Official Fabricator

krion®
PORCELANOSA SOLID SURFACE

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Introduction

In this guide you will find all of the necessary information for processing KRION™ elements correctly and safely. These are the correct procedures for guaranteeing customer satisfaction.

The processing procedures described are those that are recognized in Europe, the USA, Middle East and Africa. These instructions must be followed in order to take advantage of the 10-year SYSTEMPOOL installation guarantee. (See conditions at the end of this manual).

This manual is not intended to be fully comprehensive. Although the information it contains is sufficient for carrying out the majority of your projects, other more advanced processing techniques may exist. Please contact SYSTEMPOOL before attempting any technique that is not described in this manual.

Find out more about KRION™ processing. Contact your KRION™ supplier. SYSTEMPOOL will not accept any liability if these techniques are used with other products.

General Information about KRION™ 1

1.1. Information about the product.

KRION™ is a solid, non-porous covering material for walls and floors, kitchens, façades, bathrooms, commercial applications, etc., consisting up of a uniform compound of approximately two thirds Aluminium Trihydrate (ATH), a natural mineral obtained directly from Bauxite, and one third acrylic resins or latest generation polyester.

Resin	Pigment	Mineral content
Polyester	Color	ATH (trihidrato de alumina)
Acrylic		

KRION™ can be used for a huge array of applications in homes and commercial premises as a decorative material and for daily use. It offers versatility of design, functionality and durability. Manufactured in sheets and moulded sections, it can be processed into practically any design using conventional carpentry tools.

KRION™ is the original material for solid surfaces, which is only manufactured by SYSTEMPOOL. It is an ideal material for countertops, vanity tops, wall coverings for showers and bathrooms, kitchen sinks, washbasins, laboratory worktops, etc., in a wide range of sectors including hotels, operating theatres, banks, shops, restaurants and many more.

- Non-toxic: at room temperature, KRION™ is non-toxic, and is virtually free from any type of gaseous emissions containing organic compounds. In the event of fire, KRION™ burns cleanly and produces an insignificant amount of smoke. Also, KRION™ adhesives and sealants produce extremely low levels of emissions of volatile organic compounds during the curing process, well below the standard limits for the United States and the European Union.

- Long lasting and renewable: it is a long-lasting material that can be repaired and renewed. It is also 100% recyclable.

- Chemically inert and environmentally safe: it does not react with other chemical elements or materials, meaning it has a minor impact on the environment. Also, KRION™ meets the most stringent standards for contact with foodstuffs.

- KRION™ is certified according to the ISO 19.712 standard for Solid Surfaces.

Characteristics 2

Antibacteria

Resistant to germs & bacteria.
Does not allow the proliferation of germs and bacteria.
Very low volitile organic compounds. (VOCs)
Aseptic.
Suitable for use in operating rooms.

ANTI BACTERIAS SIN ADITIVOS

GREENGUARD GOLD

KRION™ does not allow bacteria or fungi to grow or spread. This is an intrinsic property of the composition of the material, without the need for additives to achieve this permanent effect.
This makes it an ideal material for locations with demanding hygiene and sanitation requirements, such as operating theatres or clean rooms.

Ecological

SCScertified RECYCLED CONTENT

KRION™ is an ecological material, as it is 100% recyclable. Any product made of KRION™ can be reprocessed and used again in its production process.
Some KRION™ series are manufactured with recycled material.

Durable:
- Renewable
- Reusable
- Repairable

Characteristics

Natural

This material is made of two-thirds natural minerals (ATH – aluminium trihydride) and a low percentage of high-resistance resins.

Invisible seams

When KRION™ is properly processed, as indicated in this manual, the end results are of a very high standard, with invisible seams.

INVISIBLE SEAMS

- Seam resistance.
- Seam resistance.
- Tensile strength of KRION™ bonding material: 30.6 Mpa.
- Tensile strength of KRION™ sheets: 40 Mpa.
- The PENCENTAGE OF TENSILE STRENGTH of the seamed material in respect to the sheet is 76%.

CHEMICAL WELDING (KRION™ Stone)

KRION™ Stone sheets and parts (ref. 5101) can be bonded to one another with the chemical welding kit made of the same formula. See page 72.

Integrated sinks

KRION™ sinks and washbasins are available in a wide range of colours, thus making it possible to integrate sinks into countertops.

Resistant

All tests have shown that KRION™ is the most resistant Solid Surface on the market to factors such as sunlight, high temperatures and abrasive products.

KRION™ is a product that is extraordinarily resistant to deterioration caused by UV radiation.
The most stable colour is white; please consult the manufacturer for information on other colours.
Inappreciable change in colour (white colours) during 10 years.

Specific study of the situation. Orientation,radiation ΔE colour difference. A formula that determines the change of colour, measures three components: light, blue - yellow and green - red.

Characteristics

Highly resistant to fire

The KRION™ product range is considered to be practically fireproof as it does not allow fire to spread. It is classified according to the UNE-EN 13501 standard as Euroclass B-s1-d0, where the values indicate:

- B Very limited contribution to fire.
- s1 Low amount and speed of smoke emission.
- d0 No burning droplets or particles are produced.

KRION complies with the rule USA Class A:

A Very limited contribution to fire.
Low amount and speed of smoke emission.

Thermoformable

With KRION™ we can obtain specific curvatures by applying heat and force for a specific period of time.

- Allows for organic designs.
- 3D shapes are possible.
- The minimum radius permitted for thermoforming (colours) is 50mm.
- No alteration in colour, maintains the same intensity of colour.

Easy to clean

Any normal stain, superficial burn, graffiti or marker pen stain can be removed, immediately returning the surface to its original appearance simply by following the recommended cleaning instructions.

How is it processed?

KRION™ is a very hard material. Added to this, it is easy to process since it is worked in a similar way to wood or marble.

Applications

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KRION™ has a wide range of well-known applications.

Its capacity to prevent bacteria from building up makes it an ideal choice as a wall covering or as furniture where these conditions are required (operating theatres, medical surgeries, dentists, laboratories etc).

In hotels, the discrete beauty of KRION™ sheets can be used to grace any type of wall. It can also be used to create headboards, furniture, bathroom countertops, shower trays, wall coverings, swimming pools or community areas.

It can be used to create tables, chairs, bookshelves or shelves, bar countertops, niches, and furniture or auxiliary furnishings of all kinds.

As this material is UV-resistant, it is ideal for urban furniture. Benches, flowerpots, road dividers, squares, fountains, decorative elements and coverings are just a few examples of the possibilities offered by KRION™.

Using Ventilated or Bonded Façade Systems from Butech, we can cover large surfaces. Façades that serve as canvases on which KRION™ provides a modern, futuristic appearance.

Shower trays and countertops can be made according to your designs or using those from SYSTEMPOOL: Almond, SP Concept, Epoque, Modul, Kole..

Formats 4

Details of the size of the sheets and different bowls can be found in the KRION™ 2014 General Catalogue and on our website: www.krion.com

General tips before beginning a work project 5

5.1- Preparation and installation tips.

Check that the pre-installation is suitable for the project to be carried out, making sure that:

The entrances to the installation area are large enough to manoeuvre the material, checking doors, hallways, lifts, elevators and staircases. This will condition the way that work is carried out.

The indicated measurements are correct. Templates should be used as a way of gathering data. These are useful when carrying out work.

The spirit levels, set squares and other levelling tools are suitable for installing KRION™.

The installation substrates (walls, ceiling, etc.) are suitable for the type of work being carried out. They must all be completely flat and level.

Check the position of the seams, making every effort to locate them in the least visible points. Take into account the recommendations contained in this manual about positioning seams and strengthening them.

Also take into account and check the following elements:

Plugs and sockets.

Doors and windows.

Gas and water pipes

Occupational safety and work conditions

6.1- Health and safety conditions.

We recommend that KRION™ installers work according to the instructions contained in this Guide and respect applicable Occupational Health and Safety legislation.

Safety instructions:

1. For your own safety, please read the instructions for all tools and take all necessary precautions.

2. Use tools with earth connections.

3. Keep the working area clean and tidy.

4. Keep visitors and children away from the working area.

5. Do not use excess force with tools.

6. Always use the right tool.

7. Wear suitable clothing. Loose clothing and elements such as necklaces or bracelets can be dangerous if they become trapped in machinery.

8. Always wear safety goggles or a suitable face mask when working, ear protection, safety boots, gloves and all other recommended safety equipment.

6.1- Health and safety conditions.

9. Use clamps to hold the sections you are working on in place whenever possible.

10. Make sure all tools are kept in good working order.

11. Use the recommended accessories.

12. Take steps to ensure that tools cannot be started up accidentally.

13. Do not step on tools.

14. Check all damaged components and repair immediately.

15. Never leave tools unattended.

16. Regularly check tools and machinery as per the manufacturer’s instructions.

17. If you are taking medication, check with your doctor and/or chemist to see if it may have any adverse effect on your work (causing sleepiness, lack of attention, nervousness, etc.). If it does, avoid using tools and machinery.

18. Do not use tools and machinery under the influence of drugs or alcohol.

Occupational safety and work conditions

6.1- Health and safety conditions.

19. Make sure all drill bits and saws are kept sharp.

20. Keep all adhesives away from heat sources.

21. If you use a forklift, make sure it is kept in good working order and follow all safety instructions.

22. Do not allow children to enter the workshop.

6.2- Safety when applying the adhesive.

Use latex gloves to prevent it coming into contact with the skin.

Avoid contact with the eyes by using safety goggles.

The peroxide in the catalyser is corrosive to human body tissues.

Do not swallow the adhesive. If accidentally swallowed, drink two glasses of water and immediately call the National Toxicology Institute (91 562 0420). Keep the container. Do not induce vomiting

If this occurs, wash for at least 10 minutes under running water and then go to the nearest hospital.

6.3- Working conditions.

1. The optimum environmental temperature in workshops is 18º C, since at lower temperatures the adhesive will take longer to catalyse.

2. Before starting work, the sheets should be stored at a stable temperature for at least 12 hours to allow them to stabilise.

3. The working areas must have good lighting conditions.

4. In the area where KRION™ is bonded in workshops, keep dust and waste matter to a minimum since it might affect the quality of any resulting seams.

5. Dust and cut-offs must be removed using a vacuum cleaner.

6. Work benches where KRION™ is bonded must be totally level.

7. The KRION™ sheets must be stored in an area where they cannot be damaged.

Occupational safety and work conditions 6

6.4- Recommendations for use.

Always:

- It is important to make sure that elements made of KRION™ can always dilate freely.
- Always leave a space of at least 1 mm per linear metre to allow the material to dilate and contract.
- Do not fasten KRION™ mechanically to other surfaces (with screws, nails, staples, rigid adhesives etc).
- Use flexible adhesives (we recommend Butech P-404) to adhere KRION™ to other surfaces (polyurethane sealant, polyurethane foam, silicone, etc.).
- Always round off the inside and outside corners, edges and reinforcement strips, as this is where the greatest stresses are placed on the acrylic materials, the most common cause of breakage.
- Always sand the edges to remove any nicks or cuts.
- The KRION™ sheet must always be attached to the substrate using a flexible adhesive.

Never:

- Screw anything on to the KRION™ elements.
- Cut the KRION™ elements with a jigsaw.
- Bond KRION™ elements using adhesives other than those supplied by SYSTEMPOOL.
- The seams must not coincide with heat sources.
- Do not attach the KRION™ sheet to underlying boards without openings if there are any heat sources nearby.
- Do not handle KRION™ with dirty hands, especially when bonding sections.

Tools 7

7.1- Tools and equipment.

In general, the type of machinery used for carpentry and cutting marble is suitable for processing and working with KRION™.

Handling and installation are equally or even more important in obtaining a high quality level in projects made using KRION™.

Using machinery with the right power and suitable quality will ensure obtaining the best results, essential for this type of work. SYSTEMPOOL recommended Festool tools.

FESTOOL

Basic tools and machinery for processing KRION™:

Circular saw

Manual circular saw

Tools

7.1- Tools and equipment.

Milling machine/manual milling machine

Fret saw

Drill

Circular sander

Portable vacuum cleaner

Carpentry vice

Clamps

Oven and membrane press

Tools

7.1- Tools and equipment.

Vertical panel saw

Additional materials:

Spirit level

Ruler

Cyanoacrylate adhesive

Hot wax pistol

Sanding disc

Milling bits

Cutting discs

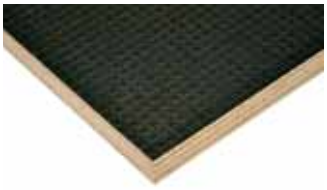
Tools

7.1- Tools and equipment.

Wood blocks

Wooden boards for templates

Material to make supporting frames



Silicone

P-404 sealant (Butech)

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Pencil

Ruled notebook

Chisel

Sanding block

Tools

7.1- Tools and equipment.

Denatured alcohol

Dremel drill

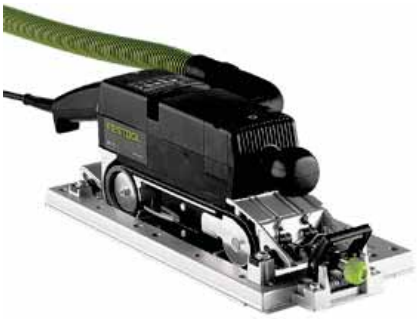
Trestles

Plane

Roll of paper

White cotton cloths (coloured cloths can leave traces of pigment in the seam) or paper

Band sander



3-way clip

Tools

7.2- Safety equipment.

Safety goggles

Protective footwear

Strong gloves

Back support

Ear protection

Protective dust mask

Helmet (for building sites)

Inspection on reception of the material

Although the sheets, bowls and adhesives are verified during manufacturing and before being dispatched, when you receive KRION™ in your workshop you must check that:

- There are no splits, cracks or chips.
- There are no scratches.
- The colour of each sheet is uniform.
- The colour is uniform on different sheets of the same colour.
- There are no stains (contamination).
- The sheets and bowls do not have holes, chips, grooves or pores.
- The particles are distributed evenly (in the Royal and Granite series).
- The real measurements coincide with the nominal measurements.
- The sheets are of a uniform thickness.
- The sheets do not have any deformations or buckling.
- The adhesives are not leaking and have not expired.
- The labels correspond to the product that has been delivered.

If any faults or defects are found in the goods received, immediately contact the corresponding branch to report the incident.

- SYSTEMPOOL will evaluate the situation and decide if it is necessary to replace the goods.
- SYSTEMPOOL will not replace or compensate the cost of products that have already been processed, nor the manufacturing costs or loss of income resulting from the delivery of non-compliant materials.

Slight variations in colour between batches are acceptable and should not be considered as defects.

The manufacturing process for KRION™ means that there may be slight variations between production runs. This is more likely between bowls and sheets, as they are produced in different ways.

For this reason, make sure you use sheets from the same batch for the same project.

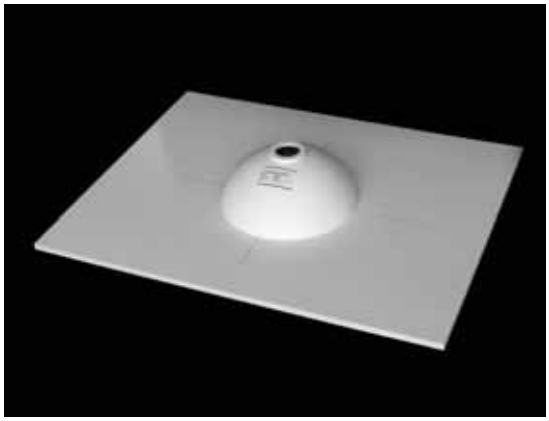
Before starting a project, check that the colour of the different sheets to be used coincides.

8.1- Product inspection.

Bowls

Place the bowl face down on top of a completely flat surface. The sink must be in full contact with the surface. This will prove that the sink is completely flat.

This ensures a completely perfect fit in the KRION™ sheet.



Keep the ‘instructions of use’ leaflet that comes with each bowl so that it can be given to the customer/user once the product has been fitted.

Sheets

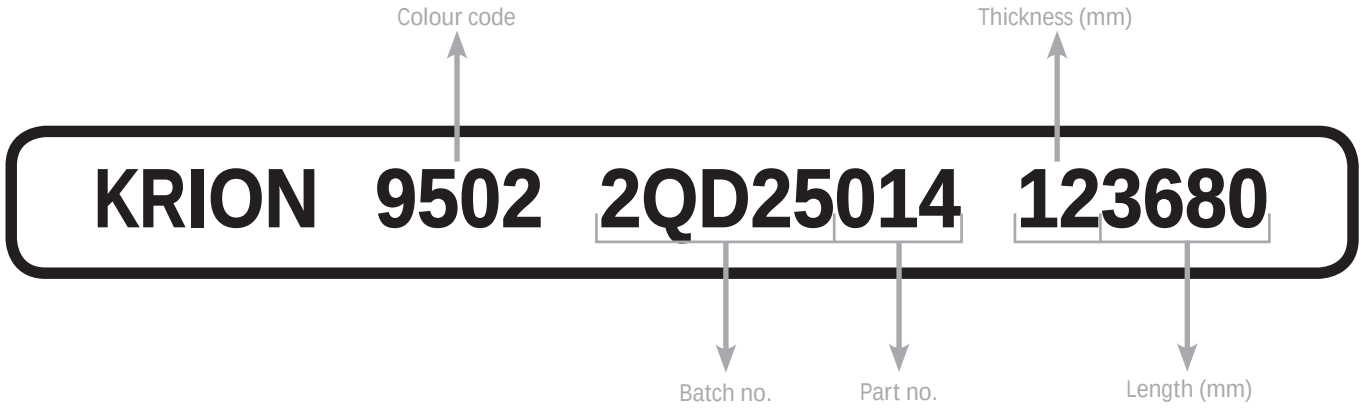
The KRION™ sheets must be inspected immediately after reception: inform your corresponding branch if you find any defects.

Batches 9

9.1- Batch number.

Different production runs of KRION™ of the same colour may have slight variations in tone due to environmental changes, different batches of raw materials, variations in the production process or other unforeseen circumstances.

To ensure the maximum similarity in colour between different sheets, whenever possible always use sheets with the same batch number (preferably successive).



Even when very slight differences do exist, they will be difficult to spot, even by trained specialists.

If you need to bond several sheets in the same project, inform the person taking the order. They will make sure that the sheets delivered are from the same batch.

Sheets from different batches can be used when there is a change of angle (corner).

9.2- How to conceal different batches in the same work project.

There are different ways of concealing the use of different batches of KRION™ in the same project:

► Large panelling: when it is impossible to complete a project using the same batch due to its size, use corners and changes in height to change the batch. The way light shines on surfaces with different angles means that small variations in colour will be invisible.

► Panelling in general: use the expansion joints to change the batch. The change of continuity will mean that no change in the colour will be visible.

► Panelling in general II: do not bond the sheets together; although part of the beauty of KRION™ lies in being able to make large, seamless sections, leave a tongue and groove space between the sheets to break up their visual continuity.

► Recessed bowls: it is more likely that there will be differences in tone between sheets and bowls. Leave the edge with an angle of 15º to conceal the change in colour. If this does not work, try with 30º.

This is more likely to happen with colours with chips, as different production batches may have different concentrations and distributions

Transport & storage 10

The KRION™ sheets must be inspected immediately after reception: inform your corresponding branch if you find any defects.

To unload a pallet of KRION™ from a truck, use a hand pallet forklift with sufficient load capacity.

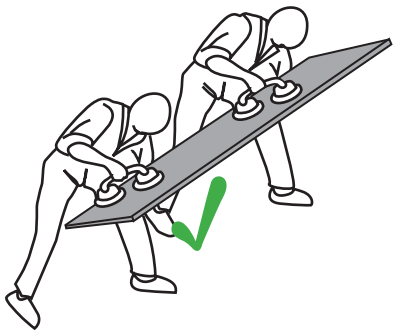
For example, a pallet with 12 sheets of KRION™ Lux measuring 3600x760x12 mm weighs 750 kilos.

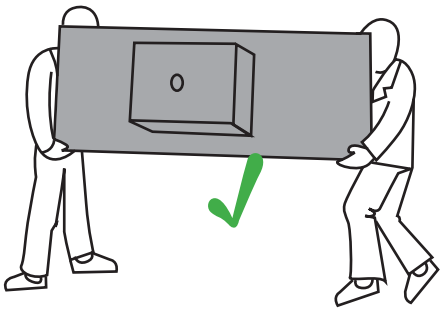
If you do not have a forklift, open the pallet on the vehicle and unload it manually. Whenever handling KRION™ sheets, move them one by one and always with the help of other people.

KRION™ sheets must be transported vertically to prevent them from breaking. When handling KRION™ sheets, you must wear gloves, protective footwear and goggles.

When transporting the sheets, suction pads and other lifting equipment should be used.

The sheets must always be transported by a minimum of two people.





Transport & storage

10.1- Moving.

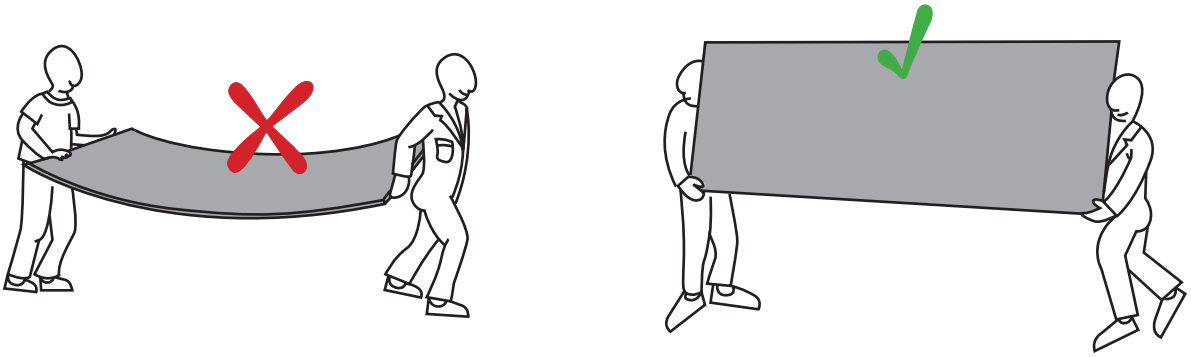
The sheets must be moved vertically using gloves, and never in a horizontal position.

When transporting the sheets, forklifts and clamps should be used.

Each sheet must always be transported by a minimum of two people.

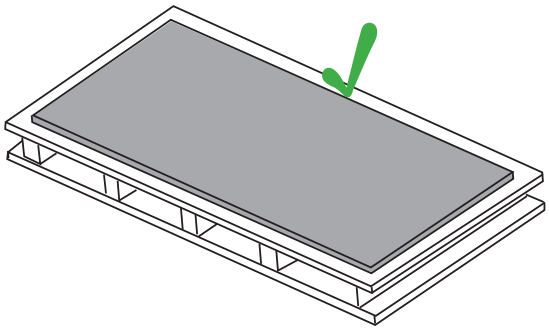
We recommend this to avoid causing damage and deformation to your KRION™ order.

Moulded KRION™ products (such as washbasins, sinks or shower trays) must be handled with care. The packaging protects them from minor knocks, but do not expose them to potential damage.



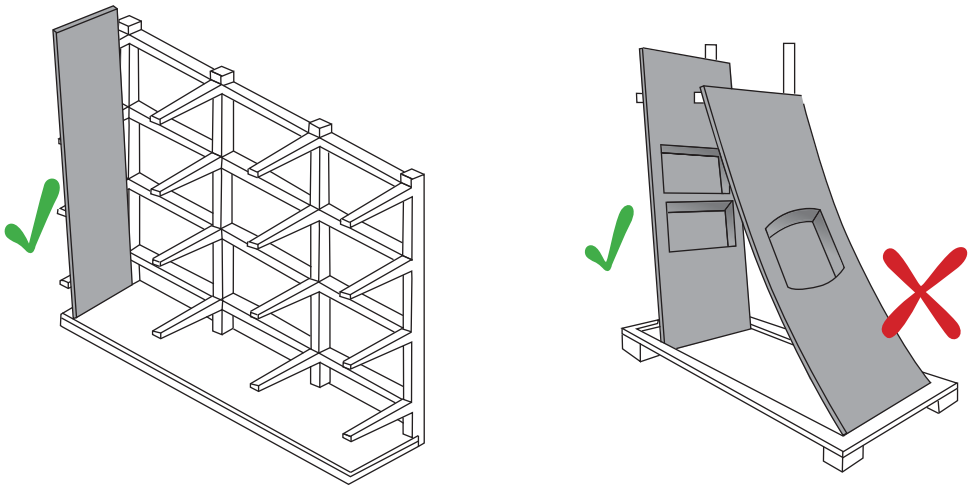
10.2- Storage.

The sheets should be stored horizontally on flat pallets.

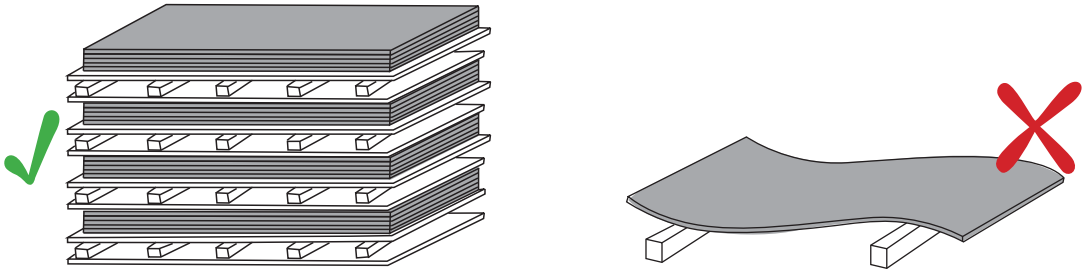


10.2- Storage.

The sheets must be stored on cantilever shelves that permit easy access to the different coloured sheets.

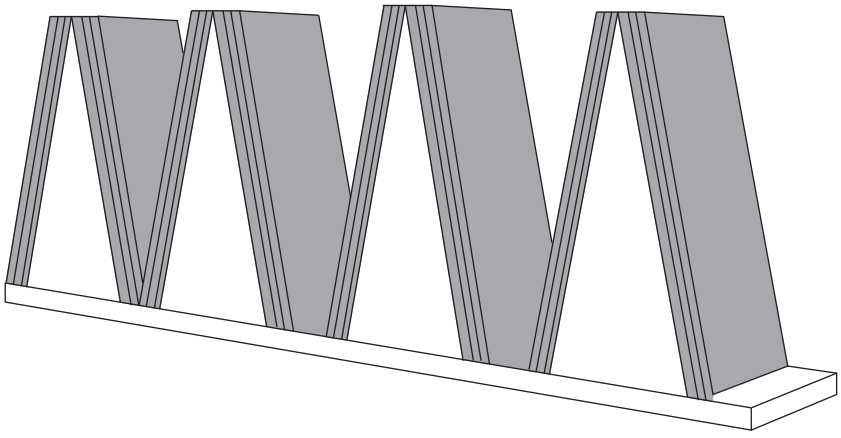


When stacked on the floor, make sure that it is level, the pallets are correctly aligned, and that they have sufficient supports.



To save space, KRION™ can also be stacked on one of its longer on an A-shaped structure.

When storing the sheets vertically, a structure such as the one shown in the diagram should be used.



Transport & storage

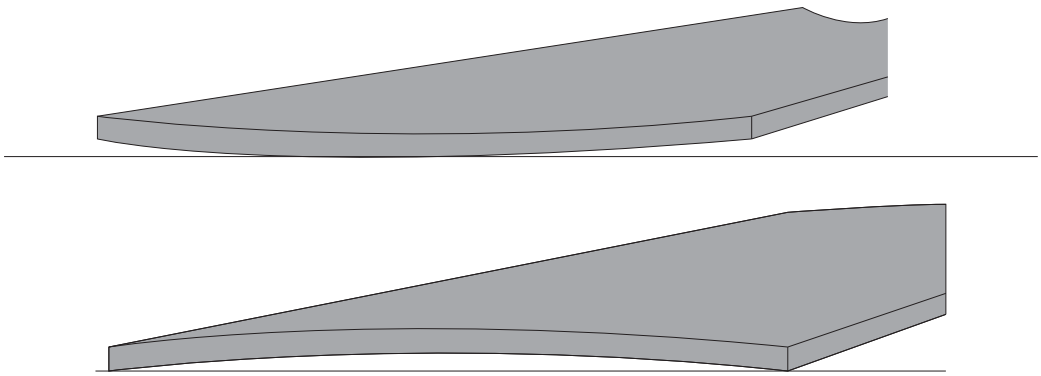
10.2- Storage.

