





# **Building Interior**

Abrasive solutions for painters, plasterers, carpenters and other professionals

# Abrasive solutions for true specialists

Wood substrates

**Visible concrete** 

Steel frames and lift doors

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**Solid surface materials** 

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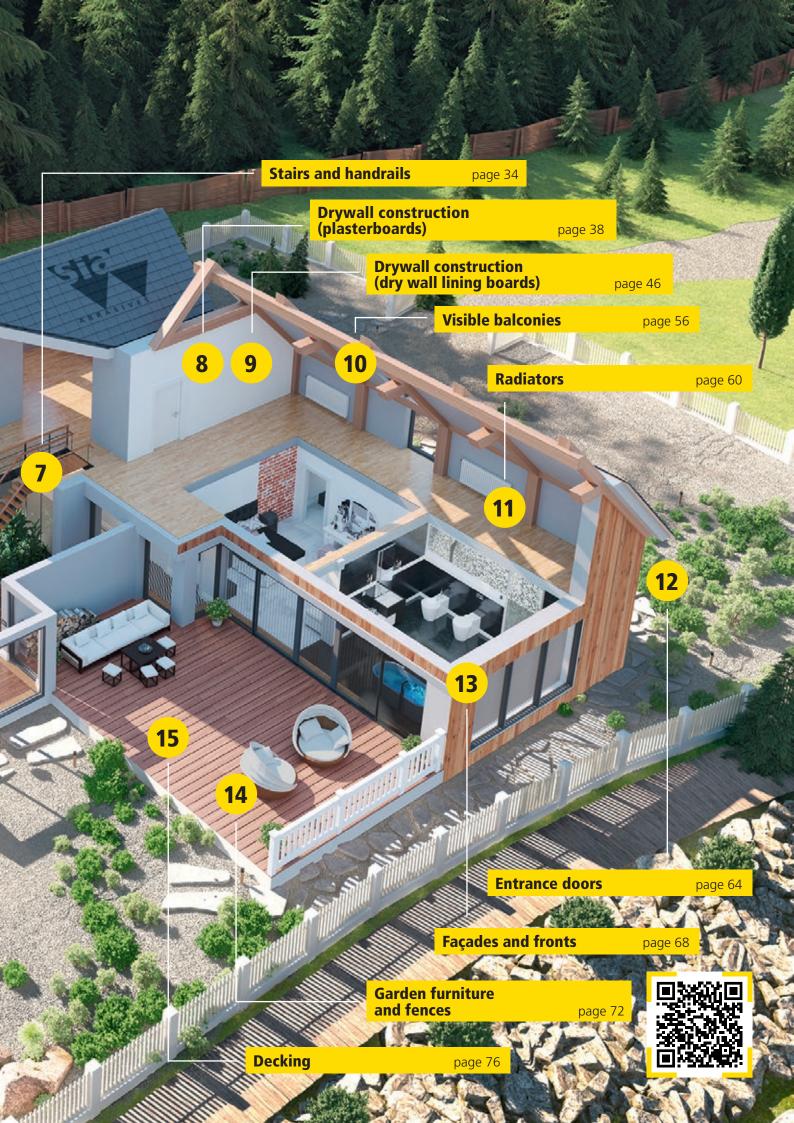
Parquet flooring

Windows

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### sia Abrasives – We are your abrasives specialists

We are passionate about professional abrasive solutions for industry and trades.

Our clearly defined abrasive processes for all materials and applications mean that we can always find the right approach to achieving the perfect surface finish.

As one of the world's largest manufacturers of high-quality abrasive products, we develop and produce abrasives with a wide variety of shapes, dimensions and specifications.

## **Your Key for a Perfect Surface**







# Solutions for professionals

Efficient and economical

- Abrasive solutions from sia Abrasives are used across a variety of industries.
- Comprehensive sanding process analyses result in fast and cost-saving applications.
- The productivity of the work process is the ultimate goal.



### **Professional partner**

Technically versed and experienced

- From professionals for professionals: Optimum consultation to help you achieve great sanding results.
- Our expert advisers have a lot of technical experience and will find the perfect abrasive solution for you.
- There for you, wherever you are. Represented globally in over 80 countries.



#### Top quality

Innovative technology leader

- The latest production methods and technologies guarantee the highest quality.
- Processes with ultrasonic monitoring ensure the continually high level of quality.
- Standardised testing methods guarantee the utmost product safety.



### Perfect surface finish

Finish by sia Abrasives

- A perfect surface finish offers protection, enhances design and aesthetic aspects or increases functionality.
- We support you in getting the best out of every surface.
- Your specifications are our goal.

# sia-abrasives.com



### **Experienced specialist**

Skilled and proven

in

- Abrasives are our core competence.
- We offer a full range of products for any sanding application.
- We are a manufacturer with more than 140 years of experience!

# Abrasive solutions for true specialists









### The perfect abrasive solution from page 8

Product descriptions

from page 82

**Product search** 

from page 92

# System solution Window renovation



- Cover all parts that you are not renovating
- Apply a light layer of bodyfiller to cracks and holes

Sanding off



Fully sand off any brittle / peeling paintKey the whole window frame



Manual sanding P80/P120 Sanding off P180 Keying

★ ★ 7900 sianet
★ ☆ 1960 siarexx
☆ ☆ 1902 siacraft



Machine sanding P80/P120 Sanding off P180 Keying



7900 sianet 1960 siarexx 1944 siaone



 Clean the surface thoroughly
 Apply a second coat according to the paint manufacturer's specifications

#### Expert tip:

Use a siasponge Combination Block for precise intermediate sanding.





#### **Expert tip:**

Use siafleece for soft and efficient intermediate sanding.









 Thoroughly clean the window
 Apply a first coat according to the paint manufacturer's specifications



Sand off wood fibres resulting from moisture in the paint



Manual sanding P240

7900 sianet
 7900 sianet
 1960 siarexx
 1902 siacraft



Machine sanding P240



7900 sianet 1960 siarexx 1944 siaone

### Window with a perfect surface finish





# The perfect abrasive solution

| B | Ø 125 mm                    |  |
|---|-----------------------------|--|
| B | 100 x 147 mm                |  |
|   | 230 x 280 mm 115 mm (width) |  |
|   | 152 x 229 mm Ø 125 mm       |  |
|   | 98 x 69 x 26 mm             |  |



| <b>Best</b><br>Top performance, surface quality and durability  | Better<br>High performance and surface quality   | Good<br>Proven performance and surface quality   |  |
|---|--|--|--|
| ****  | ★★★★☆  | ★★★☆☆  |  |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (multi-hole)  | 1944 siaone (9-hole)   |  |
| Art. no.         Grit           5869.5710.0080         80           5869.5710.0120         120           5869.5710.0180         180           5869.5710.0240         240  | Art. no.         Grit           7375.1406.0080         80           7375.1406.0120         120           7375.1406.0180         180           7375.1406.0240         240               | Art. no.         Grit           4569.9165.0080         80           4569.9165.0120         120           4569.9165.0180         180           4569.9165.0240         240 |  |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx   |  |  |
| Art. no.         Grit           0998.5363.0080         80           0998.5363.0120         120           0998.5363.0180         180           0998.5363.0240         240  | Art. no.         Grit           6318.5062.0080         80           6318.5062.0120         120           6318.5062.0180         180           6318.5062.0240         240               |  |  |
| 7900 sianet – Net-backed abrasive   | Art. no.         Grit           4097.5762.0080         80           4097.5762.0120         120           4097.5762.0180         180           4097.5762.0240         240               | Art. no.         Grit           2849.9871.0080         80           2849.9871.0120         120           2849.9871.0180         180           2849.9871.0240         240 |  |
| Art. no.Grit1635.2907.0080801635.2907.01201201635.2907.01801801635.2907.024024010 m   | Art. no.         Grit           0906.6878.0080         80           0906.6878.0120         120           0906.6878.0180         180           0906.6878.0240         240           5 m |  |  |
| Art. no.       Grit         4132.9840.6921       Image: Compare the second |  |  |  |
| Art. no.         Grit           0070.1255         medium           0070.1230         fine   |  |  |  |

## System solution Newly laid parquet floor





Machine sanding P40/P60

★ 2812 siaral★ 2920 siawood

2 Pre-sanding



Fill any cracks and wood faultsWhen dry, sand again across the grain

#### $\hfill\square$ Flatten all rough patches

- $\hfill\square$  Work along the grain
- Resand along the wall using the manual machine





- $\hfill\square$  Clean the surface thoroughly
- $\hfill\square$  Apply oil or varnish according to
- the manufacturer's instructions
- □ Important: Apply oil evenly



Depending on the varnish and wear, prepare for an optional second coat

- □ Observe the drying time according to the oil / paint manufacturer's instructions
- Sand off any protruding wood fibres with fleece



Machine sanding very fine

 $\star$   $\star$   $\star$   $\star$   $\star$  6120 siafleece

#### 6 Second coat of oil/ varnish



- Use slightly less oil / varnish than the 1st coat
   Oil: Rub off any remaining oil with
- Oil: Rub off any remaining oil with a cloth after 5 minutes



For a perfect finish, place a delta triangle (P220) on (very fine) fleece.



1960 siarexx





Availability of parquet products

- Sales via sia Abrasives specialist retailers in the following countries: Australia, China, Italy, the Netherlands, Switzerland and Singapore
- For sales via Bona specialist retailers, visit: www.bona.com



Machine sanding P80/P100

7 + 2812 siaral

 $\star$   $\star$   $\star$  2920 siawood



 $\hfill\square$  Finely sand the whole area  $\hfill\square$  Resand along the wall using the manual machine



### Parquet floor with a perfect surface finish

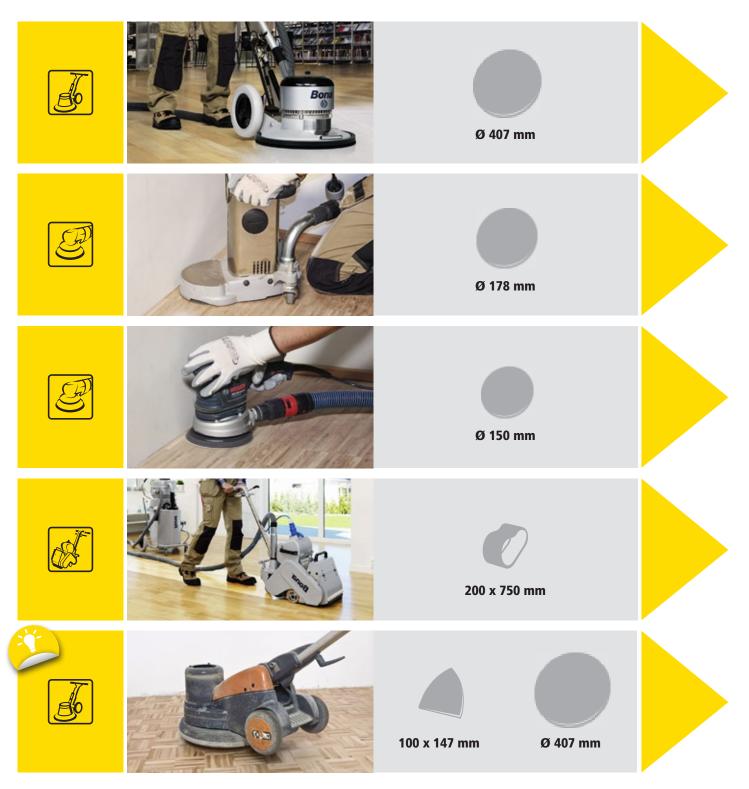




Products Newly laid parquet floor



# The perfect abrasive solution





Availability of parquet products

- Sales via sia Abrasives specialist retailers in the following countries: Australia, China, Italy, the Netherlands, Switzerland and Singapore
- For sales via Bona specialist retailers, visit: www.bona.com

| <b>Best</b><br>Top performance, surface quality and durability   |                                      | <b>Better</b><br>High performance and surface quality   | <b>Good</b><br>Proven performance and surface quality |
|--|--------------------------------------|---|---|
| ****   |                                      | ★★★★☆   | ★★★☆☆   |
| <b>1749 siaral</b><br>Art. no.<br>2690.6226.0120.01  | Grit<br>120                          |   |   |
| Art. no.           3587.8581.0040.01           3587.8581.0060.01           3587.8581.0080.01           3587.8581.000.01           3587.8581.0120.01                              | Grit<br>40<br>60<br>80<br>100<br>120 |   |   |
| Art. no.           2981.4558.0040.01           2981.4558.0060.01           2981.4558.0080.01           2981.4558.0080.01           2981.4558.0100.01           2981.4558.0120.01 | Grit<br>40<br>60<br>80<br>100<br>120 | Art. no.         Grit           7756.0796.0040         40           7756.0796.0060         60           7756.0796.0080         80           7756.0796.0100         100           7756.0796.0120         120 | ••••  |
| <b>2812 siaral</b><br>Art. no.<br>7271.6954.0040<br>7271.6954.0060<br>1173.7707.0080<br>8785.5450.0100   | Grit<br>40<br>60<br>80<br>100        | Art. no.         Grit           9598.5525.0040         40           9598.5525.0060         60           3500.5811.0080         80           1144.5673.0100         100                                      |   |
| <b>1960 siarexx</b><br>Art. no.<br>6318.5062.0320  | Grit<br>320                          |   |   |
| 6120 siafleece<br>Art. no.<br>0049.0168.6932 ve  | Grit<br>ery fine                     |   |   |

# System solution Visible concrete



 Cover the floor and surroundings
 Sand down any concrete seams until flush, using grinding discs or a diamond grinding disc

#### 2 Sanding off



□ Key the surface to remove any traces of parting agents



Machine sanding P100

7900
7 ☆ 7900

7900 sianet 1749 siaral

#### **Expert tip:**

If you plan to paint the surface, the concrete surface must be keyed to enable better adhesion. Alternatively, pretreat the surface with an etch primer.







