

MIRKA

A close-up photograph showing a person's hand holding a yellow and black Mirka orbital sander. The sander is being used to sand a piece of light-colored wood. The sander has a yellow handle and a black body with the 'MIRKA' logo in yellow. The sanding disc is yellow and black with a brown abrasive surface. The background is blurred, showing a person's arm and a white shirt.

Effective wood sanding

KWH Mirka Ltd is part of the KWH Group and the biggest manufacturer of coated abrasives in Scandinavia. Through its innovative research and development program, Mirka has become a specialist in flexible abrasives, as well as revolutionary, patented abrasives which allow customers to enjoy a truly dust-free surface finishing process.

Mirka has invested heavily in product development and the company has expanded from a leading abrasive producer into a developer and manufacturer of complete sanding systems.

These innovations are further backed by the creation of ground-breaking new coatings production processes. The wide range includes advanced products designed to efficiently tackle specialised applications for both professionals and DIY, as well as products that have been specially developed for the most demanding operations.

The recently established Mirka Power Tools unit develops and manufactures advanced sanding and polishing machines providing outstanding benefits to users. These innovatively designed tools combined with a range of effective, high quality accessories, give Mirka's customers unmatched access to a complete sanding solution to meet their individual needs.

Mirka is a globally expanding company with subsidiaries located in Europe, North and South America and Asia. Head quarters and production are located in Finland. More than 90% of our products are exported and sold in more than 80 countries.

Mirka is the first company in its sector to obtain the three most important quality standards. The production process guarantees reliable quality by following the ISO 9001 quality assurance system. The OHSAS 18001 occupational health and safety management system ensures a high level of work safety. The ISO 14001 environmental management system proves that we consider the environment in all our activities.

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Products for wood sanding

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Machine and hand sanding

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Belt sanding









- Ultimax
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- Sica Coarse
- Calitex
- Stalit

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Narrow belt sanding

- Hiolit X
- Hiolit J
- Hiolit F
- Oraflex

Symbols

 Disc	 Sheet	 Wide belt	 Narrow belt
 Abranet disc	 Abranet strip	 Roll	 Pad

Abranet®

Abranet® HD

ABRANET® AND ABRANET® HD
 The range of innovative abrasives that use Mirka's revolutionary and patented 'Net Sanding' construction is continuously being expanded as new products and accessories are added to provide effective solutions to changing market needs.

BENEFITS: Abranet combines high performance and a longer lifespan than traditional abrasives, making it a cost effective solution in a vast range of applications. It is user-friendly whether being used by machine or by hand and its true dust-free sanding characteristics result in a cleaner work environment, as well as a better surface finish.

APPLICATION: Sanding of both soft and hard wood, intermediate sanding of paint and lacquer, sanding of putty and filler.

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin
Backing	Polyamide fabric
Coating	Closed
Colour	Brownish
Grit range	P80-P180, P240, P320-P1000



BENEFITS: Abranet HD was specifically developed to achieve outstanding results on the most challenging applications. It delivers optimum performance and superior stock removal, while its strong construction gives it exceptional resistance to edge wear that allows it to retain its high sanding efficiency for far longer, especially in demanding situations.

APPLICATION: General use for high stock removal with minimal clogging on wood and old paint. Abranet HD is the ideal choice where conventional abrasives fail!

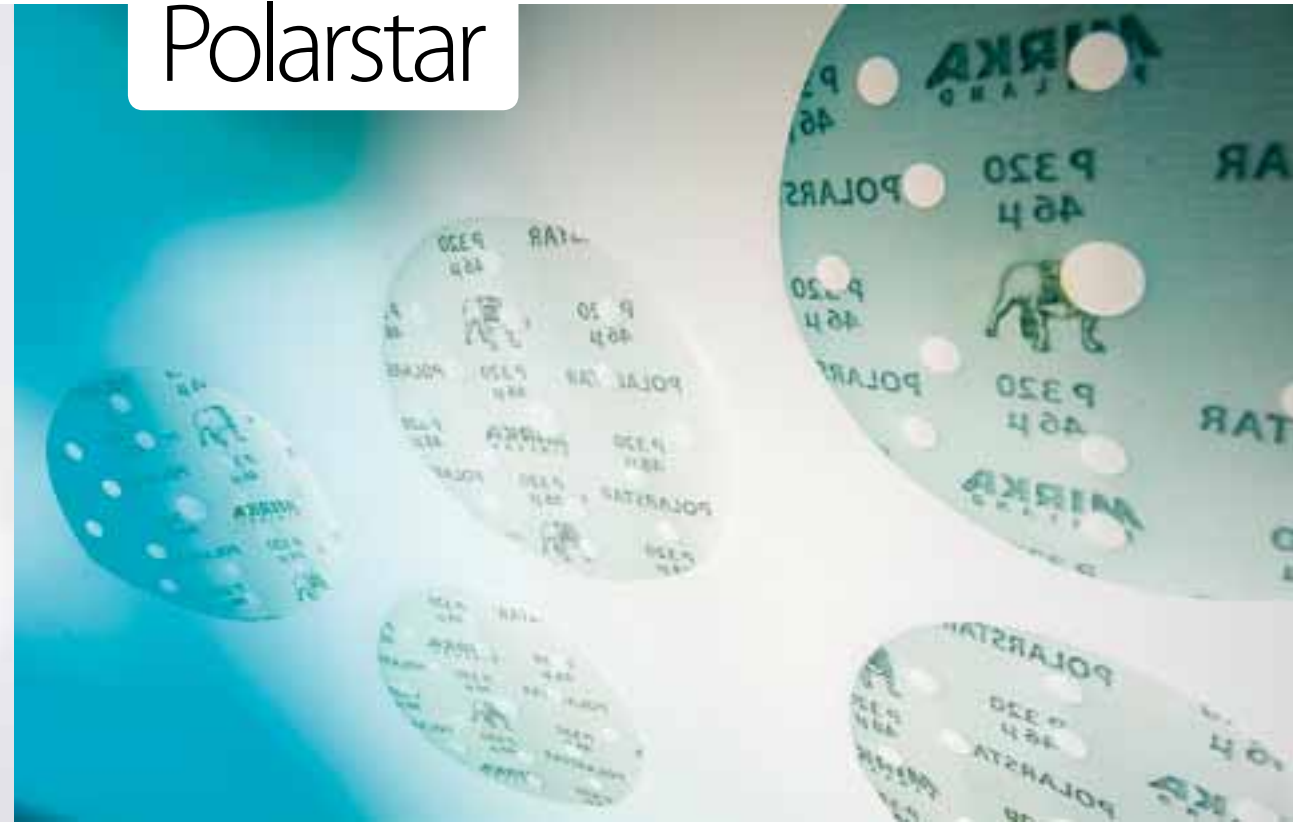
Technical specifications	
Grain	Special aluminium oxide grain
Bonding	Resin over resin
Backing	Nylon mesh
Coating	Semi-open
Colour	Brownish
Grit range	P40, P60, P80, P120-P180



Abralon®



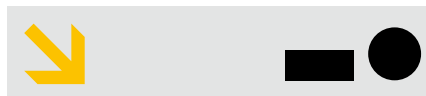
Polarstar



BENEFITS: This multifunctional sanding material features a unique, three-layer flexible construction that allows it to create an ultra-fine surface finish on flat and profiled surfaces. The flexible weave construction also makes it suitable for both dry and wet sanding, either by machine or by hand.