Have the different batch numbers of stored sheets organized and easily locatable.

Boxes containing sinks and washbasins can be stored on shelves or on pallets.

KRION™ should be stored in a dry place away from sunlight, at a constant temperature and away from possible impacts. Do not allow the sheets to be stored in a position where they are under tension.

Do not leave KRION™ products directly on the floor of the workshop. They may warp due to the difference in temperature between the ground and the air:



KRION™ sheets must be stored in their original packaging. Any sheets that are left over should be stored in a vertical position to save space.

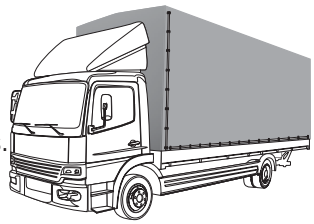
Finished products must be stored in a way that prevents them from being deformed.

We recommend packaging the finished KRION™ product properly before transportation to avoid deformation or other damage.

10.3- Transporting unfinished pieces.

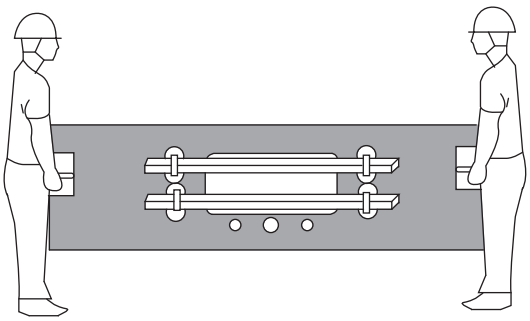
When you need to transport an element made of KRION™ from your workplace to where it is to be installed, take extra care:

- Treat the elements as fragile and valuable (which they actually are).
- Protect the sections with bubble wrap, cork and blankets.
- Fix the sections into place using clamps and straps in the vehicle so that they do not move during transportation.
- Use objects such as wood blocks, clamps or specially made sections to fix the elements in place in the truck when transporting them from your workshop to the customer's home.
- Never transport elements which are so large or heavy that:
  - They are difficult for two people to carry.
  - They do not fit in the transportation vehicle.
  - They can be deformed by the weight of any of their component parts.
  - They are fragile when handled.
  - They do not fit in the route from the street to where they are to be installed: check lifts, stairs, hallways, etc.
  - If special transportation is needed (evaluate the cost of transportation, risk of breakage and working time required to make the element in smaller sections).



Use fixing elements to prevent the countertops from splitting (with or without bowls).

Two straight wood or metal bars can be used to strengthen the countertop during transportation.



KRION™ Processing Operations

11.1- Cutting.

Cutting with fret saws

Remember the saying: “Measure twice, cut once.”

Harmful gases can be released due to the high temperatures produced during cutting.

The saw must have the following features:

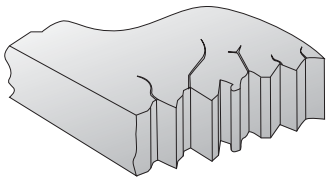
- High power.
- Discs with hard triple tungsten carbide teeth, only used for cutting KRION™.
- Diamond tipped discs produce a better cut. However, if used for dry cutting, they usually become clogged up.
- Discs with teeth at an angle of–5º and +10º for cutting aluminium.
- The discs and safety guides must be adjusted according to applicable safety standards.
- Regularly sharpen the cutting discs. The cutting discs must have 8 teeth per 25 mm diameter.
- The table below shows the most suitable cutting disc saws for working with KRION™.

Diameter (mm)	Cutting widths (mm)	Disc thickness (mm)	Opening (mm)	Number of teeth (mm)	Gap (mm)
160	2,2	2,2	20	48	9,8
200	2,8	2,2	30	64	9,8
250	3,2	2,6	30	80	9,8
300	3,2	2,6	30	96	9,8
350	3,6	3,0	30	112	10,2
400	4,4	3,6	30	128	10,5
450	4,4	3,6	30	144	9,8
500	4,4	3,6	30	160	9,8

11.1- Cutting.

Cutting with fret saws

Vertical fret saws cause small cracks along the cut. As a result, these types of saws should only be used for trimming or preparing KRION™ before making special cuts or trimming, considering that the measurements must be at least 5 mm more. The saw blades must be made of hard metal.



Trimming may cause small cracks along the edges of the cut, which may extend and cause the product to break. A manual milling machine should be used for the final finish.

Make sure that there are no nicks in the KRION™ and the cuts are straight and clean.

Small cracks can cause breakage when the product is exposed to thermal or mechanical stress.

Cutting with a vertical saw

Vertical cutting ensures the cuts are straight.

KRION™ Processing Operations

11.2- Milling.

Milling machines are essential for processing KRION™.

Below we detail the features of the most suitable machines for day-to-day work, although top quality, correctly sharpened metal bits must always be used.

Always used manual milling machines with round bases. This makes it easier to guide the cutting process, as on a round base, the centre of the milling bit is always the same.

Do not rush the cutting process.

Hastily produced cuts and milled sections lead to more imperfections and faults in the work. It will take longer to fix them than to cut them properly the first time.

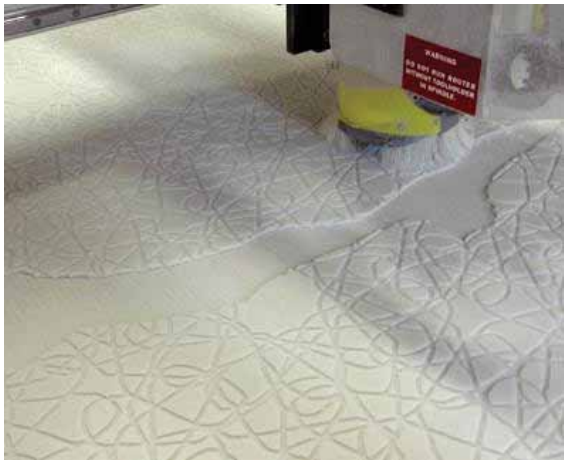
When edging, use templates and/or milling machines with bearings.
Diamond and hard metal milling machines are highly effective at cutting KRION™. Follow the specialist suppliers' recommendations. The table shows the suitable power and type of tool.

Operation	Minimum power	Milling bit
General work For example: cutting edges and seams, cutting openings	1400W	Twin blade 10 mm carbide mill
More demanding types of work: For example: large openings, sheet contours (mill a quarter round)	2000W	Twin blade 10 mm carbide mill
Detailed work: For example: profiling edges	900W	Carbide profiling mill

Note: Machinery manufacturers tend to have models with different power ratings. Preferably these should have a speed regulator.

11.3- CNC (numeric control).

Numeric control machines are costly, but their performance and the possibilities they offer in terms of cutting, edging, folding, milling, profiling or cutting openings are far better than those obtained using manual tools.



Repeat cuts made using numeric control machines are nearly always perfect, unlike manual tools that are more likely to cause imperfections. CNCs make perfect cuts for the creation of seamless surfaces.

The cutting tips or milling machines should only be used for KRION™.

11.4- Considerations prior to bonding.

Material required:

- Plastic tape.
- Wood blocks.
- Clamps/grips.
- Cyanoacrylate adhesive.
- Milling machine.
- Sander.
- Sanding discs.
- Chisel.
- KRION™ adhesive.

KRION™ Processing Operations

11.4- Considerations prior to bonding.

Never bond KRION™ using a solid surface adhesive from another manufacturer.

Their different features may cause stresses leading to breakages.

Colour coincidence test:

1. Cut two strips from the different sheets you intend to use.

2. Bond them together using KRION™ adhesive, according to the instructions contained in this manual.

3. Sand until achieving the required finish.

4. Visually check that there are no differences between the sheets.

In series with large chips, the distribution and size of the particles varies. This is done to give the KRION™ a more natural appearance, similar to natural stone.

The dissimilarity between different sheets is part of the appeal of this series.

Whenever possible, bond correlative sheets. This will help the chips to coincide better.

If this is not possible, cut a 5 mm strip and carry out a test. If the result is not satisfactory, cut another 5 mm strip from another sheet and repeat the test.

You should obtain an acceptable coincidence after several attempts.

The sheets can also be rotated 180º so that they coincide better.

11.5- Preparing the seams.

Note: The seams must always be parallel or perpendicular to the edge of the sheet, and always parallel to the edge of heat sources (vitroceramic hobs, ovens, etc.).

► Check the evenness of the colour and for any visual defects on the surface of the sheets.

► The processor will be responsible for visually inspecting the colour of the sheets.

► Do not use saw-cut material without first milling and/or sanding it. The room temperature should not be any lower than 18ºC or higher than 28ºC.

► When bonding sections from sheets with different batch numbers, there may be slight differences in colour.

11.5- Preparing the seams.

► To reduce the risk of differences in colour, always use sheets with the same batch number for the same project.

► Remember to keep back a piece from the same batch for possible future repairs. For example, adhere a remnant under the kitchen units using silicone.

► Do not bond KRION™ surfaces that have been very finely polished or sanded. First sand the surface that will be in contact with the adhesive, using 240 or 320 grit sandpaper. Adhesive should not be directly applied to the smooth plasticized side of the sheets.

Material required:

► Safety goggles.

► Protective dust mask P100, P 120, P180, P240, P320 & P400 Sandpaper.

► Sanding block.

► Denatured alcohol.

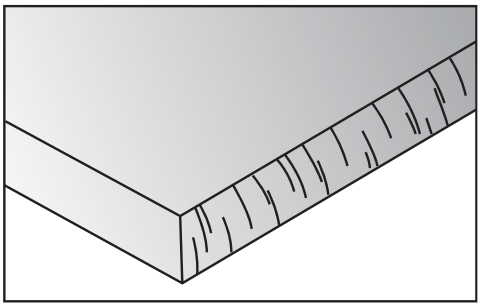
► Clean white cotton cloths or paper.

► Wax paper or adhesive tape.

► KRION™ seam adhesive.

► Milling machine.

The illustration shows the appearance of a sheet after being sawed. This finish should not be used bonding sheets together.



KRION™ Processing Operations

11.5- Preparing the seams.

To remove saw marks, use a milling machine to smooth the surface. Mill the sections one by one with matching edges to achieve an invisible bond.

Use wax paper or adhesive tape on the surface where the KRION™ is to be joined, to prevent the adhesive dripping beneath the material and bonding the sheets to the unit or working surface.

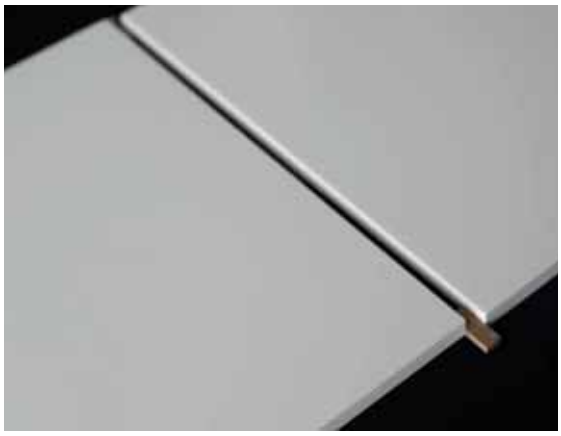
11.5- Preparing the seams.

Check beforehand that the sections to be bonded fit together correctly.

The best way to ensure that they fit together perfectly is to cut “twin edges”.
To do so, the two sheets being bonded are fixed in parallel, then running the milling machine between both at the same time, so that the edges of both sheets are a mirror image of the other.

Milling “twin edges”.

The two sheets are fixed on a level surface 10 mm apart. To maintain this distance between the sheets, use pre-cut 10 mm wood blocks.



Use a 12 mm diameter bit, to remove 1 mm of KRION™ from each side, leaving the edges ready to create a perfect bond.

Fix a steel ruler to the working surface to guide the milling machine in a straight line. Adjust the distance from the edge based on the bit you plan to use and the size of the milling machine.

Check that the recently milled edges coincide perfectly, and that no marks are visible when connecting them. This will produce a seamless bond.

Important!: Only mill once. If you mill it more times, you will damage the seam.

If the edges are not perfect before making the bond, the final result will be faulty. Take time to work correctly without any mistakes. If the seam is not perfect before bonding, mill again and then check. Repeat as many times as necessary.

Check that there is a protective board on top of the working surface, to avoid causing irreparable damage to the surface.

Do not use blocks or wedges when milling, as this will not provide sufficient support for the KRION™ and the milling process will not be perfect.

Fix the sheets in place onto the working surface using clamps. Do not apply too much pressure, as this could leave marks on the KRION™ sections which will have to be sanded off. If you cannot mill using the twin edge process, you can mill both sections independently. The result will be just as good.

11.5- Preparing the seams.

Clean the areas to be bonded with a clean cloth and denatured alcohol.

Note: use good quality paper, as recycled paper is made using paper of different colours, and when combined with the alcohol may stain the seam.

Afterwards, avoid touching the edges with your bare hands, so as not to leave any remnants that may darken the seam.

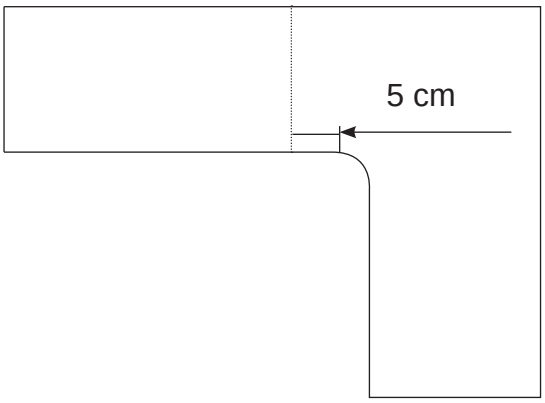
Fit the two pieces being bonded together with a gap of 3 mm between them.

Remember:

- ► Measure and check measurements.
- ► Make templates if necessary.
- ► Cut leaving an extra 5 mm.
- ► Lightly sand the edges after cutting.
- ► Use a properly level cutting surface

11.5- Preparing the seams.

Leave at least 5 cm between the internal angles and the seams, as seen in the diagram.



11.6- Mitering/Folding.

45º miter cuts make it possible to create different planes on the same sheet.

This is useful when creating rear trims and/or skirts.

KRION™ Processing Operations

11.6- Mitering/Folding.

All you need to do this is a 45º milling bit. If you use a 5 axis numerical control milling machine, the machining can also be done with a flat mill bit, angling the head as necessary.

The cut must be completely smooth for bonding purposes.

Attach a strip of adhesive tape under the line you are going to mill to keep the pieces in place, and to be able to work on them more easily.

Once you have machined the pieces, bond them using suitable KRION™ adhesive.

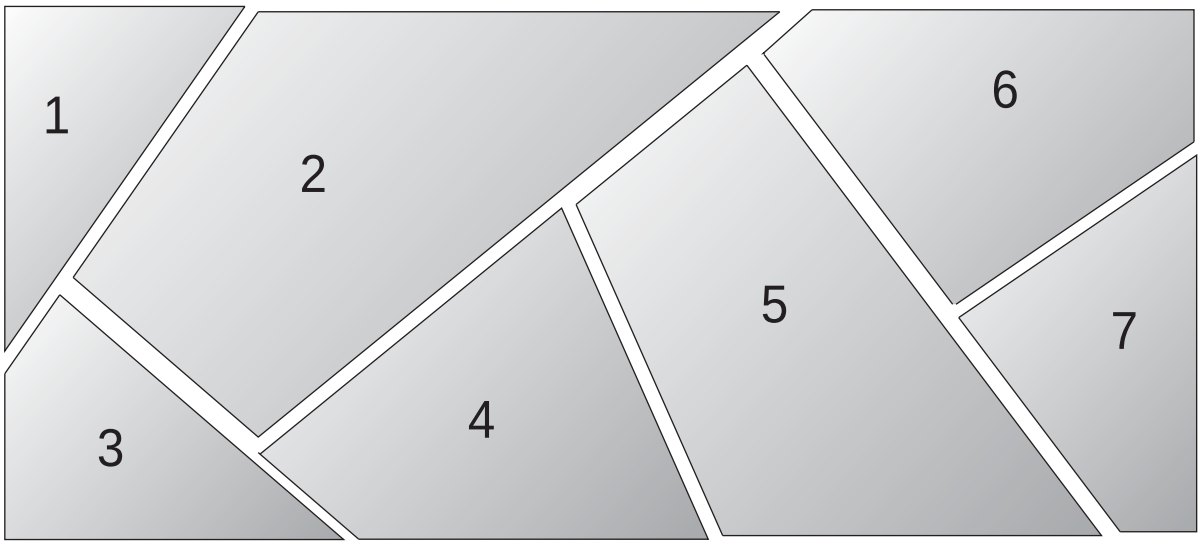
The folding technique is a further step, making it possible to create complex 3D shapes without any visible seams.

To create pieces using folding, it is essential to have a CNC machine with 3D programming abilities.

Planning and preparing beforehand are essential in order to achieve a good end result.

11.6- Mitering/Folding.

1.



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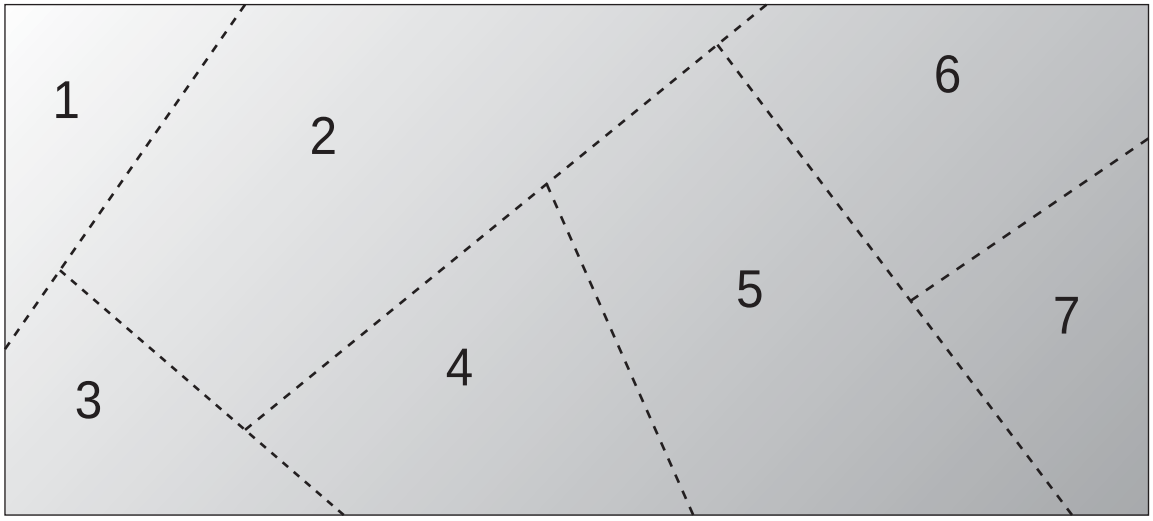

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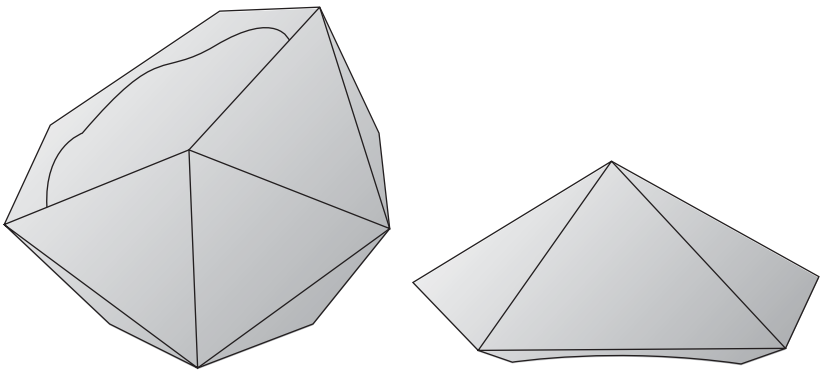


KRION™ Processing Operations

11.7- Preparing the adhesive.

KRION™ adhesive must be kept in a horizontal position in a cool, dark place, preferably a refrigerator.

Warning: ever keep food in refrigerators used for KRION™ adhesives.

Never freeze KRION™ adhesive

Before using KRION™ adhesive, do the following:

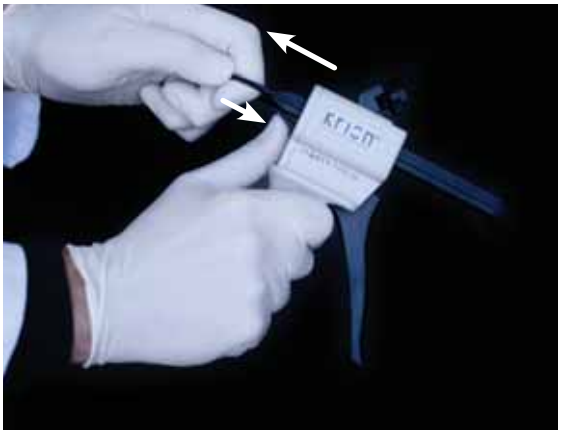
1- Check that the colour code of the adhesive is the same as or is compatible with the colour code of the sheets.

2- First, check the expiry date. Put it in a vertical position for 15 minutes if it has any air bubbles close to the nozzle. This means that when it is used, any air will come out first.

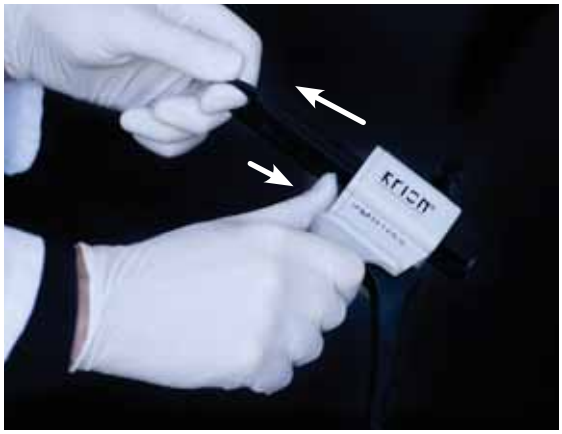
1

3- Pick up the special gun for dosing KRION™ adhesive.
With your thumb, hold down the stop and pull out the rod to make space for the tube of KRION™ adhesive.

3.1



3.2



11.7- Preparing the adhesive.

4- Fit the adhesive tube in the correct position in the slot in the gun.

4.1

4.2

4.3

5- Close the top cover of the gun so that the adhesive is held firmly in place.

5.1

KRION™ Processing Operations

11.7- Preparing the adhesive.

6- Remove the cap by twisting.

6.1

7- Press the trigger of the gun several times until liquid comes out of the two holes of the tube (the adhesive and catalyst).

7.1

8- Fit the mixing nozzle in the correct position on the adhesive tube. The holes in the nozzle must coincide with the holes in the adhesive tube

Twist the nozzle cap to close.

8.1

11.7- Preparing the adhesive.

9- Press the trigger until the adhesive comes out of the end of the nozzle.
Run some of the adhesive onto a piece of paper to check the mixture is correct.

10- The adhesive is ready for use.

10.1

11- After using the adhesive, push down on the stop on the gun with your thumb to relieve the pressure.

Remove the mixing nozzle and screw the cap back on. This will prevent the catalysed material inside the nozzle entering the tube and causing a blockage.

11.1

11.2

12- Remove the adhesive from the gun and place it horizontally in a cool, dark place (preferably a refrigerator).

KRION™ Processing Operations

11.8- Applying the adhesive.

Procedure

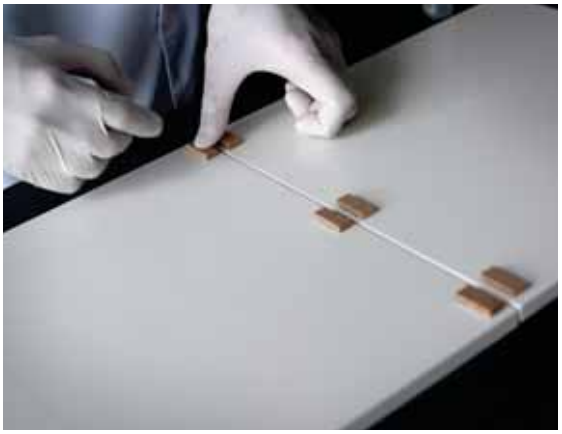
1. Place waxed paper around the seam to keep the adhesive in place and prevent it from adhering to the substrate.

2. Clean the seam with alcohol and good quality paper (not recycled paper).

11.8- Applying the adhesive.

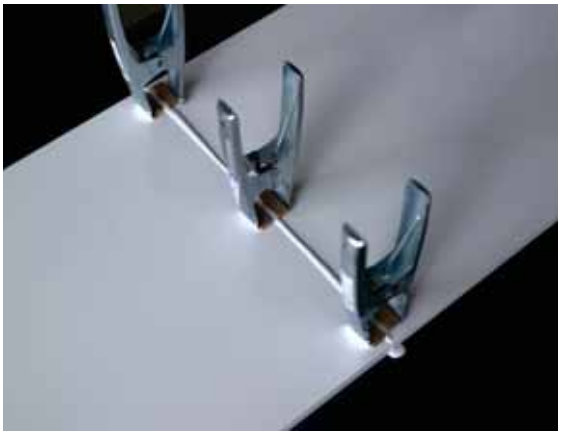
Procedure

3. Use hot wax or cyanoacrylate glue to attach wood or KRION™ blocks close to the area of the seam (the blocks should be fixed in place before applying the seam adhesive).



4. Fill the seam to 1/3 the thickness of the pieces being bonded.

5. Press the blocks in place using spring clips.



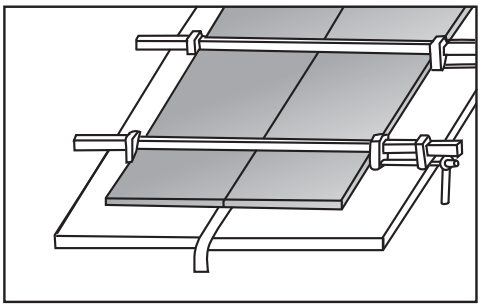
11.8- Applying the adhesive.

■ Procedure

6. Push the pieces being bonded together. The excess adhesive that appears on the surface should not be removed until it has hardened.

The adhesive should flow out evenly along the whole length of the seam. If you press too hard, all of the adhesive will be pushed out of the seam, resulting in a weak bond.

■ Pressure methods



Bar clamps:

Attach the clamps and tighten without forcing.
Leave for approximately 45 minutes at between 21 and 24ºC before loosening the clamps and removing the waxed paper.

Spring grips:

Press the blocks into place using spring grips.
Leave for approximately 90 minutes at between 21 and 24ºC before removing the clips and waxed paper.
KRION™ chemical welding paste: leave for approximately 24 hours at between 21 and 24ºC before loosening the clamps and removing the waxed paper.

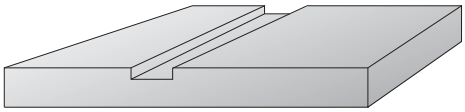
Warning: never place seams close to heat sources. Keep them as far away from heat as possible, and parallel to the edge of the heat source (ovens, hobs, vitroceramic hobs, etc.).
Position the seals over the dishwasher whenever possible.

11.8- Applying the adhesive.

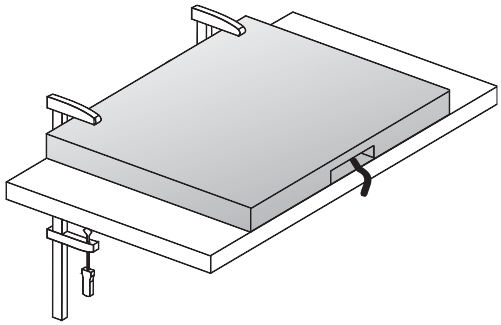
Procedure

Bridging blocks:

Sections with the shape shown below can be used to help adjust the two pieces being bonded.



Use the central groove to position the seam, and fix in place using grips or clamps.