 $\hfill\square$  For an extra fine surface, sand with fleece



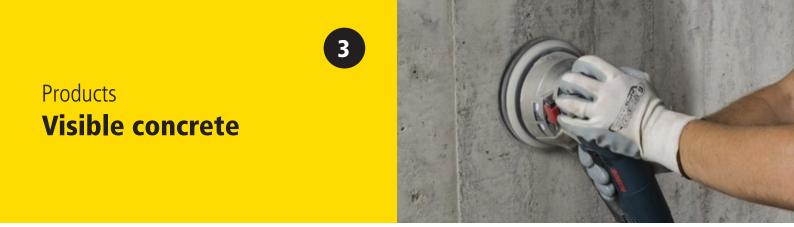




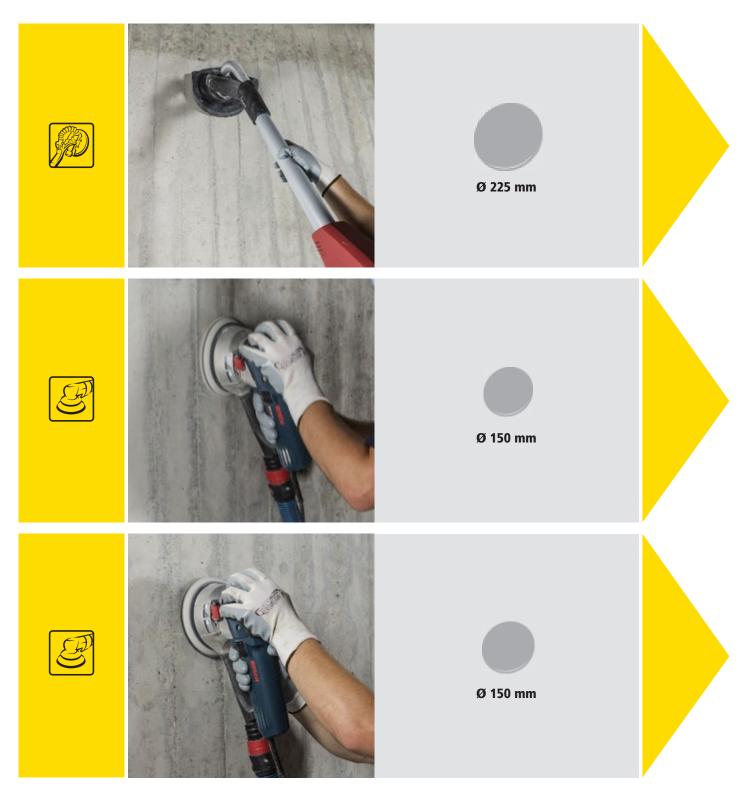
 $\Box$  To provide protection against stains (e.g. coffee or grease), the concrete can also be impregnated

# Visible concrete with a perfect surface finish





# The perfect abrasive solution





| <b>Best</b><br>Top performance, surface quality and durability  | Better<br>High performance and surface quality                             | Good<br>Proven performance and surface quality |
|---|--|--|
| ****  | ★★★★☆  | ★★★☆☆  |
| Art. no.         Grit           8023.0581.0100         100      | <b>1749 siaral</b> Art. no. Grit 7635.2076.0100.01 100                     |  |
| Art. no.         Grit           6397.0967.0100         100      | <b>1749 siaral</b> Art. no.       Grit         2981.4558.0100.05       100 |  |
| <b>6120 siafleece</b><br>Art. no. Grit<br>7866.2539.4721 medium |  |  |

#### System solution

# Smoothing and painting wooden surfaces with bodyfiller



- Cover all parts that you are not renovating
- □ Apply a light layer of bodyfiller to cracks and holes

#### 2 Basic sanding



- Flatten any significant uneven and filled sections
- $\hfill\square$  Then finely sand the whole surface



#### Manual sanding P120/P180

 ★ ★
 7900 sianet

 ★ ☆
 1960 siarexx

 ☆ ☆
 1902 siacraft



#### Machine sanding P120/P180



7900 sianet 1960 siarexx 1944 siaone



 Clean the surface thoroughly
 Apply a second coat according to the paint manufacturer's specifications

#### **Expert tip:**

Use a fleece for quick, soft intermediate sanding of surfaces and edges.



6120 siafleece







 Clean the surface thoroughly
 Apply a first coat according to the paint manufacturer's specifications

#### 4 Intermediate sanding



Sand off wood fibres resulting from moisture in the paint



Manual sanding P240

**Machine sanding** 

★★★7900 sianet★★★1960 siarexx★★★1902 siacraft





P240

7900 sianet 1960 siarexx 1944 siaone

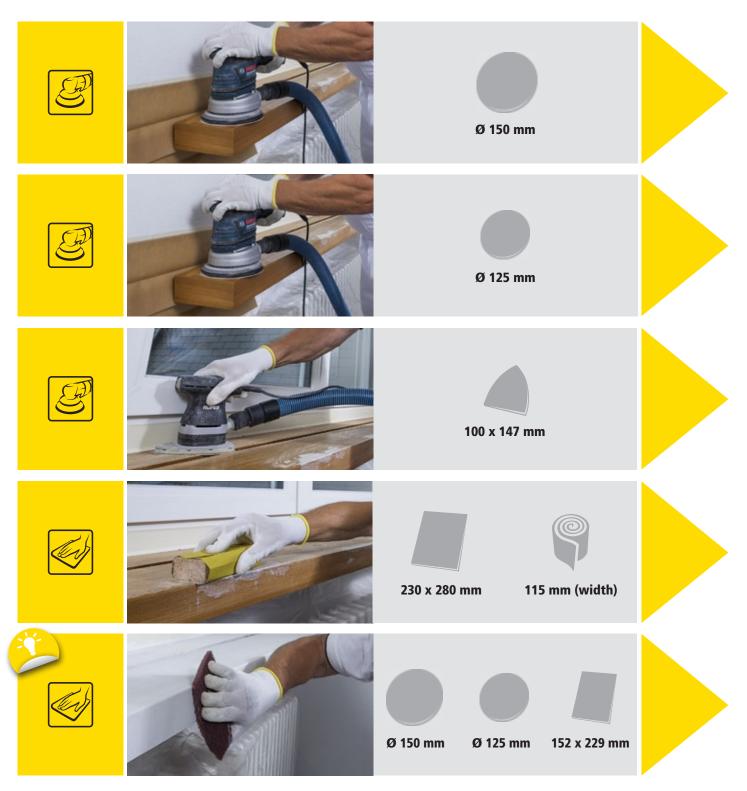
# Wooden substrate with a perfect surface finish



Products Smoothing and painting wooden surfaces with bodyfiller



# The perfect abrasive solution



Product description from p. 82



| Deat   | Detter   | Card   |
|--|--|--|
| Best<br>Top performance, surface quality and durability  | Better<br>High performance and surface quality   | Good<br>Proven performance and surface quality   |
| ****   | ★★★★☆  | ★★★☆☆  |
|  |  |  |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)  | 1944 siaone (15-hole)  |
| Art. no.         Grit           6397.0967.0120         120           6397.0967.0180         180           6397.0967.0240         240 | Art. no.         Grit           1762.1219.0120         120           1762.1219.0180         180           1762.1219.0240         240 | Art. no. Grit<br>7425.4595.0120 120<br>7425.4595.0180 180<br>7425.4595.0240 240  |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)  | 1944 siaone (9-hole)   |
| Art. no.         Grit           5869.5710.0120         120           5869.5710.0180         180           5869.5710.0240         240 | Art. no.         Grit           7375.1406.0120         120           7375.1406.0180         180           7375.1406.0240         240 | Art. no.         Grit           4569.9165.0120         120           4569.9165.0180         180           4569.9165.0240         240 |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx   |  |
| Art. no.         Grit           0998.5363.0120         120           0998.5363.0180         180           0998.5363.0240         240 | Art. no.         Grit           6318.5062.0120         120           6318.5062.0180         180           6318.5062.0240         240 |  |
|  | Art. no.         Grit           4097.5762.0120         120           4097.5762.0180         180           4097.5762.0240         240 | Art. no.         Grit           2849.9871.0120         120           2849.9871.0180         180           2849.9871.0240         240 |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx 💦 👘   |  |
| Art. no.         Grit           1635.2907.0120         120           1635.2907.0180         180           1635.2907.0240         240 | Art. no.         Grit           0906.6878.0120         120           0906.6878.0180         180           0906.6878.0240         240 |  |
| 6120 siafleece   |  |  |
| Art. no. Grit<br>4132.9840.6921<br>(152x229 mm)  |  |  |
| 7866.2539.6932 very<br>(Ø 150 mm) fine<br>7338.6815.6921<br>(Ø 125 mm)   |  |  |

Other dimensions and grit sizes available on request

# System solution Solid surface materials with a matt finish



Cover and protect all elements that are not being sanded

2 Sanding off



□ Sand out unevenness and any scratches or old stains



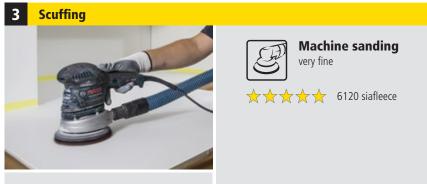
Machine sanding P180/P240



7900 sianet 1950 siaspeed



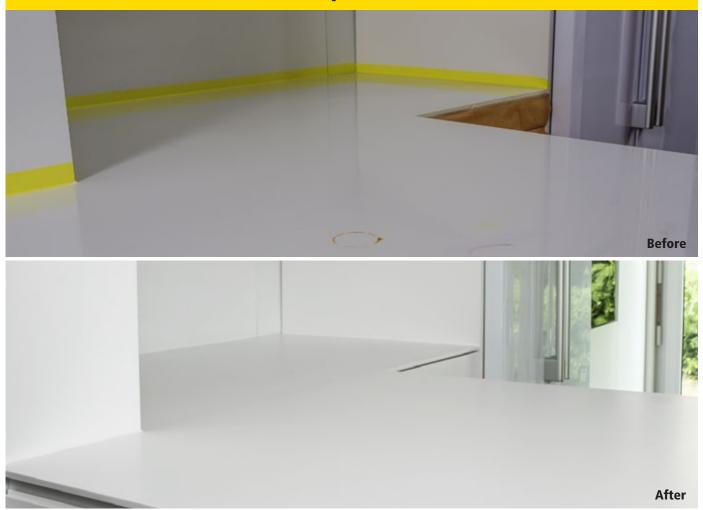




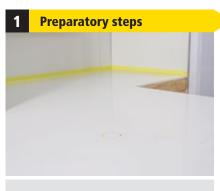
□ Remove all dust in order to check the surface

□ Use a fleece to create a matt finish over the whole surface

### Solid surface materials with a perfect surface finish



# System solution **Solid surface materials** with a gloss finish



 $\hfill\square$  Cover and protect all elements that are not being sanded

2 **Sanding off** 

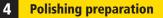


- $\hfill\square$  Sand out unevenness and any scratches or old stains
- $\Box$  Sand the whole surface with each grain size



Machine sanding P180/P240/P400/P600

 $\star$   $\star$   $\star$  7900 sianet 1950 siaspeed





 $\hfill\square$  Sand over the whole moist surface  $\Box$  After sanding, wipe the surface clean



7240 siacarat

7940 siaair



 $\Box$  Apply the polish to the pad and polish the whole surface

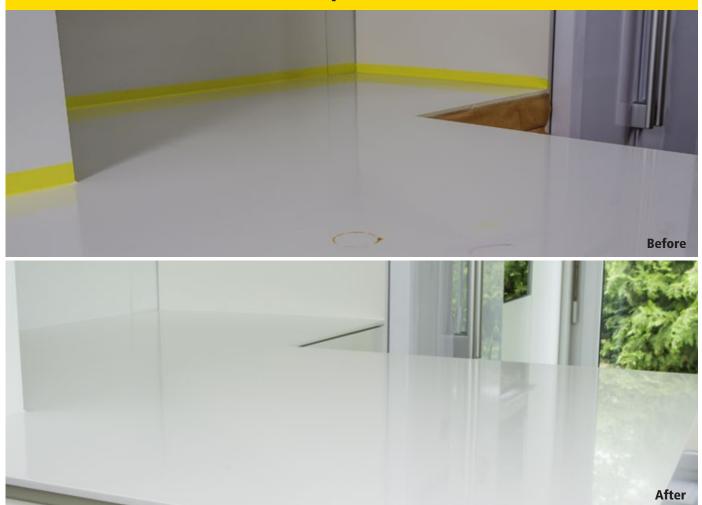






 Attach the protective disc and sand over the whole surface while moist

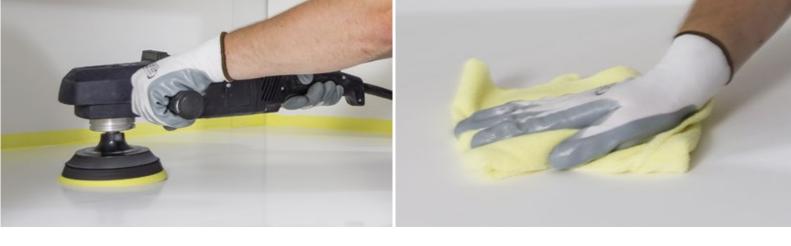
### Solid surface materials with a perfect surface finish





# The perfect abrasive solution

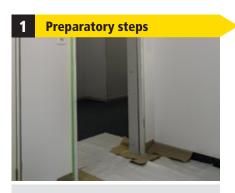




| <b>Best</b><br>Top performance, surface quality and durability   | Better<br>High performance and surface quality   | Good<br>Proven performance and surface quality |
|--|--|--|
| ****   | ★★★★☆  | ★★★☆☆  |
| Art. no.       Grit         6397.0967.0180       180         6397.0967.0240       240         6397.0967.0400       400 <b>1950 siaspeed (multi-hole)</b> 8443.7842.0600       600         7546.2948.0800       800 | Art. no.       Grit         8443.7842.0180       180         8443.7842.0240       240         8443.7842.0400       400         8443.7842.0600       600         7546.2948.0800       800 |  |
| <b>7240 siacarat</b> Art. no. Grit 9967.9911.3000 3000   | <b>7940 siaair</b> <hr/> <u>Art. no. Grit</u> <hr/> 5163.3687.3000 3000  |  |
| 6120 siafleece<br>Art. no. Grit<br>7866.2539.6932 very fine  |  |  |
| Protection disc<br>Art. no.<br>0020.3453   |  |  |
| siachrome cutArt. no.0020.6663Microfibre clothArt. no.0020.3185  |  |  |

# System solution **Steel frames (lift doors):** renovation or new treatment





Cover the surrounding area
 On new metal, remove the film and use thinner to remove the oil film

2 Sanding off



- Sand off any rusted parts
   Fill any dips and dents and sand until
- flush
- $\hfill\square$  Key the complete door surface



Manual sanding P120/P180

**Machine sanding** 

★ ★7900 sianet★ ☆1960 siarexx☆ ☆1902 siacraft



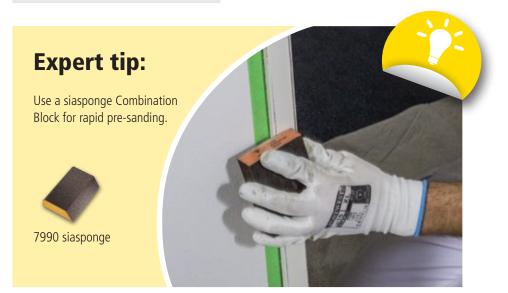




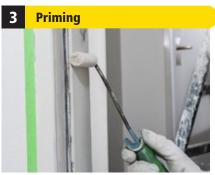
7900 sianet 1960 siarexx 1944 siaone



- □ First paint the less easily accessible parts with a paintbrush
- □ Then apply paint over the whole surface using a roller