APPLICATION: Suitable for wet sanding of high gloss paints and lacquers prior to polishing.

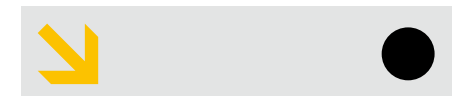
Technical specifications	
Grain	Silicon carbide
Bonding	Special resin
Backing	Knitted fabric on foam
Coating	Special Abralon® method
Colour	Grey
Grit range	180, 360, 500, 600, 1000, 2000, 3000, 4000



BENEFITS: The polyester film backing material gives Polarstar a more flexible and much smoother abrasive surface, compared to conventional paper backed abrasives. This allows it to quickly produce a fine, consistent surface finish and the stearate coating ensures superb durability due to an excellent resistance to clogging. It is also manufactured using an environmentally friendly, solvent-free coating.

APPLICATION: Suitable for wet and dry sanding of high gloss paints and lacquers.

Technical specifications	
Grain	Aluminium oxide P320–P600 Silicon carbide P800–P1500
Bonding	Resin over resin
Backing	Polyester film
Coating	Semi-open
Colour	Green / white
Grit range	P320–P1500



Mirlon



BENEFITS: Thanks to its special structure, Mirlon is a highly flexible, three-dimensional, non-woven abrasive that's easy to use on profiled and flat surfaces to produce an excellent surface finish. In particular, it is ideal for creating an excellent base for the next lacquer layer.

APPLICATION: Fine sanding of wood, paint and lacquers by hand or machine.

Technical specifications	
Grain	Aluminium oxide (GP, VF) Silicon carbide (UF, MF)
Bonding	Resin
Backing	Non-woven
Coating	Three-dimensional
Colour	Green (GP), red (VF), dark grey (UF), brownish (MF)
Grit range	320 (GP), 360 (VF), 1500 (UF), 2000 (MF)



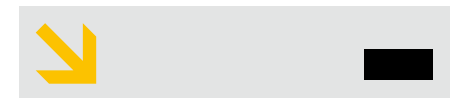
Mirlon Total



BENEFITS: Developed using Mirka's innovative Total Coating™ Technology, Mirlon Total has a flexible structure which makes it ideal for sanding profiles and difficult to reach areas by hand. Thanks to its open structure and Total Coating™ Technology it rapidly produces a fine surface finish.

APPLICATION: Fine sanding of wood, paint and lacquers by hand.

Technical specifications	
Grain	Aluminium oxide (VF) Silicon carbide (UF, MF)
Bonding	Resin
Backing	Non-woven
Coating	Three-dimensional Total Coating
Colour	Red (VF), grey (UF), beige (MF)
Grit range	360 (VF), 1500 (UF), 2500 (MF)



Coarse Cut



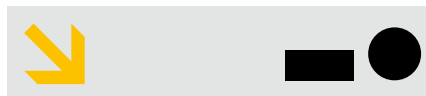
Ultimax



BENEFITS: A specially reinforced backing material and Mirka's Progressive Bond™ dust binding technology, make Coarse Cut ideal for challenging sanding applications. Features include high stock removal, excellent edge wear resistance, superior grain adhesion and minimal clogging.

APPLICATION: Coarse sanding of both soft and hard wood.

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin, Progressive Bond™
Backing	Special reinforced F-paper
Coating	Semi-open
Colour	Maroon
Grit range	P36–P40, P60–P150



BENEFITS: Manufactured using Mirka's 'Selective Coating™ Technology', Ultimax features a series of tiny cavities designed into the abrasive material which efficiently and effectively prevents clogging. In addition, the extra hardened aluminium abrasive grains ensure a longer lifespan and reduced material usage per job. The result is maximum performance and efficiency along with minimised cost.

APPLICATION: Recommended for hardwood surfaces.

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin
Backing	Antistatic F-paper
Coating	Closed with Selective Coating™
Colour	Brown
Grit range	Belts: P40, P60–P180, P240–P320 Velcro discs: P40, P60–P180, P240, P320



Goldflex-Soft



BENEFITS: With its soft, flexible characteristics, Goldflex-Soft was developed for hand sanding profiled surfaces and irregular, difficult-to-reach details. The special stearate coating prevents clogging and the foam base is 'grip friendly' and applies pressure evenly to reduce the risk of producing 'finger marks' on the surface.

APPLICATION: Fine sanding of wood and intermediate sanding of paint and lacquers.

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin
Backing	A-weight latex paper, PE-foam
Coating	Semi-open
Colour	Gold
Grit range	P150-P320, P400-P1000



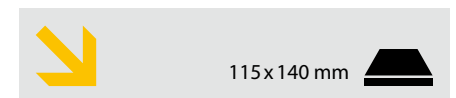
Soft sanding pad



BENEFITS: The Soft Sanding Pad is ideal for sanding profiled and flat surfaces by hand. Its soft backing material applies even pressure which reduces the risk of producing 'finger marks' or sanding through paint. It is suitable for use in both wet and dry modes.

APPLICATION: For sanding wood, fillers, paints and lacquers by hand.

Technical specifications		
Grit range	Medium	60
	Fine	120
	Super Fine	220
	Ultra Fine	400
	Micro Fine	600





Hand pad

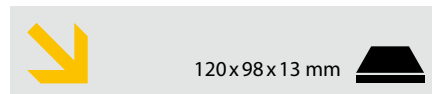


Hand pad

BENEFITS: Designed for sanding profiled and contoured surfaces by hand, the Sanding Sponge features a soft and flexible construction which makes it ideal for hard to reach areas and edges. It is suitable for use in both wet and dry modes.

APPLICATION: For sanding of wood, fillers, paints and lacquers by hand.

Technical specifications		
Grit range	Coarse/Coarse	36/36
	Medium/Medium	60/60
	Medium/Fine	60/100
	Fine/Fine	100/100
	Super fine/Super fine	180/180

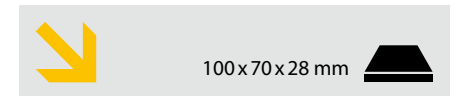


120x98x13 mm

BENEFITS: The four sided Sanding Sponge (it has abrasive material on four sides) has the significant advantage of being able to sand hard to reach inside edges and profiles, as well as flat surfaces. It is suitable for use in both wet and dry modes.

APPLICATION: For sanding of wood, fillers, paints and lacquers by hand.

Technical specifications		
Grit range	Coarse/Coarse	36/36
	Medium/Medium	60/60
	Medium/Fine	60/100
	Fine/Fine	100/100



100x70x28 mm

Gold



Q. Silver



BENEFITS: This durable, all-round sanding material is well suited to a wide variety of sanding applications in the wood process. It features a strong and flexible backing material which makes it ideal for hand and machine sanding and a stearate coating that minimises clogging and maximises its lifespan.

APPLICATION: For sanding of soft and hard wood, fillers, paints and lacquers by hand or by machine.

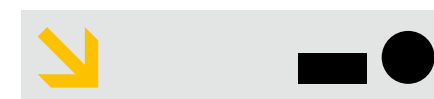
Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin, Progressive Bond™
Backing	D-weight latex paper P80–P150 C-weight latex paper P180–P800
Coating	Semi-open
Colour	Gold
Grit range	P80–P800



BENEFITS: Developed specially to tackle the more demanding surfaces in the wood industry, Q.silver features extra hardened aluminium oxide grains to produce excellent cut, especially on harder wood types, paints and lacquers. In addition, a stearate coating minimises dust loading and maximises product lifespan.