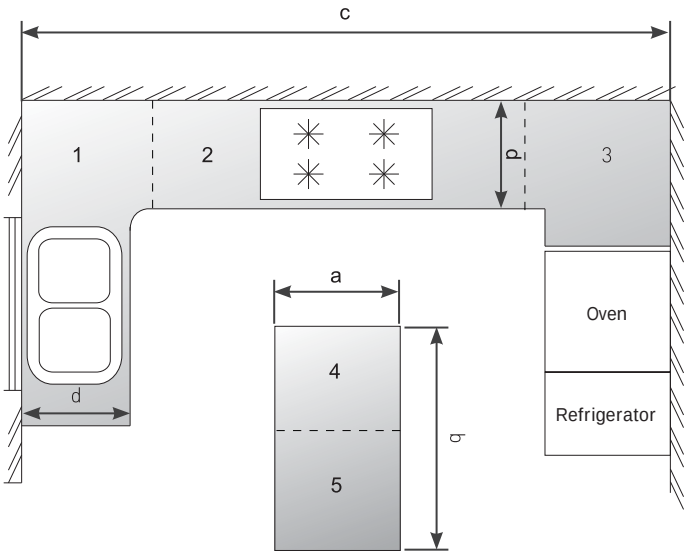
11.9- Positioning seams.

Precautions

Do not position seams in places subject to a high physical or thermal stress, such as corners or sections above ovens or very close to a hob. Remember the size of the final section, and the possibilities for transportation and accessing where it is to be installed.

Carefully plan the pieces that are going to be made in the workshop, as the integrity of the final piece will also depend on it. Do all of the work possible in the workshop. This will make the process easier, as you will have all of the necessary tools. Try to create the smallest possible number of seams, without creating sections that are difficult to transport.

Example:

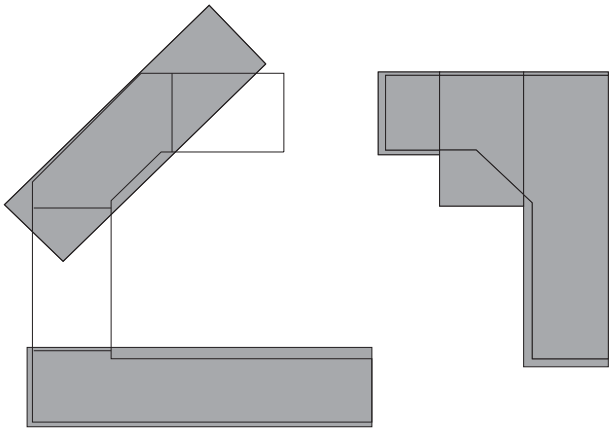


11.9- Positioning seams.

Precautions

If you have to bond sheets lengthways, bond them following the direction of the sheet whenever possible.

Use the following diagram as an example.



Whenever possible, do not position seams in corners.

Faults in the seam

If the seams you have created do not have the necessary consistency, it may be for any of the following reasons:

1. Due to having moved the bonded sheets to adjust the seam before the adhesive dried.
Make sure the seam is perfectly positioned before applying any pressure to it.

2. Due to not having added reinforcements to the underside of the seam.

3. Because too much pressure was applied when the sheets to be bonded were pressed together.
This causes the adhesive to flow out of the seam, meaning the bond will not be strong enough.

4. Due to not having rested the countertop on a proper base.

5. Due to having sanded the seam before the adhesive had dried.

6. Due to having used adhesive past its expiry date.
Although this seems simple, it is the most usual cause of bonding problems.

7. Due to changes in temperature while the adhesive was setting.
Try to keep as stable a temperature as possible in the room or workshop where you are working (air conditioning, heating, keeping the seam out of sunlight, etc).

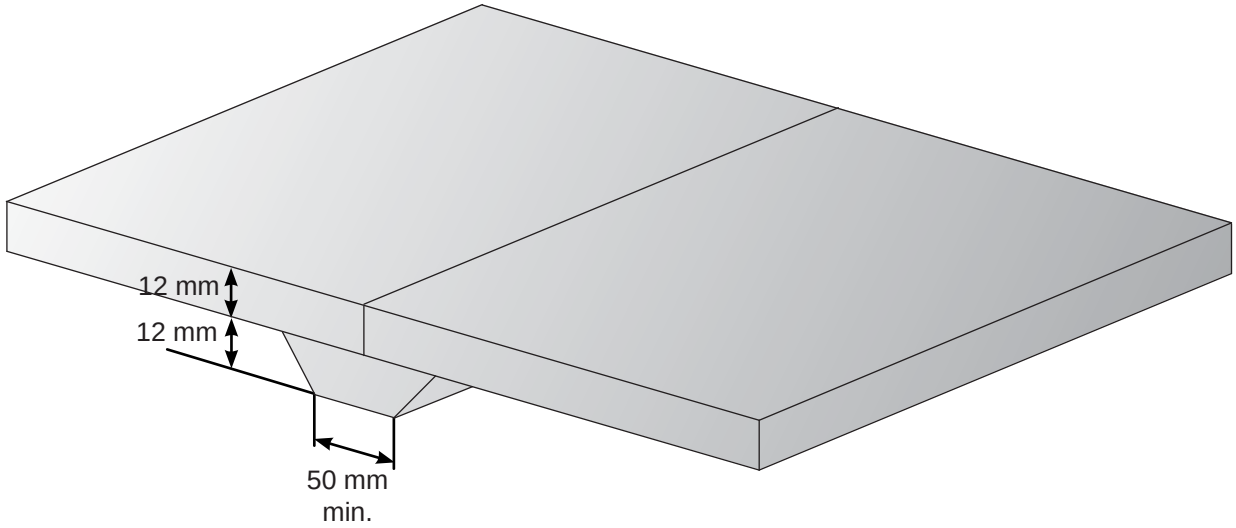
8. Due to the contamination of the seam before or while the adhesive was drying.
Clean the edges of the seam with denatured alcohol and a clean cotton cloth before applying the adhesive
Prevent other substances coming into contact with the adhesive while it cures.

11.10- Reinforcing seams.

Reinforcements must be used under KRION™ seams.

These reinforcements are generally a strip of KRION™ 50 mm wide in the same thickness as the countertop .

The edges of these reinforcement strips must be mitered at a 45º angle to ensure maximum strength and to reduce stress caused by changes in temperature to a minimum. Smooth the edges of the reinforcement strips.



To attach these reinforcement strips to the bottom of the seam, first remove any excess adhesive left behind after bonding using sandpaper.

The upper edge of the reinforcement strip must be sanded to ensure it bonds more firmly to the countertop.

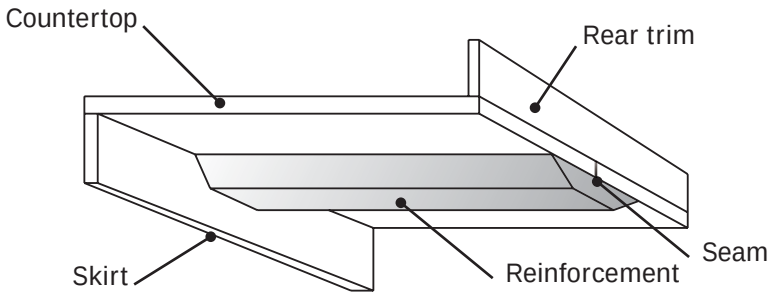
The whole contact area between the reinforcement strip and countertop must be covered with KRION™ adhesive to ensure a correct bond.

KRION™ Processing Operations

11.10- Reinforcing seams.

Make sure that the length of the reinforcement strip coincides with the length of the seam.

If the countertop has a front skirt, the reinforcement strip must reach it. The skirt and reinforcement strip must also be bonded using adhesive.



Remove any excess adhesive after application, before it dries, using a piece of paper or a spatula.

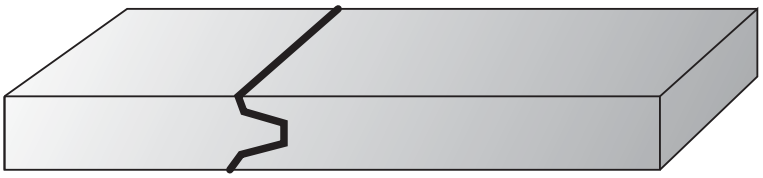
Different coloured KRION™ and KRION™ adhesive from the countertop can be used to reinforce the seams.

Do a test before carrying out the work, as some KRION™ colours, especially light colours, are slightly translucent, and adding material in a dark colour underneath could cause unwanted shadows.

You can attach the reinforcement strip at the same time as bonding the seam.

This will help you to level the two pieces: place the pieces with the visible side on the table, and attach the reinforcement strip underneath.

Tongue and groove seam



This type of seam means there is more adhesive material in the seam, creating a stronger bond.

Using a tongue and groove seam, it is also easier to adjust the two pieces being bonded.

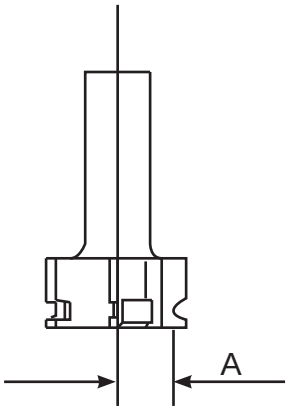
11.10- Reinforcing seams.

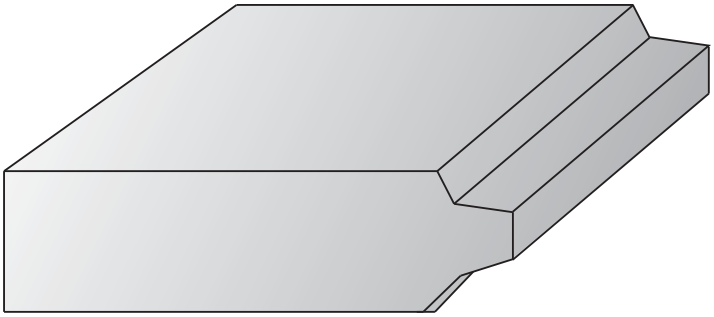
Tongue and groove seam

Put the sheets face down when milling to ensure that they fit together better.

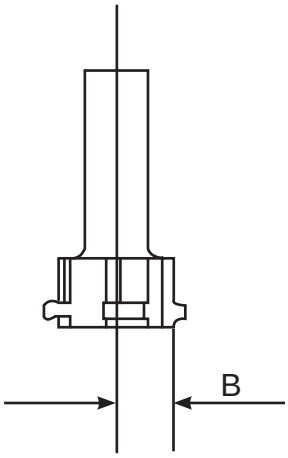
Additional milling bits are required when creating this type of seam. The sections are milled one at a time;

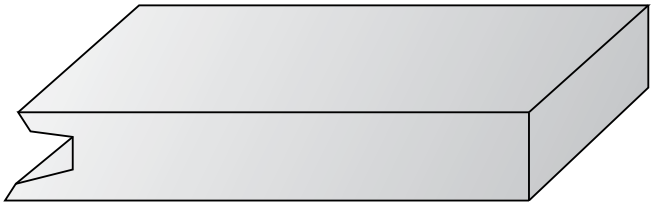
Part A:



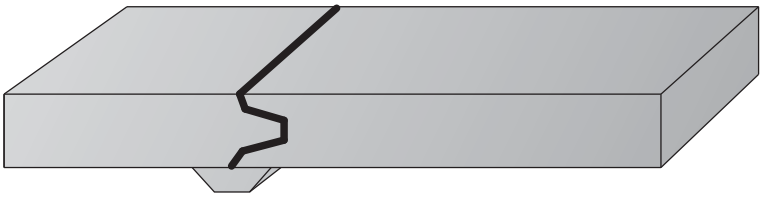


Part B:





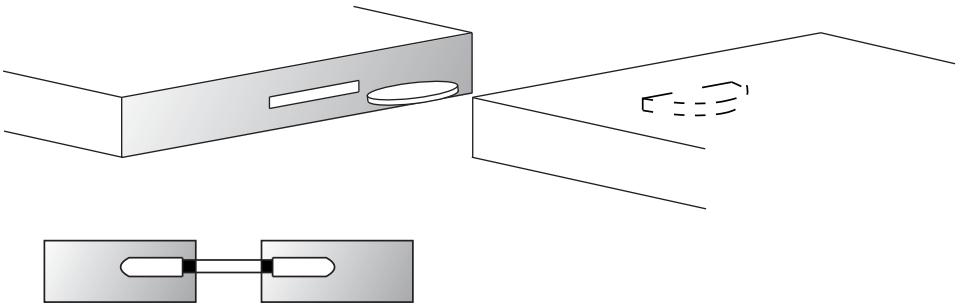
The tongue and groove seam is stronger than a straight 90º seam, although a reinforcement strip will still be necessary.



KRION™ Processing Operations

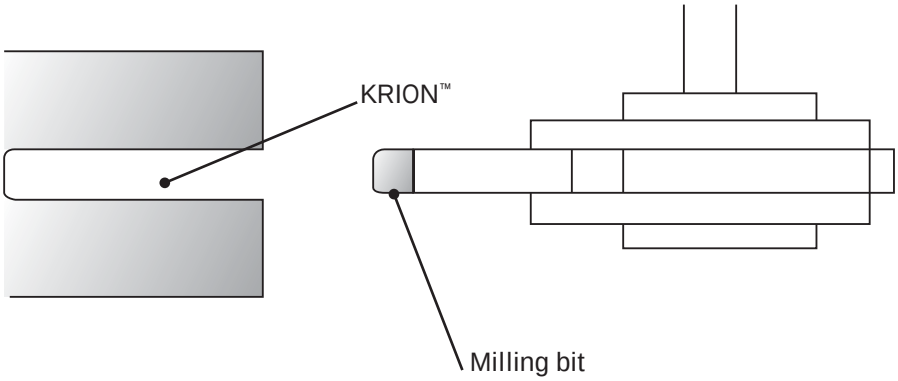
11.10- Reinforcing seams.

- Biscuit



To make a stronger horizontal seam, a biscuit joint can be used.

The biscuits can be made of methacrylate or the same KRION™ used to make the countertop.



1. Use a template to make sure that all of the biscuits are made in the right size.

2. Place adhesive tape along the whole length of the seam.

3. Fill the grooves in the biscuit with KRION™ adhesive.

4. Push the biscuit into one of the slots.

5. Add adhesive along the whole length of the seam.

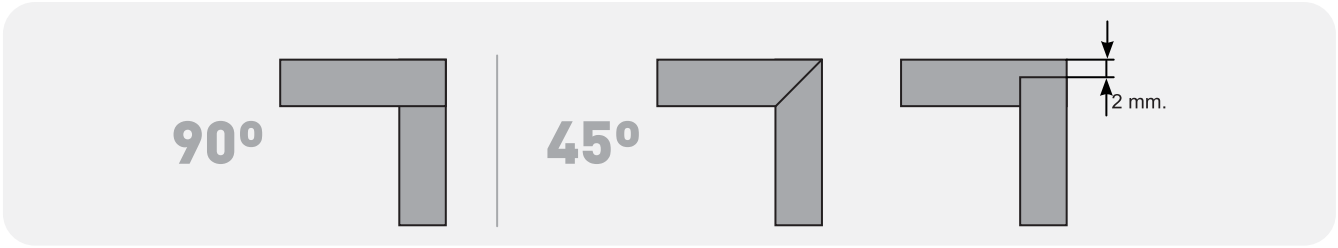
6. Adjust the two pieces of KRION™ and press using the described methods.

7. Wait for 20 minutes and then sand to remove any excess adhesive and give the surface its final finish.

8. Make sure that the edges of the milling bit are rounded to prevent 90º edges

Warning: never use this type of bond close to sources of heat.

11.11- Bonding angles by colour codes.



To ensure a better finish, miter the edges at a 45º angle or trim them down to a thickness of 2 mm before bonding them. For bonds with a 90º butt joint, carry out prior tests to check the end result.

SYSTEMPOOL conducts tests of 90º bonds with all its different coloured sheets. The following list is merely a guideline. Remember, before embarking on a job, carry out tests if you want to bond seams at a 90º angle.

RECOMMENDED STUCK DEPENDING THE COLOR REFERENCE					
Color reference	Color description	Standard Recommended stuck	Color reference	Color description	Standard Recommended stuck
5101	Stone White	90	1701	Blue Sky	45
1100	Snow White	90	1703	Light Blue	45
1101	Ice	90	1704	Navy Blue	90
1102	Marfil	90	1705	Dark Blue	45
1103	White	90	1706	Happy Blue	90
1201	Yellow	45	1901	Black	90
1202	Happy Yellow	45	1902	Light Grey	90
1301	Orange	90	1903	Grey	45
1401	Strawberry	45	1904	Dark Grey	90
1402	Lila	90	6501	Cream	90
1403	Candy	90	6502	Pearl	45
1404	Pink	45	6503	Ground	45
1405	Happy Red	45	6504	Mocha	45
1406	Happy Pink	45	6601	Fall Green	45
1501	Arena	90	6701	Blue Sky	90
1502	Vainilla	90	6903	Grey	90
1503	Lady	45	6201	Imperial Yellow	45
1504	Soap	45	6301	Fruit	45
1506	Camel	90	6401	Red Fire	45
1507	Earth	45	6405	Happy Red	90
1508	Dark Brown	45	6505	Taupe	45
1601	Yove	45	6507	Earth	45
1602	Green	90	6704	Navy Blue	90
1603	Nordic blue	45	6901	Black Metal	90
1604	Chlorophyll	90	6904	Bright	45
1605	Happy green	90	6905	Ash Grey	45

KRION™ Processing Operations

11.11- Bonding angles by colour codes.

RECOMMENDED STUCK DEPENDING THE COLOR REFERENCE					
Color reference	Color description	Standard Recommended stuck	Color reference	Color description	Standard Recommended stuck
4101	White Light	90	8501	Brownite	45
4102	Extreme White	45	8502	Goby Brown	90
4201	Yellow Light	90	8503	Fossil Forest	90
4401	Pink Light	45	8901	Crystal Black	45
4601	Green Light	90	8902	Night	90
4701	Blue Light	90	8903	Grey Granite	90
0101	White Nature	45	9101	Crystal White +	90
0102	Clear Nature	45	9102	Polar Stone	45
0501	Dune Nature	90	9103	Bright Rock	90
0502	Camel Nature	90	9501	Brownite +	90
0503	Earth Nature	90	9502	Goby Brown +	45
0504	Marfil Nature	90	9503	Sweeet Rock	90
0901	Grey Nature	90	9504	Africa	45
0902	Ash Nature	90	9505	Cream Concrete	45
7101	White Star	45	9506	Mocha Concrete	45
7102	Titanium Star	45	9507	Taupe Concrete	90
7901	Black Star	45	9901	Crystal Black +	90
7902	Grey Star	45	9902	Moon	45
8101	Crystal White	45	9903	Deep Granite	90
8102	Soring Pearl	45	9904	Bright Concrete	90

11.12- Compatibility of adhesives.

Original colour
Compatible colour
Partly compatible colour

Adhesive compatibility

The different colours in the KRION™ range must be bonded with their own adhesive. The following list shows some compatible adhesives.

When compatible adhesives are used, perfect precision machining of the edge to be bonded is required.

Color reference	Color description	Adhesive compatibility (high to low order compatibility)				Color reference	Color description	Adhesive compatibility (high to low order compatibility)			
0101	White Nature	0101	4102	1100		1605	Happy green	1605			
0102	Clear Nature	0102	1902			1701	Blue Sky	1701	1703	6701	
0501	Dune Nature	0501	1504	6501		1605	Happy green	1605			
0502	Camel Nature	0502	501	6501	1504	1701	Blue Sky	1701	1703	6701	
0503	Earth Nature	0503	1507	9506	6507	1703	Light Blue	1703			
0504	Marfil Nature	0504	501	1102		1704	Navy Blue	1704	6704		
0901	Grey Nature	0901	7902			1705	Dark Blue	1705			
0902	Ash Nature	0902	6905	9904	7102	1706	Happy Blue	1706			

11.12- Compatibility of adhesives.

Adhesive compatibility

Color reference	Color description	Adhesive compatibility (high to low order compatibility)				Color reference	Color description	Adhesive compatibility (high to low order compatibility)			
1100	Snow White	1100	1103	4102		1901	Black	1901	6901	7901	
1101	Ice	1101	1103	4102		1902	Light Grey	1902	102		
1102	Marfil	1102	1101	1503	6502	1903	Grey	1903			
1103	White	1103	1101			1904	Dark Grey	1904	7102		
1201	Yellow	1201	6201	1202		4101	White Light	4101			
1202	Happy Yellow	1202				4102	Extreme White	4102	4101		
1301	Orange	1301				4201	Yellow Light	4201	4102		
1401	Strawberry	1401	1405			4401	Pink Light	4401	4102		
1402	Lila	1402				4601	Green Light	4601			
1403	Candy	1403	1406	4401		4701	Blue Light	4701			
1404	Pink	1404				5101	Stone White	5101			
1405	Happy Red	1405				6201	Imperial Yellow	6201	1201		
1406	Happy Pink	1406	1403			6301	Fruit	6301	1301		
1501	Arena	1501				6401	Red Fire	6401			
1502	Vainilla	1502	1503			6405	Happy Red	6405	1405	6401	
1503	Lady	1503	1502			6501	Cream	6501	6502		
1504	Soap	1504				6502	Pearl	6502			
1506	Camel	1506				6503	Ground	6503			
1507	Earth	1507	6507			6504	Mocha	6504	9506		
1508	Dark Brown	1508				6505	Taupe	6505	9507		
1601	Yove	1601				6507	Earth	6507			
1602	Green	1602	6601			6601	Fall Green	6601			
1603	Nordic blue	1603	4601			6701	Blue Sky	6701	1701		
1604	Chlorophyll	1604				6704	Navy Blue	6704	1704		
6901	Black Metal	6901	8902	9901		8903	Grey Granite	8903			
6903	Grey	6903	1903			9101	Crystal White +	9101	1100		
6904	Bright	6904	7102			9102	Polar Stone	9102	1100	9101	
6905	Ash Grey	6905				9103	Bright Rock	9103	9902	1100	1902
7101	White Star	7101	4102	101		9501	Brownite +	9501	8501		
7102	Titanium Star	7102	7902			9502	Goby Brown +	9502	8502	502	
7901	Black Star	7901	6901			9503	Sweeet Rock	9503	6502	1102	
7902	Grey Star	7902				9504	Africa	9504	9502	8502	
8101	Crystal White	8101	1103	9101	1100	9505	Cream Concrete	9505	9503		
8102	Soring Pearl	8102	1100	9101	8101	9506	Mocha Concrete	9506	6504		
8501	Brownite	8501	1508	9501		9507	Taupe Concrete	9507	6505		

KRION™ Processing Operations

11.12- Compatibility of adhesives.

Adhesive compatibility

Color reference	Color description	Adhesive compatibility (high to low order compatibility)				Color reference	Color description	Adhesive compatibility (high to low order compatibility)			
8502	Goby Brown	8502	9502	9504		9901	Crystal Black +	9901	6901	7901	1901
8503	Fossil Forest	8503	8501			9902	Moon	9902	1903		
8901	Crystal Black	8901	6901	7901	9901	9903	Deep Granite	9903	9902		
8902	Night	8902	9901	6901	8901	9904	Bright Concrete	9904			

Applying the adhesive and chemical welding paste

Warning: Do not use KRION™ adhesives to fill in visible gaps or uneven seams. KRION™ Lux adhesive might undergo slight changes in colour over time.

Once the cartridge of adhesive has been opened, there is a maximum working time of 20 minutes. 20ºC to 26ºC. The higher the temperature, the shorter the working time.

KRION™ Lux acrylic adhesives are available in 50 ml and 250 ml cartridges, and 1000g kits.

With KRION™ Stone you can choose between using a cartridge adhesive similar to KRION™ Lux, or you can use the chemical welding paste.

The chemical welding paste and adhesive must only be used to bond pieces of KRION™ together. Do not use them to bond KRION™ to other materials or substrates.

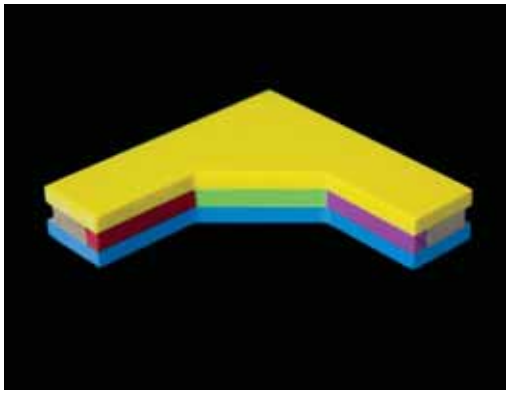
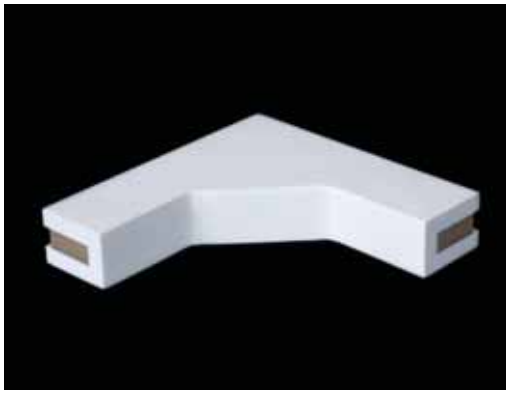
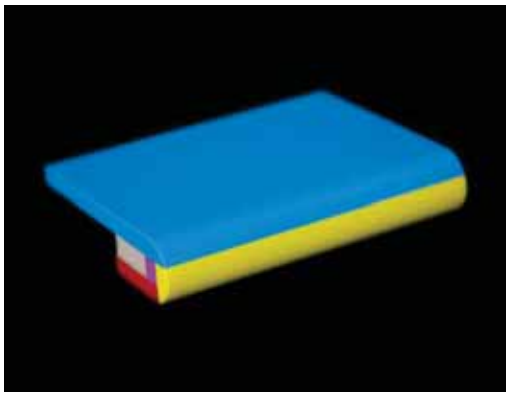
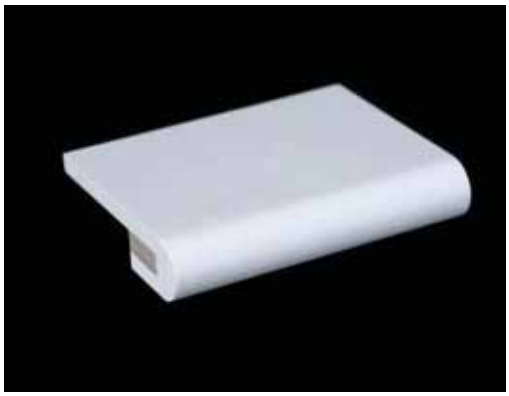
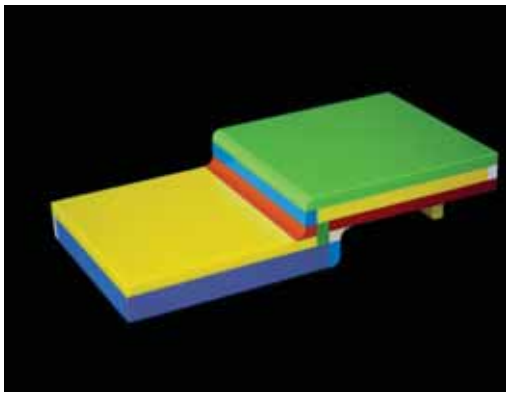
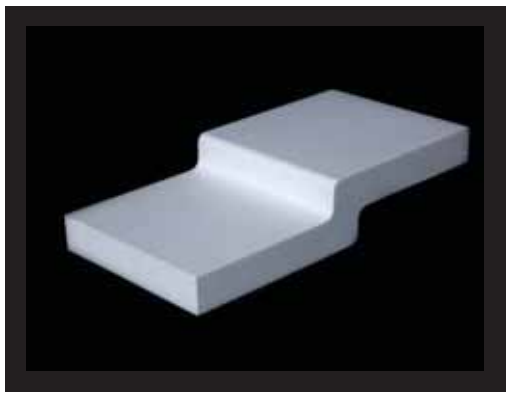
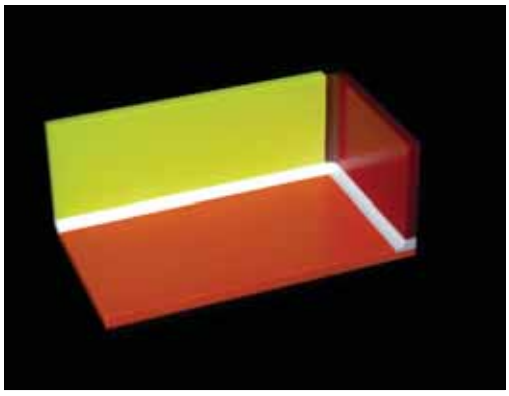
After the bonding adhesive has been applied to the seam, press the sheets lightly together. If they are pressed together too hard, the adhesive will be squeezed out, leading to a faulty seam.

