impurities. For example, water-based paints require longer drying times, which in turn tends to allow dust particles to adhere to the paint layers before they have a chance to cure completely.

There may be other defects, too, such as curtains, pitting and minor scratches. These problem cases occur in cathodic electrocoat paint, fillers, and in base and top coat application. It is absolutely essential to remove pimples and faults completely in this area, since this is the finishing operation, i.e. the bodies will leave the factory in this state.

It is always critical to sand and polish out defects on high-brilliance top coats with excellent surface quality. The polishing tool has to be carefully adjusted to the sanding tool type and grain size. If the roughness depth of the sanded surface is increased by only $R_z > 0.5 \mu\text{m}$, this may produce defects that can no longer be removed by polishing. On the other hand, excessively long polishing times, excessive speed of the sanding and polishing machine, and other factors of this kind may cause smearing which can no longer be removed. This is mainly caused by excessive heat generation, causing a thermal change in the paint.

Hermes has developed a complete system to deal with all defects of this kind, that is the Hermes LP System. (LP = Lacquer-Polishing-System).



The Hermes LP System is applicable on practically all paint and lacquer coats. It is used to remove pimples and scratches not only in automobile production and repair, but also on lacquered furniture parts and on ceramics.

Sanding out faults

Convex surface faults such as dust pimples, curtains and dirt inclusions are adjusted to the level of the top coat by sanding out. Concave faults (pitting) require very careful work to avoid sanding through the top coat layer (clear varnish) completely, as the layer thickness is between 25 and 40 μm .

If the fault position is sanded through to the base coat, it no longer has the same brilliance as a clear varnish after polishing. This situation is even more problematic with metallic paints - if the fine

aluminium particles in the base coat are sanded, this may alter light refraction at these points.

Sanding is a chip-removing machining method, and involves surface damage to the paint coat. The coat then has to be restored to its original condition by polishing. The amount of removal in the sanding process should therefore be kept to the absolute minimum.

The Hermes LP System includes self-stick paper discs having a diameter of 36mm. In order to avoid contact traces, the discs are designed with a scalloped edge (rosette). Depending on scratch depth, paint type and sanding method, the grain sizes used are P 2000 and P 2500. The best results are achieved with the waterproof sanding paper Hermes WS flex 18 F SK.

It is advisable to start preliminary tests with grain size P 2500 in order to achieve optimum polishing results with the minimum polishing times.

➤ Automated fine sanding of paintwork

➤ Sanding machine

Pneumatic angle sanders are normally used in automated processes for sanding out defects. These machines should operate at a spindle speed of 2500 - 3000 rpm, at constant speed.

➤ VEL-backing pad-X

The backing pad is made of hard-rubber ($\varnothing 32\text{mm}$) with an integral cast M14 thread, and is coated with a special heat-resistant velvet hook material.



➤ SK-Soft Pad

The SK-Soft Pad comprises soft, micro-cellular polyurethane. One side is coated with velour, the other with vinyl. It is attached as an adapter to mount the self-stick discs on the VEL-backing pad-X.

The SK-Soft Pad is a consumable part, and should be replaced when the sticking power of the velour begins to decline.

➤ Application recommendations

In order to ensure that the starting position is not shown as a pattern on the surface, first place disc on the defect position such that the whole disc surface makes contact, then switch on the sanding machine.

To avoid sanding through the clear top coat, keep sanding periods to not more than 2 - 3 seconds. Use a slight circling movement, to give better overlap of the sanding score marks, thus improving the surface pattern.

Wet operation prevents premature clogging of the abrasive, due to better removal of swarf. The agent to be used here is either pure de-ionized water or water with a 30 to 50 % proportion of alcohol (e.g. ethanol, isopropanol).

➤ Manual fine sanding of paintwork

The second way of sanding out faults is manual sanding with a waterproof paper disc (rosette) on the Hermes SK-Disc Holder. The design of the disc holder is conical to improve handling (\varnothing 31/25 mm). It has a silicone-free rubber blend, with a rubber hardness of 67° Sh A.



As in automated operation, use a slight circling movement. Avoid oblique positioning of the holder, as this causes greater roughness depth.

For large-area fault removal, there are waterproof sanding papers available (grain P 1200 - P 2500) as sheets or discs for manual operations. Best results are achieved here with the waterproof sanding paper Hermes-WS flex 18 G.

Polishing the sanded surface

After sanding, polish the fault position in order to level out sanding score marks, to achieve uniform brilliance as for the surrounding paint surface. Use polishing fluid to minimize material removal and to level out the score marks in the top paint coat.

➤ Polishing fluid

The Hermes polishing fluid is a water-soluble polishing suspension on aluminium oxide basis. The grain has a mean diameter of $d_{k50} < 5 \mu\text{m}$. The high viscosity of the fluid gives good machining capabilities even with vertical surfaces. Depending on the size of the sanded area, apply an appropriate quantity of the polishing fluid.