APPLICATION: For sanding of soft and hard wood, fillers, paints and lacquers by machine or by hand.

Technical specifications	
Grain	Aluminium oxide P80–P500 Silicon carbide 600–1500
Bonding	Resin over resin
Backing	D-paper P80–P150, C-paper P180–P500, B-paper 600–1500
Coating	Semi-open
Colour	Blueish
Grit range	P80–P320, P400–P500, 600–1500



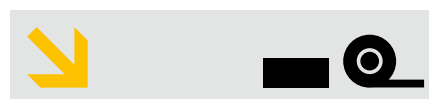
Carat Flex



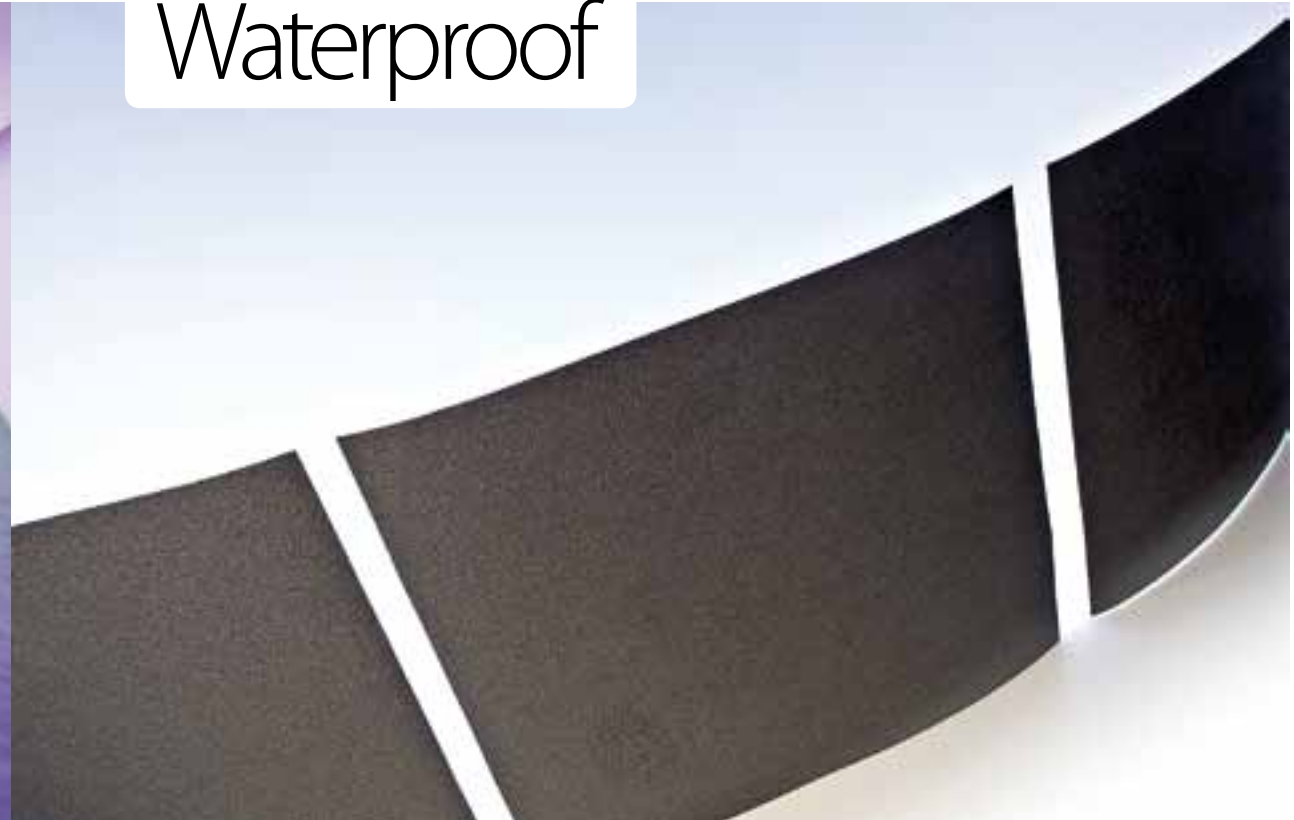
BENEFITS: This stearate coated abrasive for dry sanding applications features fine stock removal, a uniform scratch pattern, a long lifespan and extremely good grain adherence. The backing consists of a flexible, impregnated latex paper which is ideal for profile sanding.

APPLICATION: For sanding of wood, sealers, paint and lacquers by hand.

Technical specifications	
Grain	Silicon carbide
Bonding	Resin over resin, Progressive Bond™
Backing	B-paper P80–P120 A-paper P150–P400
Coating	Semi-open
Colour	Grey
Grit range	P80–P320, P400



Waterproof



BENEFITS: WPF is ideal for mattening of paints and lacquers prior to the final top coat. The product is also well suited for fixing defects in lacquers or sanding away dirt layers. The use of a sanding block is recommended, in order to obtain a smooth surface with a smooth sanding pattern.

APPLICATION: For wet sanding of paints and lacquers.

Technical specifications	
Grain	Aluminium oxide P80–P360 Silicon carbide P400–P2000
Bonding	Resin over resin
Backing	C-weight paper P80–P120 B-weight paper P150–P2000
Coating	Closed
Colour	Black
Grit range	P80–P2000



Ultimax

BENEFITS: Manufactured using Mirka's 'Selective Coating™ Technology', Ultimax features a series of tiny cavities designed into the abrasive material which efficiently and effectively prevent clogging. In addition, the extra hardened aluminium abrasive grains ensure a longer lifespan and reduced material usage per job. The result is maximum performance and efficiency along with minimised cost.

APPLICATION: Recommended for hardwood surfaces.

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin
Backing	Antistatic F-paper
Coating	Closed with Selective Coating™
Colour	Brown
Grit range	Belts: P40, P60–P180, P240–P320 Velcro discs: P40, P60–P180, P240, P320

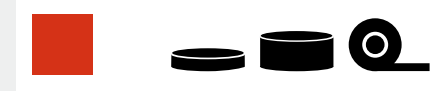


Avomax Plus

BENEFITS: The extra open abrasive coating and aluminium oxide grains make Avomax Plus ideally suited for the sanding of soft and resinous materials. It is a high quality, long lasting and cost effective product that delivers excellent performance even when used on materials that clog easily.

APPLICATION: For soft and resinous wood types such as pine.

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin
Backing	T-paper P40, P60, F-Paper P80–P320, antistatic paper
Coating	Open
Colour	Maroon
Grit range	P40, P60–P240, P320



Unimax

BENEFITS: A semi-open abrasive coating makes Unimax suitable for sanding of all types of wood. The aluminium oxide grains produce efficient cutting on both soft and hard wood, while the anti-static properties make it dust repellent. This reduces the belt dust load and minimises clogging which helps the machine stay cleaner and improves work safety while increasing belt lifespan.

APPLICATION: Recommended for both soft and hard wood types.

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin, antistatic
Backing	Antistatic F-paper
Coating	Semi-open
Colour	Black
Grit range	P80–P220



Sica Open

BENEFITS: The ideal choice for efficiently creating a fine surface finish on both soft and hard materials. The open coating and silicon carbide grains used on Sica Open prevent clogging and improve the lifespan of the product. It is also completely anti-static which limits dust loading and reduces dust during the sanding process.

APPLICATION: Recommended for soft and hard wood.