Once the sheets have been bonded together, remove the nozzle from the cartridge and seal it with the original cap.

Material required:

- Safety goggles.
- Dust mask.
- Sawing trestles.
- Clean white cloths (or paper).
- Denatured alcohol.
- Wax paper.
- Cutter or scissors.
- Hot glue.
- Wood blocks.
- Bar clamp.
- Spring clips.
- KRION™ adhesive or KRION™ chemical welding paste.

11.13- Examples of designs.


Chemical welding paste (only KRION™ Stone)

12.1- Chemical welding paste.

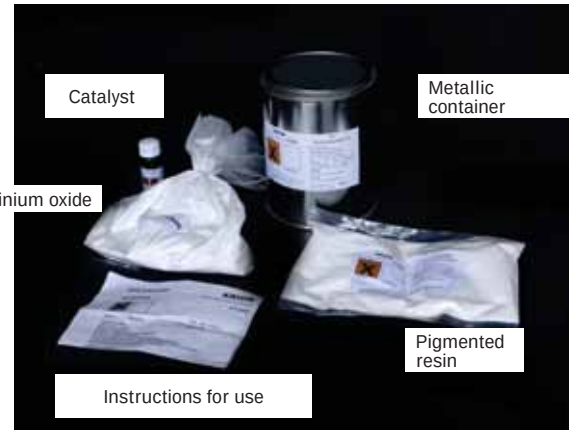
How to use the chemical welding paste

Chemical

The chemical welding kit contains 3 elements: resin, aluminium oxide and catalyst.

These components are supplied inside a metallic container, which is used to make the mixture:

1



First, mix the resin and aluminium oxide inside the metallic container. Once the two components have been put in the container, shake for at least 10 minutes.

To improve mixing, put all of the resin in the container and then gradually add the aluminium oxide while shaking.

The resulting mixture can be used for 6 months. As long as it is not catalysed it will not harden.

2

3

Do not keep the mixture for more than 6 months as lumps may form and it can harden, becoming useless.

12.1- Chemical welding paste.

How to use the chemical welding paste

Chemical

Once the KRION™ chemical welding paste is mixed inside the metallic container, it is ready for use.

Each time you use the chemical welding paste, the KRION™ mixture prepared inside the container must be shaken, as the aluminium oxide will fall to the bottom.

This is not a problem; shake vigorously until a uniform paste is once again obtained.

4

When needed again, get the necessary amount and weigh it on a digital scale:

5

Chemical welding paste (only KRION™ Stone)

12.1- Chemical welding paste.

How to use the chemical welding paste

Chemical

Then catalyse between 1 and 3%, depending on the room temperature and drying time required.

It is normally catalysed at 2%, achieving a drying time of 20 minutes.

6

7

In this case, and if it is catalysed at 2%, add 2 g of catalyser for each 100g of KRION™.

Safety is essential when handling the catalyst. Wear goggles and gloves. If you do not wear safety goggles, look away from the catalyst when opening the container. In some cases there may be high pressure inside the container and it may splash when opened.

If splashed, wash with plenty of water.

Once the KRION™ paste is ready it can be applied using either a spatula or a plastic bag in the same way as a pastry nozzle.

8

9

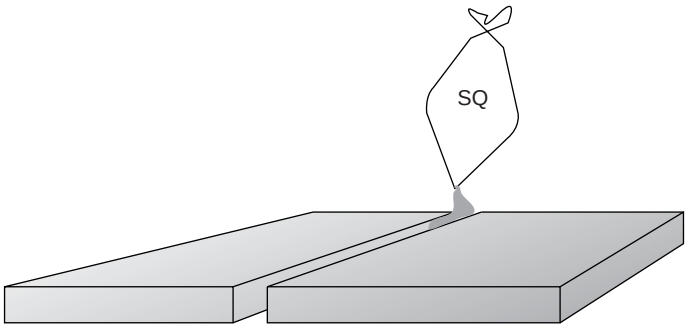
12.1- Chemical welding paste.

How to use the chemical welding paste

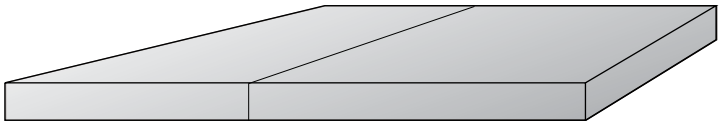
Chemical

Using the chemical welding kit we are adding KRION™ in liquid form, which will solidify to form a single piece between all of the different elements.

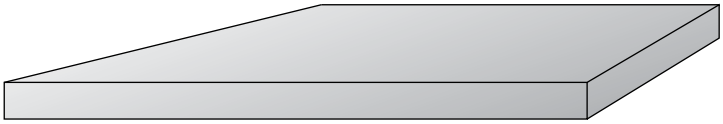
1)



2)



3)



If the desired result is not achieved after repairing, use the colour adjustment kit.

This kit makes it possible to adjust the tone of the paste and thicken the KRION™ to repair vertical zones.

Expiry date of adhesives 13

The expiry date is printed on the label of the adhesives.

The adhesive expires because the catalysing element becomes weaker over time.

Over-exposure to heat will cause it to lose its properties faster.

Once the guaranteed pot time for the adhesive has expired, in some cases when it has been kept in extremely good conditions (low temperature, darkness, etc.) it may be used for a longer period, although SYSTEMPOOL does not recommend this or accept any liability for problems that may occur.

Nevertheless, test the adhesive to make sure it is in a suitable condition for use (whether expired or not).

Try to use the oldest adhesive you have first, to avoid exceeding the expiry date.

Expired adhesive will give the following problems:

- It will not catalyse.
- It will be catalysed inside the tube.
- It will not bond.
- Its colour will change.

If you have to dispose of expired adhesives, NEVER throw them away in a bin.

The components of the adhesive, especially the catalyst, are pollutants and flammable.

Contact a chemical waste collection facility, which will indicate what you should do.

As a general rule, the catalysed adhesive is not a pollutant. For this reason, mix the adhesive with its catalyst to ensure it can be disposed of safely.

In the case of cartridges, fit it into the gun with a nozzle and expel all of the contents onto a spare piece of KRION™ and mix it with a stick. Once the adhesive has hardened onto the piece, it will be safer to eliminate.

Bonding KRION™ to other materials 14

KRION™ can be bonded to a wide range of surfaces and materials. Methacrylate, wood, metal, glass, concrete, plaster and brick surfaces are all perfect candidates for covering with KRION™.

These surfaces must first be levelled.

A flexible, long-lasting adhesive is required.

Butech P-404 polyurethane sealant is the best option.

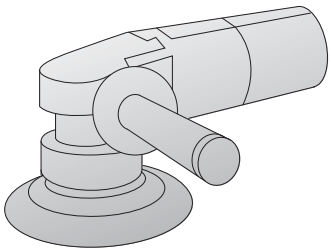
Other polyurethane-based sealants can be used to good effect.

Only use P-404 sealant to bond KRION™ to walls when the substrate requirements are not particularly demanding. For example, do not use it to panel façades.

To create façades with KRION™, it is necessary to combine the adhesive with a mechanical support (metal profiles and/or anchors).

Coverings bonded with silicone are only acceptable when the sheets are supported on the floor or on a skirting board (more recommended).

Finish (Sanding and Polishing)



KRION™ is sanded after shaping to achieve a smooth, even surface.

Sanding must be carried out with rotary sanders, gradually changing from rough to medium and then fine sandpapers.

For decorative purposes, KRION™ can be polished to obtain a gloss surface.

As far as possible, the final finish given to the product must fit in with the type of use that it will have.

15.1- Sanding.

Sand with aluminum oxide sandpaper or P120, P180 and P240 grain (for KRION™ Stone) and P320, P400, P600, P800 and P1000 from Abralon (for KRION™ Lux).

For dark colours, it is advisable to use water when sanding with P400, P600, P800 and P1000 grain sandpaper. This will result in a smoother finish.

In the case of rough surfaces and to rectify edges, manual or angle sanders can be used with P120 grain sandpaper. Afterwards, rotary sanders must be used.

To obtain a high-quality surface, the KRION™ must be sanded gradually, avoiding pressing down the sander excessively on the surface. This will prevent the sander from overheating, and the surface of the material from becoming polymerised (causing an opaque surface as a result of an excessive temperature increase on the surface of the KRION™ together with circular scratch marks).

Excessive temperature on a joint will increase the possibilities of the adhesive failing.

Warning: When using darker coloured sheets, it is important to carry out the sanding process following the order of the grain size, in order to eliminate the marks left behind by the previous sandpapers. This will prevent marks from appearing on the polished surface.

Remember, for the final finish the sander should have a 3 or 4mm orbital diameter. For polishing, the bigger the orbital diameter, the more material that the sander will remove, although it will also make more scratches. (An 8mm orbital diameter is sufficient).

15.2- Polishing.

Firstly, sand the surface with P120, P180, P240, P320 and P400 sandpaper, up to P600.

Then sand with P800 to P1200, or even P2000 or 3000 grain sandpaper.

The polished finish is created using a sponge or wool disc and by applying polishing paste onto the surface of the KRION™.

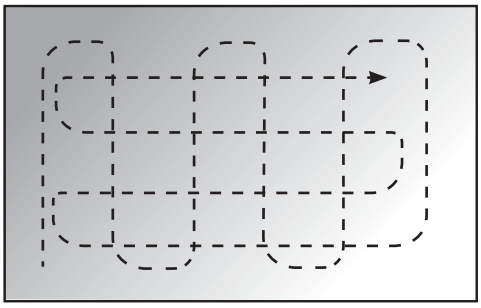
The surface can be polished to the required quality in order to obtain a gloss effect.

Polishing KRION™ manually or using a machine is mainly carried out for decorative purposes.

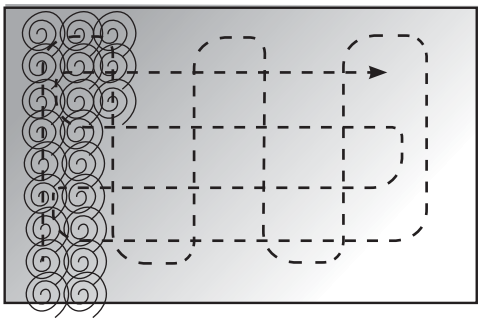
Clients may specify a different finish, although we always recommend a matt or satin finish, as this makes the day-to-day care of the surfaces easier.

A gloss finish is more fragile and difficult to maintain. Customers must be informed of this.

Carry out the successive sanding operations by working from the top to the bottom and from left to right, in small, overlapping circular movements, but without rounding the edges (the sanding process should be carried out in two steps, twice in each direction).



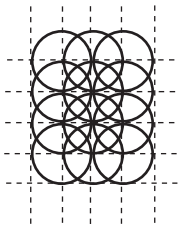
Sand the surface in a circular motion from top to bottom and from left to right, overlapping the sanding zones. Clean the sanding disc and the surface after each sanding cycle.



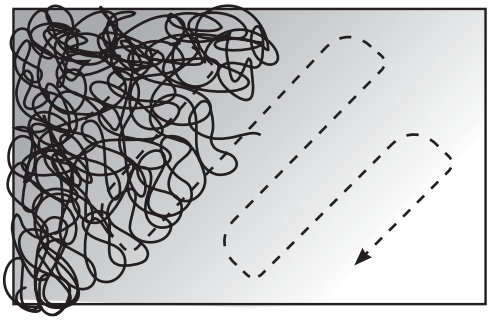
Finish (Sanding and Polishing)

15.2- Polishing.

Note:
Use the rough sanding position (on some machines) when working with P80 to P100 grain sandpaper, or P180 grain. Use the polishing position when working with finer grain sandpapers.



For fine sanding, move the sander in random figure of eight movements, diagonally rather than up and down. (This same movement should be used for finishes with a P1000 grit Abralon soft sponge disc.



Use slower speeds when using finer sandpapers.

Excessive speed with fine sandpapers may burn the surface and ruin the finish.

Sand with water if you have a sander powered by compressed air and you wish to polish the section.

Important observations:

- Do not apply too much pressure to the sander.
- Maintain the same pressure.
- Always work at the same speed.
- Use the right tools.
- Replace worn sanding discs.
- Use a rigid base with no profiles to sand horizontal surfaces.

Warning!
Do not use an electric sander to wet sand, given the high risk of electrocution and very serious potential consequences.

If you have to wet sand, use tools that work with compressed air.

15.2- Polishing.

Scotch discs

These are used for the final finish to achieve a satin (semi-gloss) finish.

A matt or satin finish is better at concealing flaws that a surface acquires as a result of wear and tear. A kitchen countertop finished with a Scotch disc is an ideal choice.

Fine grain discs

Very fine grain discs (3000) can be used to achieve a high gloss finish. If we use polish and a wool disc, even finer finishes can be obtained. Although high gloss finishes are more attractive, they are more delicate and require more maintenance than matt finishes.

In commercial applications with heavy use, you should recommend your customers to choose a matt finish (especially with dark colours). If your customers want a high gloss finish on dark colours and/or in applications exposed to heavier wear, you must inform them that they will require more maintenance.

Make sure that you do not create false expectations with your customers: this will only affect your future business relations with them.

Warning!

- ▶ Always use vacuum systems when sanding, cutting or milling.
- ▶ Whenever possible, use booths with extractor systems in their lower sections to remove KRION™ dust.
- ▶ Portable vacuum cleaners are also useful when it is not possible to use an extractor booth.
- ▶ Keep all filters and motors of extractor systems in good working order.
- ▶ If extractor systems cannot be used, open doors and windows to ensure good ventilation.
- ▶ Always wear a face mask to protect against dust.
- ▶ If you have to make dust in a customer's house (from milling, cutting or sanding) always use portable vacuum cleaners. Always seal off the area where you are working to prevent dust from entering the rest of the house.

Finish (Sanding and Polishing) 15

15.3- Recommendations depending on the finish.

The sanding must be done with abrasive silicon carbide and/or aluminium oxide discs. For the final finish, depending on the required surface, continue with a fibre-backed abrasive disc (like Scotch) for a satin surface or an abrasive disc on fabric-backed foam for a glossy shine.

Fibre-backed abrasive disc (like Scotch)

Abrasive disc on fabric-backed foam

See the following table for the progressive sanding discs and finishes that are needed for each type of surface. When a finish is being given to a dark surface, use sanding machines with an orbital diameter no greater than 3 or 4 mm.

SANDING & FINISHING KRION		
Type of finish	Pale colours	Dark colours
MATT	P120 P150 P180 Fibre 280	P120 P150 P180 P240 Fibre 800
SATIN	P120 P150 P180 P240 P320 P400 Sanding discs 500	P120 P150 P180 P240 P320 P400 Sanding discs 500 Sanding discs 1000
GLOSS	P120 P150 P180 P240 P320 P400 Sanding discs 500 Sanding discs 1000 Sanding discs 2000 Sanding discs 4000	

Drilling (screwing) 16

16.1- Drilling and screwing.

Holes can be drilled using fixed or manual drills with high speed machined steel or hardened carbide bits.

For holes with a diameter of up to 10 mm, high speed steel bits are used with a normal tip with an angle of 120º.

For holes with a diameter of up to 500 mm, bits with a hardened carbide tip are used.

When inserting screws in the material, a PVC or brass plug must be used.

The same working conditions must be applied for working with glass or other fragile materials:

- ► The hole must be larger than the screw.
- ► A silicone spacer that allows for expansion due to temperature changes must be fitted between the KRION™, the screw and the material being attached.
- ► Elements must never be screwed directly onto KRION™ as this may cause splits and cracks

Inserts

If you have to mechanically attach KRION™ to any other material (such as a wall or wood), NEVER screw or nail a sheet of KRION™ onto it

Use inserts to screw in KRION™. Expansion inserts can be used directly in the KRION™.

To attach screwed inserts, drill 2 mm more than the diameter of the insert, then fill with adhesive.

17.1- Installing inserts.

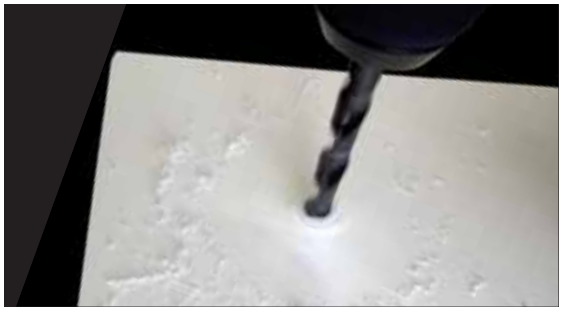
1

Use inserts with a closed base that are no thicker than the KRION™ sheet.

2

Use a metal bit with a 1mm wider diameter than the insert.

3



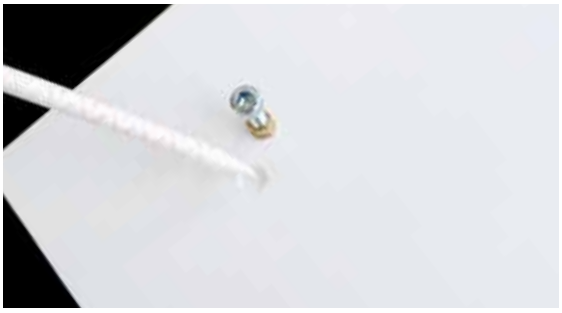
Make sure that the hole is the same depth as the insert. Never drill in hammer mode.

4

Clean away any remains from the drilling process.

17.1- Installing inserts.

5

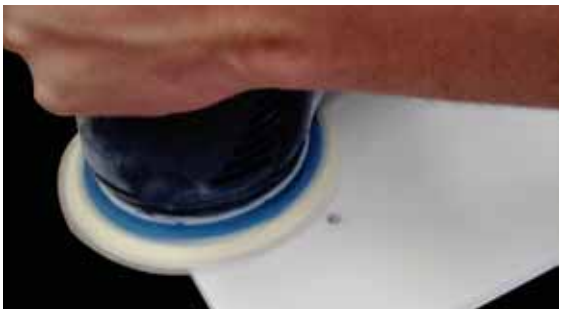


Fill the hole to half its depth with KRION™ adhesive.

6

Use a threaded screw to fit the insert into the adhesive-filled hole so as to prevent the adhesive from blocking the thread.

7

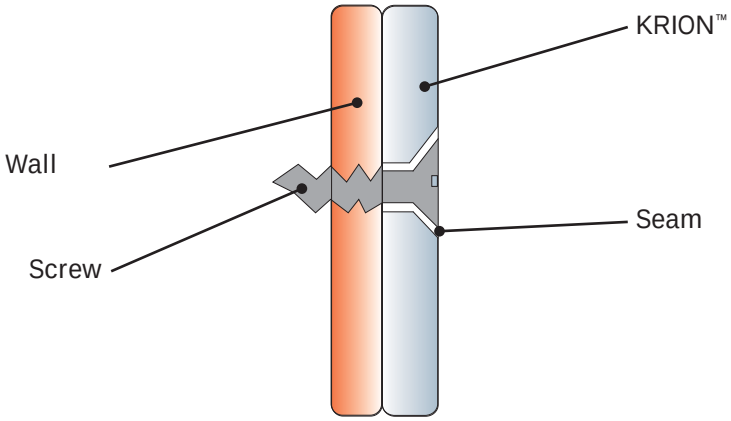


Remove the screw and sand away any surplus adhesive.

8

If you intent to attach KRION™ to something like a wall, you must first drill a hole, attach a plastic insert (to allow for expansion in the KRION™, screw and wall) and use screws that allow for a certain degree of movement.

► Plastic joint.



Inserts 17

17.1- Installing inserts.

Warnings

- Do not screw or nail KRION™ directly.
- Leave expansion joints.
- Round interior and exterior radii to eliminate stresses.
- Do not bond sheets cut with saws.
- Add reinforcements strips to seams and bowls.
- Leave room for the vitroceramic hob to expand.
- Work on flat tables.
- Respect working temperatures.
- Use flexible adhesive to attach KRION™ to another surface (Butech P-404).

P-404 is an adhesive sealant mastic with a single component polyurethane base. It polymerises in contact with air humidity, turning into an extremely elastic and adherent elastomer.

P-404 can be painted.

Cleaning KRION™ 18

KRION® STONE
PORCELANOSA SOLID SURFACE

Programme	Product	Composition	Exposure time	Exposure time
			24 hours	10 minutes
1	Acetic acid	98%	A	A
2	Acetic acid	10%	A	A
3	Citric acid	20%	A	A
4	Hydrochloric acid	37%	A	A
5	Hydrochloric acid	10%	A	A
6	Chromic acid	60%	A	A
7	Hydrofluoric acid	48%	A	A
8	Formic acid	99%	A	A
9	Nitric acid	70%	A	A
10	Nitric acid	10%	A	A
11	Orthophosphoric acid	85%	A	A
12	Orthophosphoric acid	25%	A	A
13	Sulphuric acid	96%	A	A
14	Sulphuric acid	10%	A	A
15	Sulphuric acid	10% (water solution)	A	A
16	Mixture of sulphuric and nitric acid	96% Sulphuric acid	A	A
17	Mixture of sulphuric and nitric acid	70% Nitric acid	A	A
18	Ammonia hydroxide	25% water solution	A	A
19	Potassium hydroxide flakes	Unaltered	A	A
20	Potassium hydroxide	40% water solution	A	A
21	Potassium hydroxide	10% water solution	A	A
22	Potassium hydroxide flakes	Unaltered	A	A
23	Sodium hydroxide	40% water solution	A	A
24	Sodium hydroxide	10% water solution	A	A
25	Unaltered ethanol	Unaltered	A	A
26	Isopropyl alcohol	Unaltered	A	A
27	Acetone	Unaltered	A	A
28	Amyl acetate	Unaltered	A	A
29	Benzene	Unaltered	A	A
30	Chloroform	Unaltered	A	A
31	Methylene chloride	Unaltered	A	A
32	Dioxane	Unaltered	A	A
33	Dymethilformamide	Unaltered	A	A
34	Etil ether	Unaltered	A	A
35	Furfural	Unaltered	A	A
36	Methyl ethyl ketone	Unaltered	A	A
37	Carbon tetrachloride	Unaltered	A	A
38	Toluene	Unaltered	A	A
39	Trichloroethylene	Unaltered	A	A
40	Xylene	Unaltered	A	A

Cleaning KRION™

KRION® STONE
PORCELANOSA SOLID SURFACE

Programme	Product	Composition	Exposure time	Exposure time
			24 hours	10 minutes
41	Ethyl acetate	Unaltered	A ■	A ■
42	Silver nitrate	Saturated water solution	A ■	A ■
43	Ferric chloride	Saturated water solution	A ■	A ■
44	Iodine	2% water solution	A ■	A ■
45	Potassium permanganate	Saturated water solution	A ■	A ■
46	Copper sulphate	Saturated water solution	A ■	A ■
47	Sodium chloride	Saturated water solution	A ■	A ■
48	Sodium hypochlorite	Saturated water solution	A ■	A ■
49	Sodium sulphate	Saturated water solution	A ■	A ■
50	Zinc chloride	Saturated water solution	A ■	A ■
51	Petrol	Unaltered	A ■	A ■
52	Mixture of phenol and formal-dehyde	48% phenol + 26%formaldehyde	A ■	A ■
53	Phenol	Unaltered	A ■	A ■
54	Methyl purple	10 g/l solution	A ■	A ■
55	Formaldehyde	36% water solution	A ■	A ■
56	Peroxide	30% Unaltered	A ■	A ■
57	Temrex	Dental laboratory disinfectant	A ■	A ■
58	Toothpaste	Unaltered	A ■	A ■
59	Hand cream	Unaltered	A ■	A ■
60	Olive oil	Unaltered	A ■	A ■
61	Yeast dissolved in water	Unaltered	A ■	A ■
62	Red wine	Unaltered	A ■	A ■
63	Vinegar	Unaltered	A ■	A ■
64	Lemon juice	Unaltered	A ■	A ■
65	Coffee	Unaltered	A ■	A ■
66	White wine	Unaltered	A ■	A ■
67	Milk	Unaltered	A ■	A ■
68	Tea	Unaltered	A ■	A ■
69	Nail lacquer	Unaltered	A ■	A ■
70	Nail lacquer remover	Unaltered	A ■	A ■
71	Lipstick	Unaltered	A ■	A ■
72	Watercolour	Unaltered	A ■	A ■
73	Pen	Unaltered	A ■	A ■
74	Bleach	Unaltered	A ■	A ■
75	Anti-limescale	Unaltered	A ■	A ■
76	Alkaline detergent	Unaltered	A ■	A ■
77	Acid detergent for metals	Unaltered	A ■	A ■
78	Merbromin	Unaltered	A ■	A ■
79	Shoe polish	Unaltered	A ■	A ■
80	Hair dye	Unaltered	A ■	A ■

■ Method A: Scotch-Brite Nº 7

Any type of stain on a product made of KRION™ Lux can be cleaned easily. To do so, different methods are used depending on the type of stain.

KRION® LUX
PORCELANOSA SOLID SURFACE

Programme	Product	Composition	Exposure time	Exposure time
			24 hours	10 minutes
1	Acetic acid	98%	A	A
2	Acetic acid	10%	A	0
3	Citric acid	20%	0	0
4	Hydrochloric acid	37%	A	A
5	Hydrochloric acid	10%	A	A
6	Chromic acid	60%	C	A
7	Hydrofluoric acid	48%	C	B
8	Formic acid	99%	B	B
9	Nitric acid	70%	D	C
10	Nitric acid	10%	D	A
11	Orthophosphoric acid	85%	C	B
12	Orthophosphoric acid	25%	C	A
13	Sulphuric acid	96%	E	B
14	Sulphuric acid	10%	C	A
15	Sulphuric acid	10% (water solution)	C	A
16	Mixture of sulphuric and nitric acid	96% Sulphuric acid	E	C
17	Mixture of sulphuric and nitric acid	70% Nitric acid	E	C
18	Ammonia hydroxide	25% water solution	0	0
19	Potassium hydroxide flakes	Unaltered	C	0
20	Potassium hydroxide	40% water solution	C	A
21	Potassium hydroxide	10% water solution	A	A
22	Potassium hydroxide flakes	Unaltered	C	A
23	Sodium hydroxide	40% water solution	C	A
24	Sodium hydroxide	10% water solution	A	A
25	Unaltered ethanol	Unaltered	A	0
26	Isopropyl alcohol	Unaltered	A	0
27	Acetone	Unaltered	A	0
28	Amyl acetate	Unaltered	0	0
29	Benzene	Unaltered	A	0
30	Chloroform	Unaltered	D	A
31	Methylene chloride	Unaltered	D	A
32	Dioxane	Unaltered	A	0
33	Dymethilformamide	Unaltered	A	0
34	Etil ether	Unaltered	0	0
35	Furfural	Unaltered	A	0
36	Methyl ethyl ketone	Unaltered	A	0
37	Carbon tetrachloride	Unaltered	A	0
38	Toluene	Unaltered	B	A
39	Trichloroethylene	Unaltered	A	0
40	Xylene	Unaltered	A	0

KRION® LUX
PORCELANOSA SOLID SURFACE

Programme	Product	Composition	Exposure time 24 hours	Exposure time 10 minutes
41	Ethyl acetate	Unaltered	A	0
42	Silver nitrate	Saturated water solution	A	0
43	Ferric chloride	Saturated water solution	A	0
44	Iodine	2% water solution	A	0
45	Potassium permanganate	Saturated water solution	A	0
46	Copper sulphate	Saturated water solution	A	0
47	Sodium chloride	Saturated water solution	0	0
48	Sodium hypochlorite	Saturated water solution	A	0
49	Sodium sulphate	Saturated water solution	A	0
50	Zinc chloride	Saturated water solution	0	0
51	Petrol	Unaltered	A	0
52	Mixture of phenol and formal-dehyde	48% phenol + 26%formaldehyde	E	A
53	Phenol	Unaltered	B	A
54	Methyl purple	10 g/l solution	B	B
55	Formaldehyde	36% water solution	A	0
56	Peroxide	30% Unaltered	0	0
57	Temrex	Dental laboratory disinfectant	A	0
58	Toothpaste	Unaltered	0	0
59	Hand cream	Unaltered	0	0
60	Olive oil	Unaltered	0	0
61	Yeast dissolved in water	Unaltered	0	0
62	Red wine	Unaltered	0	0
63	Vinegar	Unaltered	0	0
64	Lemon juice	Unaltered	0	0
65	Coffee	Unaltered	0	0
66	White wine	Unaltered	0	0
67	Milk	Unaltered	0	0
68	Tea	Unaltered	0	0
69	Nail lacquer	Unaltered	A	0
70	Nail lacquer remover	Unaltered	A	0
71	Lipstick	Unaltered	0	0
72	Watercolour	Unaltered	0	0
73	Pen	Unaltered	0	0
74	Bleach	Unaltered	A	0
75	Anti-limescale	Unaltered	A	0
76	Alkaline detergent	Unaltered	0	0
77	Acid detergent for metals	Unaltered	A	0
78	Merbromin	Unaltered	A	0
79	Shoe polish	Unaltered	0	0
80	Hair dye	Unaltered	A	0

Method 0: Non-abrasive detergent and soft sponge
Method A: Abrasive detergent and soft sponge
Method B: 600 grain sandpaper
Method C: 320 grain sandpaper
Method D: 150 grain sandpaper
Method E: With sandpaper and detergent supplied by the manufacturer

Thermoforming 19

Thermoforming is the process in which heat is used to make KRION™ sheets flexible and create curved shapes.