- □ First, apply primer to parts that a roller cannot reach
- $\hfill\square$  Then use a roller over the whole surface

4 Intermediate sanding







Manual sanding P240

★★★ 7900 sianet
 ★★☆ 1960 siarexx
 ★☆☆ 1902 siacraft

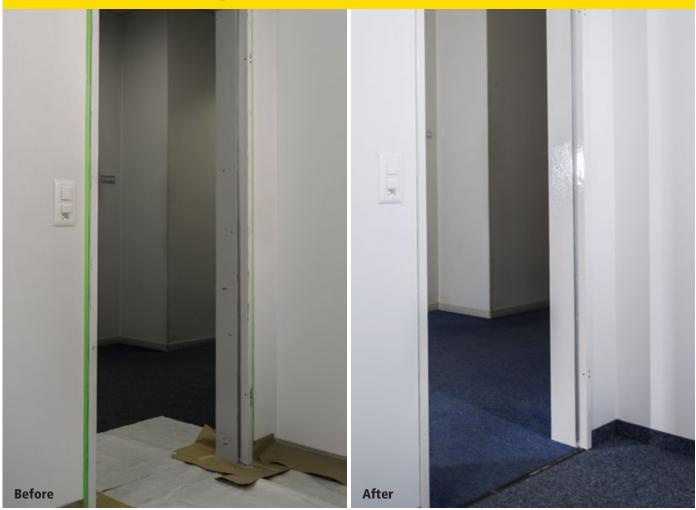


Machine sanding P240



7900 sianet 1960 siarexx 1944 siaone

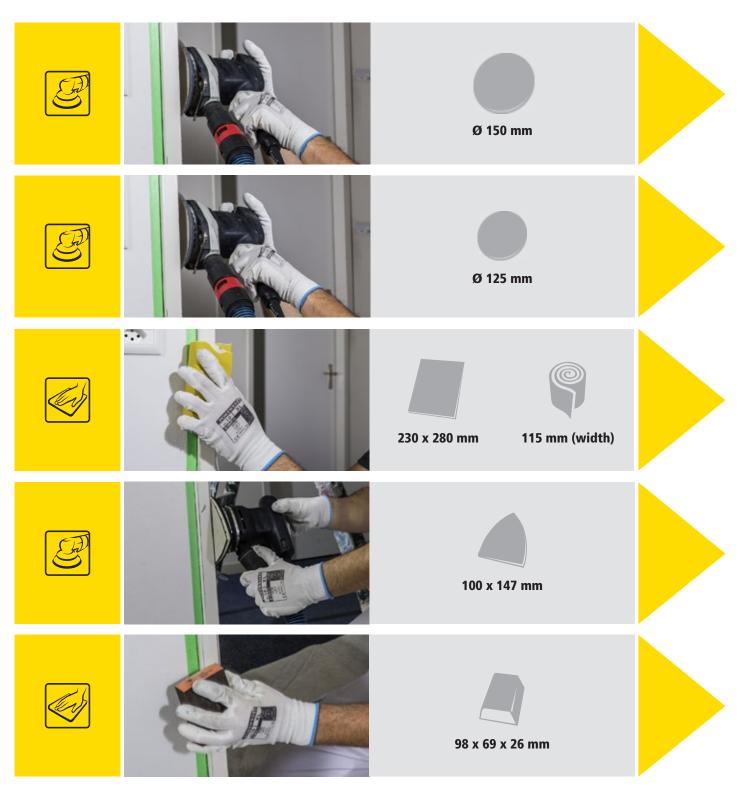
### **Door frames with a perfect surface finish**



Products 6 Steel frames (lift doors): renovation or new treatment



# The perfect abrasive solution





| <b>Best</b><br>Top performance, surface quality and durability   | Better<br>High performance and surface quality  | Good<br>Proven performance and surface quality   |
|--|---|--|
| ****   | ★★★★☆   | ★★★☆☆  |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)   | 1944 siaone (15-hole)  |
| Art. no.         Grit           6397.0967.0120         120           6397.0967.0180         180           6397.0967.0240         240 | Art. no. Grit<br>1762.1219.0120 120<br>1762.1219.0180 180<br>1762.1219.0240 240   | Art. no. Grit<br>7425.4595.0120 120<br>7425.4595.0180 180<br>7425.4595.0240 240  |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)   | 1944 siaone (9-hole)   |
| Art. no.         Grit           5869.5710.0120         120           5869.5710.0180         180           5869.5710.0240         240 | Art. no.         Grit           7375.1406.0120         120           7375.1406.0180         180           7375.1406.0240         240                        | Art. no. Grit<br>4569.9165.0120 120<br>4569.9165.0180 180<br>4569.9165.0240 240  |
|  | 1960 siarexx           Art. no.         Grit           4097.5762.0120         120           4097.5762.0180         180           4097.5762.0240         240 | Art. no.         Grit           2849.9871.0120         120           2849.9871.0180         180           2849.9871.0240         240 |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx 💦 👘  |  |
| Art. no.Grit1635.2907.01201201635.2907.01801801635.2907.024024010 m  | Art. no.         Grit           0906.6878.0120         120           0906.6878.0180         180           0906.6878.0240         240                        |  |
|  |   |  |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx  |  |
| Art. no.         Grit           0998.5363.0120         120           0998.5363.0180         180           0998.5363.0240         240 | Art. no.         Grit           6318.5062.0120         120           6318.5062.0180         180           6318.5062.0240         240                        |  |
| 7990 siasponge   |   |  |
| Art. no. Grit<br>0070.1255 medium<br>0070.1230 fine  |   |  |

## System solution **Refreshing stairs and** handrails (oiling)



- □ Clean the steps of all dirt or coating residue
- Repair any cracks with bodyfiller or patch up with wood

#### Basic sanding

2



- Flatten any rougher uneven areasSand off old paint
- $\Box$  Finely sand the stairs



#### Manual sanding P80/P120

★★★★ ★★★☆☆ ★★☆☆☆





#### Machine sanding P80/P120



7900 sianet 1960 siarexx 1944 siaone

#### 5 Second coat of oil



 Apply oil sparingly in accordance with manufacturer's instructions
 Allow to soak in for five minutes, then wipe over with a cloth







□ Apply oil sparingly in accordance with manufacturer's instructions

 $\hfill\square$  Important: Oil must be applied evenly

#### 4 Intermediate sanding



□ For a fine finish, sand off any wood fibres protruding as a result of the oil application



### Manual sanding P240

7900 sianet 1960 siarexx 1902 siacraft

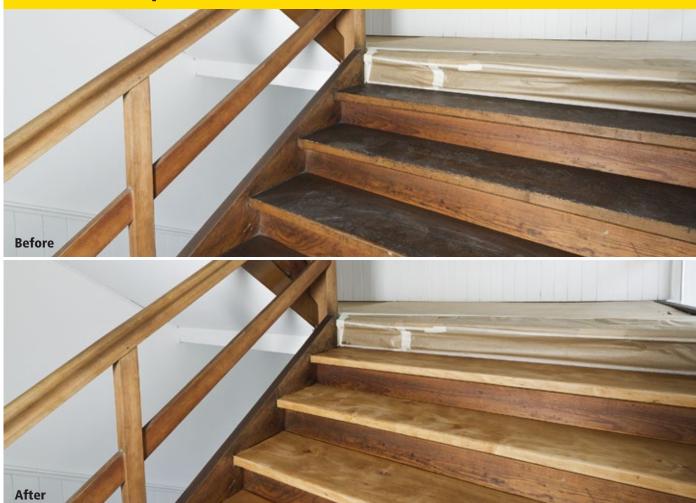






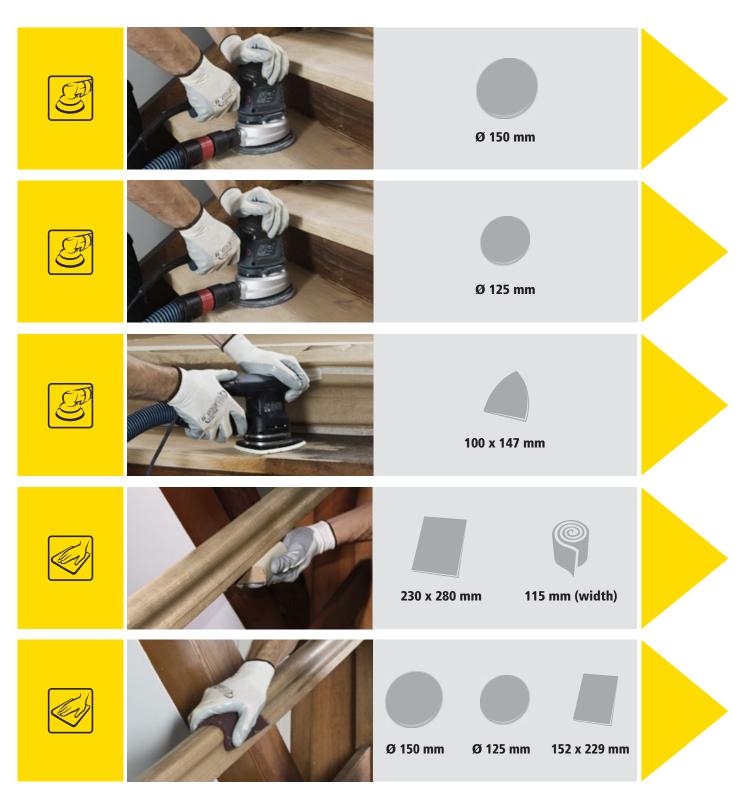
7900 sianet 1960 siarexx 1944 siaone

### Stairs with a perfect surface finish



Products **Refreshing stairs and handrails (oiling)** 





Product description from p. 82



| <b>Best</b><br>Top performance, surface quality and durability  | <b>Better</b><br>High performance and surface quality   | <b>Good</b><br>Proven performance and surface quality   |
|---|---|---|
| ****  | ★★★☆☆   | ★★★☆☆   |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (multi-hole)   | 1944 siaone (15-hole)   |
| Art. no.         Grit           6397.0967.0080         80           6397.0967.0120         120           6397.0967.0240         240 | Art. no. Grit<br>1762.1219.0080 80<br>1762.1219.0120 120<br>1762.1219.0240 240  | Art. no. Grit<br>7425.4595.0080 80<br>7425.4595.0120 120<br>7425.4595.0240 240  |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (multi-hole)   | 1944 siaone (9-hole)  |
| Art. no.         Grit           5869.5710.0080         80           5869.5710.0120         120           5869.5710.0240         240 | Art. no.         Grit           7375.1406.0080         80           7375.1406.0120         120           7375.1406.0240         240 | Art. no.         Grit           4569.9165.0080         80           4569.9165.0120         120           4569.9165.0240         240 |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx  |   |
| Art. no.         Grit           0998.5363.0080         80           0998.5363.0120         120           0998.5363.0240         240 | Art. no.         Grit           6318.5062.0080         80           6318.5062.0120         120           6318.5062.0240         240 |   |
|   | Art. no.         Grit           4097.5762.0080         80           4097.5762.0120         120           4097.5762.0240         240 | Art. no.         Grit           2849.9871.0080         80           2849.9871.0120         120           2849.9871.0240         240 |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx 💦 💦  |   |
| Art. no.         Grit           1635.2907.0080         80           1635.2907.0120         120           1635.2907.0240         240 | Art. no.         Grit           0906.6878.0080         80           0906.6878.0120         120           0906.6878.0240         240 |   |
| 6120 siafleece  |   |   |
| Art. no. Grit<br>4132.9840.6921   |   |   |
| (152:229 mm)<br>7866.2539.6932 very<br>(Ø 150 mm) fine<br>7338.6815.6921<br>(Ø 125 mm)  |   |   |

# System solution Drywall construction (plasterboards) Medium-fine finish







Clean surfaceMoisten transverse joints using a paint-

- brush

  Apply filler at right angles to the joint
- □ and wipe along the joint to remove



Insert glass fibre strips
 Press in carefully with a smoothing trowel



- $\Box$  Allow the filler to dry
- $\Box$  Skim the bodyfiller using a sharp edge
- □ Cover over joints again with a slightly wider application of filler

# **Plasterboards – Overview of quality levels**



#### **Quality level:**

For medium and coarse structured wall coverings (e.g. ingrain or textured wallpaper) or finishing coats with a grain size from 1 mm.



#### **Quality level:**

For finely structured coatings and wall coverings such as wallpaper with a grain size of less than 1 mm.



#### **Quality level:**





- completely
- $\square$  Sand over the plastered surface
- $\hfill\square$  Caution: Do not sand into the board surface of the panels



# Plasterboard with a perfect surface finish



# System solution Drywall construction (plasterboards) Fine finish







Clean surface
 Moisten transverse joints

- □ Moisten transverse joints using a paintbrush
- □ Apply filler at right angles to the joint
- $\hfill\square$  and wipe along the joint to remove



Insert glass fibre strips
 Press in carefully with a smoothing trowel



- □ Allow the filler to dry
- $\hfill \Box$  Skim the bodyfiller using a sharp edge
- □ Cover over joints again with a slightly wider application of filler

# **Plasterboards – Overview of quality levels**



#### **Quality level:**

For medium and coarse structured wall coverings (e.g. ingrain or textured wallpaper) or finishing coats with a grain size from 1 mm.



#### Quality level:

For finely structured coatings and wall coverings such as wallpaper with a grain size of less than 1 mm.



#### **Quality level:**





 $\hfill \Box$  Apply a thin layer of filler to the whole surface

 $\hfill\square$  Skim using a sharp edge

#### **Final sanding** 5



 $\Box$  Allow the covered surface to dry completely  $\hfill\square$  Sand over the plastered surface



7900 sianet 1960 siarexx



**Machine sanding** P240



7900 sianet 1960 siarexx 1944 siaone

# Plasterboard with a perfect surface finish



# System solution Drywall construction (plasterboards)

Extremely fine finish







Clean surface

- □ Moisten transverse joints using a paintbrush
- $\hfill \Box$  Apply filler at right angles to the joint
- $\hfill\square$  and wipe along the joint to remove



- Insert glass fibre strips
   Press in carefully with a smooth
- $\hfill\square$  Press in carefully with a smoothing trowel



- $\Box$  Allow the filler to dry
- $\hfill \Box$  Skim the bodyfiller using a sharp edge
- □ Cover over joints again with a slightly wider application of filler

# **Plasterboards – Overview of quality levels**



#### **Quality level:**

For medium and coarse structured wall coverings (e.g. ingrain or textured wallpaper) or finishing coats with a grain size from 1 mm.