Technical specifications	
Grain	Silicon carbide
Bonding	Resin over resin, antistatic
Backing	Antistatic F-paper
Coating	Open
Colour	Black
Grit range	P80–P180



Jepuflex Plus

BENEFITS: This high quality, cost effective product features a closed coating that ensures it delivers aggressive performance and an efficient cut on hard wood types.

APPLICATION: Recommended for hard wood types, such as oak.

Technical specifications

Grain	Silicon carbide P36 Aluminium oxide P40–P400
Bonding	Resin over resin
Backing	T-paper P36–P60, F-paper P80–P400, antistatic paper
Coating	Closed
Colour	Maroon
Grit range	P36–320, P400



Sica Fine

BENEFITS: Developed for the fine sanding of paint and lacquer, Sica Fine features silicon carbide grains and a semi-open coating which makes it ideal for producing a high-quality surface finish prior to applying the final coat. In addition, its fully anti-static characteristics minimize the dust load.

APPLICATION: Recommended for intermediate and fine sanding of paint and lacquers.

Technical specifications

Grain	Silicon carbide
Bonding	Resin over resin, antistatic
Backing	Antistatic E-paper
Coating	Semi-open
Colour	Black
Grit range	P240–P320, P400–P800



Sica Closed

BENEFITS: Silicon carbide grains, in combination with a closed coating, ensure that Sica Closed performs efficiently on hard materials to create a smooth, fine surface finish. The fully anti-static properties minimise dust in the sanding process and contribute to the product's long lifespan.

APPLICATION: Recommended for hard wood and MDF.

Technical specifications

Grain	Silicon carbide
Bonding	Resin over resin, antistatic
Backing	Antistatic F-paper
Coating	Closed
Colour	Black
Grit range	P80–P220



Sica Fine Stearate

BENEFITS: Developed for the fine sanding of paint and lacquer, Sica Fine Stearate includes a stearate coating which minimises clogging to prolong its lifespan. In addition, its fully anti-static characteristics minimize the dust load, while the silicon carbide grains and semi-open coating make this product ideal for producing a high-quality surface finish prior to applying the final coat.

APPLICATION: Recommended for intermediate and fine sanding of paint and lacquers.

Technical specifications

Grain	Silicon carbide
Bonding	Stearate coated resin over resin, antistatic
Backing	Antistatic E-paper
Coating	Semi-open
Colour	Grey
Grit range	P240–P320, P400–P800



Sica Coarse

BENEFITS: Sica Coarse is ideal for coarse sanding and calibration sanding of hard materials. It features silicon carbide grains, in combination with an open coating, to provide long lasting performance on tough sanding applications. In addition, the product's anti-static characteristics minimise dust load and help prevent clogging.

APPLICATION: Recommended for coarse sanding and calibration of hard wood and MDF.

Technical specifications

Grain	Silicon carbide
Bonding	Resin over resin, antistatic
Backing	Antistatic F-paper
Coating	Open
Colour	Black
Grit range	P40-P60



Calitex

BENEFITS: This is a very strong and durable product designed for tough sanding applications, particularly calibration sanding and other applications where a large amount of material needs to be removed. The polyester cloth backing and open coating help it maintain its shape and achieve a long lifespan.

APPLICATION: Recommended for rough sanding and calibration of soft wood types.

Technical specifications

Grain	Silicon carbide P16-P24 Aluminium oxide P36-P80
Bonding	Resin over resin
Backing	Polyester cloth
Coating	Semi-open
Colour	Maroon
Grit range	P16-P40, P60, P80



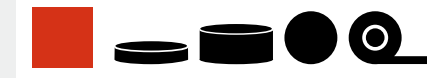
Stalit

BENEFITS: This is a tough sanding material specially developed for demanding applications. It features high durability, stability and resistance to wear and tear thanks to the strong polyester backing. It is particularly suited to applications such as calibration sanding where the removal of large amounts of material is required.

APPLICATION: Recommended for rough sanding and calibration of hard wood types.

Technical specifications

Grain	Aluminium oxide P40-P180, P240
Bonding	Resin over resin
Backing	Polyester cloth
Coating	Closed
Colour	Maroon
Grit range	P40, P60-P180, P240



Hiolit X

BENEFITS: The stiff cotton-cloth backing ensures this is a strong product that is ideally suited to challenging sanding operations. It features excellent edge wear resistance, which extends its lifespan, and aluminium oxide grains that produce efficient cutting properties on various wood types.

APPLICATION: Recommended for soft and hard wood where product stiffness is important.

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin
Backing	X-weight cotton cloth
Coating	Closed
Colour	Maroon
Grit range	P36–P180, P240



Hiolit F

BENEFITS: Hiolit F is a flexible and durable sanding material that is particularly effective for sanding profiles and other contoured surfaces where flexibility is required. It offers efficient cutting properties on a variety of wood types and produces a high quality surface finish.

APPLICATION: Recommended for edge and profile sanding applications where high flexibility is required

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin
Backing	Flexible F-cotton cloth
Coating	Closed
Colour	Maroon
Grit range	P80–P320, P400 Hiolit F P180, P240, P320 Hiolit F Stearate



Hiolit J

BENEFITS: Suitable for a variety of wood sanding applications, Hiolit J features a strong, durable backing material that delivers excellent edge wear, as well as flexibility. The aluminium oxide grains ensure it produces efficient cutting properties on various wood types.

APPLICATION: Recommended for edge and profile sanding applications

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin
Backing	J-weight cotton cloth
Coating	Closed
Colour	Maroon
Grit range	P60–P240, P320, P400



Oraflex

BENEFITS: Oraflex is an ultra-flexible sanding material that is ideally suited to producing a high quality surface finish on all kinds of profile sanding tasks. Its soft cotton cloth construction makes it possible to sand even difficult to reach places.

APPLICATION: Recommended for edge and profile sanding applications where ultra high flexibility is required.

Technical specifications	
Grain	Aluminium oxide
Bonding	Resin over resin
Backing	Extra flexible F-cloth
Coating	Semi-open
Colour	Maroon
Grit range	P80–P180, P240, P320





Guide for effective wood sanding



Effective wood sanding

Achieving the desired final result with any surface treatment is affected by a wide variety of factors. For example, the choice of sanding material plays a vital part in the overall process.

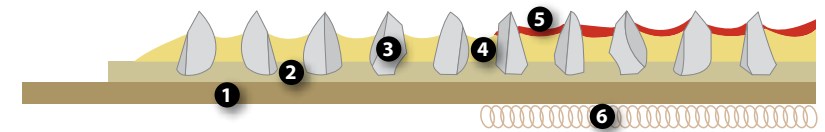
By choosing the correct type of sanding material and handling it correctly, you can ensure that you achieve an optimal sanding result, as well as the best possible lifespan for the sanding material itself.

The aim of this guide is to outline the construction of various sanding materials and to highlight the differences between products in an effort to help you achieve the easiest and most effective sanding procedure for each application.

When sanding is performed correctly, it will ensure:

- an even, smooth surface finish
- an accurate thickness and flatness
- minimal problems due to fibre rising
- a better result due to less dust on the surface
- cost savings, both on sanding products, as well as coatings and lacquers

Sanding material construction



1. Backing 2. Make coat 3. Grains 4. Size coat 5. Supersize 6. Fastening system

Backing material

The backing material not only carries the abrasive layers, it must also transfer the sanding power through to the surface. This means that larger abrasive grains demand more power and, therefore, also need a stronger backing material. For example, a backing material made of cloth-woven thread is often stronger and more stable than a backing material made of paper. Cloth can be either rigid or flexible depending on the construction and, nowadays, there are also strong paper backings specially developed for challenging sanding applications.

