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Sanding how-to in practice

Tips for using different tool types, accessories and abrasives

Over the last few years, renovating old houses and apartments has been in vogue. Most of these buildings date back to the period between 1960 and 1980, meaning there is a lot of work to do – every surface needs to be renovated and the related subsurfaces indoors must be prepared.

Image: Festool_Sanding_Know-How_01.jpg

Sanding is required when renovating and restoring old structures – in all possible configurations. It's not uncommon for certain parts of the building to remain occupied during a renovation, making clean work with low volumes of generated dust all the more important. Due to the increasing demands that customers place – with regard to the quality, durability and sustainability of the surface and materials – the requirements for painting businesses are also increasing. Ultimately, a surface is only ever as good as the preparation of the subsurface. To meet these demands, the ideal subsurface preparation and professional sanding are gaining increasing importance. In this article, the sanding experts at Festool explain how this is interpreted in practice. "With all sanding work, a harmonised sanding system is key to quality and working progress," explains Dino Frey, painter and trainer at Festool. Painting businesses usually encounter these sanding requirements: Sanding off unsound old coats, or those that are incompatible

with new coats, adapting and smoothing surfaces and removing unevenness, as well as intermediate sanding of layers of repair compound. A harmonised sanding system helps to complete these tasks to a suitable standard. It consists of the ideal abrasive paper for the sanding requirement in question, the right sanding pad and the compatible sander in combination with the optimum dust extraction system. With sanding systems that can be combined in a variety of ways, everyday work becomes more effective, delivers the required result more quickly and is also more healthy – for employees of the painting business as well as for the customer, who often remains living in a separate area of the building during the painting work. For every requirement there is an individual solution. You just have to know the best way to use it.

BOX 1: Large-scale filler work

(page at end of text with three images 02-04)

Many sanders – which one to choose?

"There is no single, universal sander – the same is true when renovating. It always depends on the main requirements to be met," says Dino Frey. For example, is a high material removal capacity required, or a particularly fine sanding finish? Or do large wall and ceiling surfaces have to be sanded right into the smallest corners? There are specific sanders for every task: Long-reach sanders in various configurations, numerous eccentric sanders with different sanding strokes, rotary sanders with eccentric motion and different sanding disc diameters, as well as orbital sanders. "Every painting business works differently. This makes it difficult to recommend a specific one to choose. In general, I would give the following recommendation: For painting businesses that often perform drywall construction work, it is worth buying a long-reach sander. For smaller surfaces on walls and ceilings such as in guest toilets or in stairwells, I recommend the handy ETS EC 150/5 eccentric sander. For renovating windows with damaged old paintwork around the weatherboard, it is worth using a Rotex RO 90 geared eccentric sander. It has four different functions: Coarse and fine sanding, polishing and triangular sanding. The RUTSCHER RTS or DTS orbital sander is suitable for corners and smaller surfaces. For work outdoors or on scaffolding – without

an available power source – a cordless compact sander is very practical," says Trainer Frey.

Image: Festool_Sanding_Know-How_05.jpg

(BOX 2) Sanding basics: Sanding motions 101

(page at end of text with four images 06-10)

Woodwork: Proper door preparation

Image: Festool_Sanding_Know-How_11.jpg

Image: Festool_Sanding_Know-How_12.jpg

Image: Festool_Sanding_Know-How_13.jpg

Image: Festool_Sanding_Know-How_14.jpg

Image: Festool_Sanding_Know-How_15.jpg

If historical doors which are worth preserving need to be prepared in order to maintain the special character of the house, if meticulous refurbishment is important in order to preserve the design of the door for many years to come, every door is one of a kind. Is the door in question an interior or an exterior door, an entrance that shapes the building's external appearance? If so, it's all the more important to think about the correct approach in advance. This often poses the question as to how much of the original material can be preserved. This is not only true of the doors, but of course of the frames as well. The doors are first examined, meaning old coats are checked and damaged areas in the wood are determined. The existing paint layers can be sanded smoothly and reliably with the ETS EC 150/5 or ETS EC 125 eccentric sander, to name a couple of tool recommendations. With the right speed, loose pieces are removed without too much pressure and intact surfaces are roughened. "We recommend that you use abrasives with a grit from P180 for water-based paint, and a grit from P150 for alkyd resin paint," explains application engineer Philipp Stahl. The DUPLEX LS 130 linear sander is ideal for profiles and recessed panels, as the linear sanding motion avoids deflections to the side. You also have the option of creating an individual sanding pad for all joint and profile shapes with the DIY construction kit. Sanding with the individual sanding pad is efficient and makes the job much easier. If necessary, hard-to-reach areas on profile grooves and transitions can be resanded using a particularly adaptable abrasive sponge. After lightly sanding the old paint, you can fill small holes and damaged areas. Of course, dust extraction is a must when lightly sanding. After sanding, you can vacuum the sanded surfaces thoroughly with a mobile dust extractor, and, if