Important: remove the protective film before heating the sheet.

SYSTEMPOOL recommends the use of GLOBAL machinery for thermoforming KRION™.

The KRION™ sheets must be heated uniformly. If the temperature is not the same throughout the whole sheet, it may snap when curving.

Never use heating methods that do not heat uniformly, such as paint removing guns.

KRION™ sheets are shaped by heating them in ovens and positioning them on moulds in vacuum membranes or in presses with a mould and counter mould. These shapes can be curved and partly three-dimensional. These shapes can be curved and partly 3-D.

Always wear gloves with a minimum protection level of 200ºC to protect your hands and arms.
When handling KRION™ sheets that have just come out of the oven, wear an apron, protective boots and safety goggles.

Sand the sheet until obtaining a matt finish before heating, to prevent white patches and breakages.

Sand all the edges of the piece of KRION™ to prevent it from cracking or cutting the vacuum membrane.

19.1- Thermoforming KRION™ Lux.

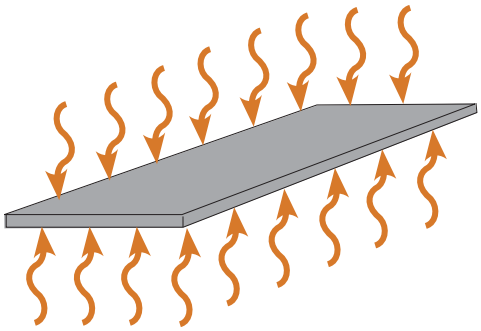
The sheets are heated in (hot-air or electrically heated) ovens to temperatures of between 150 and 170ºC for 15 to 30 minutes, depending on the thickness of the material and complexity of the design.

Do not exert mechanical pressure on the surface of the sheet while it is being heated as this may affect the surface colour.

Heating principle for sheets

It should be heated for 10 minutes, plus an extra minute for each mm of the thickness of the material. The additional heating time is 1 minute for each mm of the thickness of the material.

160ºC (± 10ºC)



160ºC (± 10ºC)

Thermoforming

19.1- Thermoforming KRION™ Lux.

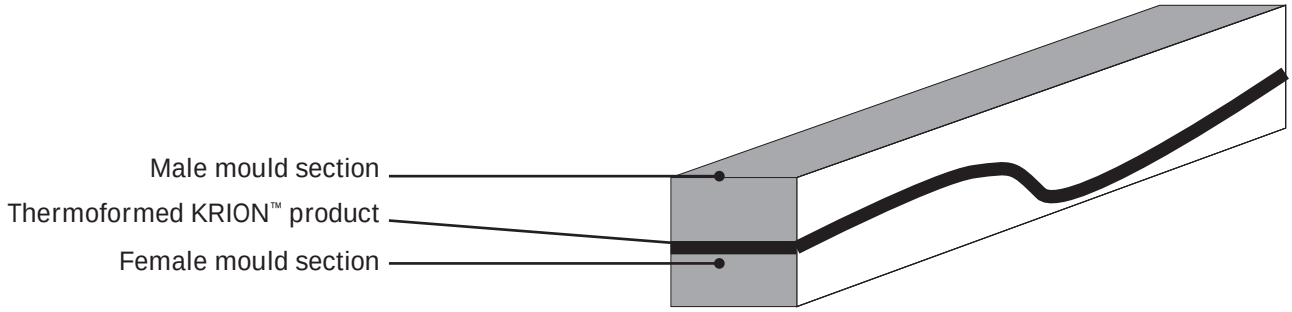
Example:
A 12-mm thick sheet must be heated for 10 minutes (basic) plus a further 12 minutes (as it is 12 mm thick). Total: 22 minutes.

Sheet thickness	Heating time	Minimum curve radius
6 mm	Approximately. 16 min.	25 mm
8 mm	Approximately. 18 min.	50 mm
12 mm	Approximately. 22 min.	90 mm
18 mm	Approximately. 30 min.	120 mm

Forced cooling may affect the resistance of the material, making the sheets more fragile.

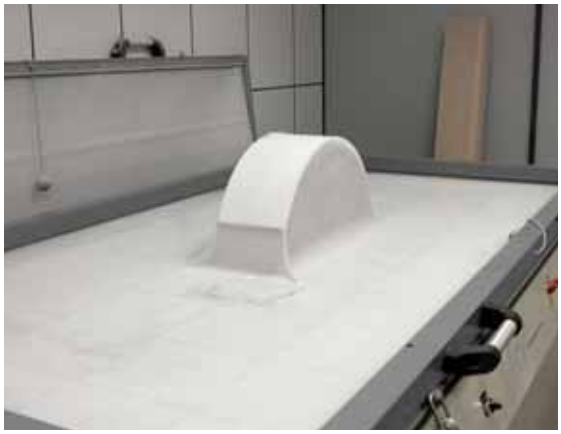
Sheets that are thermoformed must have smooth, milled edges to prevent breakage occurring due to nicks and microfissures.

For more complex pieces, two-faced (tongue and groove) moulds can be used to achieve the required shapes once they have cooled down to the environmental temperature.

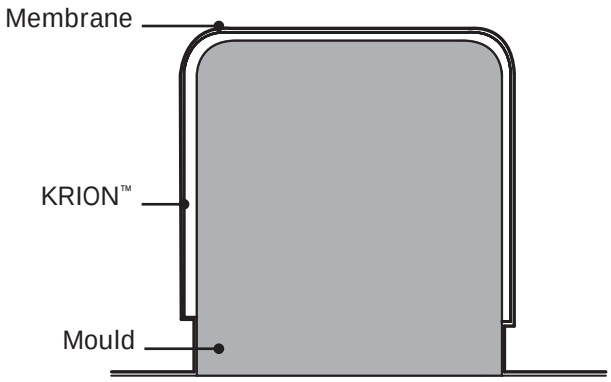


Membrane press

If you have a membrane press, the same membrane will act as a counter mould (providing that the required curves are not too complex).



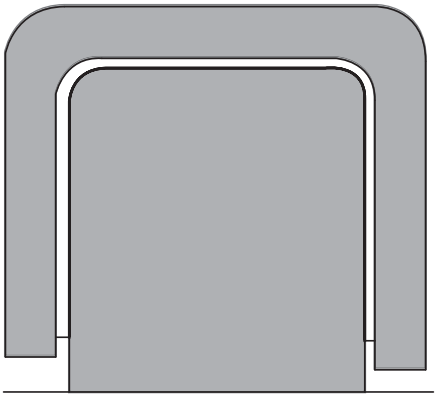
19.1- Thermoforming KRION™ Lux.



It is always advisable to use male and female moulds (mould and countermould), even in a membrane press.

Moulds can be made of different materials (wood, MDF, aluminium, resin fibre etc).

It is important to bear in mind how solid and resistant they are so that they do not become deformed. Always bear in mind that a membrane press can exert pressures of close to 10 tons and hydraulic ones around 20 tons.



Hydraulic press

Thermoforming

19.2- Thermoforming KRION™ Stone.

KRION™ Stone sheets must be heated in ovens at a temperature of 140º C for 3 minutes per millimetre of material, ensuring that the material is heated throughout and uniformly on both sides.

Do not thermoform KRION™ sheets with inserts.

The varying characteristics of different inserts can lead to breakages.

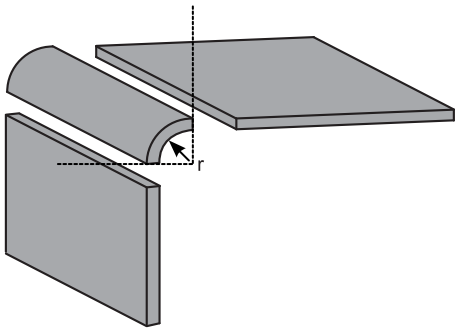
Even when inserting KRION™, the result may not be as required and the insert may move from its position, or the section may break. If you have to add inserts, do it once the section has already been curved.

Thickness	Heating time	Minimum radio curve
6 mm ($^{4}/_{16}$")	18 min / 140ºC (284ºF)	200 mm (7 $^{14}/_{16}$")
11 mm ($^{7}/_{16}$")	33 min / 140ºC (284ºF)	400 mm (15 $^{12}/_{16}$")

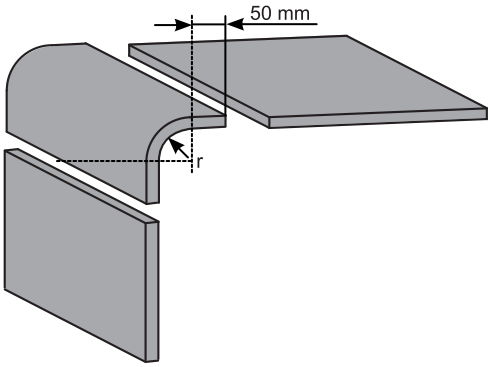
19.3- Minimum recommended radius.

Avoid just using the area of the radius. Always cut the thermoformed piece 5 cm away from the area of the radius.

WRONG



RIGHT



The radii shown in the following tables are the minimum internal ones for thermoforming each colour.

They have been tested until a visible change in colour close to the radius was observed or until the material broke.

19.3- Minimum recommended radius.

The radii shown in the following tables are internal radii of the curve.

STONE (CE/INT)		
Color Ref.	Color Description	Minimum internal radius
5101	Stone White	400 mm (15 12/16")

SNOW (CE/INT)		
Color Ref.	Color Description	Minimum internal radius
1100	Snow White	20 mm (13/16")

PURE LUX (CE)					
Color Ref.	Color Description	Minimum internal radius	Color Ref.	Color Description	Minimum internal radius
1101	Ice	40 mm (1 9/16")	1507	Earth	50 mm (1 15/16")
1102	Marfil	30 mm (1 3/16")	1508	Dark Brown	50 mm (1 15/16")
1103	White	40 mm (1 9/16")	1601	Yove	40 mm (1 9/16")
1201	Yellow	50 mm (1 15/16")	1602	Green	50 mm (1 15/16")
1202	Happy Yellow	20 mm (13/16")	1603	Nordic blue	50 mm (1 15/16")
1301	Orange	50 mm (1 15/16")	1604	Chlorophyll	50 mm (1 15/16")
1401	Strawberry	50 mm (1 15/16")	1605	Happy green	60 (2 6/16")
1402	Lila	50 mm (1 15/16")	1701	Blue Sky	50 mm (1 15/16")
1403	Candy	40 mm (1 9/16")	1703	Light Blue	50 mm (1 15/16")
1404	Pink	50 mm (1 15/16")	1704	Navy Blue	40 mm (1 9/16")
1405	Happy Red	40 mm (1 9/16")	1705	Dark Blue	60 mm (2 6/16")
1406	Happy Pink	60 mm (2 6/16")	1706	Happy Blue	50 mm (1 15/16")
1501	Arena	30 mm (1 3/16")	1901	Black	60 mm (2 6/16")
1502	Vainilla	40 mm (1 9/16")	1902	Light Grey	30 mm (1 3/16")
1503	Lady	40 mm (1 9/16")	1903	Grey	50 mm (1 15/16")
1504	Soap	40 mm (1 9/16")	1904	Dark Grey	40 mm (1 9/16")
1506	Camel	50 mm (1 15/16")			

COLORS LUX (INT)		
Color Ref.	Color Description	Minimum internal radius
6501	Cream	80 mm (3 2/16")
6502	Pearl	R
6503	Ground	R
6504	Mocha	50 mm (1 15/16")
6601	Fall Green	R
6701	Blue Sky	60 (2 6/16")
6903	Grey	70 mm (2 12/16")

COLORS + LUX (INT)		
Color Ref.	Color Description	Minimum internal radius
6201	Imperial Yellow	R
6301	Fruit	70 mm (2 12/16")
6401	Red Fire	70 mm (2 12/16")
6405	Happy Red	50 mm (1 15/16")
6505	Taupe	50 mm (1 15/16")
6507	Earth	60 (2 6/16")
6704	Navy Blue	80 mm (3 2/16")
6901	Black Metal	70 mm (2 12/16")
6904	Bright	50 mm (1 15/16")
6905	Ash Grey	90 mm (3 9/16")

Thermoforming

19.3- Minimum recommended radius.

LIGHT LUX (CE/INT)		
Color Ref.	Color Description	Minimum internal radius
4101	White Light	80 mm (3 2/16")
4102	Extreme White	50 mm (1 15/16")
4201	Yellow Light	90 mm (3 9/16")
4401	Pink Light	70 mm (2 12/16")
4601	Green Light	90 mm (3 9/16")
4701	Blue Light	90 mm (3 9/16")

NATURE LUX (CE/INT)		
Color Ref.	Color Description	Minimum internal radius
0101	White Nature	50 mm (1 15/16")
0102	Clear Nature	70 mm (2 12/16")
0501	Dune Nature	50 mm (1 15/16")
0502	Camel Nature	90 mm (3 9/16")
0503	Earth Nature	50 mm (1 15/16")
0504	Marfil Nature	50 mm (1 15/16")
0901	Grey Nature	more than 90 mm (3 9/16")
0902	Ash Nature	more than 90 mm (3 9/16")

STAR LUX (CE/INT)		
Color Ref.	Color Description	Minimum internal radius
7101	White Star	60 mm (2 6/16")
7102	Titanium Star	more than 90 mm (3 9/16")
7901	Black Star	50 mm (1 15/16")
7902	Grey Star	80 mm (3 2/16")

ROYAL LUX (CE/INT)		
Color Ref.	Color Description	Minimum internal radius
8101	Crystal White	more than 300 mm (11 13/16")
8102	Soring Pearl	more than 300 mm (11 13/16")
8501	Brownite	more than 300 mm (11 13/16")
8502	Goby Brown	more than 300 mm (11 13/16")
8503	Fossil Forest	more than 300 mm (11 13/16")
8901	Crystal Black	more than 300 mm (11 13/16")
8902	Night	more than 300 mm (11 13/16")
8903	Grey Granite	more than 300 mm (11 13/16")

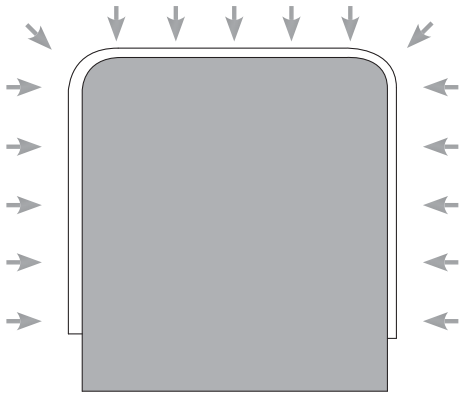
ROYAL + LUX (CE/INT)		
Color Ref.	Color Description	Minimum internal radius
9101	Crystal White +	more than 300 mm (11 13/16")
9102	Polar Stone	more than 300 mm (11 13/16")
9103	Bright Rock	more than 300 mm (11 13/16")
9501	Brownite +	more than 300 mm (11 13/16")
9502	Goby Brown +	more than 300 mm (11 13/16")
9503	Sweeet Rock	more than 300 mm (11 13/16")
9504	Africa	more than 300 mm (11 13/16")
9505	Cream Concrete	more than 90 mm (3 9/16")
9506	Mocha Concrete	more than 90 mm (3 9/16")
9507	Taupe Concrete	more than 90 mm (3 9/16")
9901	Crystal Black +	more than 300 mm (11 13/16")
9902	Moon	more than 300 mm (11 13/16")
9903	Deep Granite	more than 300 mm (11 13/16")
9904	Bright Concrete	more than 90 mm (3 9/16")

19.4- Thermoforming errors.

KRION™ Lux y KRION™ Stone

▶ Too much heat:
See temperature charts and heating times.
May burn and blister.

▶ Insufficient heat:
See charts.
May not curve correctly and split.



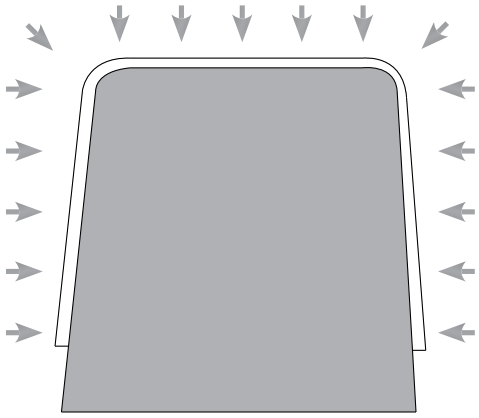
▶ Curves too fast:
May break, whiten or wrinkle.

▶ Uneven heating:
The sheet may split.

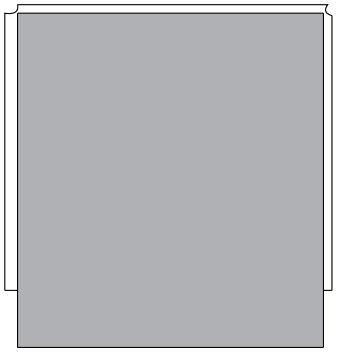
▶ Incorrectly prepared moulds:
Wrinkles may appear.

▶ No mould removing angle has been left:
It may not be possible to remove the section once it has cooled, due to contraction.
Leave a minimum angle of 5º to ensure the section can be removed from the mould without problems.

▶ Too much mechanical pressure on the surface to be heated:
May slightly alter the colour of the sheet.



▶ Moulds with sharp edges:
The KRION™ section and/or press membrane may break.

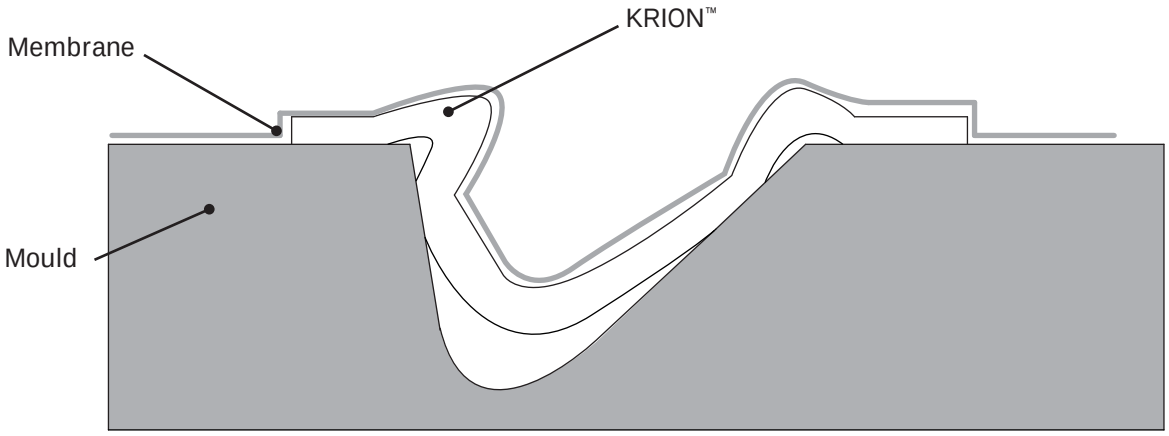


19.4- Thermoforming errors.

KRION™ Lux y KRION™ Stone

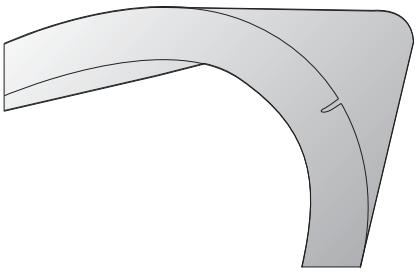
► KRION™ sections with sharp edges:
Round the edges slightly with a sanding block.

► Excessive curving.



The material will not attach to the mould correctly and it will not be possible to achieve the required shape.

If you force the material too much, it will snap and/or whiten.



► Stretched material:

Maximum stretching to avoid breakage: 25%

Maximum stretching to avoid whitening: 10%

► Compressed material.

► Moulds with rough finishes:
Surface finish of the section with wrinkles.

► Mould without lubrication (using talc):
The section may not fit properly as it cannot move.
When it cools, it may be difficult to remove it from the mould.

► Remove the section from the mould before it cools:
If it is still hot, it may bend in a different way than required by leaving it outside the mould.

► Heating the section too quickly:
Will only heat the surface and the sheet will break when curved.

19.4- Thermoforming errors.

KRION™ Lux y KRION™ Stone

► Uneven heating:
The sheet might break because some parts have not been sufficiently heated.

► Incorrectly positioned membrane:
The KRION™ does not adapt to the mould, leading to flawed results.

► KRION™ too thick:
The desired radii cannot be made.

► KRION™ sections bonded using adhesive:
The pressure may break the seam.
The heat may affect the quality of the bond.

► Incorrect positioning of the mould and/or KRION™ in the press:
Pressure is not applied correctly.
KRION™ does not fit the mould.

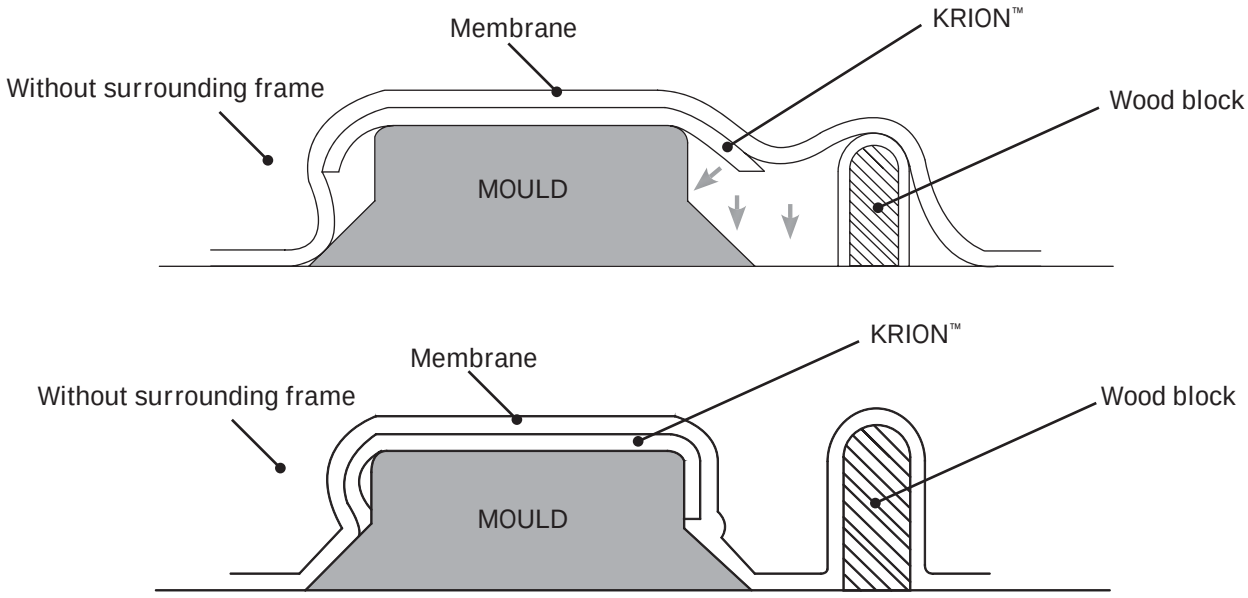
► Do not use male and female moulds:
The KRION™ section may not fit correctly.
KRION™ does not curve correctly.

19.5- Problems when thermoforming.

Problem	Reason
-Whitening:	- KRION™ too stretched. - KRION™ too folded. - Incorrect heating.
- Bubbles and blisters:	- Too much heat. - Heated too quickly.
- Burns or a change of colour in the sheet:	- Too much heat or mechanical pressure during the heating process. - Mould with rough surface.
- Rough patches:	- Curved to an excessive radius. - Insufficient heating. - Mould with sharp edges. - KRION™ section with sharp edges.
- Cracks:	- Curved to an excessive radius. - Insufficient heating. - Mould with sharp edges. - KRION™ section with sharp edges. - Mould with overly aggressive shapes.
- Wrinkles:	- Mould surface not sufficiently smooth. - Too much heat.
- Impossible to remove from mould:	- Give the mould a minimum angle of 5º in order to be able to remove the section once it has cooled (it will expand when heated, and contract when it cools).
- KRION™ does not curve to the required radius:	- See radius chart. - Heat to the indicated temperature. - Use male and female moulds. - Manual adjustment before adding the membrane. - Reduce the curving speed.
The KRION™ section does not fit the mould:	- Check that the radius is possible. - Tongue and groove moulds (a mould and counter-mould) are needed. - Manual adjustment helping to position the membrane.
Membrane breakage:	- Mould with sharp edges. - KRION™ with sharp edges. - Temperature too high. - The membrane is not elastic enough for the shape or height of the mould/piece.

19.6- Perimeter frames (vacuum membranes).

The system makes the membrane adapt from top to bottom. The diagrams below show the difference between the side that has the surrounding frame and the one that does not.



19.7- Thermoforming de KRION™ Stone.

The radii that can be obtained with KRION™ Stone will never be as prominent as those that can be achieved with KRION™ Lux. If you attempt to curve KRION™ Stone to a similar radius as KRION™ Lux, breakage will occur and the material will be wasted.

KRION™ Lux and KRION™ Stone have different compositions, meaning they behave in different ways.

The greater resistance to chemical and environmental agents of KRION™ Stone is offset by the fact that it cannot be thermoformed in the same way as KRION™ Lux.

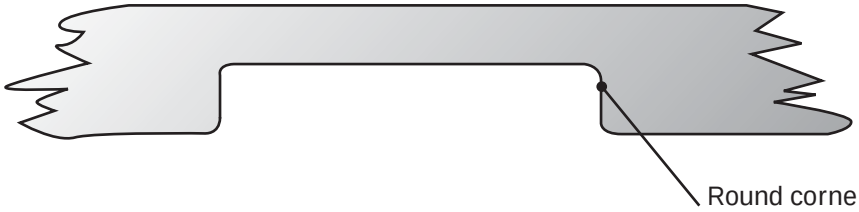
This should not be seen as a limitation; the different materials respond to different needs, and each has its strengths, depending on what it is used for.

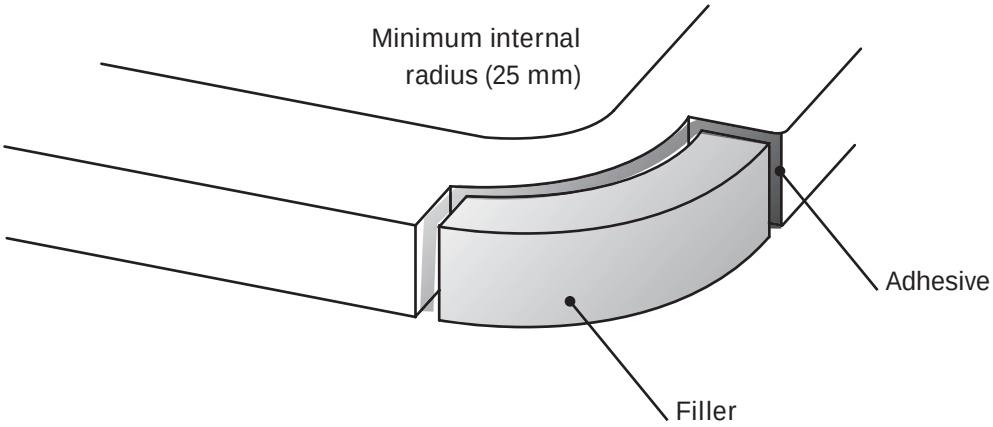
The smooth curves that can be achieved with KRION™ Stone can provide a touch of beauty for your projects, but it will not be possible to achieve the bold designs that are possible with KRION™ Lux.