#### **Quality level:**

For finely structured coatings and wall coverings such as wallpaper with a grain size of less than 1 mm.



#### Quality level:





□ Coat the whole surface with a layer of approx. 1 mm thickness

#### 5 Final sanding



 Allow the covered surface to dry completely
 Sand over the plastered surface



Manual sanding P240

> 7900 sianet 1960 siarexx 1902 siacraft







7900 sianet 1960 siarexx 1944 siaone

# Plasterboard with a perfect surface finish

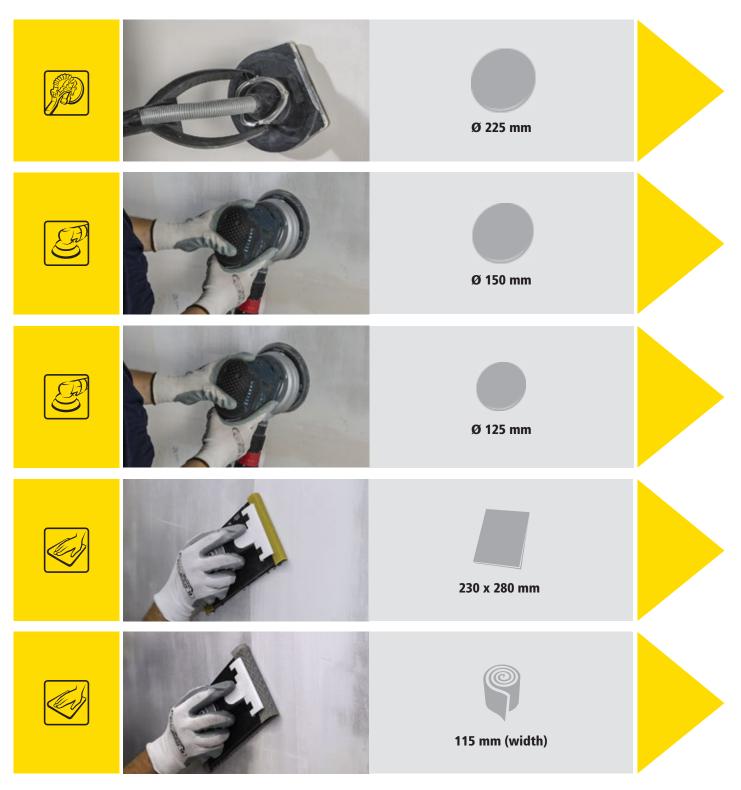


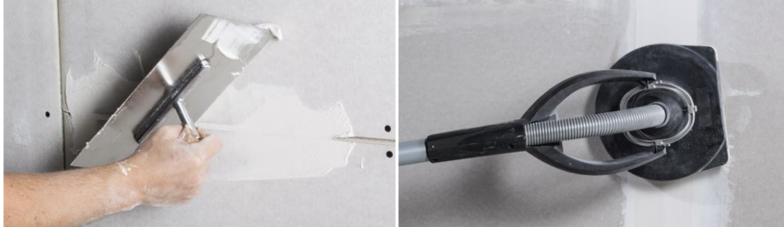




# The perfect abrasive solution

8





| <b>Best</b><br>Top performance, surface quality and durability                                  | Better<br>High performance and surface quality            | <b>Good</b><br>Proven performance and surface quality   |
|---|---|---|
| ★★★★★<br>7900 sianet – Net-backed abrasive  | ★★★☆☆<br>1960 siarexx (19-hole)                           | ★★★☆☆   |
| Art. no.         Grit           8023.0581.0120         120           8023.0581.0240         240 | Art. no. Grit<br>2234.7823.0120 120<br>2234.7823.0240 240 |   |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (multi-hole)                                 | 1944 siaone (15-hole)   |
| Art. no.         Grit           6397.0967.0120         120           6397.0967.0240         240 | Art. no. Grit<br>1762.1219.0120 120<br>1762.1219.0240 240 | Art. no. Grit<br>7425.4595.0120 120<br>7425.4595.0240 240                                       |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (multi-hole)                                 | 1944 siaone (9-hole)  |
| Art. no.         Grit           5869.5710.0120         120           5869.5710.0240         240 | Art. no. Grit<br>7375.1406.0120 120<br>7375.1406.0240 240 | Art. no.         Grit           4569.9165.0120         120           4569.9165.0240         240 |
|   | 1960 siarexx  | 1902 siacraft   |
|   | Art. no. Grit<br>4097.5762.0120 120<br>4097.5762.0240 240 | Art. no. Grit<br>2849.9871.0120 120<br>2849.9871.0240 240                                       |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx  |   |
| Art. no.         Grit           1635.2907.0120         120           1635.2907.0240         240 | Art. no. Grit<br>0906.6878.0120 120<br>0906.6878.0240 240 |   |

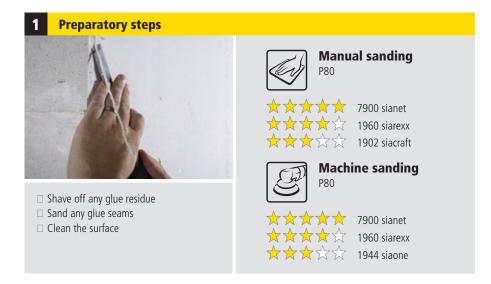
5 m

Other dimensions and grit sizes available on request

10 m

# System solution9Drywall construction(dry wall lining boards)Coarse finishQ1

e.g. Fermacell



# Dry wall lining boards – Overview of quality levels



#### **Quality level:**

For mounting tiles or other ceramic wall coverings (e.g. flagging).



#### Quality level:

For medium and coarse structured wall coverings (e.g. ingrain or textured wallpaper) or finishing coats with a grain size from 1 mm.



#### **Quality level:**

For finely structured coatings and wall coverings such as wallpaper with a grain size of less than 1 mm.



#### **Quality level:**



Dry wall lining board with a perfect surface finish



# System solution Drywall construction (dry wall lining boards) Medium-fine finish

e.g. Fermacell



Shave off any glue residueSand flat surfaces

#### 2 Pre-filling and final sanding



- Fill joints and holes with bodyfiller
   Optional: For tapered board, insert glass fibre strips
- $\hfill \square$  Sand over the filled surfaces





7900 sianet 1960 siarexx 1944 siaone

# Dry wall lining boards – Overview of quality levels



#### **Quality level:**

For mounting tiles or other ceramic wall coverings (e.g. flagging).



#### **Quality level:**

For medium and coarse structured wall coverings (e.g. ingrain or textured wallpaper) or finishing coats with a grain size from 1 mm.



#### **Quality level:**

For finely structured coatings and wall coverings such as wallpaper with a grain size of less than 1 mm.



#### **Quality level:**



# Dry wall lining board with a perfect surface finish



# System solution Drywall construction (dry wall lining boards) Fine finish

e.g. Fermacell



Shave off any glue residueSand flat surfaces



**Q**3

Fill joints and holes with bodyfiller
 Optional: For tapered board, insert glass fibre strips



 Apply filler over the whole surface
 Allow the filler to dry
 After drying, skim the bodyfiller using a sharp edge

# Dry wall lining boards – Overview of quality levels



Quality level:

For mounting tiles or other ceramic wall coverings (e.g. flagging).



**Quality level:** 

For medium and coarse structured wall coverings (e.g. ingrain or textured wallpaper) or finishing coats with a grain size from 1 mm.



#### **Quality level:**

For finely structured coatings and wall coverings such as wallpaper with a grain size of less than 1 mm.



**Quality level Q4:** 



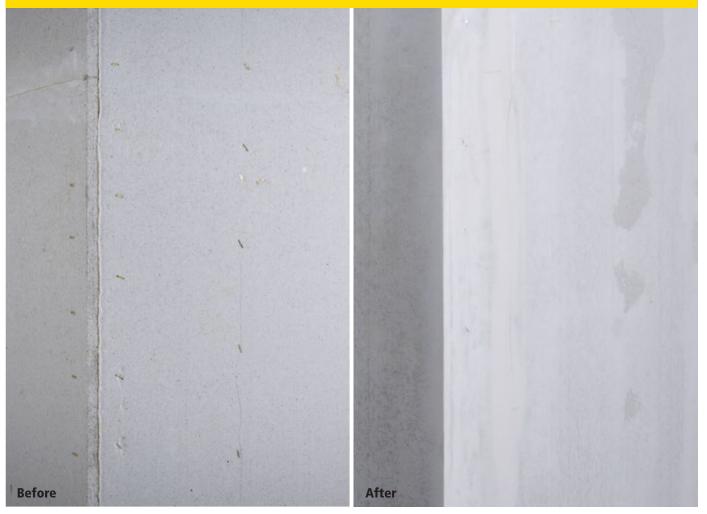
4 **Final sanding** 



- Allow the covered surface to dry completely
- $\hfill\square$  Sand over the plastered surface



# Dry wall lining board with a perfect surface finish



# System solution Drywall construction (dry wall lining boards)

Extremely fine Finish e.g. Fermacell



Shave off any glue residueSand flat surfaces



**Q**4

Fill joints and holes with bodyfiller
 Optional: For tapered board, insert glass fibre strips



□ Coat the whole surface with a layer of approx. 1 mm thickness

# Dry wall lining boards – Overview of quality levels



Quality level:

For mounting tiles or other ceramic wall coverings (e.g. flagging).



#### **Quality level:**

For medium and coarse structured wall coverings (e.g. ingrain or textured wallpaper) or finishing coats with a grain size from 1 mm.



#### **Quality level:**

For finely structured coatings and wall coverings such as wallpaper with a grain size of less than 1 mm.



#### **Quality level:**



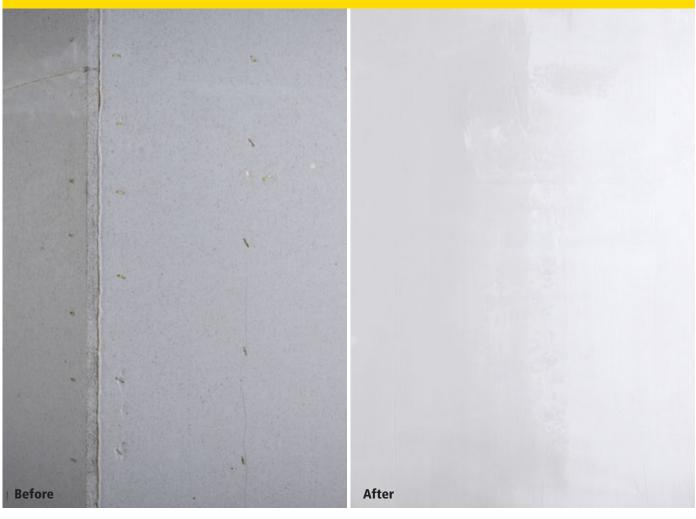
4 Final sanding



- Allow the covered surface to dry completely
- $\hfill\square$  Sand over the plastered surface



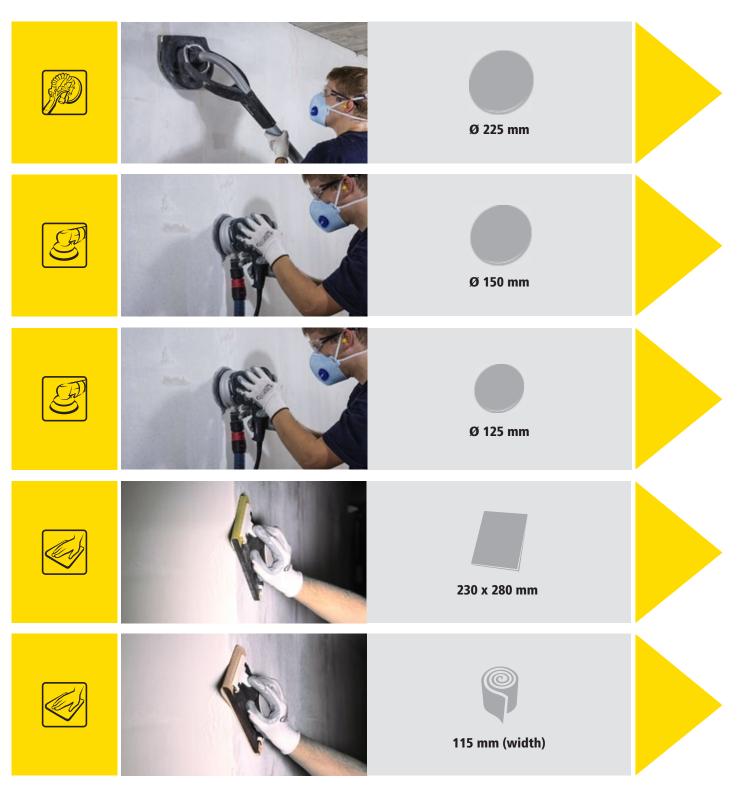
# Dry wall lining board with a perfect surface finish







# The perfect abrasive solution





| <b>Best</b><br>Top performance, surface quality and durability  | <b>Better</b><br>High performance and surface quality   | <b>Good</b><br>Proven performance and surface quality   |
|---|---|---|
| $\star \star \star \star \star$   | ★★★★☆   | ★★★☆☆   |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (19-hole)  |   |
| Art. no.         Grit           8023.0581.0080         80           8023.0581.0120         120           8023.0581.0240         240 | Art. no. Grit<br>2234.7823.0080 80<br>2234.7823.0120 120<br>2234.7823.0240 240  |   |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (multi-hole)   | 1944 siaone (15-hole)   |
| Art. no.         Grit           6397.0967.0080         80           6397.0967.0120         120           6397.0967.0240         240 | Art. no.         Grit           1762.1219.0080         80           1762.1219.0120         120           1762.1219.0240         240 | Art. no.         Grit           7425.4595.0080         80           7425.4595.0120         120           7425.4595.0240         240 |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (multi-hole)   | 1944 siaone (9-hole)  |
| Art. no.         Grit           5869.5710.0080         80           5869.5710.0120         120           5869.5710.0240         240 | Art. no.         Grit           7375.1406.0080         80           7375.1406.0120         120           7375.1406.0240         240 | Art. no.         Grit           4569.9165.0080         80           4569.9165.0120         120           4569.9165.0240         240 |
|   | 1960 siarexx  | 1902 siacraft   |
|   | Art. no.         Grit           4097.5762.0080         80           4097.5762.0120         120           4097.5762.0240         240 | Art. no.         Grit           2849.9871.0080         80           2849.9871.0120         120           2849.9871.0240         240 |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx  |   |
| Art. no.Grit1635.2907.0080801635.2907.01201201635.2907.0240240  | Art. no. Grit<br>0906.6878.0080 80<br>0906.6878.0120 120<br>0906.6878.0240 240  |   |