necessary, you can clean up with an anti-dust and tack cloth. For intermediate sanding with the ETS EC, we recommended using GRANAT abrasives with a grit of P240 to P500. The speed should be reduced to avoid sanding through or heating up the primed surface. If necessary, hard-to-reach areas on profile grooves and transitions can be resanded again using a manual abrasive. Renewed splendour for old windows. Renovating old window frames and casements made from wood to a professional standard is a challenging task. Renovating old window frames and casements made from wood to a professional standard is a challenging task. This is true in the conservation of cultural heritage as well as in the modern and sustainable handling of existing materials such as wood. Meticulous refurbishment with the appropriate expertise can make a window construction usable for many more years.

Image: Festool_Sanding_Know-How_17.jpg

Image: Festool_Sanding_Know-How_18.jpg

Image: Festool_Sanding_Know-How_19.jpg

Sanding attractive railings

Many houses built in the period from the 1960s to the 1980s have stairwells, and sometimes a gallery area, featuring beautiful wooden railings. A linear sander is the ideal tool if the railing is to be left as it is and just brightened up. One of the few tools that offers pure linear motion in both directions is the DUPLEX LS 130. It is perfect for sanding wood material along the grain. The linear sanding motion does not deflect to the side, which is perfect for profiles such as handrails in stairwells or galleries. The DIY construction kit is particularly clever in this regard, making it possible to create individual sanding pads for any profile, according to subsurface shape. This allows profiles for old radiators to be produced individually. Of course, metal railings can be treated in the same way.

Image: Festool_Sanding_Know-How_22.jpg

Image: Festool_Sanding_Know-How_23.jpg

Image: Festool_Sanding_Know-How_24.jpg

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Total approx. 7440 characters (including spaces)

Image source: Festool GmbH

(BOX 1)**Large-scale filler work**

Surfaces and various repairs carried out at the time these houses were built, between the 1960s and the 1980s, can be treated most time-efficiently using a long-reach sander. Customers' requirements for the surface finish quality of walls and ceilings are growing constantly and, as a result, perfect sanding results are needed. At the same time, the fillers used are becoming softer, thereby making such high-quality surface finishes harder to achieve. There are often poor lighting conditions when carrying out renovations/restorations. It is hard to identify unevenness and sanding marks may be produced; these may need to be subsequently reworked. The LED light ring built around the sanding pad on the new Planex long-reach sander provides perfect illumination with individually adjustable brightness in a 50 cm radius around the sanding head. This avoids the need for inconvenient, time-consuming and costly reworking by ensuring a perfect sanding result first time. Sanding is made significantly easier by the eccentric sanding motion. This allows outstanding scratch-free surfaces to be created in the shortest time frame – with no sanding errors or scratch marks. Adjustable suction ensures ergonomic working. This means that it can hold its own weight when sanding walls and ceilings, relieving the weight from arms and backs – especially during lengthy tasks. In addition, the PLANEX can be individually adapted to the working height because its working length can be extended to up to 2.1 m using two guide extensions. This means that the machine can be used to sand particularly high walls and ceilings. The T-handle allows for a longer range. High volumes of hazardous sanding dust are generated when sanding plasterboard and drywall filler, among others. Combined with the CTM 36 E AC PLANEX mobile dust extractor and Grant abrasive, Festool offers a coordinated system, which ensures a perfect surface finish quality and a healthy low-dust working environment. The new hole pattern in the sanding pad and abrasive ensure an ideal sanding performance with full-surface extraction. With the new Planex, Festool has enabled full app connectivity. Numerous extra features can be accessed in conjunction with the free Work App from Festool. See www.festool.co.uk for more information

Image: Festool_Sanding_Know-How_02.jpg

Image: Festool_Sanding_Know-How_03.jpg

Image: Festool_Sanding_Know-How_04.jpg

(BOX 2)**Sanding basics – sanding motions 101**

When sanding, choosing the right tool is crucial. Experts often talk about strokes, pad hardness and the right abrasive. They often fail to mention that one thing matters above all else: The right sanding motion. Depending on the quality of the surface and the result you want to achieve, there are five different sanding motions to choose from for coarse and fine sanding. It's also true that the longer the sanding stroke, the more material is removed. A short sanding stroke of 3 millimetres, for example, is ideal for fine sanding; sanding strokes of between five and seven millimetres remove a large amount of material for coarse sanding.