Take this into account when planning your projects.

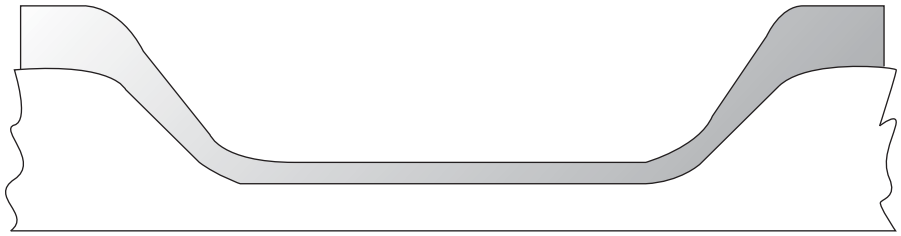
19.8- Trimming to achieve smaller radii.

By trimming to reduce the thickness of a KRION™ sheet, it is possible to obtain more prominent curvature radii:





The 12 mm sheet is reduced to 6 mm, and after thermoforming, a piece of KRION™ is added to return it to its original thickness and resistance.



In this case it will not be necessary (or possible) to add more material.

This is usually the case when the aim is to curve 18 mm sheets more than is possible in principle.

The countertop will be strong and have a solid appearance, but the sink will be finer (12 mm), allowing you to achieve the required shape

19.9- Moulds for thermocurving.

The moulds can be made by hand or using CNC.

If you only have to make a few sections, the moulds can be made of high density polyurethane.

Stronger, more resistant moulds can be made with 12 mm MDF.

When making MDF moulds, make a block by stacking 12 mm layers until reaching the required thickness.

This will result in a stronger mould that will last longer and be less liable to deform than using a single thick board.

Using the block of MDF or polyurethane, machine until achieving the required shape.

If you need to make a lot of sections, you will need a mould in a more durable material, such as aluminium.

You can also make several moulds to increase productivity, making several thermoformed sections at the same time.

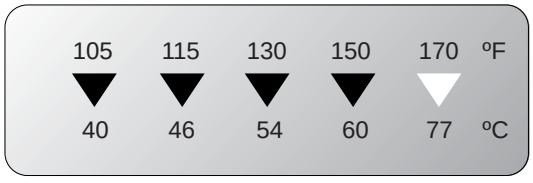
This also means that each mould will be used for less sections, increasing the amount of time they last.

19.10- Manual ovens.

Small KRION™ sections can be heated in domestic ovens, providing they offer reliable temperature measurements and heat the KRION™ section constantly and uniformly.

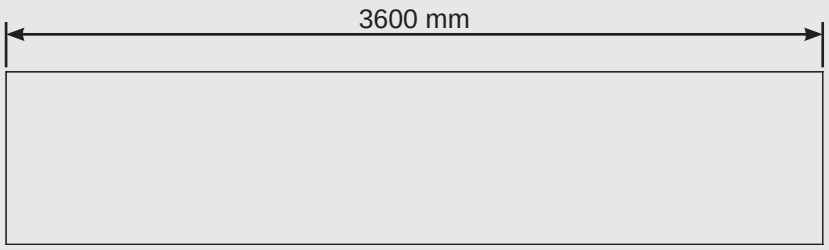
An electronic thermometer is the best way of controlling excess oven temperatures.

Thermal strips are useful if you do not have a reliable thermometer and your oven does not have a temperature control.

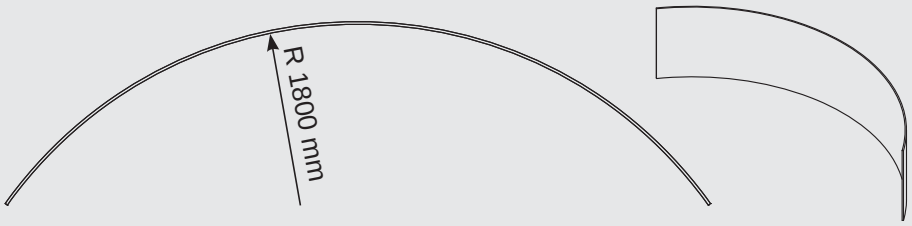


19.11- Cold bending radius of KRION™ Lux sheet.

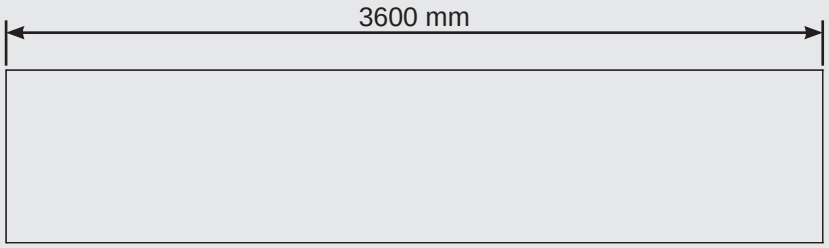
Thickness of sheet: 12 mm.
Length of sheet: 3600 mm.



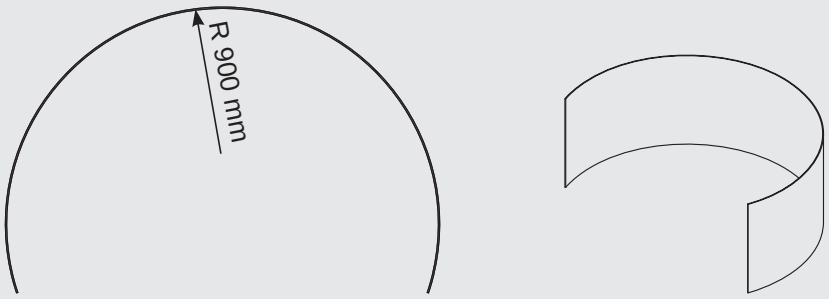
Bending radius: 1800 mm.



Thickness of sheet: 6 mm.
Length of sheet: 3600 mm.



Bending radius: 900 mm.



Backlighting KRION™ Lux Light 20

The colours in the Light series are naturally translucent.

Particularly beautiful surfaces and wall coverings can be achieved by using backlighting.

The finer the KRION™ sheet, the more light it will allow to pass through.

By using black vinyl (or any other opaque system), KRION™ can be used to create signs and placards.

Backlighting KRION™ Lux Light

20.1- Processing KRION™ Lux Light.

Although the processing methods used with translucent colours are the same as those for the other colours, certain factors must be taken into account when carrying out projects.

Always check the appearance of projects using KRION™ Light with the final backlighting and without the backlighting.

When inspected in both ways, faults can be detected and corrected prior to the final installation process.

20.2- Seams KRION™ Lux Light.

KRION™ Lux Light seams will always be visible, above all when the panel is backlit.

The adhesive, reinforcement strips and supporting frames will always be visible when you backlight the finished product.

These elements will create visible shadows.

Follow the indications given below to ensure a correct finish:

- ► Study the design and position of the seams carefully, positioning them in less visible, less well-lit places.
- ► The twin edges must be prepared with extreme precision to avoid hollows where excess adhesive may accumulate.
- ► The adhesive left at the back of the seam must be removed, as it has a different translucence to the sheet.
- ► Use the same sanded finish for the whole of the rear part, as different sanding grains provide different levels of translucence.
- ► Attach the seam reinforcement strips in areas where the KRION™ is supported on the substrate.
- ► One shadow will help to conceal another.
- ► Position the seams in less visible or less illuminated areas.

20.3- Thermoforming KRION™ Lux Light.

If you thermoform a section of KRION™ Light, remember that heating the sheet may cause differences in the translucence of different parts of the sheet if it is not heated uniformly.

If you have to bond a straight section to a hot thermoformed section, make sure that the straight section has the same translucence as the curved section.

If you exceed the recommended curvature radii, major changes will occur in the colour and translucence.

Heat the sheets for as short a time as possible to reduce changes in colour. Try for 12 minutes and gradually increase in 1-minute intervals until achieving a heat that allows you to carry out the required application.

If the mould does not have a sufficiently smooth finish, any irregularities will be seen when the section is backlit.

Any irregularities can be removed by sanding the section once it has been thermoformed.

20.4- Panelling KRION™ Lux Light.

If you have to panel walls that will be backlit, use a transparent mounting adhesive and experiment using a section before completing the project.

If the supporting wall does not have a uniform colour, these differences may be seen when the KRION™ is backlit.

Trimming down KRION™ to incorporate backlighting 21

Non-translucent colours can be trimmed down to a thickness of 2 or 3 mm to achieve a translucent effect.

Experiment with the depth and type of lighting until the desired effect is achieved.

Kitchens 22

The following details explain how to build a perfectly assembled kitchen.

Take into account the need for rear trims, side panels, seams, the integration of bowls and vitroceramic hobs, supporting frames, reinforcements etc.

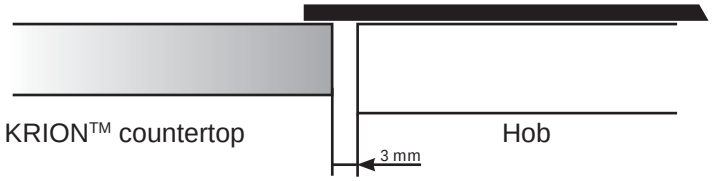
Cutting and preparing the material for installing hobs.

22.1- Thermal insulation – Necessary precautions.

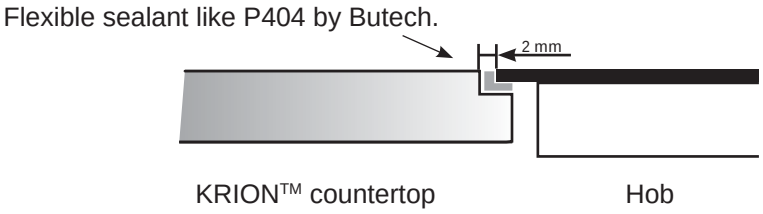
- Expansion gap – safety distances.
- Reinforcements.
- The area's protection (ceramic fibre + aluminium foil tape).
- Lower ventilation.

EXPANSION GAP AND SAFETY DISTANCES

A minimum distance of 3 mm should be left between the hob and the cut edge.



Preferably, hobs should not be integrated flush with the countertop. If this is done, a 2mm margin must be left round the perimeter of the hob and this gap sealed with a flexible sealant like P404 by Butech. Never use rigid sealants.



A minimum distance of 700 mm must be left between the seam where the KRION™ sheets have been bonded longitudinally or crosswise and any high heat source (such as a hob or oven).

Always maintain a minimum safety distance of 50 mm between the hob and rear trim of the countertop.

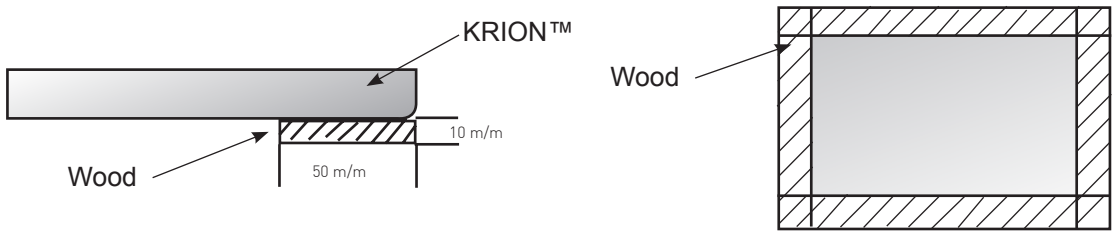
When the hob works with a combustion system (like gas), a bigger gap should be left due to flames that might exceed the diameter of large saucepans or frying pans.

Another solution to this problem is to incorporate a stainless steel plate to insulate and protect the rear trim and/or wall of the cooking area.

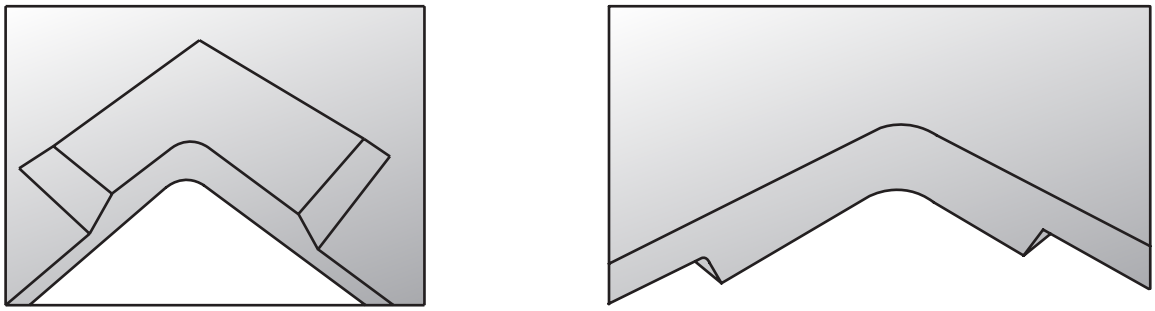
22.1- Thermal insulation – Necessary precautions.

REINFORCEMENTS

The whole perimeter of the gap left for the hob must be reinforced using, for example, a 10mm-thick wood strip with a width of at least 50 mm, sealing it at all times with flexible adhesive (type P404).



The gap left for the hob can also be reinforced with KRION™, always mitering the edge at a 45º angle (see close-up).

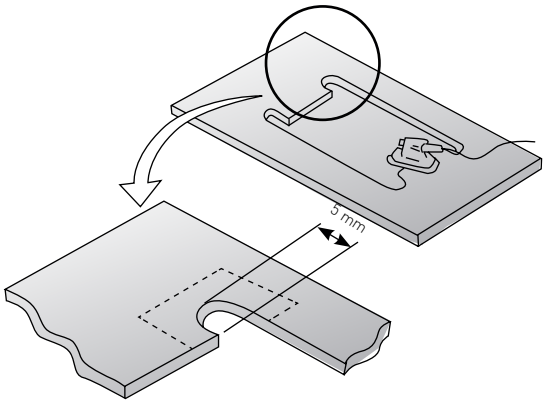


Bottom and top view of the gap reinforced with a 100x100mm piece of KRION™, with an edge mitered at a 45º angle, bonded with KRION™ adhesive. Reinforce the 4 corners of the gap in the same way.

The underside of seams between two sheets can also be reinforced with a (50-100mm) KRION™ strip. The edges should also be mitered at a 45º angle.

PROTECTING THE SECTION

Using the same milling machine that was used to cut the gap, make a groove in it of at least 5 mm as shown in the drawing.

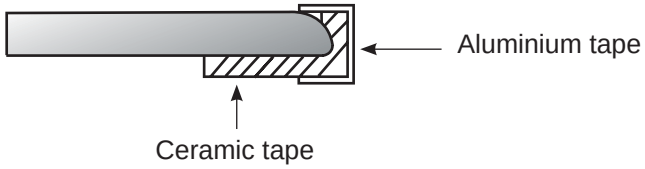


To prevent breakage caused by stress and to cool.

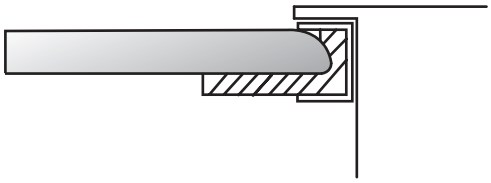
Kitchens

22.1- Thermal insulation – Necessary precautions.

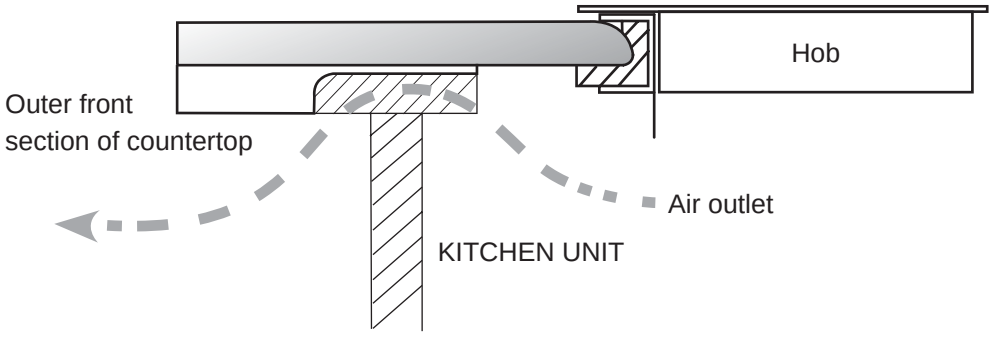
The edges of the sections should be sanded with P400 sandpaper and protected with heat-resistant tape (ceramic fibre tape), followed by an overlapping layer of heat-reflecting aluminium foil tape that surrounds the edge.



Overlap this with a new layer of heat reflecting aluminium foil tape to form an L shape, as shown in the picture.



Ventilation holes should be made in the front wall of the countertop, coinciding with the area where the hob is.



The entire underside of the countertop that holds the hob should be reinforced with wooden chipboard, bonded with an adhesive sealant.

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Do not forget to round the inner edges of the gap used to house the hob. A rough edge is always more fragile than a rounded one.

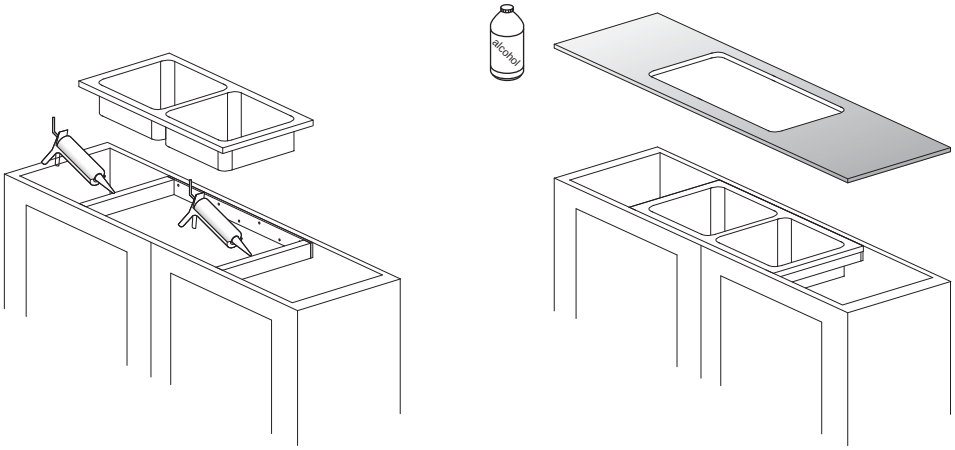
22.2- Recessing sinks (alternative).

1. Build a supporting frame over the sink unit.

2. Place the sink on top.

3. Cut a hole in the countertop using a template. Sand to remove scratches and sharp edges.

4. Position the countertop and attach it to the sink with silicone.



22.3- Recessing sinks (alternative II).

With insets. Without KRION™ adhesive: only silicone. Or with KRION™ adhesive.

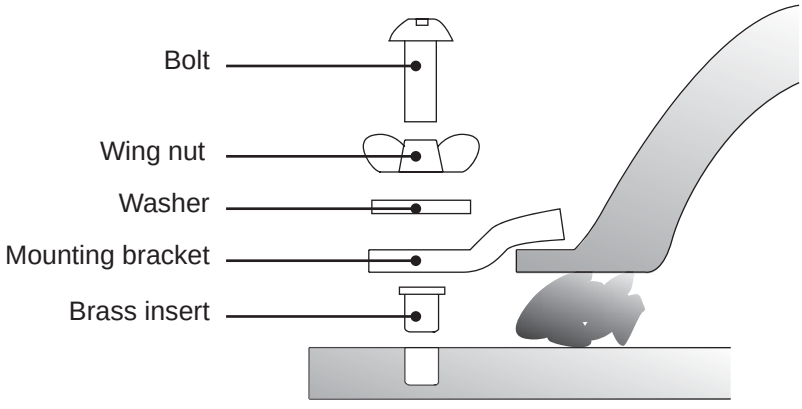
1. Cut the hole for the inset with a suitably sized bit.

2. Push in the expansion inset and tap it so that it adjusts to the opening.

3. Add silicone around the edge of the bowl and move it into place.

4. Add a rubber washer to protect the sections.

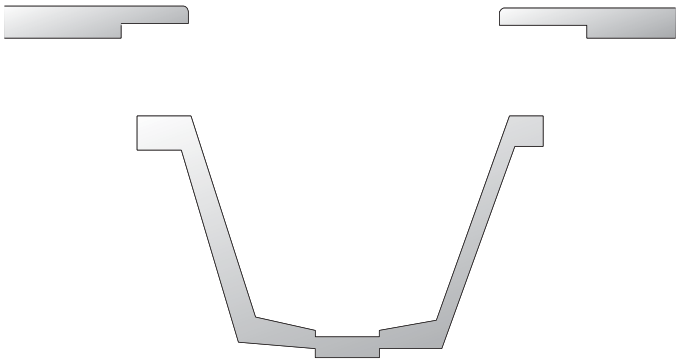
5. Screw in without using too much pressure.



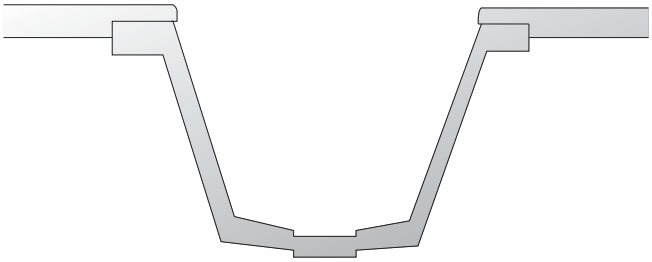
22.4- Recessing sinks (alternative III).

A sink can be recessed by slightly changing the method described in the first case

1. Cut an opening with the shape of the bowl in the sheet before attaching the bowl. The best tool in this case is a CNC machine.



2. Attach the bowl in the opening using adhesive.



22.5- Replacing bowls.

If your customer wants to change the bowl model once the countertop has been installed, there are two possibilities: the new bowl could be the same as the previous one, or it could be larger.

If it is larger, you will need to cut an opening in the countertop around the bowl to remove it and install the new one.

If the new bowl is not larger:

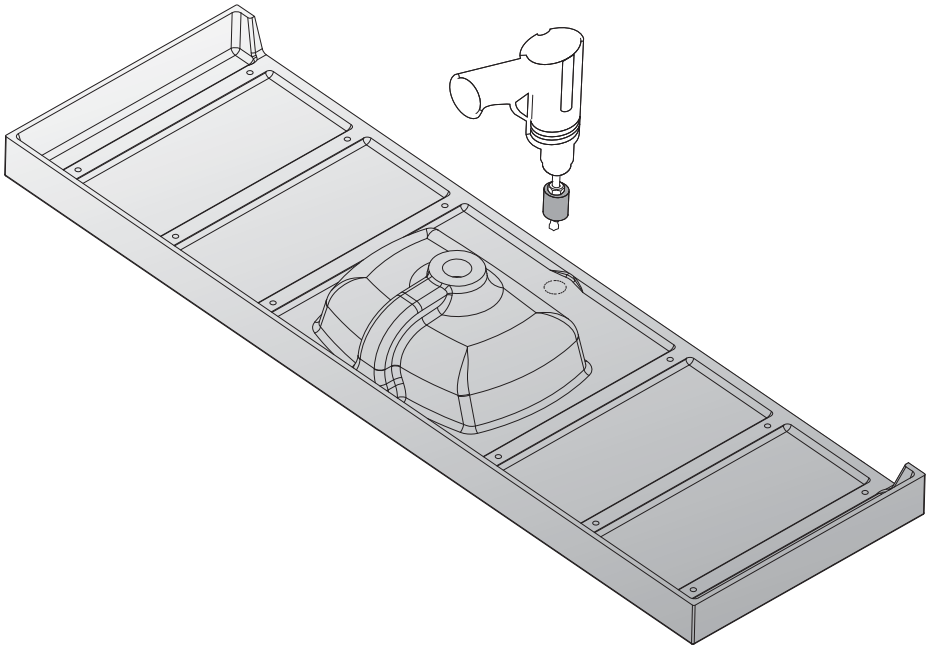
1. Remove the existing bowl .

2. Add KRION™ to cover the hole where the bowl was.

3 Add the new bowl according to the instructions described above.

22.6- Tap hole.

Using a drill bit or core bit make the hole for the tap, as specified in the installation manual. If the tap has screw-on parts like nuts or fastening screws, make sure that the diameter of the machined holes is 2 mm bigger than the screw or piece to be fitted.



Never reinforce the base of the tap with wood or materials that are not waterproof or damp-resistant.

KRION™ is a good material for reinforcing this area.

22.7- Kitchen maintenance.

Use and care of KRION™ in satin or gloss finish

Newly-installed KRION™ countertops have a matt, gloss or satin finish. For more intensive or special uses, they can also be installed with a matt finish.

By following the maintenance recommendations for countertops with a satin finish, the surface will become softer and silkier over time.

If you choose a matt finish, your countertop will have a deep, uniform stony appearance.

We have produced these simple guidelines that will help you to maintain the appearance and feel of your KRION™ kitchen.

Cleaning and maintenance for satin finish KRION™ countertops.

The satin finish, with a slight gloss, is recommended for domestic and commercial uses, especially because it is easy to clean and maintain.

For a perfect finish, always rub in circular movements and clean evenly over the whole surface. Darker colours may require more frequent attention in order to maintain a uniform finish.

For daily cleaning

Clean with a damp cloth and gentle cream cleaners with microparticles. Then rinse and dry the surface with a towel. For daily maintenance, cream bleach products available in department stores are recommended, or products such as CIF™ cream or VIM™ cream.

For more stubborn stains

Apply a gentle cream cleaner with microparticles using a blue ScotchBrite™ pad, rubbing in a circular motion. Then rinse and dry the surface with a towel. Once stubborn stains have been removed, carry out the daily cleaning process with a damp cloth to make the surface even.

For persistent stains

Apply the cream cleaner with a green ScotchBrite™ pad, only in the area with the stain, rubbing gently in a circular motion.

Then do the same with a blue ScotchBrite™ pad, and then with a damp cloth, cleaning over a wider area to ensure a uniform finish.

22.7- Kitchen maintenance.

Cleaning sinks

Clean the sink once or twice a week. Clean as usual and then apply a cream bleach over the whole surface and leave overnight. The next day, clean and rub with a damp cloth, to leave the sink looking as good as new. The next day, clean and rub with a damp cloth, to leave the sink looking as good as new.

Cleaning and maintenance of gloss KRION™ solid surface

The gloss finish, characterised by its quality and optimum quality, is only recommended for decorative uses.

The high gloss finish requires very careful maintenance, meaning it is not recommended for normal uses.

For a perfect finish, always rub in regular circular movements without applying excess force. Apply cleaning treatments uniformly over the whole surface. Darker colours may require more frequent attention to maintain a uniform finish.

For daily cleaning.

Clean with a damp cloth and gentle cream cleaners with microparticles. Then rinse and dry the surface using a cloth. For daily care, use bleach gel available in department stores, or cleaning products with microparticles such as Vim™ cream or Cif™ cream.

For more stubborn stains

Apply a daily cleaning product using a Scotch Brite™ pad with white microfibers, only in the area of the stain, and rub gently in a circular motion. Then use a clean cloth to apply car polish, available in paint shops and specialised outlets. Gradually extend the polished area to ensure a uniform finish.

Kitchens

22.7- Kitchen maintenance.

Cleaning y mantenimiento Brillo de KRION™ Solid Surface

For persistent stains

Apply a daily cleaning product using a blue Scotch Brite™ pad, only in the area of the stain, and rub gently in a circular motion. Then apply a daily cleaner using a Scotch Brite™ pad with white microfibers, only in the area of the stain, and rub gently in a circular motion.