5 m

1 mil 10 m

# System solution Refreshing visible timber beams

Sanding off



Sand off the beam with a coarse grain
 Fully sand off all old glaze, paints and coatings





7900 sianet 1960 siarexx 1944 siaone



SWES ONS UST

> Finely sand in an additional sanding step
>  For structured beams, clean with a brush if necessary







**Manual sanding** P180



 $\times$   $\times$   $\times$   $\times$  7900 sianet 1960 siarexx



**Machine sanding** 



P180

7900 sianet 1960 siarexx 1944 siaone



 $\Box$  Clean the surface thoroughly □ Apply coating according to the manufacturer's instructions □ Glazer requires only one coat

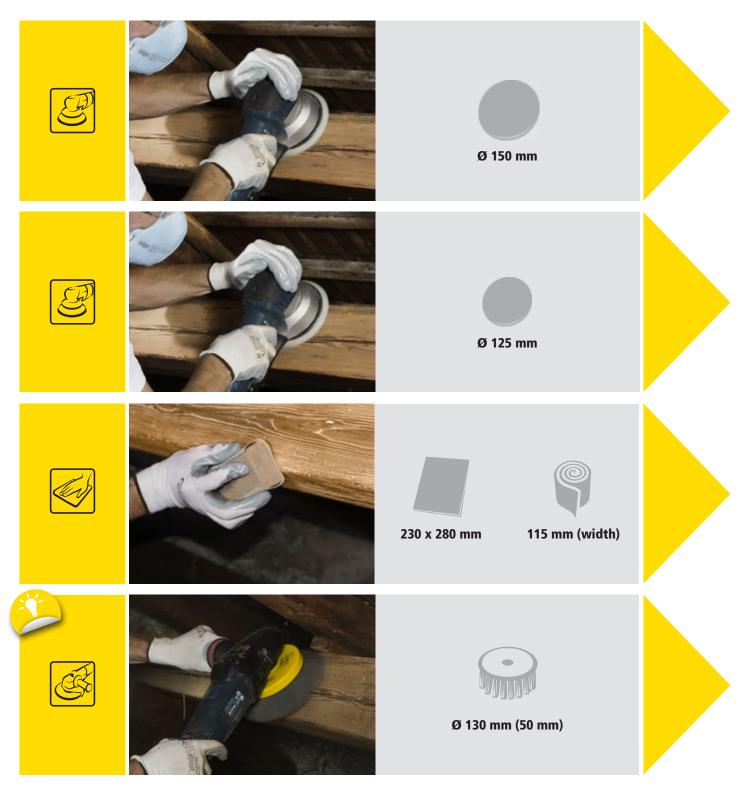
# Visible beams with a perfect surface finish







# The perfect abrasive solution





| <b>Best</b><br>Top performance, surface quality and durability   | <b>Better</b><br>High performance and surface quality  | <b>Good</b><br>Proven performance and surface quality   |
|--|--|---|
| ****   | ★★★★☆  | ★★★☆☆   |
| Art. no.         Grit           6397.0967.0120         120           6397.0967.0180         180                | <b>1960 siarexx (multi-hole)</b> Art. no.         Grit           1762.1219.0120         120           1762.1219.0180         180           | <b>1944 siaone (15-hole)</b><br><u>Art. no. Grit</u><br>7425.4595.0120 120<br>7425.4595.0180 180                        |
| Art. no.         Grit           5869.5710.0120         120           5869.5710.0180         180                | <b>1960 siarexx (multi-hole)</b> Art. no.       Grit         7375.1406.0120       120         7375.1406.0180       180                     | <b>1944 siaone (9-hole)</b><br><u>Art. no. Grit</u><br><u>4569.9165.0120 120</u><br><u>4569.9165.0180 180</u>           |
| 7900 sianet – Net-backed abrasive  | <b>1960 siarexx</b> Art. no.       Grit         4097.5762.0120       120         4097.5762.0180       180 <b>1960 siarexx 1960 siarexx</b> | Igo2 siacraft           Art. no.         Grit           2849.9871.0120         120           2849.9871.0180         180 |
| Art. no.         Grit           1635.2907.0120         120           1635.2907.0180         180           10 m | Art. no.         Grit           0906.6878.0120         120           0906.6878.0180         180           5 m                              |   |
| Art. no.         Grit           0020.0358         60           0020.0359         80                            |  |   |

# System solution **Renovating radiators**



□ Treat the radiator when cold □ Cover the surrounding area

#### 2 **Sanding off**



 $\hfill\square$  Sand off any rust points down to the metal



7900 sianet 1960 siarexx

1902 siacraft



**Machine sanding** P120



7900 sianet 1960 siarexx 1944 siaone



 $\hfill \Box$  Allow the primer coat to dry

□ If necessary, perform intermediate

- sanding with P240 or siafleece
- $\hfill\square$  Apply a second coat with varnish

# **Expert tip:**

siasponge flex is perfect for use on curved elements.



## **Expert tip:**

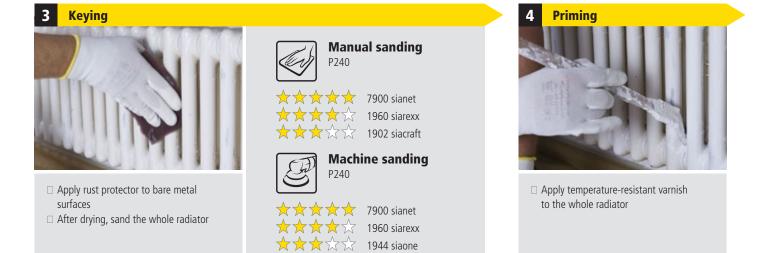
For curved elements, use siafleece instead of P240 sandpaper.



6120 siafleece







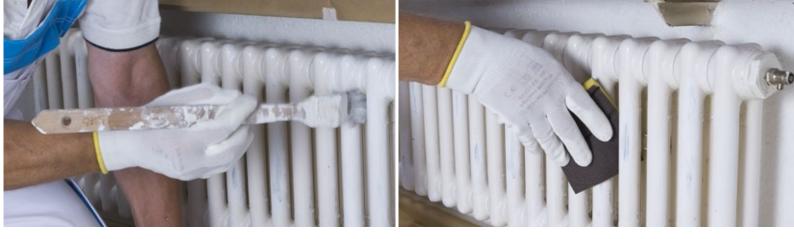
# **Radiators with a perfect surface finish**





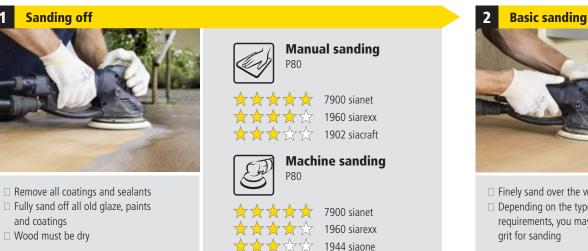
# The perfect abrasive solution

| F | Ø 150 mm                       |
|---|--------------------------------|
| Ŀ | Ø 125 mm                       |
|   | 230 x 280 mm 115 mm (width)    |
|   | Ø 150 mm Ø 125 mm 152 x 229 mm |
|   | 120 x 98 x 13 mm               |



| <b>Best</b><br>Top performance, surface quality and durability   | <b>Better</b><br>High performance and surface quality   | <b>Good</b><br>Proven performance and surface quality   |
|--|---|---|
| ****   | ****  | ★★★☆☆   |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)   | 1944 siaone (15-hole)   |
| Art. no.         Grit           6397.0967.0120         120           6397.0967.0240         240  | Art. no. Grit<br>1762.1219.0120 120<br>1762.1219.0240 240   | Art. no. Grit<br>7425.4595.0120 120<br>7425.4595.0240 240   |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)   | 1944 siaone (9-hole)  |
| Art. no.         Grit           5869.5710.0120         120           5869.5710.0240         240  | Art. no. Grit<br>7375.1406.0120 120<br>7375.1406.0240 240   | Art. no.         Grit           4569.9165.0120         120           4569.9165.0240         240                         |
|  | Art. no.         Grit           4097.5762.0120         120           4097.5762.0240         240               | 1902 siacraft           Art. no.         Grit           2849.9871.0120         120           2849.9871.0240         240 |
| Art. no.         Grit           1635.2907.0120         120           1635.2907.0240         240           10 m                                       | Art. no.         Grit           0906.6878.0120         120           0906.6878.0240         240           5 m |   |
| 6120 siafleece<br><u>Art. no.</u> Grit<br>4132.9840.6921<br>(152 x 229 mm)<br>7866.2539.6932 very<br>(Ø 150 mm) fine<br>7338.6815.6921<br>(Ø 125 mm) |   |   |
| Art. no.Grit0070.1244medium0070.1247fine   |   |   |

# System solution **Renovating entrance** doors





□ Sand off wood fibres resulting from moisture in the paint



1960 siarexx 1902 siacraft





7900 sianet 1960 siarexx 1944 siaone

5 Second coat

 $\Box$  Clean the surface thoroughly

□ Apply coating according to the manufacturer's instructions

 $\Box$  When fully dry, re-apply the coatings and sealants

## **Expert tip:**

Use a siasponge Block for seams and grooves.



7990 siasponge





Use a fleece for quick, soft intermediate sanding of surfaces and edges.



6120 siafleece







 $\square$  Finely sand over the whole surface  $\hfill\square$  Depending on the type of wood and your requirements, you may need to use a finer





**Manual sanding** P120



 $\uparrow$   $\uparrow$   $\uparrow$   $\uparrow$   $\uparrow$  7900 sianet 1960 siarexx



**Machine sanding** 



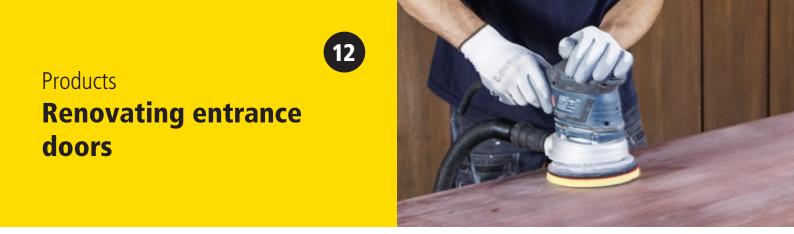
7900 sianet 1960 siarexx 1944 siaone



 $\hfill\square$  Clean the surface thoroughly □ Apply coating according to the manufacturer's instructions

# **Entrance door with a perfect surface finish**





# The perfect abrasive solution





| Post  | Pottor  | Cood  |
|---|---|---|
| Best<br>Top performance, surface quality and durability   | Better<br>High performance and surface quality  | Good<br>Proven performance and surface quality  |
| ****  | ★★★★☆   | ★★★☆☆   |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (multi-hole)   | 1944 siaone (15-hole)   |
| Art. no.         Grit           6397.0967.0080         80           6397.0967.0120         120           6397.0967.0240         240 | Art. no. Grit<br>1762.1219.0080 80<br>1762.1219.0120 120<br>1762.1219.0240 240  | Art. no. Grit<br>7425.4595.0080 80<br>7425.4595.0120 120<br>7425.4595.0240 240  |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx (multi-hole)   | 1944 siaone (9-hole)  |
| Art. no.         Grit           5869.5710.0080         80           5869.5710.0120         120           5869.5710.0240         240 | Art. no.         Grit           7375.1406.0080         80           7375.1406.0120         120           7375.1406.0240         240 | Art. no.         Grit           4569.9165.0080         80           4569.9165.0120         120           4569.9165.0240         240                         |
|   | Art. no.         Grit           4097.5762.0080         80           4097.5762.0120         120           4097.5762.0240         240 | Igo2 siacraft           Art. no.         Grit           2849.9871.0080         80           2849.9871.0120         120           2849.9871.0240         240 |
| 7900 sianet – Net-backed abrasive   | 1960 siarexx 💦 💦  |   |
| Art. no.         Grit           1635.2907.0080         80           1635.2907.0120         120           1635.2907.0240         240 | Art. no.         Grit           0906.6878.0080         80           0906.6878.0120         120           0906.6878.0240         240 |   |
| 7990 siasponge  |   |   |
| Art. no. Grit<br>0070.1255 medium<br>0070.1230 fine   |   |   |
| 6120 siafleece  |   |   |
| Art. no. Grit<br>4132.9840.6921<br>(152x229 mm)   |   |   |
| 7866.2539.6932 very<br>(Ø 150 mm) fine<br>7338.6815.6921<br>(Ø 125 mm)  |   |   |



# System solution **Façades and fronts**

**Sanding off** 



- $\hfill\square$  Sand off the façade with a coarse grain
- $\Box$  Fully sand out all old glaze, paints and coatings
- □ Wood must be dry





7900 sianet 1960 siarexx 1944 siaone

2 **Basic sanding** 



□ Finely sand using sandpaper □ Perform an additional fine sanding step if necessary

#### 1 **Intermediate sanding**

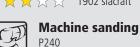


 $\Box$  Sand off wood fibres resulting from moisture in the paint





1902 siacraft



 $\bigstar \bigstar \bigstar \bigstar \bigstar \bigstar$ 

 $\bigstar \bigstar \bigstar \bigstar \bigstar \bigstar$ 



7900 sianet 1960 siarexx 1944 siaone

#### Weather and discolouration 5 protection



- $\Box$  Clean the surface thoroughly
- $\hfill\square$  Apply weather and discolouration protection according to the manufacturer's specifications

## **Expert tip:**

Use a siasponge Combination Block for seams and grooves.