Cloth backings

Type	Weight	Application	Example product
F (JJ)	Flexible cotton cloth	Profile sanding	Hiolit F/Oraflex
J	Soft cotton cloth	Edge sanding	Hiolit J
X	Stiff cotton cloth	Coarse sanding	Hiolit X
PES	Polyester cloth	Extra coarse sanding	Stalit, Calitex

When sanding between coats or around profiles, it is important to use a material that is both light and has a flexible backing. Flexibility enables the sanding material to follow edges and profiles, while the light paper provides a smooth surface for the abrasive grains which, in turn, results in a finer surface finish. For paper, the weight of the backing material is in direct proportion to its strength and stiffness.

Paper backings

Type	Weight	Application	Example product
A-paper	90 g/m ²	Manual profile sanding	Gold Flex
B-paper	110 g/m ²	Manual or light machine sanding	Caratflex P80-120
C-paper	125 g/m ²	Machine disc sanding	Q.Silver P180->
D-paper	150-180 g/m ²	Coarse disc sanding	Deflex
E-paper	220-250 g/m ²	Intermediate belt sanding	Sica Fine
F-paper	270 g/m ²	Belt sanding, coarse disc sanding	Jepuflex Plus P80-P400 Avomax Plus P80-P320 Ultimax

An anti-static backing paper is used for wide belt sanding applications where it helps to keep the machine and the sanding units clean of dust.

When a superior surface finish is demanded, film backing can provide a good alternative. The advantage of a film backing is the same as for premium light paper backings – it provides a very even surface for the abrasive grains.

For non-conventional products there are unique backing materials. For example, the revolutionary material found on Mirka's family of Net Sanding products which enables dust-free sanding and features integrated loops for easy fastening. For other products a combination of backing materials is used, such as for Abralon and Goldflex-Soft. Coarse Cut is another example – it is made of a special paper backing reinforced with non-woven fibres.

Unique/Special backings

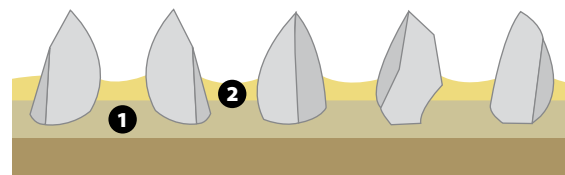
Type	Special features	Application	Example product
Net-backing	Dust-free	Suitable for most wood applications	Abranet
Non-woven backing	Three-dimensional structure	Sanding of profiles, fine sanding	Mirlon, Mirlon Total
Knitted fabric on foam	Foam layer for damp sanding	Superior finish sanding	Abralon
Paper on foam	Ergonomic structure	Manual profile sanding	Goldflex-Soft
Fiber reinforced paper	Strong and durable	Coarse sanding, edge sanding	Coarse Cut
Film backing	Even construction	Superior finish sanding	Polarstar

Make coat and size coat

The 'make coat' and 'size coat' are layers of resin. The make coat is the first layer on which the abrasive grains are applied, while the size coat is added to keep the grains firmly in place. All products in the wood sanding range are made with synthetic resins (R/R, resin over resin). The benefits of using synthetic resins, instead of natural glue, include greater product durability and more consistent quality.

A key factor in producing flexible abrasives is the amount of resin that is applied. A low amount of resin results in an aggressive product but with restricted working lifespan. Increasing the amount of resin increases the products working lifespan.

A constant research and development program has enabled Mirka to continually enhance the performance of its products. By optimising the construction of our products we have been able to provide innovative and cost effective solutions that meet the demanding requirements of modern customers.



1. Make coat 2. Size coat

Grains and coatings

When it comes to sanding wood the choice of abrasive grain is vital, both for the final result and to achieve the best possible lifespan from the product. Choosing a sharp grain will achieve a good cut, however if a finer surface finish is essential then another type of grain may be chosen. The grain selection process is also affected by the strength required.

Aluminium oxide

The most common abrasive grain for sanding wood is aluminium oxide – the grains are sharp and tough enough for most applications.

Silicon carbide

Compared to aluminium oxide, silicon carbide is more regular in shape and is not as brittle. The strength of these grains makes it perform well on hard surfaces. It would typically be used to sand materials such as oak and MDF, since fibre boards usually contain hard impurities. In addition, the shape of the silicon carbide grains produces a better surface finish compared to aluminium oxide, which makes them more suitable for intermediate sanding.



Aluminium oxide grains plough into soft wood types.



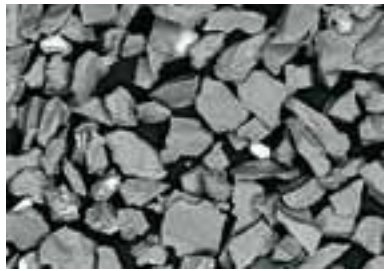
Silicon carbide grains cut through hard wood.



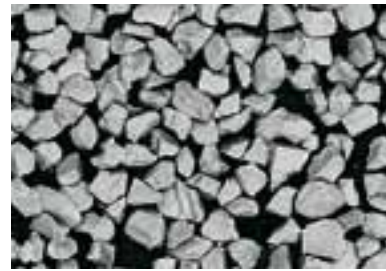
Wooden surface after sanding with aluminium oxide.



Wooden surface after sanding with silicon carbide.



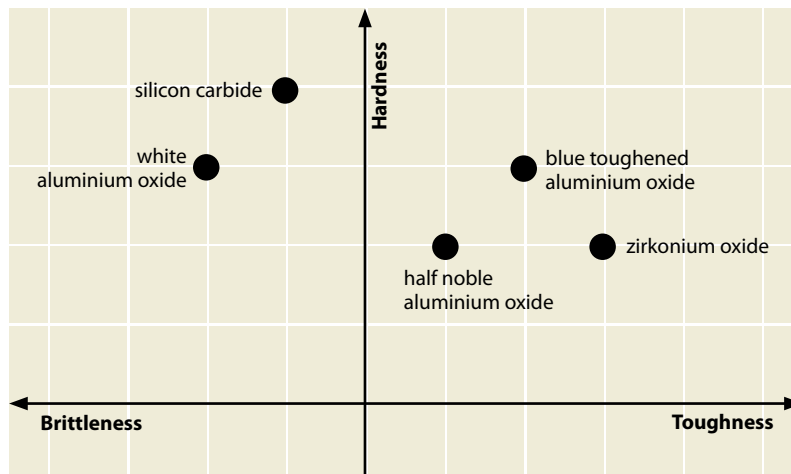
Aluminium oxide grains.



Silicon carbide grains.

Standard grain: Qualities and use

Grain	Use
Aluminium oxide	
• White	Paint, lacquer, wood
• Semi-friable	Allround (wood, light metals, all types of sanding machines)
• Hardened	Metal, hard wood and hard coatings
Silicon carbide	Paint, lacquer, polishing, MDF, veneer, hard wood
Zirkonium oxide	Demanding/aggressive metal sanding



It is important to note that both the surface structure and surface finish is affected by the choice of grains. This means that the colour of the treated surface might vary. The minerals used for Mirka products are synthetic, making them harder and more durable compared to natural sand.