Then use a clean cloth to apply car polish, available in paint shops and specialised outlets. Gradually extend the polished area to ensure a uniform finish.

Cleaning sinks

Clean the sink once or twice a week.

Clean as usual and then apply a cream bleach over the whole surface and leave overnight. The next day, clean and rub with a damp cloth, to leave the sink looking as good as new.

The next day, clean and rub with a damp cloth, to leave the sink looking as good as new.

Cleaning and maintenance for matt KRION™ countertops

The matt finish is especially recommended for ‘high traffic’ areas with low or no gloss, in laboratories or in areas that are constantly exposed to persistent stains.

For a perfect finish, always rub in a circular motion and apply cleaning treatments evenly over the whole surface.

Darker colours may require more frequent attention in order to maintain a uniform finish.

22.7- Kitchen maintenance.

For daily cleaning and for difficult or persistent stains

Clean with a green ScotchBrite™ pad and use cleaning products with microparticles. Rub in a circular motion, then rinse and dry the surface using a towel.

For daily maintenance, cream bleach products available in department stores are recommended, Ajax ™ or products such as CIF™ cream or VIM™ cream.

Cleaning sinks

Clean the sink once or twice a week.

Clean as usual and then apply a cream bleach over the whole surface and leave overnight. The next day, clean and rub with a damp cloth, to leave the sink looking as good as new.

The next day, clean and rub with a damp cloth, to leave the sink looking as good as new.

22.7- Kitchen maintenance.

Care guidelines

Warnings

► Avoid excessive heat on the countertop. KRION™ is designed to withstand high temperatures, but extreme heat can cause damage to any surface.

► Use surface protectors when placing pots that have recently been removed from the hob or oven on top of KRION™, especially if they are made of cast iron.

► Avoid pots and pans overlapping the rings on the hob.

► Avoid direct contact with devices that emit heat.

► When pouring boiling liquids into KRION™ sinks, run the cold water tap at the same time.

► Avoid sliding heavy or hard objects over stain or gloss finish surfaces.

► EAvoid harmful chemical products such as drain cleaners or paint solvents. Quickly remove any splashes of chemical products using plenty of soapy water to prevent damage.

► Avoid hitting objects against the external corners of KRION™ countertops.

► Use a cutting board to prevent damaging the surface.

Repairs 23

KRION™ can be completely repaired. Any imperfection affecting a product made of differences can be returned to its original appearance.

The different ways of repairing the material will depend on the type of damage the product has suffered.

If you have to add KRION™ to the damaged area, try to make sure it has the same batch number as the rest of the section, to minimise any differences in colour.

For this reason, we recommend that you keep a piece of differences from the same sheet used for the finished product to be used for any future repairs.

If you have made a kitchen, it is a good idea to attach a section measuring 100 x 50 cm beneath it with silicone in case it is needed in the future.

23.1- Scratches.

A green Scotch Brite pad can be used to restore the majority of white KRION™ surfaces. For other scratches, P240 sandpaper is usually sufficient.

In the case of large scratches, a rotary sander must be used, sanding the whole product.

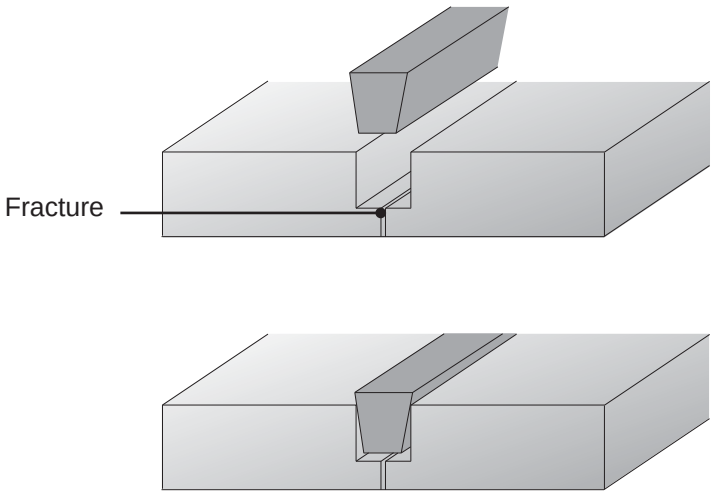
23.2- Cracks in KRION™.

It can be repaired by fitting an insert into the cracked patch.

1. First locate the end of the crack and drill a hole right through the sheet, using a 2 to 4mm drill bit. This will prevent the crack from continuing to open due to stress.

2. With a milling machine, cut out a straight section along the crack, leaving a 2 to 3mm-thick base.

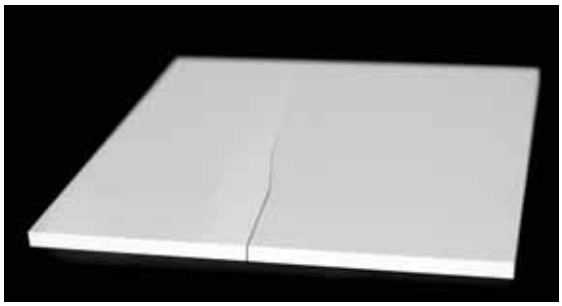
3. The insert should be from the same batch as the original sheet. It must be hand finished and adjusted to give it a slightly conical shape, so as to ensure a seam with an optimum bond.



Repairs

23.2- Cracks in KRION™.

1



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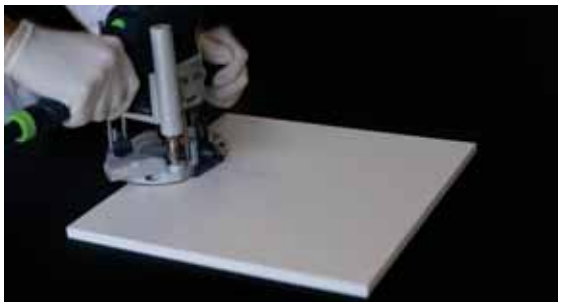

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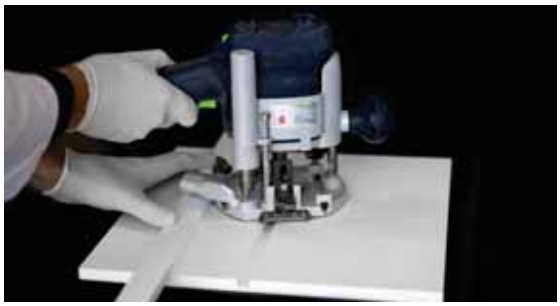

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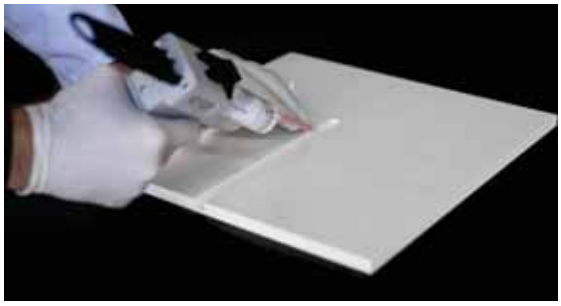

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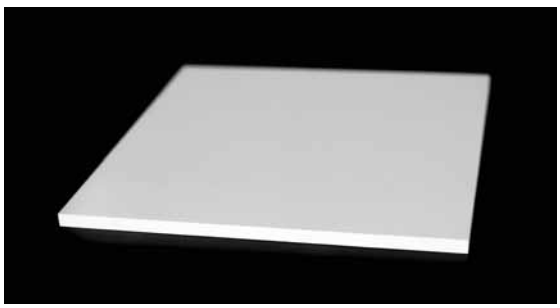
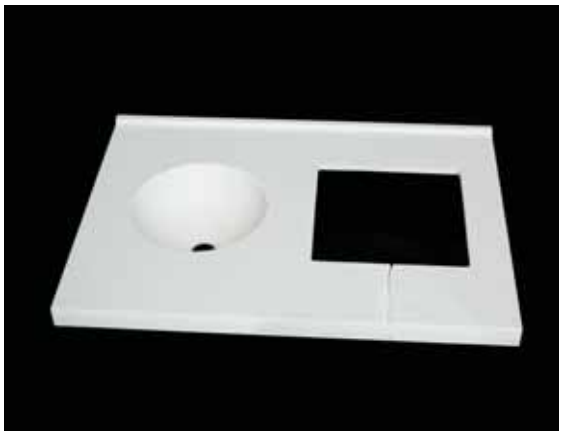


23.2- Cracks in KRION™.

If the crack reaches as far as the sink or hob opening, a larger section must be replaced:



1. Draw a template of the shape being replaced. To ensure a more precise fit, the replacement section must be wedge shaped.

1

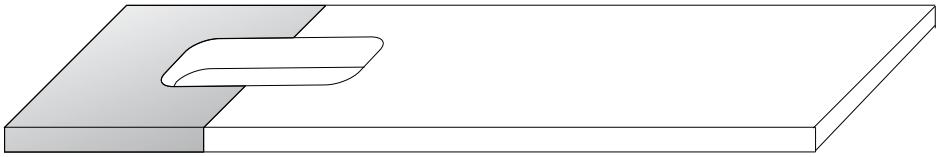
2. Remove the cracked section, make a piece to replace it and bond it using the normal procedures. Use a milling machine to finish the opening in the original shape. Sand the whole countertop and give it the required finish.

2

Repairs

23.3- Replacing large sections of KRION™.

If the problem is so serious that it cannot be repaired, you may need to replace a part of the countertop.



Follow the procedures detailed above to cut, bond and sand the countertop.

If you cannot guarantee that the colour will match perfectly, inform the customer.

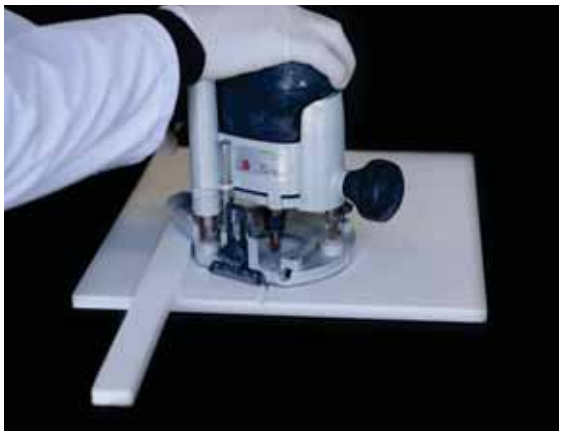
You could suggest using a completely different colour to create a contrast.

23.4- Broken seams in KRION™.

If a seam has broken or come loose, it can be repaired using a “V”.

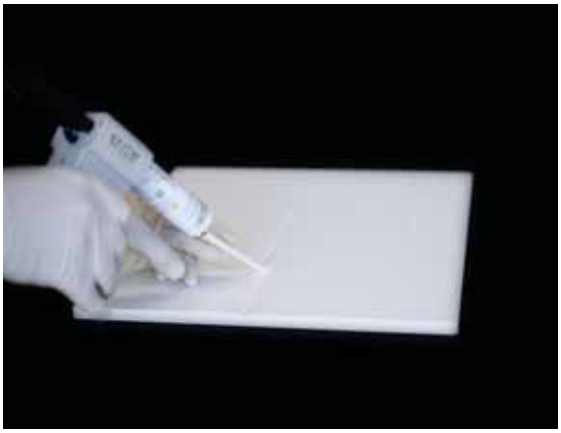
1. Mill the seam in a V shape. A CNC can be used, or a manual milling machine with a 45º bit.

1



2. Make a strip with a square base to create an insert in the same colour as the countertop, and bond it.

2.1



2.2

23.4- Broken seams in KRION™.

2.3

3. When the adhesive is dry, remove the excess material by sanding and then give it the required finish.

3

4. Add a reinforcement section beneath the new insert.

Repairs

23.5- Holes in KRION™.

If the surface of the KRION™ has been damaged by a sharp object, it can be repaired using a set of complementary milling bits.

The first bit will make a hole in the surface, and the second will remove a “cap” that will fit perfectly in the opening.

Bond the cap in place, and once the adhesive is dry, sand it to achieve the correct finish.

1

2

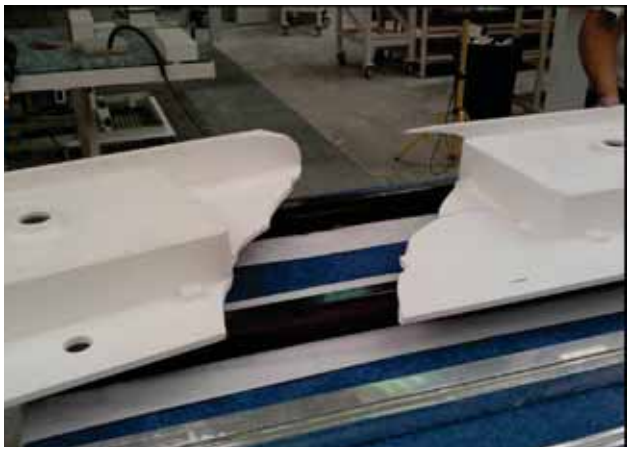
3

4

5

6

23.6- Repairing KRION™ Stone (chemical welding).



Any damage to an element made of KRION™ can be repaired. It is easy to return damaged sections to their original appearance.

The instructions given below will help you to return any damaged element to its original state.

Repairing with chemical welding paste is simpler because the paste fills in gaps where material is missing, sections whose edges are chipped, and missing sheet sections, none of which can be repaired using adhesive.

1. Prepare the chemical welding paste and apply it along the whole length of the crack.

1

2. Apply pressure, leave it to dry and then sand until achieving the required finish.

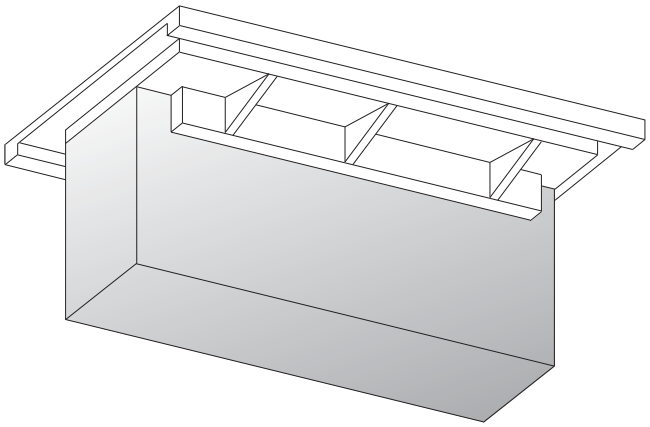
2

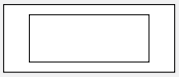
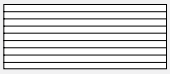
Countertops

24.1- Wall hung countertops.

To make wall hung countertops, it will be necessary to build a supporting frame.

The most suitable materials are wood, steel tubing, phenolic plywood and waterproof MD.



Typical supporting frame materials	
	Steel tubing
	Steel brackets
	Plywood

Triangular reinforcement brackets are the most advisable, as they will provide the strongest support.

As a general rule, position one bracket every 60 cm. The brackets must be screwed onto the supporting plate, as the units are not normally strong enough to withstand the stress.

Attach the brackets to the countertop with P-404 (Butech).

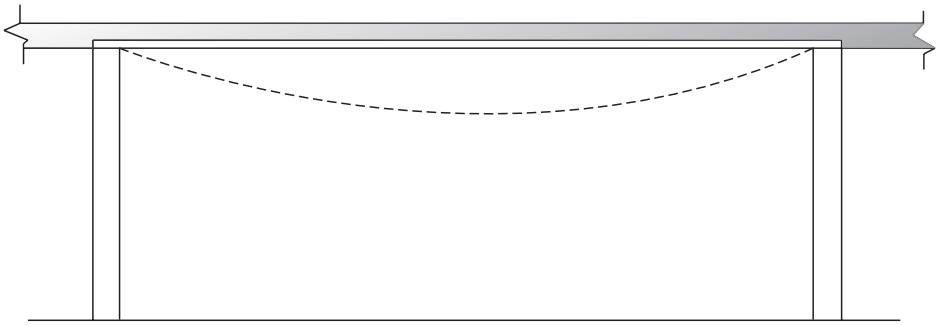
If the countertop has seams, they must be positioned on top of the units, as far away as possible from the edge.

Check that by applying a weight of 50 kg on the end of the suspended part, it does not bend more than 5 mm. This will indicate whether the additional support is suitable for the weight and measurements of the countertop.

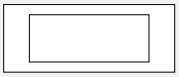
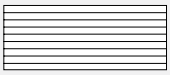
24.2- Unsupported sections.

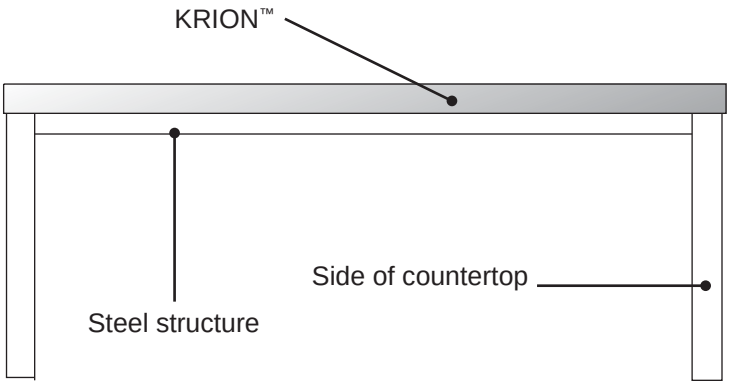
For sections that do not rest on units to provide mechanical support, it will be necessary to reinforce the supporting frame.

The larger the overhanging section, the more support will be necessary.



The most suitable materials are wood, steel tubing, phenolic plywood and waterproof MD.

Typical supporting frame materials	
	Steel tubing
	Steel brackets
	Plywood



Supporting frame

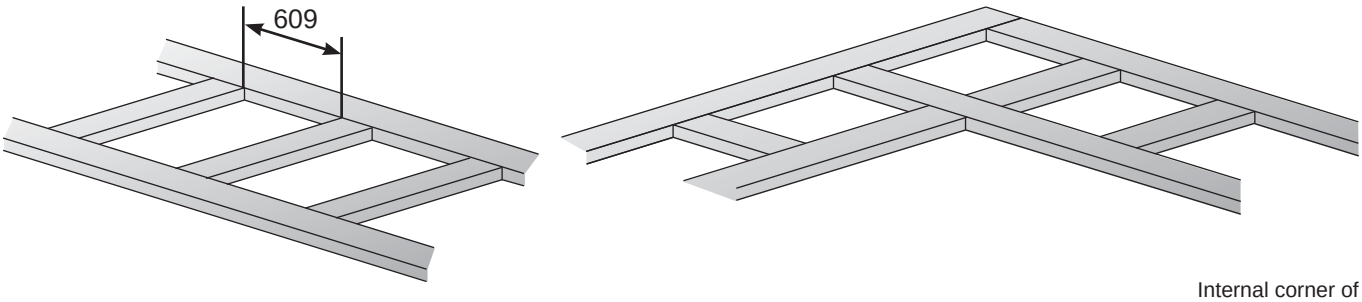
Kitchen and bathroom countertops made of KRION™ are hard wearing, but they need a supporting structure. KRION™ is a hard-wearing material, but to ensure a long useful life, the structures need supporting frames.

The supporting frames must be made of materials that are highly resistant to heat and humidity. The most recommended materials are phenolic plywood and waterproof MD.

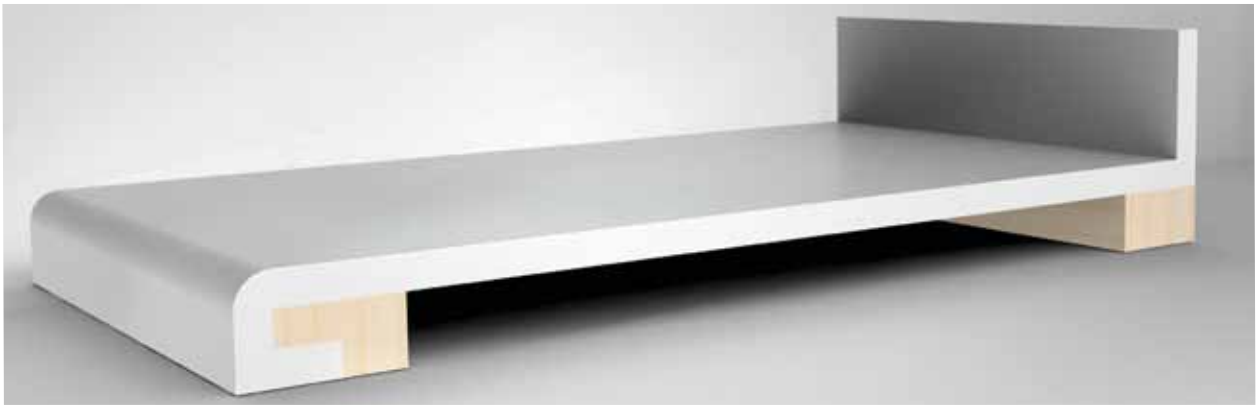
Chipboard is not suitable for this purpose, as it has a relatively low resistance to heat and humidity.

A supporting frame in a stepped shape is the best option for a KRION™ countertop.

Supporting boards without any openings prevent air from circulating and heat from dispersing, increasing heat stresses.



Internal corner of stepped frame



Build sections taking into account that the countertop must be supported at least every 40 cm, that additional supports must be added to the sides of openings for sinks and washbasins, and that areas with seams must also be reinforced.

Do not support the KRION™ countertop directly on units, as these are generally not level. Also, this will prevent air from flowing freely beneath the countertop.

If air does not flow freely beneath the countertop, it may overheat and crack.

Adjust using shims and a spirit level until the upper section is completely flat.
The supporting frame must have supports on the front and rear.

The KRION™ countertop must be bonded to the supporting frame with a good quality flexible adhesive (like P404 by Butech), thus allowing the countertop to absorb expansion movements.

The supporting frame must have an even, level surface to ensure that the KRION™ is correctly supported. Also make sure that the silicone keeps them firmly attached.

A correctly levelled supporting surface will make it easier to create the seams and obtain better results.

Check that the drawers and doors can be opened correctly after installing the countertop. Make sure that the upper drawers do not hit the skirt.

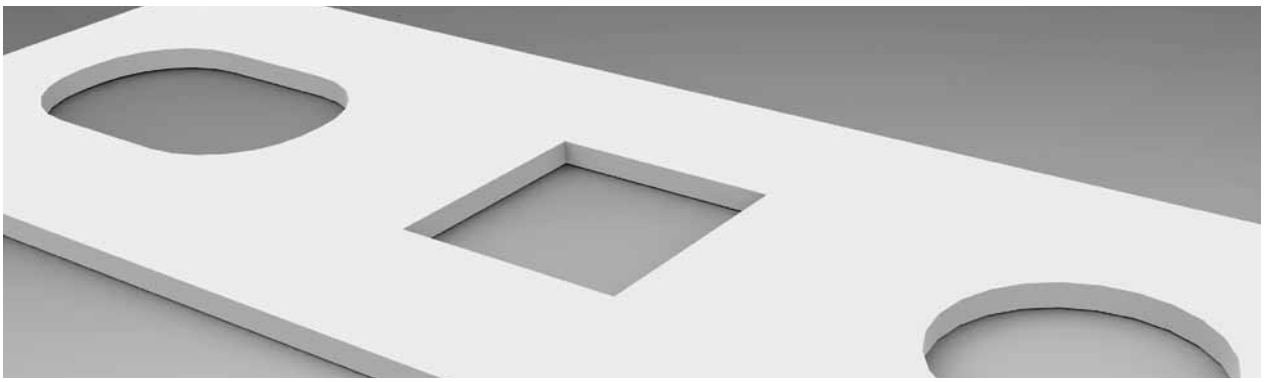
Make the parts that will go on the front and back.

Then check the location of the cross-ties, taking into account elements such as openings, seams and units.

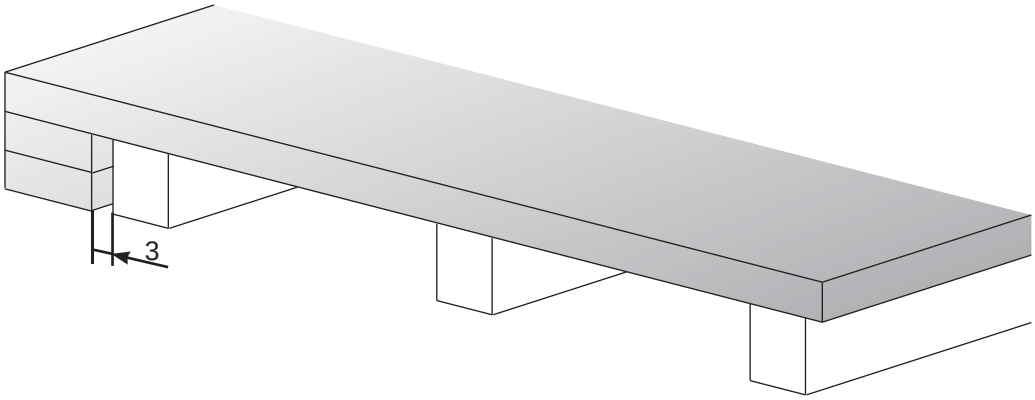
Assemble the supporting frame using mounting adhesive, nails, screws or biscuit-type joints.

Another way of making the countertop supporting frame is by using a whole board, and then using a manual or CNC milling machine to cut the openings needed for the sink and ventilation.

The supporting frame should never occupy the whole of the space under the KRION™. Leave a margin, particularly in areas exposed to damp and/or sharp temperature changes.



Always leave a gap of 3 mm between the supporting frame and countertop skirt:



Integrating bowls

26.1- Location.

Only use a milling machine to make the bowl opening.

- Bonding.
- Edge finish (angles).
- Template.
- Manual press.

Note: Remember to sand the interior of the bowls with same grain sandpaper as the countertop

26.2- Fitting bowls into countertops.

1. Place the KRION™ sheet face down on a working surface.

2. Using a nail or screwdriver, mark the longest and shortest axes on the back of the sheet.

3. Drill a hole with a core bit in the sheet that coincides with the centre of the washbasin drain, cutting a Ø 12 mm hole to pass through the threaded bar.

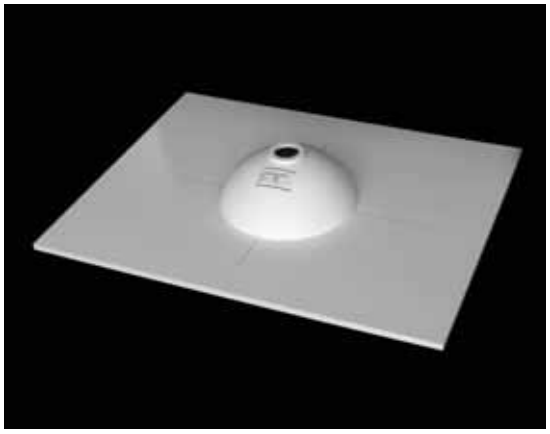
3.1

3.2

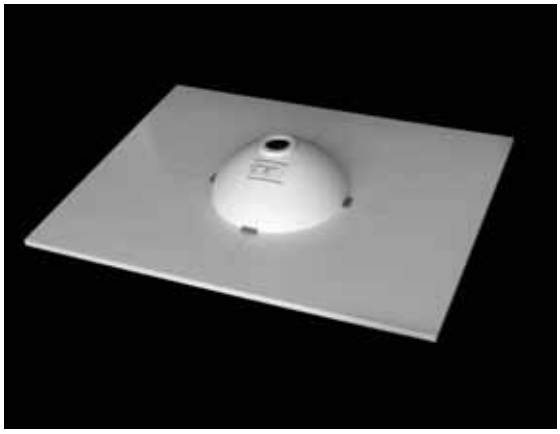
26.2- Fitting bowls into countertops.

4. Place the washbasin over the KRION™ sheet so that the marks on the rim coincide with the axes marked on the sheet.

4.1



4.2



* Centring blocks: fit small centring blocks in place using adhesive, so that it is easier to centre the washbasin.

5. Using a wooden block and 120-grain sandpaper, sand the lower edge of the KRION™ sheet where the washbasin is to be attached.

6. Sand the upper rim of the washbasin using 120-grain sandpaper.

6

7. Clean the connecting points with denatured alcohol.

8. Apply adhesive for sheet seams, completely covering the rim.

Integrating bowls

26.2- Fitting bowls into countertops.