7990 siasponge







**Manual sanding** P120

7900 sianet

1960 siarexx

 $\star \star \star \star \star$  $\star \star \star \star \star \star$  $\bigstar$ 



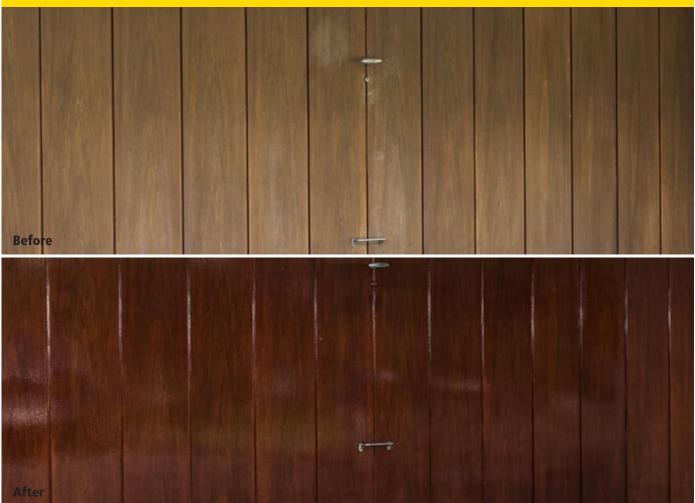
7900 sianet 1960 siarexx  $\star \star \star \star \star \star$ 1944 siaone





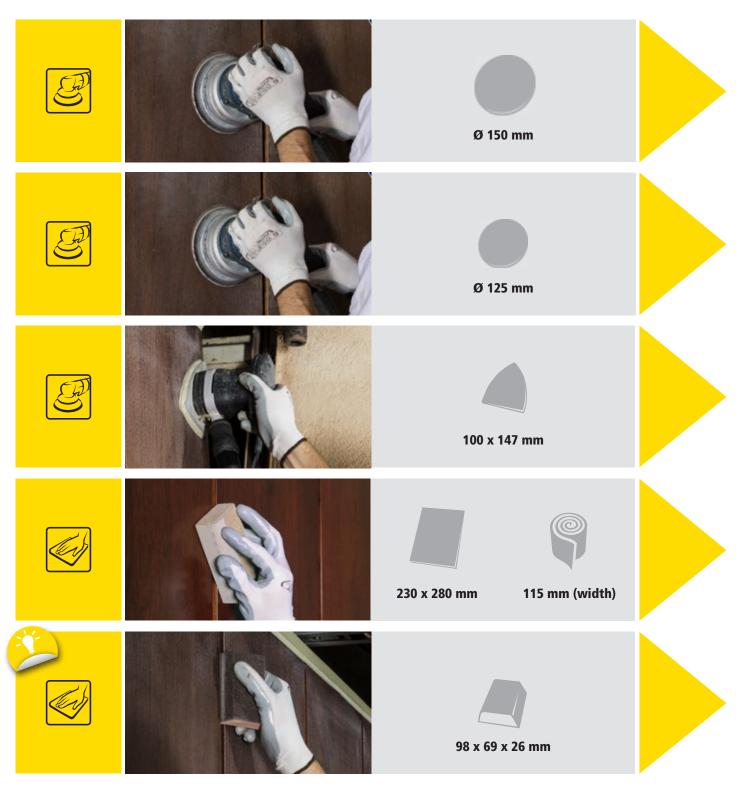
 $\hfill\square$  Clean the surface thoroughly  $\hfill\square$  Apply coating according to the manufacturer's instructions

# Façade with a perfect surface finish





# The perfect abrasive solution





| <b>Best</b><br>Top performance, surface quality and durability   | <b>Better</b><br>High performance and surface quality  | Good Proven performance and surface quality   |
|--|--|---|
| ****   | ★★★★☆  | ★★★☆☆   |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)  | 1944 siaone (15-hole)   |
| Art. no.         Grit           6397.0967.0080         80           6397.0967.0120         120           6397.0967.0240         240  | Art. no. Grit<br>1762.1219.0080 80<br>1762.1219.0120 120<br>1762.1219.0240 240   | Art. no.         Grit           7425.4595.0080         80           7425.4595.0120         120           7425.4595.0240         240 |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)  | 1944 siaone (9-hole)  |
| Art. no.         Grit           5869.5710.0080         80           5869.5710.0120         120           5869.5710.0240         240  | Art. no.         Grit           7375.1406.0080         80           7375.1406.0120         120           7375.1406.0240         240  | Art. no. Grit<br>4569.9165.0080 80<br>4569.9165.0120 120<br>4569.9165.0240 240  |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx   |   |
| Art. no.         Grit           0998.5363.0120         120           0998.5363.0180         180           0998.5363.0240         240 | Art. no.         Grit           6318.5062.0120         120           6318.5062.0180         180           6318.5062.0240         240 |   |
|  | Art. no.         Grit           4097.5762.0080         80           4097.5762.0120         120           4097.5762.0240         240  | Art. no.         Grit           2849.9871.0080         80           2849.9871.0120         120           2849.9871.0240         240 |
| Art. no.         Grit           1635.2907.0080         80           1635.2907.0120         120           1635.2907.0240         240  | Art. no.         Grit           0906.6878.0080         80           0906.6878.0120         120           0906.6878.0240         240  |   |
| 7990 siasponge   |  |   |
| Art. no.         Grit           0070.1255         medium           0070.1230         fine  |  |   |

Other dimensions and grit sizes available on request

# System solution **Renovating garden** furniture and fences







- □ Clean with a coarse brush if necessary wood must be dry
- □ Fully sand out all old glaze, paints and coatings



1960 siarexx 1944 siaone  $\bigstar \bigstar \bigstar \bigstar \bigstar \bigstar$ 



□ Sand using a medium-grain sandpaper □ Garden furniture may require an additional fine sanding step



 $\Box$  Sand off wood fibres resulting from moisture in the paint



## 7900 sianet 1960 siarexx









7900 sianet 1960 siarexx 1944 siaone



□ Clean the surface thoroughly □ Apply paint according to the manufacturer's instructions

## **Expert tip:**

siasponge flex is perfect for use on curved elements.



7983 siasponge flex



## **Expert tip:**

siafleece is perfect for use on curved elements.



6120 siafleece







**Manual sanding** P120





1960 siarexx r 🛧 🛧 ☆☆ 👌 1902 siacraft



**Machine sanding** 



First coat 3

 $\hfill\square$  Clean the surface thoroughly  $\hfill\square$  Apply coating according to the manufacturer's instructions

# Garden furniture with a perfect surface finish



Products Renovating garden furniture and fences



# The perfect abrasive solution



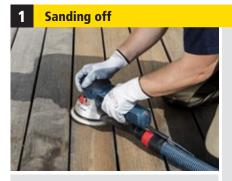


| <b>Best</b><br>Top performance, surface quality and durability   | <b>Better</b><br>High performance and surface quality   | <b>Good</b><br>Proven performance and surface quality   |
|--|---|---|
| ***  | $\star \star \star \star \star \star$   | <b>★★★</b> ☆☆   |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)   | 1944 siaone (15-hole)   |
| Art. no.         Grit           6397.0967.0080         80           6397.0967.0120         120           6397.0967.0180         180                  | Art. no.         Grit           1762.1219.0080         80           1762.1219.0120         120           1762.1219.0180         180 | Art. no.         Grit           7425.4595.0080         80           7425.4595.0120         120           7425.4595.0180         180   |
| 7900 sianet – Net-backed abrasive  | 1960 siarexx (multi-hole)   | 1944 siaone (9-hole)  |
| Art. no.         Grit           5869.5710.0080         80           5869.5710.0120         120           5869.5710.0180         180                  | Art. no.         Grit           7375.1406.0080         80           7375.1406.0120         120           7375.1406.0180         180 | Art. no.         Grit           4569.9165.0080         80           4569.9165.0120         120           4569.9165.0180         180   |
|  | Art. no.         Grit           4097.5762.0080         80           4097.5762.0120         120           4097.5762.0180         180 | Image: How State of the state of t |
| Art. no.         Grit           1635.2907.0080         80           1635.2907.0120         120           1635.2907.0180         180                  | Art. no.         Grit           0906.6878.0080         80           0906.6878.0120         120           0906.6878.0180         180 |   |
| 6120 siafleece<br><u>Art. no.</u> Grit<br>4132.9840.6921<br>(152 x 229 mm)<br>7866.2539.6932 very<br>(Ø 150 mm) fine<br>7338.6815.6921<br>(Ø 125 mm) |   |   |
| Art. no.Grit0070.1244medium0070.1247fine   |   |   |

15

# System solution Renovating decking



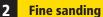


□ Sand off floorboards using sandpaper until smooth and clean





7900 sianet 1960 siarexx 1944 siaone





□ For a finer surface finish, perform an additional sanding step

# **Expert tip:**

Maintain your decking regularly with oil to prolong the lifetime of your perfect surface.







**Manual sanding** P120

 $\star \star \star \star$  $\mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x}$  $\bigstar$   $\bigstar$   $\bigstar$  1902 siacraft



**Machine sanding** P120

7900 sianet

1960 siarexx



7900 sianet 1960 siarexx 1944 siaone



 $\hfill\square$  Clean the surface thoroughly  $\hfill\square$  Apply oil coating according to the oil manufacturer's instructions

# **Decking with a perfect surface finish**

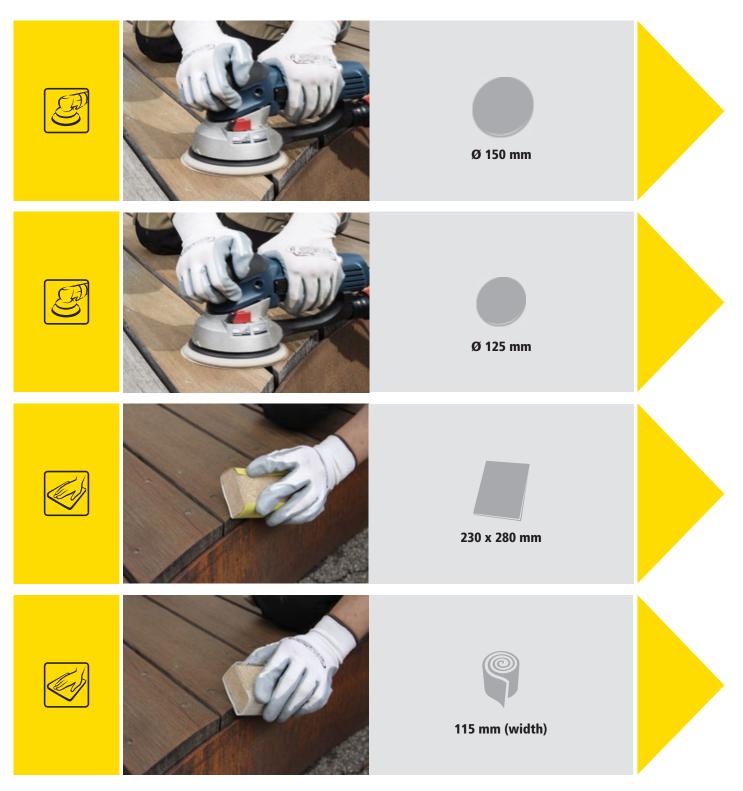




# Products Renovating decking



# The perfect abrasive solution

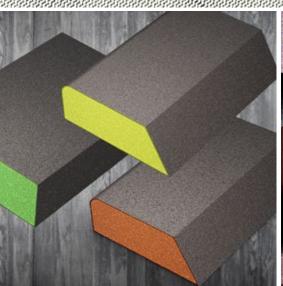


Product description from p. 82



| Best<br>Top performance, surface quality and durability<br>$\bigstar$   | Better<br>High performance and surface quality   | <b>Good</b><br>Proven performance and surface quality<br>$\bigstar \bigstar \bigstar \bigstar$               |
|---|--|--|
| Art. no.         Grit           6397.0967.0080         80           6397.0967.0120         120                | Art. no.       Grit         1762.1219.0080       80         1762.1219.0120       120                               | <b>1944 siaone (15-hole)</b><br><u>Art. no. Grit</u><br>7425.4595.0080 80<br>7425.4595.0120 120              |
| Art. no.         Grit           5869.5710.0080         80           5869.5710.0120         120                | <b>1960 siarexx (multi-hole)</b><br><u>Art. no. Grit</u><br>7375.1406.0080 80<br>7375.1406.0120 120                | <b>1944 siaone (9-hole)</b><br><u>Art. no. Grit</u><br><u>4569.9165.0080 80</u><br><u>4569.9165.0120 120</u> |
|   | <b>1960 siarexx</b> Art. no.         Grit           4097.5762.0080         80           4097.5762.0120         120 | <b>1902 siacraft</b> Art. no.       Grit         2849.9871.0080       80         2849.9871.0120       120    |
| Art. no.         Grit           1635.2907.0080         80           1635.2907.0120         120           10 m | Art. no.         Grit           0906.6878.0080         80           0906.6878.0120         120           5 m       |  |

# **Products for perfect surface finishes**

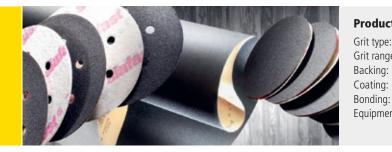








# 1749 siaral – For maximum performance during heavy-duty rotary sanding on plasterboard, stone and old paints



#### **Product profile**

Grit type:Silicon carbideGrit range:36-400Backing:F-wt paperCoating:ClosedBonding:Resin over resinEquipment:TopTec

A specialist abrasive for keying MDF, HDF and chipboard, 1749 siaral f not only has a long lifetime, it also produces a high-quality surface finish.

#### Advantages

- Ideal for rotary sanding
- Strong paper backing for portable machine sanding
- Fast and safe change of abrasive with siafast hook and loop fastening system

#### Applications

- Keying of insulating boards
- Sanding off old paints and varnish
- Sanding off plaster, stone and concrete

#### Materials

MDF board; Dry wall lining boards; Plaster; Mineral fibreboard; Plastics; Hardwood; Primer filler; PU lacquer; Polyester lacquer; UV lacquer; Stone

#### Technology

siafast; TopTec



**Conversion forms** 



# 1902 siacraft – For diverse manual sanding applications on wood



Ideal for fast sanding on wood or for interior work with a good price-performance ratio.

#### Advantages

- Economical all-round product for wood sanding
- Can be folded and cut to any desired format
- Ideal for manual sanding

### **Product profile**

Grit type: Grit range: Backing: Coating: Bonding: Aluminium oxide 40-240 C-wt paper Closed Hide glue

#### Applications

- Rounding off edges
- Sanding off paints and old lacquer
- $\hfill\square$  Keying of solid wood and veneer

#### Materials

Old lacquer; wooden-based material; solid wood

# Application

#### Conversion forms



# 1919 siawood – The benchmark for wood and lacguer sanding



#### **Product profile**

Grit

| Grit type:  | Aluminium oxide    |
|-------------|--------------------|
| Grit range: | 36-220             |
| Backing:    | F-wt paper         |
| Coating:    | Electrostatic open |
| Bonding:    | Resin over resin   |
|             |                    |

As a universal all-round product with outstanding properties, 1919 siawood meets the toughest standards of the wood processing industry and craft trades in wood and lacquer sanding applications.