Closed coating



Semi-open coating



Open coating

Amount of grains

The performance is greatly affected by the amount of abrasive grains used. For example, less grains results in an open coating which is highly resistant to clogging, whereas more grains produce a closed coating with good stock removal and a smooth surface finish.

Grit sizes

Different grit sizes are used for different purposes. Therefore, grit sizes are sorted during manufacture. Abrasive products can be made with different grit size standards such as FEPA, ANSI and GOST (See next page). Mirka uses grains according to the FEPA standards – Federation of European Producers of Abrasives. Products produced according to this standard are recognised by the 'P' mark – for example P80.

Grain size is determined by passing them through sieves that are measured in 'threads-per-inch'. When it comes to micro-grains, the threads-per-inch measurement is a theoretical amount.

Grit standards

FEPA		ANSI	GOST
FEPA P	Grain size (microns)		
Macro grain sizes			
P12	1815	12	160
P16	1324	16	125
P20	1000	20	100
P24	764	24	80
P30	642	30	63
P36	538	36	50
P40	425	40	40
P50	336	50	32
P60	269	60	25
P80	201	80	16
P100	162	100	12
P120	125	120	10
P150	100	150	8
P180	82	180	6
P220	68	220	5
Micro grain sizes			
P240	58,5 ± 2,0		M63
P280	52,2 ± 2,0	240	M50
P320	46,2 ± 1,5		M40
P360	40,5 ± 1,5	280	
P400	35,0 ± 1,5	320	M28
P500	30,2 ± 1,5		M20
P600	25,8 ± 1,0	360	M10
P800	21,8 ± 1,0	400	M7
P1000	18,3 ± 1,0	500	M5
P1200	15,3 ± 1,0	600	
P1500	12,6 ± 1,0	800	
P2000	10,3 ± 0,8	1000	
P2500	8,4 ± 0,5	1200	

Standards are not directly comparable to each other.

Additional treatments

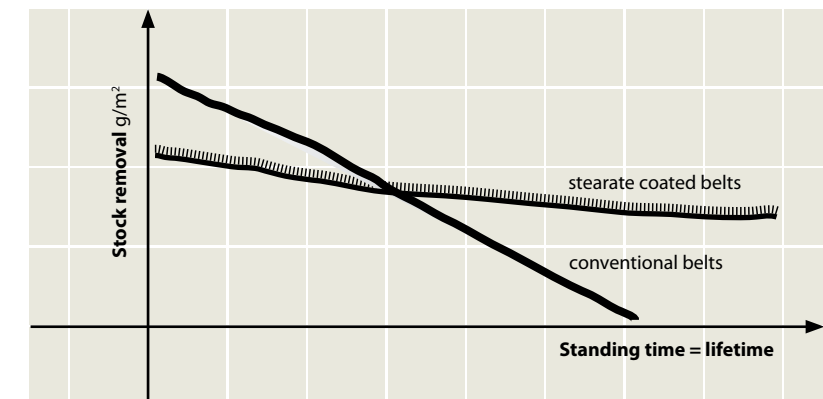
Stearate coating

Some products receive a special stearate coating treatment which is designed to prolong lifespan. Usually the stearate is based on zinc or calcium and is like small flakes applied on top of the abrasive.

Advantages:

- As the stearate coating is worn off during use it prevents clogging and gives the product a longer lifespan.
- The stearate reduces the initial cut and, therefore, produces a more consistent surface finish over the lifetime of the product.

Typical Mirka stearated products include Gold, Q.Silver, Abranet and Sice Fine Stearate. Stearated products achieve best results when sanding paint, lacquer and similar surfaces. For coarse sanding with high sanding pressure (for example, wood sanding with wide belts), stearate provides no advantage because it is very quickly worn off.



Anti-static treatment

Static electricity load can cause significant dust problems when sanding with a wide belt. However, using anti-static belts prevents dust problems and provides a better work environment. Indeed, reducing the static load of sanding machine belts brings a variety of positive benefits:

- a clean, dust-free sanding surface provides a better surface treatment result
- the machine stays cleaner which makes maintenance easier
- a low dust load ensures a better work environment

It is also worth noting that abrasives can have various degrees of antistatic effect. Some products only have an antistatic backing material, while others also include an antistatic bonding system. Dust problems can also be further prevented through the use of an efficient dust extraction system.



Fastening systems

Generally there are two types of fastening systems – 'PSA' (Pressure Sensitive Adhesives) and 'Grip'.

PSA uses an adhesive that is permanently tacky in dry form. With only light contact or hand pressure, PSA's adhere firmly to a variety of different surfaces which makes them ideally suited for fastening of discs and similar products to an even backing pad.

The Grip fastening system is a Velcro material attached to the backing of the abrasive. The Velcro loops on the abrasive backing joins with the Velcro hooks on the backing pad to fasten the two together. For example, Mirka's Net Sanding products are constructed with loops integrated into the backing material.



Sanding with portable machines and hand tools

User recommendations

Coarse wood sanding. When a lot of material needs to be removed P24–P80 is used and, typically, these products have a thick paper backing. However, there are also special products, such as Coarse Cut, with reinforced paper, or Abranet HD, with a high strength version of Mirka’s unique ‘net’ construction. These products are well suited to sanding using orbital machines with forced pad rotation (gear driven machines).

Normal bare wood sanding. P100–P220 is used to make the surface smooth and even and also to ensure good adhesion for paint or lacquer. Q.Silver and Abranet are typical products used for these purposes. Sanding with grits that are too fine will not give any advantages, normal paints and lacquers will cover the surface after sanded with grit P180 (even P150). Decreased adhesion, longer sanding time and higher consumption of discs and sanding material.

Intermediate sanding of paint or lacquer. Using P240–P400 is the typical step to make the surface even prior to final coating. A sanding grit that is too coarse will easily cut through the first coating, while if it is too fine it will not make the surface even and will be too time consuming. Flexible paper products with stearate are recommended, while Mirka’s Net products are also very well suited for this type of sanding. When you need to manually sand profiles there are several specialty products available, such as Mirlon Total, Goldflex-Soft and sanding sponges.

Sanding of top coat before polishing (P600–P4000). The initial step is to cut away defects and level up the surface. The following steps are only there to remove scratches in order to achieve a high gloss finish with polishing compounds. Recommended products are those with thin paper backing, Net Sanding technology or film backing. For example, Mirka Abralon is an excellent choice for this stage.



Normal bare wood sanding.



Intermediate sanding of paint or lacquer.



Sanding of top coat before polishing.

Net sanding

Advantages

Sanding dust is a major health problem in many industrial sectors since dust from paint, lacquers and hard wood can contain a lot of harmful particles. By developing its patented Net Sanding technology, Mirka has solved the dust problem with a simple, yet very clever solution. Now it is finally possible to use a true dust-free sanding system that minimises the risk of breathing in harmful sanding dust while delivering a whole host of added advantages.

Net Sanding technology virtually eliminates dust which gives the operator better control over the job and also improves the quality of the end finish by removing the risk of dust problems affecting the surface. Whether you are using sanding sheets or discs, another key Net Sanding advantage is that it has a longer lifespan than traditional sanding materials. Mirka's Net Sanding family is being continuously expanded with innovative new products and accessories.



Applications

Net Sanding products can be used for machine sanding with discs or strips, or they can be used by hand with a hand sanding block, and are well suited for most types of wood.