Linear: The sanding motion is pure linear motion, which is ideal for sanding wood material along the grain. This does not damage wood fibres (Important: if the surface is to be oiled, waxed or coated with a thin layer of varnish afterwards, for example). The linear sanding motion does not deflect to the side; linear sanders are therefore particularly suited to sanding frame sections adjacent to panes of glass. Example machine: DUPLEX LS 130 linear sander

Image: Festool_Sanding_Know-How_06.jpg

Eccentric: The sanding motion is an oscillating motion, which combines overlapping linear and circular motions. Ideal when the quality of the sanding finish is not so important (if a top-coat layer is to be applied afterwards). Note: The delta sander also has an oscillating motion; it is particularly suited to removing material on small surfaces with angles, corners and edges. Example machine: DTS 400 delta sander *Image: Festool_Sanding_Know-How_07.jpg*

Eccentric rotation: This is a combination of oscillating and rotary motion. Ideal for coarse sanding and paint removal) as well as intermediate and fine sanding. Allows for a surface that is virtually free from any circular or ridged sanding marks. Note: When sanding using an eccentric rotary motion, it makes no difference whether the machine is moved with or against the grain; particular care must be taken when sanding areas where longitudinal and transverse wooden surfaces meet. Example machine: ETS EC 150 *Image: Festool_Sanding_Know-How_08.jpg*

Forced eccentric rotation: This is a sanding motion with forced eccentric rotation as a result of connection to a gear unit. The gear unit considerably increases the material removal rate. Ideal for coarse sanding and for quickly removing old paint layers that are not viable. The result: Quick removal of large amounts of weathered layers of paint and varnish, without a high risk of sanding errors. Forced eccentric rotation can also be used for polishing. Example machine: ROTEX RO 90

Image: Festool_Sanding_Know-How_09.jpg

Rotation: The last type is pure rotary motion. This is used wherever a high level of material removal is needed as quickly as possible (among other cases, when stripping large areas of paint). It is, however, important to note that powerful rotary sanders are not forgiving of any user errors. Unintentionally deep sanding marks can be produced when working on workpieces that need to be completely level. Example machine: RAS 180

Image: Festool_Sanding_Know-How_10.jpg

(BOX 3)**Newly developed: The new long-reach sander**

From September 2020, the newly developed PLANEX LHS 2 225 EQI long-reach sander is available from Festool, for sanding walls and ceilings. The circumferential LED light ring highlights unevenness when sanding, thereby preventing the need for costly reworking. The laborious installation and transportation of light sources is therefore also no longer necessary. The eccentric sanding motion ensures a premium surface quality – without any sanding marks. The focus of the product development team was to ensure ergonomic work on walls and ceilings: The new long-reach sander with adjustable suction, variable working length and a clever T-handle. The result: Comfortable handling for sanding without fatigue – even during lengthy tasks.

Image: Festool_Sanding_Know-How_16.jpg

(BOX 4)**Checklist: Everything on-hand for sanding**

- Which sanding applications are to be completed?
- Do I have the right sanding tools to hand?
- Which sanding pad do I need?
- Which abrasive and abrasive qualities are required?
- Which materials are to be sanded?
- Do we have the right mobile dust extractor to hand?
- Do we need several/different dust collectors?
- Which cordless tools should be on hand?
- Do we have the right battery packs?
- What are the light conditions like in the building and do we need working lights?

Image: Festool_Sanding_Know-How_20.jpg

(BOX 5)**What customers require when painters sand: Dust-free work**

The working environment should remain **free of dust** as far as possible, not just for the sake of the customer, but also to protect the **health of one's own employees**. We have a few tips: The right abrasive paper is essential for **perfect sanding results**, especially when sanding completely filled walls and ceilings of the highest surface finish class (Q3 and Q4). If you separate occupied areas and surfaces to be worked on using **foil covers or dust protection walls**, you will keep a lot of dust out. a) abrasive nets have an open mesh structure that allows materials to be **comprehensively extracted**. b) When carrying out comprehensive filling work, it is worth **using a pre-separator** that already isolates the majority of the sanding dust before the dust can reach the dust collector. c) The dust collectors fall into various dust classes. The use of **dust extractors from dust class M with AC function** (AC=autoclean – automatic main filter cleaning system) is recommended.

(BOX 6)
Not all sanding pads are the same

Besides the abrasive, the sanding pad plays an important role as a connecting element in sanding. Manufacturers make different versions available depending on the sanding task. Festool offers a hard version (hardness grade H-HT) with high edge resistance for flat surfaces and narrow edges, a soft version for universal use on flat and curved surfaces (hardness grade W-HT) and an ultra-soft, flexible version for extreme bends and curves (hardness grade SW); in addition, the range includes a pad for sanding slats and louvres, a pad for polishing accessories and an interface pad for sanding work on curved parts and fine sanding using the eccentric sander and a guard (available as an accessory) for the sanding pad and workpiece.