#### **Advantages**

- Premium product for the highest quality demands in stationary wood sanding
- Minimal clogging thanks to modern coating technology
- Outstanding performance and long life
- Very high abrasive performance with a good finish
- Backing with very high stability and rigidity
- Lower sanding costs due to longer lifetime and fewer belt changes

#### Applications

- Calibrating surfaces
- Coarse sanding of solid wood and wood-based materials
- Fine sanding of solid wood, veneer and wood-based materials



#### **Conversion forms**



### 1944 siaone – The one with cut



#### **Product profile**

Grit type: Semi-friable aluminium oxide Grit range: 40; 60-240; 320; 400-500 P040-P500 FEPA P/ISO 6344 Backing: C-wt paper, B-wt paper Coating: Electrostatic Bonding: Resin over resin Special coating: P220-P500 Stearate

A universal abrasive for manual and portable machine sanding in wood and varnish applications. An aggressive cut and good service life make this an attractive product. For price-conscious users for working with various materials, for example: bodyfiller, primer filler, varnish, paint and wood.

#### Advantages

- Aggressive initial sanding thanks to optimised sanding grain
- Universal all-round product for wood and lacquer

#### Applications

- Keying of solid wood
- Intermediate sanding of varnishes on surfaces and curves
- Keying of primers, primer fillers and bodyfillers
- Final sanding as preparation for painting
- Sanding off old paint and varnish layers

#### Materials

Softwood, hardwood, resinous wood, water-based varnish, polyester lacquer, PU lacquer, NC lacquer, UV lacquer, acrylic varnish, solid surface materials, old lacquer, old paint, primer filler, primer, bodyfiller, plastic, mineral fibreboard, plaster, dry wall lining board

#### Application



#### **Conversion forms**



### 1950 siaspeed – For a perfect finish at full speed



### Product profile

| Grit type:       | Mixed grit with ceramic of semi-friable aluminium of |           |
|------------------|--|-----------|
| Grit range:      | 40; 60-600   | P100-P600 |
| Backing:         | Paper  |           |
| Coating:         | Mechanical closed                                    | P40-P180  |
|                  | Electrostatic open                                   | P220-P600 |
| Bonding:         | Resin over resin                                     |           |
| Special coating: | Stearate   | from P080 |

A versatile all-round product, the 1950 siaspeed is specially designed for high removal rates, perfect surface quality and long lifetime in applications such as the surface treatment of body filler, primer filler, varnishes and paints.

#### Advantages

- A versatile all-round product
- High removal rate
- Longest lifetime
- Minimal clogging thanks to open coating in 220-600 grit range

#### Applications

- Removal of solid wood
- Keying of bodyfiller and polyester
- Keying of solid wood
- Intermediate sanding of varnishes

#### Materials

Varnish; primer filler, bodyfiller, solid surface material, plastic, hard wood; soft wood; resinous wood; plaster; dry wall lining boards



### 1960 siarexx cut – The benchmark on wood, lacquers and paints



1960 siarexx cut is a universal all-round product for manual and portable machine sanding and delivers impressive results in wood and lacquer applications.

#### Advantages

- Universal all-round product for wood and lacquer
- $\hfill {\hfill \hfill \hfill$
- Low clogging
- Good finish properties

#### Applications

- Keying of solid wood
- Intermediate sanding of varnishes on surfaces and curves
- Keying of primers, primer fillers and bodyfillers
- Final sanding as preparation for painting

#### Materials

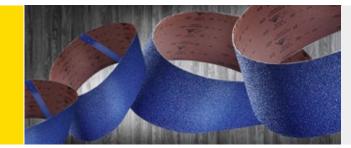
Softwood, hardwood, resinous wood, water-based varnish, polyester lacquer, PU lacquer, NC lacquer, UV lacquer, acrylic varnish, solid surface materials, old lacquer, old paint, primer filler, primer, bodyfiller, plastic, mineral fibreboard, plaster, dry wall lining board

#### Application





# 2812 siaral x – The professional abrasive for edges, seams, solid wood and parquet flooring



#### **Product profile**

Grit type: Grit range: Backing: Coating: Bonding: Mixed grit types 16; 24; 36-40; 60-120 Y-wt cloth, cotton X-wt cloth, cotton Closed Resin over resin

As a specialist product for the surface treatment of hardwood, glued solid wood panels as well as for parquet flooring and plywood production, 2812 siaral x with its robust cloth backing and application-oriented belt joints produces top-quality results in belt sanding applications.

#### Advantages

- Suitable for long periods of use thanks to very robust backing and optimised grit spreading technology
- Extremely high performance when preparing hardwood with coarser grit sizes
   Application-optimised belt joint

#### Applications

- Flush sanding of protrusions on cross-grained wood
- Flatting of edges and rabbets
- Sanding of wood-based panels and hardwood
- Coarse sanding in parquet and plywood manufacturing
- Intermediate sanding in parquet and plywood manufacturing
- Coarse sanding of laminated solid wood panels
- Intermediate sanding of laminated solid wood panels

#### Materials

Plywood panel; solid surface material; hard wood; soft wood



#### **Conversion forms**



### 2920 siawood x – For optimal performance on softwood



Ideal for belt sanding in the production of plywood and softwood panels and delivers a high removal rate, long lifetime and good finish in coarse to fine sanding applications.

#### Advantages

- Perfect surfaces thanks to TopTec
- Dust-free process: Antistatic construction minimises dust build-up on belt, workpiece and machinery
- Suitable for long periods of use thanks to very robust backing and optimised grit spreading technology
- High removal rate when working on softwood and hardwood with coarser grits

#### Materials

Old lacquer; old paint; bodyfiller; primer filler; plywood panel; MDF board; chipboard; solid surface material; soft wood; hard wood; resinous wood

#### Applications

- Flush sanding of edges
- Coarse sanding in plywood manufacturing
- Intermediate sanding in plywood manufacturing
- Coarse sanding of laminated softwood panels
- Intermediate sanding of laminated softwood panels
- Fine sanding of laminated softwood panels
- Sanding off paints and lacquers

#### Application



### Conversion forms



# 6120 siafleece – For even surface finishes in manual and portable machine sanding



#### **Product profile**

Grit type: Backing: Coating: Bonding: Aluminium oxide Silicon carbide Nonwoven Mechanical Resin over resin

Ideal for both dry and wet sanding applications and offers high conformability, constant performance over its entire lifetime, a low clogging tendency and consistently high surface quality.

#### Advantages

- Highly flexible and adaptable to contours
- 3-dimensional grit penetration
- Low clogging
- Alkali- and solvent-resistant
- Extremely long lifetime
- Very low flammability and thus a safe alternative to steel wool

#### Applications

- Fine sanding
- Intermediate sanding of varnishes to trim projecting wood fibres
- Removing spray vapour
- Sanding of profiled and rounded workpieces
- Flattening of primer filler

Materials Varnish; hard wood; soft wood

# Application



## 7240 siacarat – For finishing scratch-resistant surfaces



#### **Product profile**

Grit type: Grit range: Backing: Coating: Bonding: Diamond 500; 1000; 2000; 3000 Knitted fabric with foam backing Special process Resin over resin

Thanks to the coating of diamond abrasive minerals combined with the pressure-damping foam backing, 7240 siacarat is an ideal solution for wet sanding of hard materials in the varnishes, composites and solid surface materials segments.

#### Advantages

- Extremely long lifetime thanks to state-of-the-art diamond technology
- Lasts up to 40 times longer than conventional abrasives
- Highly adaptable to contours, curves and profiles
- Foam backing equalises pressure and prevents undercutting
- Can be used many times

#### Applications

- Keying of scratch-resistant coating systems as well as composite materials
- Fine sanding of solid surface materials and lacquers
- Scuffing and refining very hard surfaces

#### Materials

Scratchproof lacquer; varnish, solid surface materials





# 7900 sianet – The powerful net-backed abrasive



#### **Product profile**

Grit type: Grit range: Backing: Coating: Bonding: Blue-fired / white aluminium oxide 80-240; 320; 400-600 Knitted fabric Electrostatic Resin over resin

The special net structure of 7900 sianet enables dust-free sanding with the highest abrasive performance.

#### Advantages

- Full-surface dust extraction
- High removal rate without clogging
- Very efficient and productive
- <sup>□</sup> High tear resistance thanks to sturdy net backing

#### Applications

- Sanding off coatings and impurities
- Keying of paints, lacquers, bodyfiller, primer filler and plastics
- Keying of primers
- Fine sanding of surfaces and edges
- Intermediate sanding of varnishes
- Preparation for polishing on high-gloss surfaces
- Fine sanding of solid wood, veneers, solid surface materials, primer film, plaster and dry wall lining boards

#### Materials

Acrylic varnish; old lacquer; primer filler; priming foil; primer coat; HDF board; hard wood; resinous wood; plaster; dry wall lining board

# Application



#### **Conversion forms**



## 7940 siaair – A perfect finish for varnishes and mineral materials



#### **Product profile**

Grit type: Grit range: Backing: Coating: Bonding: Aluminium oxide 240; 360; 500-1000; 1500-2000; 3000-4000 Knitted fabric with foam backing Special process Resin over resin

Whether it's scuffing, fine sanding or preparation for polishing - the improved technology of 7940 siaair is the key to a perfect finish in damp and dry sanding applications.

#### Advantages

- Waterproof and washable
- Extremely long lifetime
- Low scratch depth and low clogging
- Can be used many times
- Absorbs water
- Permeable to air and water
- Pressure-equalising foam gives perfect surface finish

#### Materials

Composite material; paint; varnish; solid surface material

#### Applications

- Keying of polyester and PU lacquers before polishing
- Fine sanding of solid surface materials and lacquers
- Preparation for polishing on high-gloss surfaces
- Final sanding on solid surface materials



# 7983 siasponge flex – Flexible foam abrasive that adapts perfectly to the workpiece



#### **Product profile**

Grit type: Grit range: Backing: Coating: Bonding: Aluminium oxide 60; 100; 180-220 PU foam (soft) Mechanical Elastic binder

Be it curves, shapes or contours – an even and perfect sanding pattern can be achieved with siasponge flex. The extra-soft foam of siasponge flex ensures maximum conformability.

#### Advantages

- Colour coded for easy identification
- Foam backing equalises pressure and prevents undercutting
- Highly adaptable to contours, curves and profiles
- Low clogging
- Can be used many times
- Consistent performance throughout the life of the product
- Can be used wet or dry

#### Materials

Old paint; old lacquer; paint; primer filler; melamine sheet; NC lacquer; PU lacquer; bodyfiller; polyester lacquer; UV lacquer; water-based varnish; plastic; solid surface material; hard wood; soft wood; plaster

# Applications Keving of wo

- Keying of wood, metal and plastic prior to application of paint
- Fine sanding of primer filler
- $\hfill\square$  Sanding of profiled and rounded workpieces
- Keying surfaces without altering the shape



## 7990 siasponge Block hard – The foam block for quick use



#### **Product profile**

Grit type: Grit range: Backing: Coating: Bonding: Aluminium oxide 36; 60; 100; 180 PU foam (hard) Mechanical Elastic binder

Surfaces can be treated quickly and easily with the siasponge Block. The handy sanding block is ready to use at any time and achieves excellent results thank to its superior edge stability.

#### Advantages

- Colour coded for easy identification
- Low clogging
- Can be used wet or dry
- Coated on all four sides, ideal for use inside rebates and on flat surfaces

#### Materials

Old paint; old lacquer; paint; primer filler; melamine sheet; NC lacquer; PU lacquer; bodyfiller; polyester lacquer; UV lacquer; water-based varnish; plastic; solid surface material; hard wood; soft wood; plaster

#### Applications

- Keying of wood, metal and plastic prior to application of paint
- Fine sanding of primer filler
- Intermediate sanding of varnishes on surfaces and curves
- Keying rebates and slight curves

#### Application







# siachrome – The polishing system which is fast, simple and brilliant



Advantages

- Efficient and process-reliable polishing due to colour concept
- Suitable for hard and soft lacquers and solid surface materials
- Usable on all polishable surfaces
- Silicone and solvent free, water-based

With the siachrome polishing system, sia Abrasives offers an efficient range of products that can be used to reliably carry out all stages of top coat preparation.

#### Applications

- Removing polishing scratches
- Polishing of lacquers and solid surface materials

#### Application



**Conversion forms** 

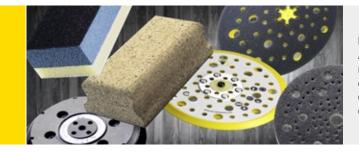


#### Comparison test of siasponge grades with 1960 siarexx grit ranges

| 7990                         |      |     |      |     |     |      | ultra | afine | ultrafine |
|------------------------------|------|-----|------|-----|-----|------|-------|-------|-----------|
| siasponge block hard         |      |     |      |     |     | supe | rfine |       | superfine |
| 7991<br>siasponge block soft |      |     |      |     |     |      |       |       | fine      |
| 7983                         |      | mec | lium |     |     |      |       |       | medium    |
| siasponge flex               | coar | se  |      |     |     |      |       |       | coarse    |
| 1960 siarexx                 | 180  | 220 | 240  | 280 | 320 | 400  | 500   | 600   |           |

#### Comparison test under the following conditions:

Test method: LTM9.0 – sia Abrasives application simulation Test equipment: 59.275 / Berta, Material: DuPont<sup>™</sup> Corian<sup>®</sup> Surface roughness measurement (Rz) as per DIN EN ISO 4287



#### Matching system components

As the ideal enhancement to our sanding system, we offer a perfectly coordinated range of accessories for all sanding applications. Hand sanding tools in different dimensions and varying levels of hardness. Backing pad for random orbital sanders and rotary sanders from extra soft to hard, in a diverse range of hole patterns and dimensions.