On soft wood types, the product lifespan is increased thanks to the unique 'Net' construction which prevents clogging. In addition, its aggressive characteristics also make it ideal for sanding hard wood. Net Sanding products are particularly effective when sanding MDF and similar materials where a substantial volume of dust is often created. Now, Net Sanding technology solves this problem by allowing dust to be efficiently removed from the work surface. Net Sanding products are also excellent for denibbing putty, paint and lacquer.

In many cases, it is recommended to use a grit size that is finer than you normally use because Net Sanding delivers more aggressive performance than conventional products.

Net sanding equipment and accessories

Mirka offers a wide selection of tools and accessories. The range consists of pneumatic and electric sanders designed to provide dust-free sanding when used together with Mirka's Net Sanding products. Dust-free sanding with Net Sanding products requires special equipment – a well-functioning dust extraction system must be available. It can be a central dust extraction system or a separate industrial vacuum cleaner.





Mirka sanding and polishing tools

Electric tools

COMPACT ELECTRIC RANDOM ORBITAL SANDER (CEROS)

Benefits: A unique design offers superior versatility and performance in a compact, lightweight package. Being electric makes it practical to use anywhere a power source is available – even in remote locations or where space is severely restricted. The optimized ergonomics ensure it is comfortable to grip, while the low profile design and very light weight allow easy manoeuvrability and greater control over the end finish. The ultra-reliable hermetic brushless motor is powerful enough to maintain a constant speed under load and it is also virtually silent in operation and cheap to run. With few wearing components, the need for maintenance is minimized and its lifespan is long.

Application: Ideal for a multitude of sanding tasks, from wooden surfaces to paints and lacquers. Best results are achieved by using Mirka Net Sanding products.

Models: Available in different models with different orbits.



POLISHERS (PS1437 AND PS1524)

Benefits: These are high quality electric polishers for professional users and come in two sizes to suit different applications. Due to its light weight and ergonomic design, the smaller polisher is very easy and convenient to use, while the bigger polisher provides a fast and efficient tool for tackling larger surfaces.

Application: The smaller polisher is suitable for small-scale polishing tasks and vertical surfaces, while the bigger polisher is ideal for larger surfaces.

Models: Available in two models: 150 mm PS1437 and 180 mm PS1524



DUST EXTRACTION UNIT

Benefits: Specifically designed for dust-free sanding, in combination with Mirka tools and accessories, this industrial vacuum cleaner is an effective, high quality tool. The automatic electric start saves the user time and the adjustable suction makes it ideal for a variety of different tasks.

Application: Recommended for all kinds of applications in both wet and dry modes.

Models: Industrial Vacuum Cleaner 915



Pneumatic tools

RANDOM ORBITAL SANDERS (ROS)

Benefits: Mirka random orbital sanders are effective and durable tools for the professional user. They are ergonomically designed machines which are built for maximum dust extraction even at a low suction power. Made from lightweight, hi-tech materials, they combine optimal strength and excellent user comfort.

Application: Recommended for various applications, from wood and filler, to primer and lacquer sanding. Best results are achieved by using Mirka Net Sanding products.

Models:

Available in various models with different pad sizes, orbits and dust systems.



TWO-HANDED RANDOM ORBITAL SANDERS (ROS2)

Benefits: These two-handed pneumatic sanders combine heavy duty performance and durability with low profile, light weight and ergonomic styling that makes them easy to handle and control. These tools are comfortable enough to use all day long to produce consistent, high quality results.

Application: Recommended for heavy duty applications together with Abranet Heavy Duty or Coarse Cut.

Models: Available in various models with different pad sizes and orbits.

ORBITAL SANDERS (OS)

Benefits: Mirka orbital sanders are effective and durable tools for professional sanding operations. Made from lightweight, hi-tech materials, they combine optimal strength and excellent user comfort. These orbital sanders were developed specially for use with Net Sanding products and their rectangular shape is ideal for sanding edges and hard-to-reach areas.



Application: Recommended for various applications, from wood and filler, to primer and lacquer sanding. Best results are achieved by using Mirka Net Sanding products.

Models: Available in different sizes.

RANDOM ORBITAL POLISHERS AND ROTARY POLISHER (ROP2 AND RP2)

Benefits: Powerful performance and a compact, streamlined design that allows operators to polish even difficult to reach areas, make Mirka's Two-Handed Polishers the fast way to achieve a glossy surface finish. There are two options to choose from depending on your needs.

Application: The ideal tool for tackling a wide variety of polishing tasks with minimum fuss and maximum efficiency. The best result will be achieved together with Mirka compounds and pads.

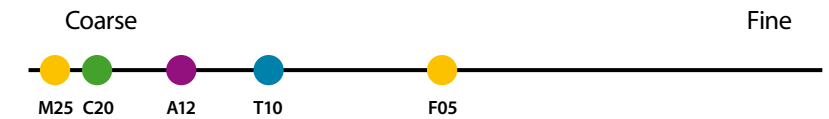
Models: Available in different sizes and orbits.



Polishing compounds



Compound grades





Belt sanding

In order to achieve the desired result and the best possible efficiency when sanding with a wide belt, many factors need to be taken into consideration. For example, the choice of sanding material is very important but other factors, such as the adjustment of sanding units, the choice of sanding speed and the handling, are also essential.

Optimising belt lifespan

The abrasive qualities of any sanding belt are reduced as it becomes slowly clogged while in use. After a sanding belt has been used for a certain period of time, clogging becomes so severe that the risk of causing geometric faults in the sanded material rapidly increases. Further clogging will make the sanded material overheated due to the high friction that occurs when greater pressure is applied to a clogged belt in order to continue achieving stock removal.

Overall sanding costs can be minimised simply by choosing the most suitable product for each sanding operation. That means:

- choosing the right type of grit
- choosing the right type of coating
- using the optimal grit sequence
- avoiding sanding with finer grits than necessary

The lifespan of the belt can be further increased by ensuring that the sanding equipment is correct and used properly:

- choose the right type of sanding machine for each sanding operation
- adjust the sanding machine correctly
- ensure the machine is properly maintained
- check that the dust extraction is adequate

Grit size and sequence

In general, the first sanding belt is used for stock removal, while the following belts are only used for creating an even surface finish. Typically, the first sanding unit consists of a drum made of materials such as steel or hard rubber. The drum, in combination with coarse grit (P36–P100) belts, is ideal for efficient stock removal.

When it comes to producing an even surface finish, sanding units that incorporate soft rubber drums or sanding pads are normally used. In these units the grit range varies from P120–P320.

For sanding between coats or intermediate sanding, grits P320–P800 are most commonly used along with a very soft rubber drum or a soft sanding pad.

When choosing a grit size the recommendation is to select belts that are only one step from each other in grit sizes. For example, P80–P120–P180 are appropriate steps, whereas P60–P120–P220 often results in problems with the surface finish and product lifespan.

Recommended grit size use

Grit size	Use
P24–P80	coarse sanding, calibration
P100–P320	medium sanding, wood sanding
P320–P1200	fine sanding, intermediate sanding



Stock removal per unit

With a three belt machine, the starting point for stock removal per unit can be divided according to the following:

- Station 1 ~ 60%
- Station 2 ~ 30%
- Station 3 ~ 10%

With a two belt machine, the division can be as follows:

- Station 1 ~ 75%
- Station 2 ~ 25%

A good way of controlling whether the adjustments are correct is to check how the belts are used in comparison to each other. If adjustments are made according to the requirements given by the grit sequence and machine, then the belts are used at the same rate.