Image: Festool_Sanding_Know-How_25.jpg

Technical data
ES-ETSC
Cordless version
ES-ETS
Cable version

Battery voltage	18 V	---
Battery capacity	3.1 Ah	---
Power consumption of mains-powered version	---	250 W
Eccentric motion speed	6000–10,000 rpm	6000–12,000 rpm
Sanding stroke	2 mm	2 mm
Angle adjustment	43–92°	43–92°
Edge height	5–60 mm	5–60 mm
Replaceable sanding pad diameter	125 mm	125 mm
Dust extraction connection diameter	27 mm	27 mm
Weight with lithium-ion battery	1.4 kg	---
Weight of mains-powered version	---	1.2 kg

Image preview



Image: Festool_Sanding_Know-How_01.jpg
Efficient and healthy sanding is increasingly important – here, the new PLANEX LHS 2 long-reach sander



Images for BOX 1

Image: Festool_Sanding_Know-How_02.jpg
Thanks to its adjustable suction, the new PLANEX supports its own weight when sanding walls and ceilings



Image: Festool_Sanding_Know-How_03.jpg
LED light ring makes any unevenness within a 50 cm radius around the sanding head visible



Image: Festool_Sanding_Know-How_04.jpg
Easy switching thanks to adjustable suction on walls and ceilings



Image: Festool_Sanding_Know-How_05.jpg
Surfaces can be easily evaluated using a surface control light (STL 450)



Images for BOX 2:
Sanding basics
Sanding motions 101

Image: Festool_Sanding_Know-How_06.jpg
Linear sanding motion – example machine Duplex LS 130



Image: Festool_Sanding_Know-How_07.jpg
Eccentric sanding motion – example machine DTS 400 delta sander



Image: Festool_Sanding_Know-How_08.jpg
Eccentric rotation – example machine ETS EC 150



Image: Festool_Sanding_Know-How_09.jpg
Forced eccentric rotation – example machine ROTEX RO 90 geared eccentric sander



Image: Festool_Sanding_Know-How_10.jpg
Rotation – example machine RAS 180



Image: Festool_Sanding_Know-How_11.jpg
You can reach easily into all corners with a DTS delta sander (also available in a cordless version with the DTSC)



Image: Festool_Sanding_Know-How_12.jpg
Clean and clearly organised: In the abrasive Systainer



Image: Festool_Sanding_Know-How_13.jpg
Preparation of historic doors on-site is common practice



Image: Festool_Sanding_Know-How_14.jpg
Painter and application engineer at Festool

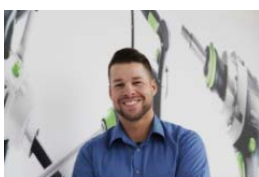


Image: Festool_Sanding_Know-How_15.jpg
Master painter and application engineer at Festool



Image for BOX 3: Newly developed

Image: Festool_Sanding_Know-How_16.jpg
The new long-reach sander



Image: Festool_Sanding_Know-How_17.jpg
Philipp Stahl recommends the DUPLEX linear sander for every profile



Image: Festool_Sanding_Know-How_18.jpg
The ETS EC 150 eccentric sander and GRANAT abrasive with grit P240 to P500 is suitable for intermediate sanding



Image: Festool_Sanding_Know-How_19.jpg
If necessary, hard-to-reach areas on profile grooves and transitions can be resanded using the extremely adaptable abrasive sponge



Image for BOX 4: Check list

Image: Festool_Sanding_Know-How_20.jpg
The new long-reach sander



Image: Festool_Sanding_Know-How_21.jpg
 ROTEX RO 90: Optimal for a high material removal capacity on small surfaces with angles, corners and edges



Image: Festool_Sanding_Know-How_22.jpg
 The DUPLEX LS 130 linear sander comes with various sanding pads and a DIY construction kit



Image: Festool_Sanding_Know-How_23.jpg
 You can create an individual sanding pad using the DIY construction kit.



Image: Festool_Sanding_Know-How_24.jpg
 For standard profiles, Festool offers various sanding pads with the DUPLEX linear sander

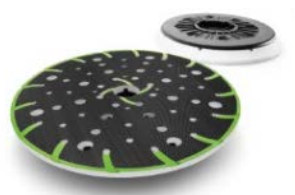


Image for BOX 6: INFO
Image: Festool_Sanding_Know-How_25.jpg
 Not all sanding pads are the same

Image source: Festool GmbH