➤ Polishing machine

The polishing machine is usually an angle sander with a speed range between 2000 and 3000 rpm.

➤ VEL-backing pad-X

The backing pad is a hard-rubber pad coated with velvet hook material (\varnothing 65mm, with integral cast M14 thread).

➤ VEL-Soft Pad

The VEL-Soft Pad comprises soft, micro-cellular polyurethane. One side is coated with velvet hook material, the other with velour. It is attached as an adapter for mounting of the polishing disc on the VEL-backing pad-X.

The VEL-Soft Pad is designed as a consumable part, and should be replaced if it becomes worn, e.g. by the action of the polishing fluid.

➤ Polishing discs

There are three different materials available as polishing discs; all of them are used on low-speed angle-sanders in conjunction with the VEL-backing pad-X and the VEL-Soft Pad.



➤ Polishing felt, velour backed

This disc is designed as the standard polishing disc, and is to be used for larger fault areas. The polishing felt comprises needle-felt, and is coated with velour on one side.

When starting to use a new polishing disc, it is recommended to soak it with a few drops of polishing fluid first, in order to achieve better flexibility and uniform absorption of fluid in the disc.

In order to avoid rotation tracks at the contact point, the disc should always make contact flat with the disc. The polishing time should not be more than 10 seconds, as otherwise there may be smearing in the polishing area due to the generation of heat.

➤ Lambs wool, velour backed

The lambs wool polishing disc (\varnothing 80 mm) is coated with velour on one side. The polishing effect of the fine, soft wool fibres generates greater brilliance of the polished surface.

The use of the lambs wool disc is advisable, mainly for high-brilliance polishing before the vehicle leaves the factory.

➤ Foam, velour backed

Smearing may occur at the polishing point, especially when polishing dark paintwork with high brilliance. This can be avoided by using a foam pad made of PUR soft foam (ø 125 mm) on an eccentric-running polishing machine.

The foam polishing disc can also be used as an alternative to the felt or lambs wool disc in the 75 mm and 125 mm diameters, for low-speed angle sanders.

Cleaning the polishing position

After completely polishing out the sanded fault area, wipe it with a non-fluff cloth. Use de-ionized water with 30-50 % alcohol (e.g. ethanol, isopropanol) to improve the cleaning effect.

Tool data

Waterproof sanding paper

	Sanding discs		Sanding sheets	
Type	WS flex 18 K, self-stick 302	WS flex 18 F, self-stick 302	WS flex 18 G	
Code	61854	61876	61830	
Grain	Silicon Carbide	Silicon Carbide	Silicon Carbide	
Grit range	P 1500, P 2000, P 2500	P 2500	P 1200, P 1500, P 2000, P 2500	
Bonding	Resin	Resin	Resin	
Backing	Waterproof C-weight paper	Waterproof C-weight paper	Waterproof B-weight paper	
Dimensions	ø 36 mm, rosette shape	ø 36 mm, rosette shape	1/4 sheet	115 x 140 mm
			1/8 sheet	70 x 115 mm
			1/16 sheet	57.5 x 70 mm

Backing pads and adapter

	Disc Holder	VEL-backing pad	VEL-backing pad
Type	SK-Disk Holder, density 2	VEL-backing pad-X	VEL-backing pad-X
Code	90345	90310	90310
Material	Rubber, 67° Sh A	Rubber pad, M14 inside thread	Rubber pad, M14 inside thread
Dimensions	ø 31/25 mm x 30 mm	ø 32 mm, coated 1-side with heat-resistant velvet hook material	ø 65 mm, coated 1-side with velvet hook material
		Adapter	Adapter
Type		SK-Soft Pad	VEL-Soft Pad
Code		90312	90311
Material		Micro-cellular PUR foam, thickness 12 mm	Micro-cellular PUR foam, thickness 12 mm
		1st side coated with velour	1st side coated with velour
		2nd side coated with vinyl	2nd side coated with velvet hook material
Dimensions		ø 32 mm	ø 70 mm

Polishing discs

	Polishing felt	Foam	Lambs wool
Type	Polishing felt, velour backed	Foam, velour backed	Lambs wool, velour backed
Code	69007	90387	90397
	Needle felt, grey, thickness 3-3.5 mm	PUR foam, white, thickness 10 mm,	Natural lambs wool, wool height 22 mm,
	coated 1-side with velour	coated 1-side with velour	coated 1-side with velour
Dimensions	ø 75 mm and ø 125 mm (other diameters on request)	ø 75 mm and ø 125 mm	ø 80 mm

Polishing fluid

Type	PF 90371	PF 90375
Code	90371	90375
Material	Polishing suspension on aluminium oxide base	Polishing suspension on aluminium oxide base
Grain size	$d_{k50} < 5 \mu\text{m}$	$d_{k50} < 5 \mu\text{m}$
Packaging	1-litre bottle	5-litre canister

All components of the Hermes LP System are free from substances that interfere with paint wetting.