Maximum removal

Contact drum unit			Sanding pad unit	
Grit	Removal (mm / inches)		Grit	Removal (mm / inches)
P36	Steel/hard rubber roller	< 1.00 / 0.04	P36	–
P40	Steel/hard rubber roller	< 0.80 / 0.03	P40	–
P60	Steel/hard rubber roller	< 0.60 / 0.02	P60	–
P80	Medium rubber roller	< 0.50 / 0.019	P80	< 0.30 / 0.012
P100	Medium rubber roller	< 0.30 / 0.012	P100	< 0.20 / 0.008
P120	Soft rubber roller	< 0.20 / 0.008	P120	< 0.15 / 0.006
P150	Soft rubber roller	< 0.10 / 0.004	P150	< 0.08 / 0.003
P180		–	P180	< 0.05 / 0.002
P220		–	P220	< 0.03 / 0.001
finer		–	finer	< 0.03 / 0.001

Belt sanding speed

The general rule is that higher belt speeds result in larger stock removal. A higher belt speed means that both friction heat and load increase on the belt which, in turn, reduces its lifespan. Different types of material require different sanding speeds.

Material and recommendation for sanding belt speed

Material	Lowest sanding speed	Highest sanding speed
Hard wood	15 m/s	24 m/s
MDF	15 m/s	21 m/s
Soft, resinous wood	12 m/s	18 m/s
Lacquer	3 m/s	15 m/s
Synthetic material	9 m/s	21 m/s
Veneer	18 m/s	27 m/s

The values indicate the sanding speed.

Belt joints

Belt joint performance is a key factor for sanding belts. The joints must be as strong as the actual sanding material and should not be too thick or too thin compared to the sanding material. The belt should also have the right shape and dimension.

Types of belt joints

A-joint



Mostly used for sanding belts made from paper, an A-joint is an overlapping joint without compensation on the sand side, e.g. without interruption in the coating. It produces a uniform sanding belt thickness, even across the joint, and results in an even sanding finish without chatter marks.

B-joint



The most common joint for sanding belts with cloth backing, the B-joint is an overlapping joint with compensation on the sand side. This means that the joint area is free of abrasive material which allows the cloth to overlap without the joint having to be thicker than the rest of the belt. The B-joint is also suitable for special paper products, such as Mirka's Ultimax.

T-joint



Typically used for small cloth belts that require strength and flexibility, a T-joint is cut through the sanding belt without an overlap and the joint is attached with tape on the backing side.

TS-joint



A TS-joint is similar to a T-joint but is different in the way the connecting ends are cut. By using a TS-joint the hinge effect can be avoided. This joint type is most suitable for belts in medium grit sizes and it is most common on cloth-backed belts, although TS-joints can also be found on paper-backed belts.

TT-joint



This is a special joint where the tape is applied on the sanding side making it suited to profile sanding with a sanding pad.

Wide belt storage

By simply following some basic recommendations on wide belt storage, you can ensure that the belts remain undamaged and maintain their full working potential.

- store belts in their unopened packages until they are to be used
- the belts can be hung horizontally prior to use in order to make handling easier
- the correct storage temperature is 15–25°C
- the relative humidity is recommended to be 35–60 per cent in order for the belts to maintain their shape
- wide belts should have even moisture over the whole width. Avoid keeping belts hanging close to a cold wall or a heating source. Do not expose the belts to direct sunlight



Problem solving

Typical problems when sanding with hand tools or by hand

Here we look at common problems in the sanding process when using hand tools or sanding by hand. It is essential to understand where a problem originates from in order to correct the process.

Potential problems

THE PRODUCT IS CLOGGING

- Check that the paint, lacquer or putty is properly cured.
- A stearated product is usually the best choice for paint or lacquer.
- Use machines with dust extraction and ensure the hole combination on the backing pad is compatible with the sanding product.
- Avoid sanding with grits that are too fine.

VISIBLE FINGER MARKS AFTER HAND SANDING

- Use a hand sanding tool when sanding plain surfaces.
- Use specialty products, such as Goldflex-Soft, for sanding profiled surfaces as they distribute the sanding pressure evenly.

VISIBLE SCRATCHES

- Avoid too big a step between grits.
- Silicon carbide products will usually give a better surface finish.
- Use a random orbital sander.

NOT ENOUGH STOCK REMOVAL

- Aluminium oxide products tend to have a better cut.
- Start with coarse grits and work towards finer grits.

DUST PROBLEMS

- Use Net Sanding products with suitable machines and accessories.

THE PRODUCT IS BREAKING UP

- Use a product with rigid backing material (e.g. Coarse Cut).
- Ensure the machine and sanding material match.
- A worn sanding pad often causes problems.

PROBLEMS WITH PROFILE SANDING

- Use a flexible sanding product (e.g. Caratflex).
- Use a product specially designed for sanding of profiles (e.g. Mirlon or Goldflex-Soft).
- Try an orbital sander instead of a random orbital sander.

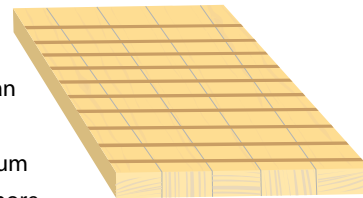
Typical problems with belt sanding

This section describes typical problems that might occur when using wide belts. It is essential to understand where a problem originates from in order to correct the process.

Potential problems

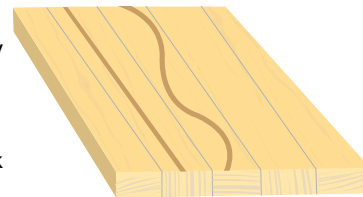
CHATTER MARKS IN CROSS DIRECTION

- Check the condition of the belt joint.
- Is the machine working as it should?
In particular, a malfunctioning drum can cause chatter marks.
- Wrong type of sanding unit? A hard drum with a short sanding contact patch is more likely to result in chatter marks, compared to a soft sanding pad.



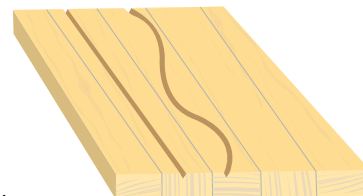
POSITIVE STRIPES (stripes coming out of the wood piece)

- Narrow stripes in a pattern following the belt oscillation? These are normally caused by sharp objects in the work piece which destroy the abrasive. Change the belt and examine the work pieces for sharp objects.
- Wide straight stripes? Typically a problem with sanding drums or pads. Clean the pad and have the drum calibrated.



NEGATIVE STRIPES

- Wide straight stripes? The most common problem is dust on the sanding pad. Clean the pad or, if necessary, change the graphite cloth.
- Narrow straight stripes? It is possible that small wood pieces or dust are stuck to the pressure shoe. Clean the machine.



BELT BREAKAGES: The belt is broken?

- Check the oscillation of the machine and clean inside the machine.
- Check the storage of the belts (see page 'Wide belt storage').
- Avoid too much stock removal. Avoid using clogged belts.
- Check the condition of the belt joint.

SHORT BELT LIFESPAN: Is the belt clogging?

- Avoid too much stock removal per sanding unit – check machine adjustments.
- Make sure you are using the correct product and grit sequence.
- Make sure the cleaning system and the dust extraction is operating correctly.
- Use the whole belt width when sanding.

UNEVEN SURFACE: The surface feels uneven?

- Steps too big in grit sequence.
- Stock removal with sanding unit which has a sanding contact that is too soft.

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