#### Backing pad Ø 125 mm

Suitable for random orbital sanding

Size:

Type:

Size:

Type:



Ø 125 mm 54-hole, soft, siafast hook and loop system Article no.: 0020.6728



Ø 125 mm 54-hole, hard, siafast hook and loop system Article no.: 0020.6729

Backing pad Ø 150 mm

Suitable for random orbital sanding



Size: Ø 150 mm Type: 103-hole, extra soft, siafast hook and loop system Article no.: 0020.5742



Size: Ø 150 mm Type: 103-hole, soft, siafast hook and loop system Article no.: 0020.5740



Ø 150 mm Size: 103-hole, hard, siafast hook and loop system Type: Article no.: 0020.5741



Size: Ø 150 mm 54-hole, soft, siafast hook and loop system Type: 0020.6734 Article no.:



Size: Ø 150 mm 54-hole, hard, siafast hook and loop system Type: Article no.: 0020.6735

#### **Manual sanding blocks**

Suitable for dry sanding



70 x 125 x 38 mm Double-sided (medium hard-extra soft), siafast hook and loop system Article no.: 0020.0342



Cork, hard Article no.: 0020.0095

70 x 125 x 40 mm



Size: Type: Article no.:

Size:

Type:

Size:

Type:

Size:

70 x 125 mm 29-hole, siafast hook and loop system 0020.6514

#### Plate brush, M14



Ø 130 mm (50 mm) Article no.: 0020.0358 (grain 60) Article no.: 0020.0359 (grain 80)

#### Backing disc for wet sanding

Protects the orbital machine against the water penetration



Size:Ø 145 mmThickness:1 mmType:siafast hook and loop systemArticle no.:0020.3453

#### **Pad saver** Prolongs the service life of the backing plate



Size:Ø 123 mmThickness:1 mmType:45-hole, siafast hook and loop systemArticle no.:0020.8124



Size: Thickr Type: Article

Size:Ø 147 mmThickness:1 mmType:80-hole, siafast hook and loop systemArticle no.:0020.8125



Size:Ø 215 mmThickness:1 mmType:19-hole, siafast hook and loop systemArticle no.:0020.8128



Size:Ø 150 mmThickness:1 mmType:103-hole, siafast hook and loop systemArticle no.:0020.7858

### Foam intermediate disc, Ø 150 mm

The pressure-equalising foam intermediate disc for dry sanding, suitable for multi-hole and mesh sanding discs



Size:Ø 150 mmThickness:10 mmType:103-hole, siafast hook and loop systemArticle no.:0020.5886



Size:Ø 150 mmThickness:5 mmType:103-hole, siafast hook and loop systemArticle no.:0020.7430

#### Polishing disc, yellow



Polishing disc for polishing varnishes and refurbishing of old lacquer Size: Ø 145 mm Type: hard, siachrome polishing system Article no.: 0020.6671

#### Lambskin pad



Polishing disc for polishing varnishes and refurbishing of old lacquer Size: Ø 135 mm Type: siachrome polishing system Article no.: 0020.6674

#### Handpad



Size: Type: Article no.:

Ø 150 mm soft, siafast hook and loop system : 0020.0364



|                            | Sand   | ing solu         | itions           |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
|----------------------------|--------|------------------|------------------|-----------------|-------------------------|-----------------------------|----------------------|--|--|----------------------|-----------------|----------------|--------------------------------|-----------------------------|---------|
|                            | 0      | 2                | 3                | 4               | 5                       | 6                           | 7                    | 8                                      | 9  | 10                   | 0               | 12             | 13                             | 14                          | 15      |
|                            |        |                  |                  |                 | terials                 | Steel frames and lift doors | ails                 | tion                                   | tion<br>oards)                                   | ams                  |                 |                | ts                             | Garden furniture and fences |         |
| Product search             |        | ooring           | Jorete           | Wooden surfaces | solid surface materials | es and                      | Stairs and handrails | Drywall construction<br>(plasterboard) | Drywall construction<br>(dry wall lining boards) | visible timber beams | Heating element | doors          | <sup>-</sup> açades and fronts | rniture                     |         |
| <b>Building Interior</b>   | Window | Parquet flooring | Visible concrete | oden s          | id surfa                | el fram                     | irs and              | wall cc<br>asterbo                     | wall cc<br>/ wall l                              | ible tim             | ating el        | Entrance doors | ades a                         | den fu                      | Decking |
| Dunung interior            | Wi     | Par              | Vis              | Mo              | Sol                     | Ste                         | Sta                  | Dry<br>bli                             | (Th<br>Dr  | Vis                  | He              | Ent            | Fag                            | Ga                          | De      |
| 1749 siaral                |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 1902 siacraft              |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 1919 siawood               |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 1944 siaone                |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 1950 siaspeed              |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 1960 siarexx               |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 2812 siaral x              |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 2920 siawood x             |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 6120 siafleece             |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 7240 siacarat              |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 7900 sianet                |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 7940 siaair                |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 7983 siasponge flex        |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| 7990 siasponge             |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |
| siachrome polishing system |        |                  |                  |                 |                         |                             |                      |  |  |                      |                 |                |                                |                             |         |



| Conve | ersion f | orms   |          |            |       |                     |       |         |                   | Appli                                  | cation s       | steps                            |                                 |                 | Contents |
|-------|----------|--------|----------|------------|-------|---------------------|-------|---------|-------------------|--|----------------|----------------------------------|---------------------------------|-----------------|----------|
| Ŷ     |          |        |          |            | •     | 4                   | Ø     |         |                   | Ð                                      | Ø              | <b>J</b> 6                       | Ø.                              | Ð               |          |
| Rolls | Triangle | Strips | Foam pad | Foam block | Discs | Deltas and polygons | Belts | Brushes | Polishing systems | Random orbit sander,<br>orbital sander | Manual sanding | Parquet flooring sander<br>discs | Parquet flooring sander<br>belt | Long-arm sander |          |
|       |          |        |          |            |       |                     |       |         |                   |  |                |                                  |                                 |                 | Page 82  |
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|                    |   |                  |    |               |   |   |                  |   |   |                    |   |                  |    |        |   |   |   |          |   |   |           |   |   |          |       |   |          |                    |          |   |                  |               |   |                    |                                       |
|                    |   |                  | Τ  | T             |   |   |                  | T |   |                    | T |                  | Τ  | T      | T |   |   |          | T |   |           | Τ |   |          |       |   |          |                    |          |   |                  | T             |   |                    |                                       |
|                    |   |                  |    |               |   |   |                  |   |   |                    |   |                  |    |        |   |   |   |          |   |   |           |   |   |          |       |   |          |                    |          |   |                  |               |   |                    |                                       |
|                    | 1 |                  |    |               |   | _ |                  |   |   |                    |   | 1                |    |        |   |   | 1 |          |   |   | L         | 1 |   | L        |       | 1 |          | 1                  |          |   | 1                |               |   |                    |                                       |

|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   | - |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|----------|-----------|-----------|---|---|---|------------------|-----------|-----------|-----------|---|---|---|---|------------------|---|---|---|-----------|---|---|-----------|-----------|---|---|---|-------------------------|---|----------|---|-----------|---|----|------------------|-----------|---|---|---|
|          |           |           |   | _ |   |                  | _         | _         |           |   | _ | + | _ |                  |   | _ |   | _         |   |   |           | _         | _ | _ | _ |                         | _ |          |   |           | _ | _  |                  |           | - |   |   |
|          |           |           |   |   |   |                  | +         |           |           |   |   | + |   |                  |   |   |   |           |   |   |           |           |   |   | + |                         | - |          | + |           | + | +  |                  |           | + |   |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   |   | - |                  | _         | _         |           |   |   | _ | _ |                  | _ | _ |   |           |   |   |           |           | _ | _ | _ |                         | _ |          |   |           |   | _  |                  |           | _ |   |   |
|          |           |           |   |   | - |                  | -         | _         |           |   |   | + |   |                  | _ |   | - |           |   |   |           |           | _ |   | - |                         | _ |          | - |           | + | -  |                  |           | + |   |   |
|          |           |           |   |   | - |                  |           |           |           |   |   | + |   |                  |   |   |   |           |   |   |           |           |   |   | + |                         |   |          |   |           | + | -  |                  |           | + |   |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   |   | _ |                  | _         |           |           |   |   | _ |   |                  |   |   |   |           |   |   |           |           |   |   | _ |                         |   |          | _ |           |   | _  |                  |           | _ |   |   |
|          |           |           |   | _ | + |                  | -         |           |           |   | _ | + | _ |                  | _ | _ | - |           |   |   |           |           | _ | _ | - |                         | _ |          | - |           | - | +- |                  |           | - |   |   |
|          |           |           |   |   | + |                  |           |           |           |   |   | + |   |                  |   | - |   |           |   |   |           |           |   |   |   |                         | + |          | + |           | + | +  |                  |           | + |   |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   |   | _ |                  |           |           |           |   |   | _ |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         | _ |          | _ |           |   | _  |                  |           | _ |   |   |
|          |           | _         |   | _ | + |                  | -         | _         | _         |   | _ | + | _ |                  |   | _ | - |           |   |   |           | _         | - | _ | _ |                         | _ |          | + | _         | + | +- |                  |           | + |   |   |
|          |           |           |   |   | + |                  |           |           |           |   |   | + |   |                  |   | - |   |           |   |   |           |           |   |   | - |                         | + |          | + |           |   | +  |                  |           | + |   |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   |   |   |                  | _         |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           | _         | _ | _ |   |                  | -         | _         | _         | - | _ | + | _ |                  |   | _ | - |           | _ | - |           | +         | _ | _ | _ | +                       | _ |          |   | _         | _ | -  |                  |           | _ | _ |   |
|          | $\vdash$  | +         | + | + |   | $\left  \right $ | +         | +         | +         |   | + | + | + |                  |   | + | - | +         |   |   |           | +         | + | - | + | +                       | + | $\vdash$ | - | +         | + | +  |                  |           | + |   | + |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   |   |   |                  | $\square$ | $\square$ |           |   |   |   |   |                  |   |   |   |           |   |   |           | $\square$ |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           | +         | _ | _ |   |                  | +         | _         | +         |   | _ | + | _ |                  |   | _ | - | -         |   | - |           | +         | _ | _ | + |                         |   |          |   | +         | _ | -  |                  |           | _ | _ | + |
| $\vdash$ | $\vdash$  | -         | + | - |   |                  | +         | +         | -         | - | + | + | + |                  |   | _ | - | -         |   | - | $\vdash$  | +         | + | - | + | +                       |   | $\vdash$ | - |           | - | -  |                  |           | - | - | + |
|          |           |           |   |   | + |                  |           |           |           |   |   | + |   |                  | - | - |   |           |   |   |           |           |   |   |   |                         | + |          | + |           | + | +  |                  |           | + |   |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   |   | _ |                  | _         |           |           | _ | _ | _ |   |                  |   | _ | - |           |   |   |           | _         | _ |   | _ |                         | _ |          | _ |           | _ | _  |                  |           | _ | _ |   |
|          |           | _         |   | _ | + |                  | -         | _         | _         |   | _ | + | _ |                  |   | _ | - |           |   |   |           | _         | - | _ | - |                         | _ |          | + | _         | + | +- |                  |           | + |   |   |
|          |           |           |   |   | + |                  | -         |           |           |   |   | + |   |                  |   |   |   |           |   |   |           |           |   |   | - |                         | + |          | + |           | + | +- |                  |           | + |   |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          | _ |           |   | _  |                  |           |   |   |   |
|          |           |           |   | _ | + |                  | _         | _         | _         | _ | _ | + | _ |                  |   | _ | - |           | _ |   |           | _         | _ | _ | _ |                         | _ |          | + | _         | + | +- |                  |           | + | _ |   |
|          |           |           |   | _ | + |                  |           |           |           |   |   | + |   |                  |   | _ |   |           |   |   |           |           |   |   |   |                         |   |          | + |           | - | +  |                  |           | + |   |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           | _         | _ | _ | _ |                  | -         | _         | _         | _ | _ | _ | _ |                  | _ |   | - | _         |   | - |           | -+        | _ | _ | _ |                         |   |          |   | _         | _ | -  |                  |           | _ | _ |   |
|          |           | +         | + | - |   | $\left  \right $ | +         | +         | +         |   | + | + |   |                  |   |   | - | +         |   | - |           | +         | + | - | + |                         | - |          |   | +         | + | -  |                  |           |   |   | + |
|          |           | +         | + | + |   |                  | +         | +         | +         | + | + | + | + |                  |   |   |   | +         |   | - |           | +         | + | - | + |                         | + |          |   | +         | + | +  |                  | $\vdash$  | + | + |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   | _ |   |                  |           | _         |           |   | _ | _ |   |                  |   |   |   |           |   |   |           |           | _ | _ | _ | +                       |   |          | _ |           | _ | _  |                  |           |   | _ |   |
|          | $\vdash$  | +         | + | + |   | $\left  \right $ | +         | +         | +         | - | + | + |   | $\left  \right $ |   | + | - | +         | _ | - |           | +         | + | _ | + | +                       | + | $\vdash$ | - | +         | + | -  | $\left  \right $ |           | - | _ | + |
|          |           | +         | + | + |   |                  | +         | +         | +         | + | + | + | + |                  | + |   |   | +         |   | - |           | +         | + | - | + |                         | + |          |   | +         | + | +  |                  | $\vdash$  | + | + |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   | _ |   |                  | -+        |           |           |   | _ | _ | _ |                  |   | _ | - |           |   | - |           | -+        |   | _ | _ |                         | _ |          | _ | -+        | _ | _  |                  |           |   | _ |   |
|          | $\vdash$  | +         | _ | + |   | $\left  \right $ | +         | -         | +         |   | - | + | _ | $\left  \right $ |   | _ | - | +         |   |   |           | +         | + | _ | + |                         | _ |          | - | +         | + | -  |                  |           | + | _ | + |
|          |           | +         | + | - |   | $\left  \right $ | +         | +         | +         | + | + | + |   |                  |   |   | - | +         |   | - |           | +         | + | + | + |                         | - |          |   | +         | + | +  |                  | $\square$ | + | + | + |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          | $\square$ | $\square$ |   |   |   | $\square$        | $\square$ | $\square$ | $\square$ |   |   |   |   | $\square$        |   |   |   | $\square$ |   |   | $\square$ | $\square$ |   |   |   | $\downarrow \downarrow$ |   |          |   | $\square$ |   |    | -                |           |   |   |   |
|          | $\square$ | _         | _ | _ | - |                  | -         | _         | _         |   | + | + | _ |                  | _ | _ | - | -+        | _ | - |           | +         |   | _ | _ | +                       | _ |          | + | +         | _ | +  |                  |           | + | _ |   |
|          |           | -         | + | + | - |                  | +         | +         | +         | + | + | + | + |                  |   | _ | - |           |   | - |           | +         | + |   | + | +                       |   | $\vdash$ |   | -+        | + | +  |                  |           | + | + | + |
|          |           | +         | + | + |   |                  | +         | +         | +         | + | + | + |   |                  |   |   | + |           |   | + |           | +         | + | + | + |                         | - |          | - | +         | + |    |                  | $\vdash$  | + | + |   |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |
|          |           |           |   | _ |   |                  |           |           |           |   | _ |   |   |                  |   | _ |   |           |   |   |           |           | _ |   | _ |                         |   |          | _ |           |   |    |                  |           |   |   |   |
|          |           |           |   | _ |   | $\left  \right $ | +         | -         | _         |   | + | + | _ |                  |   | _ | - |           |   | - |           | +         | + | _ | + |                         | _ |          |   | -         | _ | _  |                  |           | - | _ | + |
|          |           |           |   |   |   |                  |           |           |           |   |   |   |   |                  |   |   |   |           |   |   |           |           |   |   |   |                         |   |          |   |           |   |    |                  |           |   |   |   |





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