9. Place the washbasin over the sheet, making sure that the marks coincide with the lines drawn on the back of the sheet.

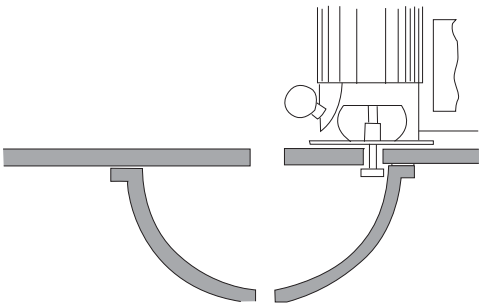
10. Pass the threaded bar through the drain and hole in the sheet. Fit the washers for applying pressure on the upper surface of the sheet and bottom surface of the washbasin. Then start to screw in the two wing nuts from each end until the sheet and washbasin are held firmly in place.

10

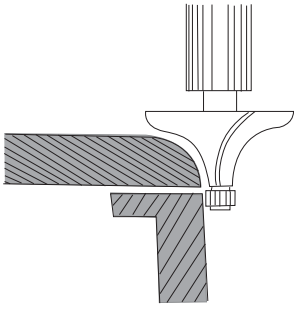
11. Turn the countertop around after the adhesive has hardened, using trestles for support.

12. Start to cut from the 12 mm hole in the centre of the washbasin, milling clockwise using a bit for contouring with an oversized nylon bearing.

13. This will produce a finish with a straight edge.

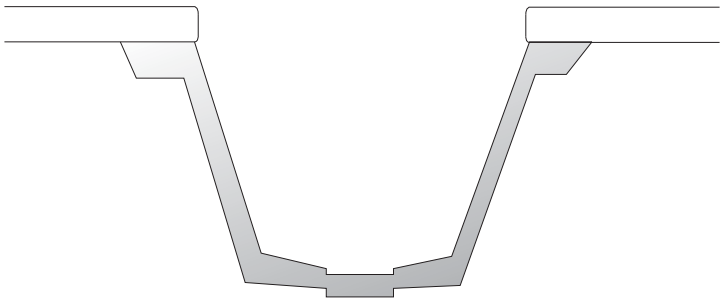


14. To obtain a blunt finish, repeat the milling operation with a suitable milling bit for contouring.

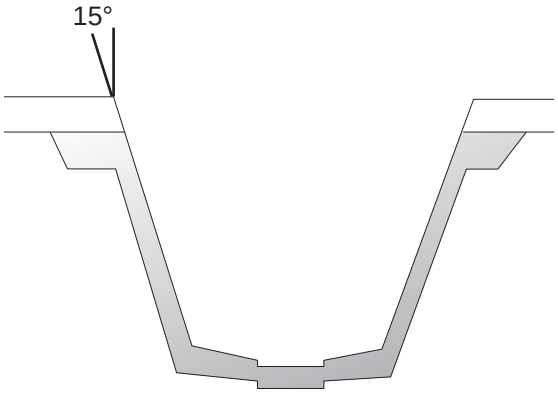


26.2- Fitting bowls into countertops.

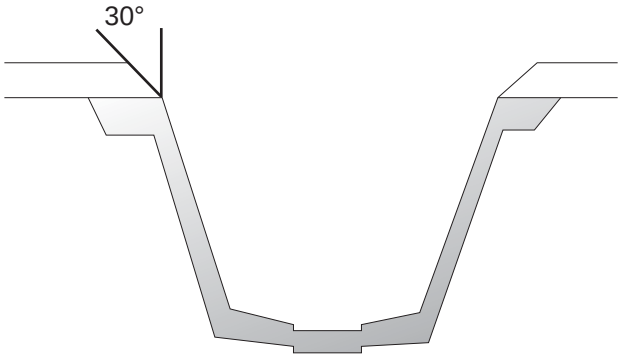
If you want a classic appearance, leave a slight rim from the sheet over the bowl, as shown in the following diagram:



In order to achieve a seamless single-surface appearance, mill the edge of the sheet at the same angle as the slope of the sides of the bowl.



To conceal possible colour differences between the sheet and bowl, cut the edge of the sheet at a sharper angle than the slope of the basin, for instance at 30º.



26.3- Recessing sinks (alternative).

1. Build a supporting frame over the sink unit.

2. Put the sink on top.

3. Cut a hole in the countertop using a template. Sand to remove any splinters and sharp edges.

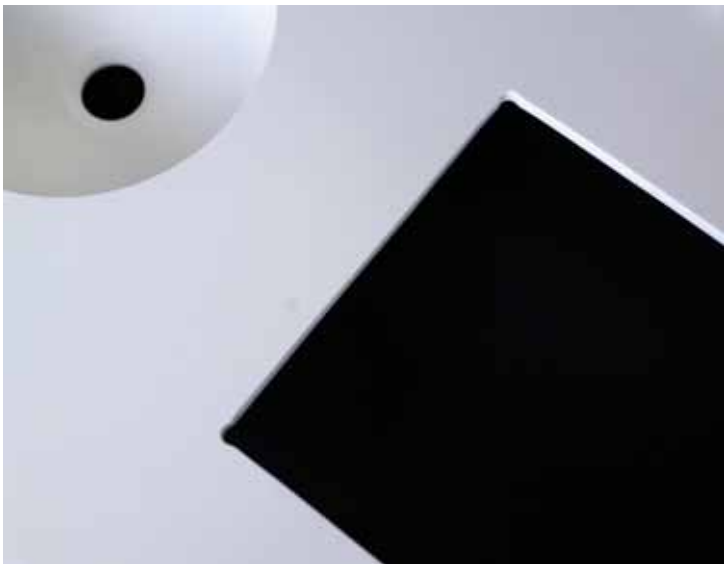
4. Put the countertop in place and attach it to the washbasin with silicone.

Rounding inner corners 27

All of the interior corners must be rounded to eliminate any stresses on the material

Machining as shown in the diagram can be used for this purpose (although not so exaggerated).

It is very important to round the corners of the gap used to house a hob.



Skirts 28

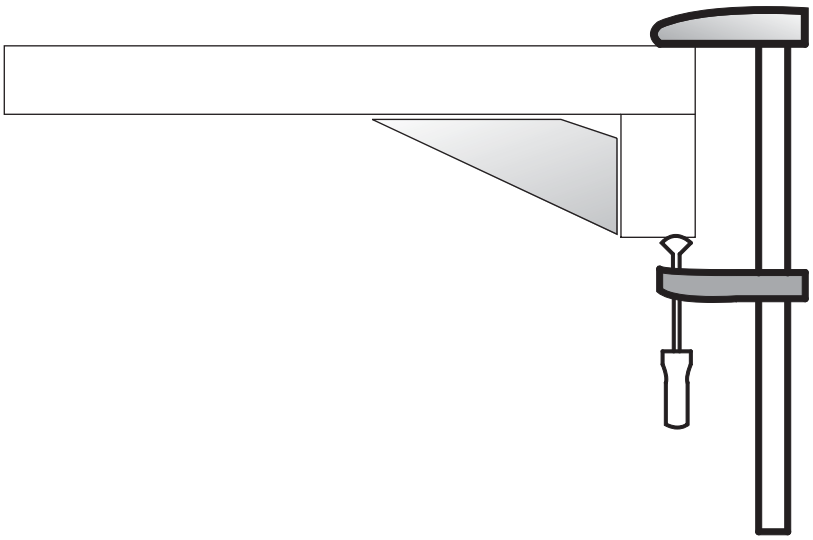
28.1- Skirts and front sections.

The most usual way of making a skirt for a countertop is by bonding a strip of KRION™ onto the upper part of the countertop. Whichever method you use, make sure you use enough KRION™ adhesive to completely cover the area of the bond.

The bonding area must be sanded before bonding on both sections to ensure they bond correctly.

Clean with denatured alcohol before bonding and do not touch with your bare hands.

Use clamps or grips to ensure that the sections stay in place while the adhesive dries.



There are different ways of carrying out this work.

In the case of curved thermoformed skirts, the basic instructions given are still valid, although the process will be more difficult than with straight front sections.

Make sure that the seams in the sheets used for the top of the countertop are at least 10 cm from the seams between the sections used for the skirts. This will help to strengthen the countertop.

Skirts

28.1- Skirts and front sections.

We will now describe the ways of making the front section in greater detail.

- Without mitered edges

In the case of seams without mitered edges, the skirt is bonded at 90º with respect to the top.

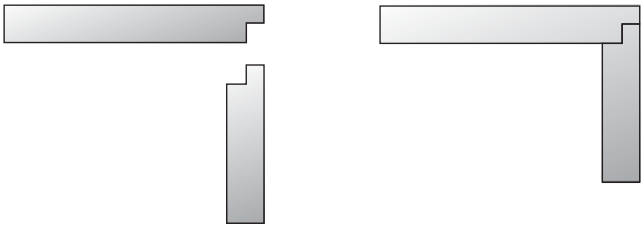
This is the easiest method that allows for the greatest productivity in your work

1. Position the skirt 1 mm from the edge.

2. Join the two pieces.

3. Once the adhesive has dried, sand to remove any excessive adhesive and KRION™.

- Trimmed down



- Tongue and groove

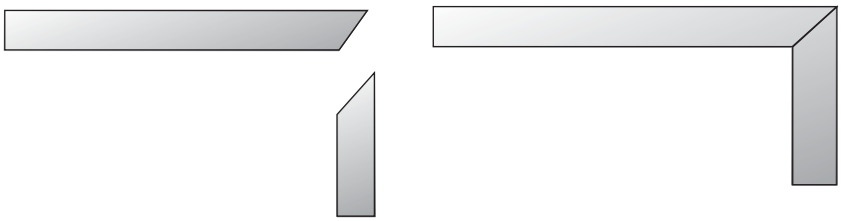
The tongue and groove joint makes the skirt more resistant, as it contains more adhesive than in other methods.

Use specific milling bits for tongue and groove joints.

28.1- Skirts and front sections.

Miter joints

With miter joints, the two sections have their edges cut at 45º.



To do this, all that is required is a milling bit for 45º cuts. The cut must be completely straight to bond the sheets.

Another way of making a miter cut is as follows:

Put a strip of adhesive tape under the line you are milling to keep the sections in place, and make the skirts and rear trims from the same sheet.

Stack skirts

To make stack skirts, cut two or more strips of KRION™ of the same width and stack them until reaching the required thickness.

In colours with chips, the skirt will show the differences between the amount of chips in the upper or bottom part of the sheets. We do not recommend using seams of this kind with these series.

Using skirts of this kind, we achieve a more solid appearance.

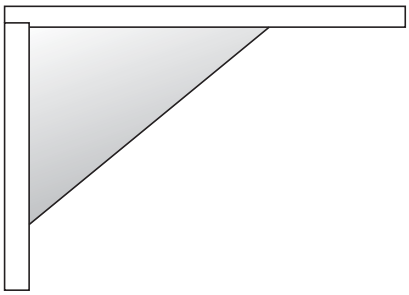
Large skirts 29

29.1- Large overhanging skirts.

In commercial premises, the front skirt is the part that is most exposed to wear.

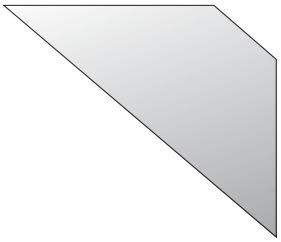
Skirts of more than 20 cm will require an additional support to be added to the countertop.

Using spare pieces of wood or KRION™, we can create brackets to provide the additional support we need.



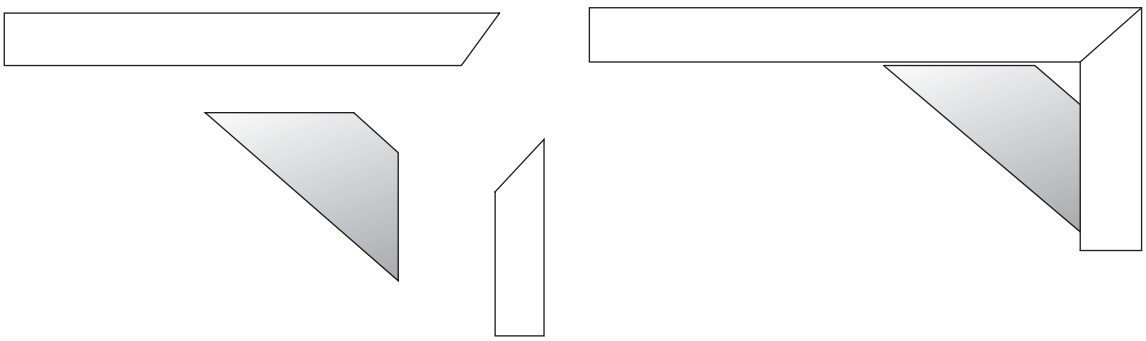
Brackets 30

Use wood or plywood brackets to support the skirts while the adhesive dries.



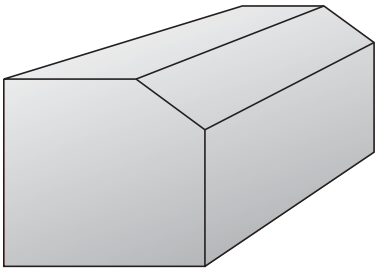
These must be as shown in the diagram: with a 90º angle and a rebate on their ends.

The rebate prevents the bracket from coming into contact with the adhesive, so it does not stick and contaminate the seam, which can cause incorrect bonding and the appearance of stains.

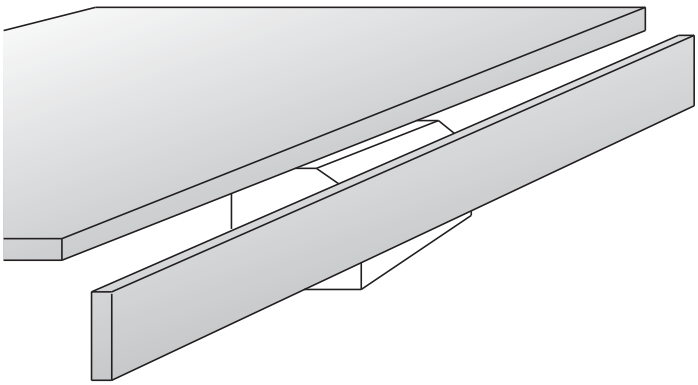


You can make these brackets if you have a template with a perfect 90º angle.

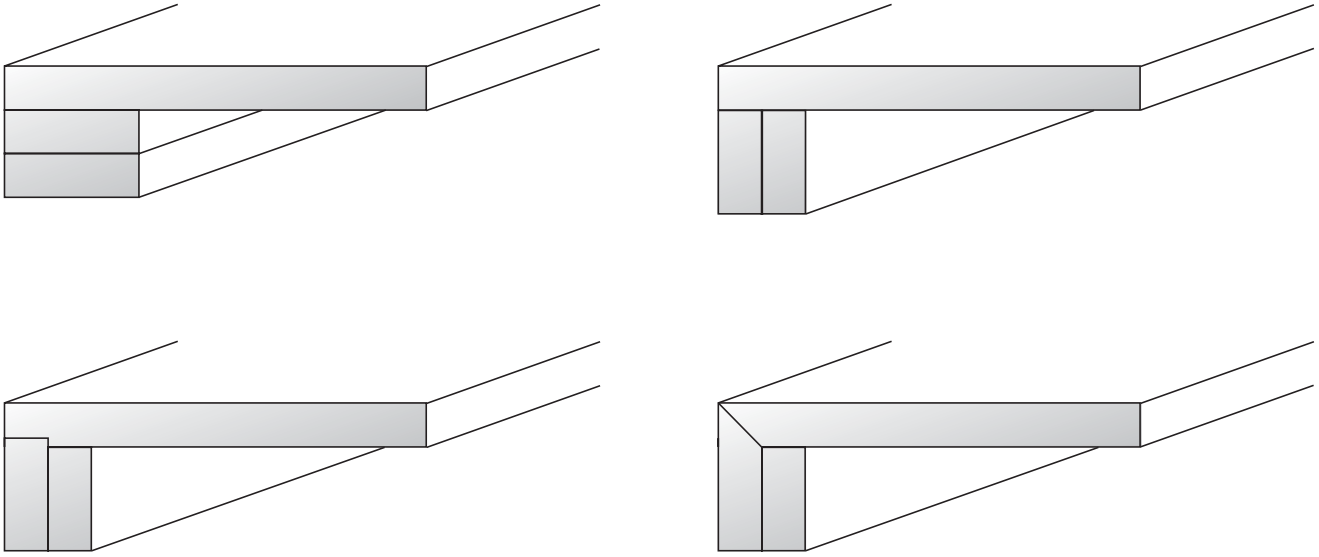
The brackets can be replaced by blocks made of wood or plywood.



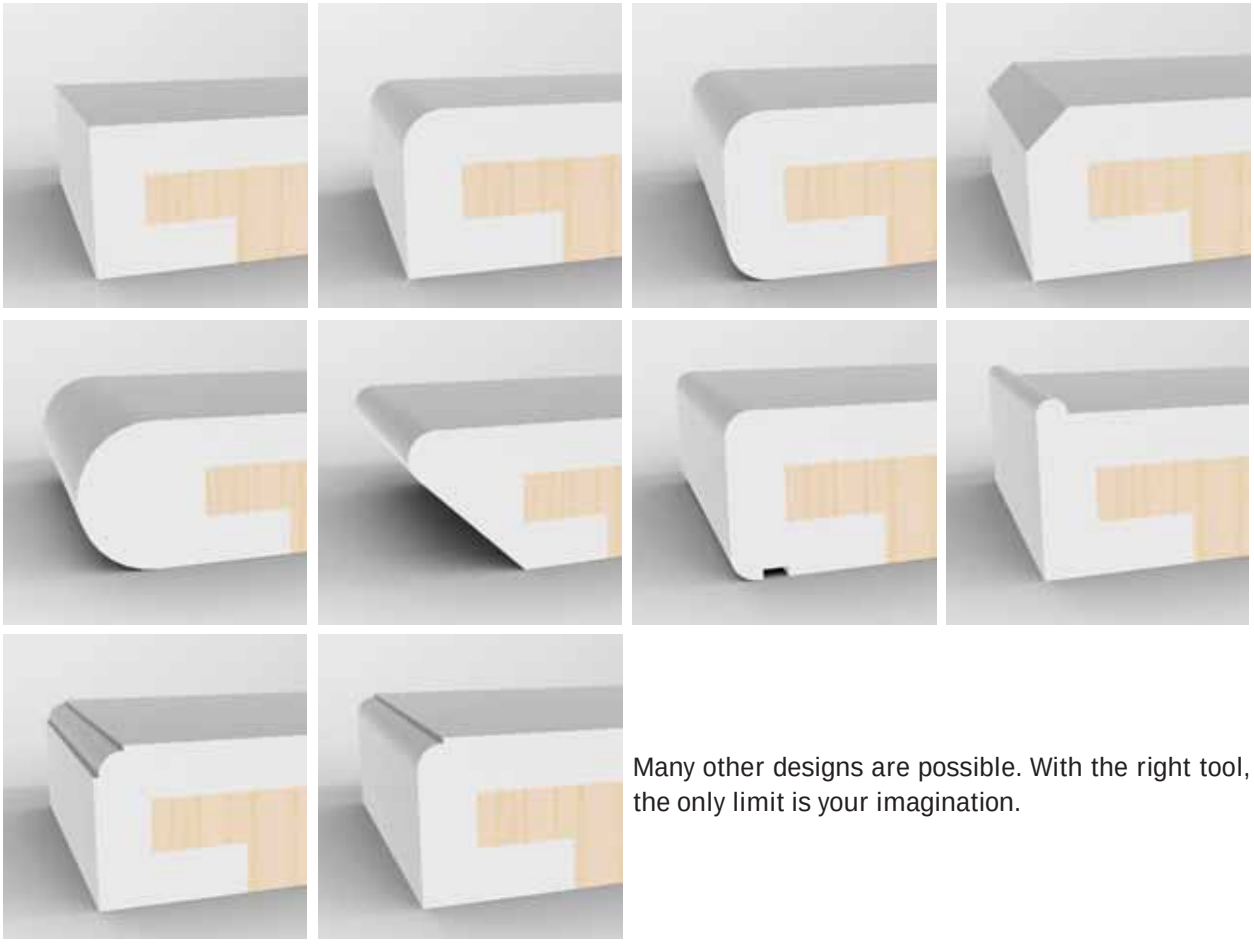
The brackets or blocks must be attached to the bottom of the countertop with hot wax. This means they can be easily removed once the work is complete.



Other images of skirts:



Using KRION™, it is possible to create all of these designs for the skirt.



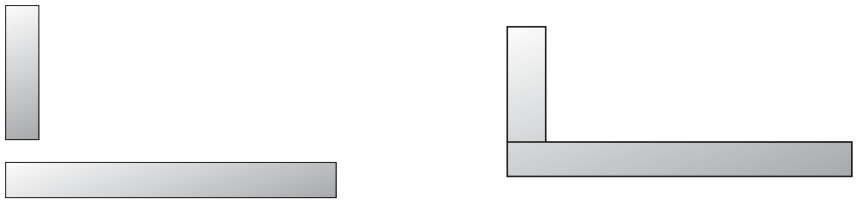
Many other designs are possible. With the right tool, the only limit is your imagination.

Rear trims 31

Rear trims can be straight or curved.

To create a straight rear trim, use any of the following methods:

- Without mitered edges



In this case, the rear trim is bonded to the top at a 90º angle.

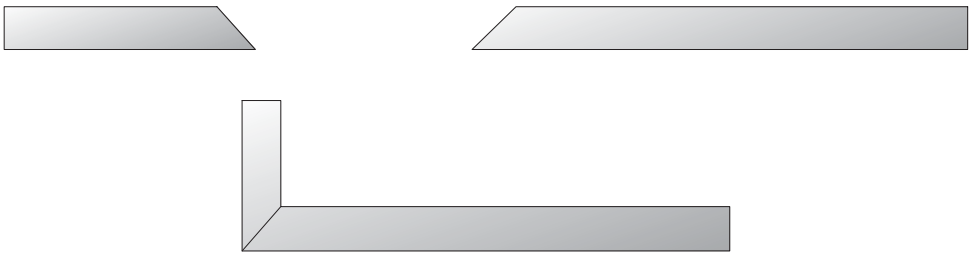
This is the easiest and most productive method:

1. Attach the pieces.

2. Once the adhesive has dried, sand to remove any excessive adhesive and KRION™.

- With mitered edges

Cut the two pieces to be connected with 45º angles and attach them using adhesive.

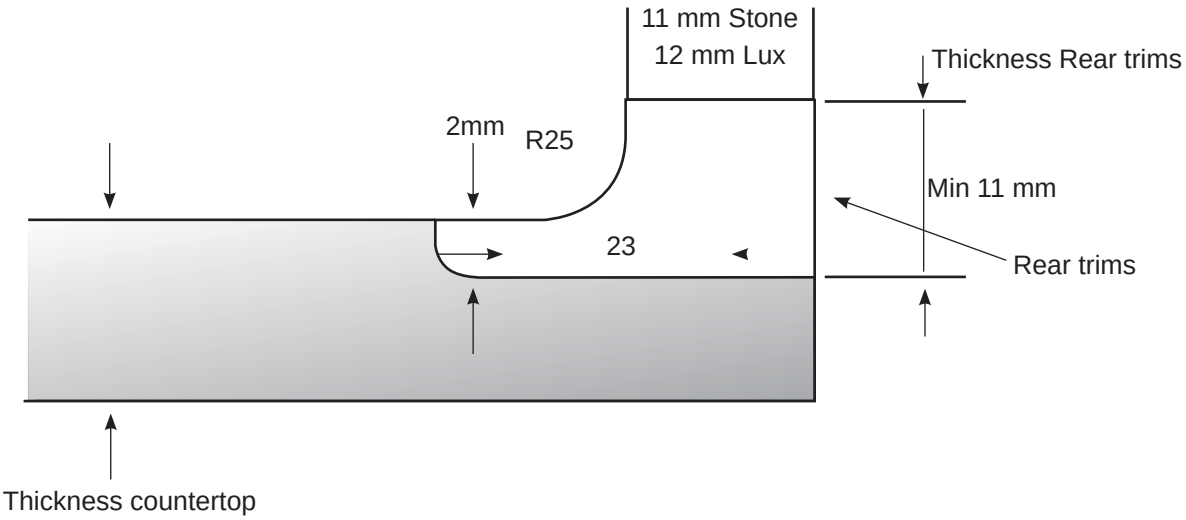


- Curved rear trim

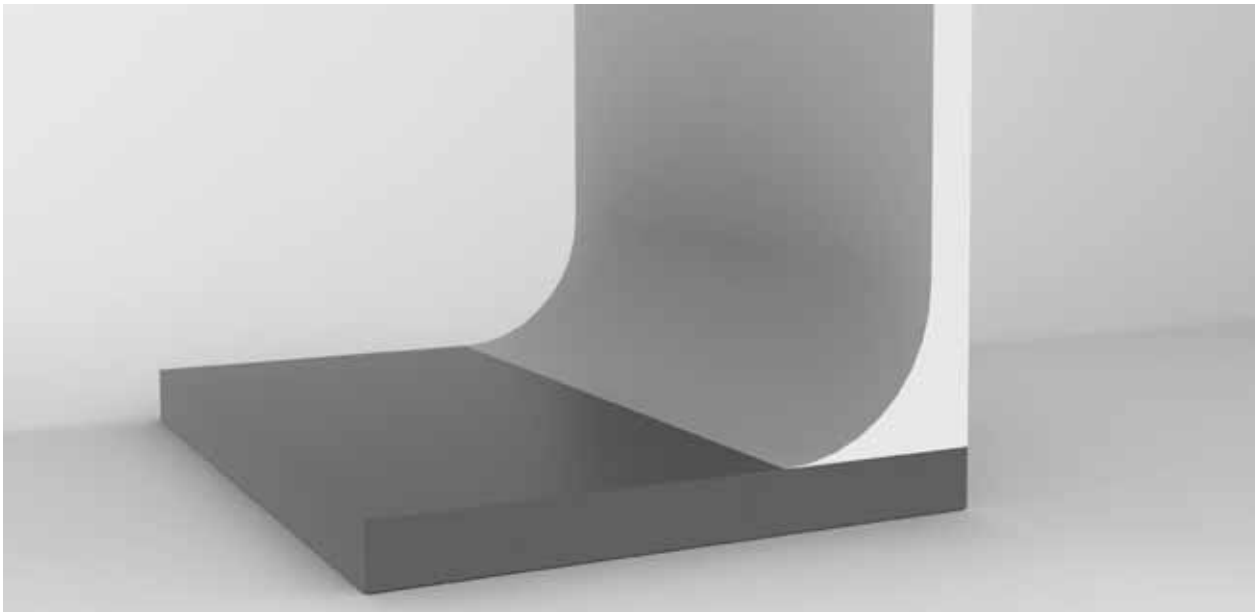
To create this type of joint, a piece is added between the sheet and the trim section. The piece is a quarter round that replaces the 90º joint, so that its base is embedded 2 mm into the countertop, while the other end supports the rear trim (with the same thickness).

For interior corners, leave a minimum radius of 10 mm.

Rear trims

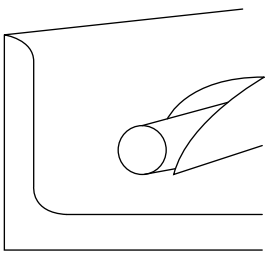


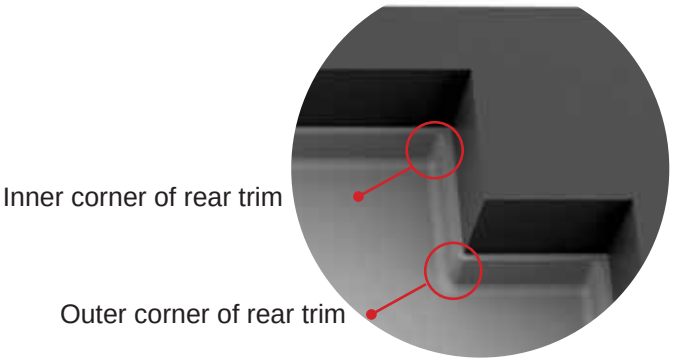
The following diagrams show the different component parts of a curved rear trim and a rounded interior corner:



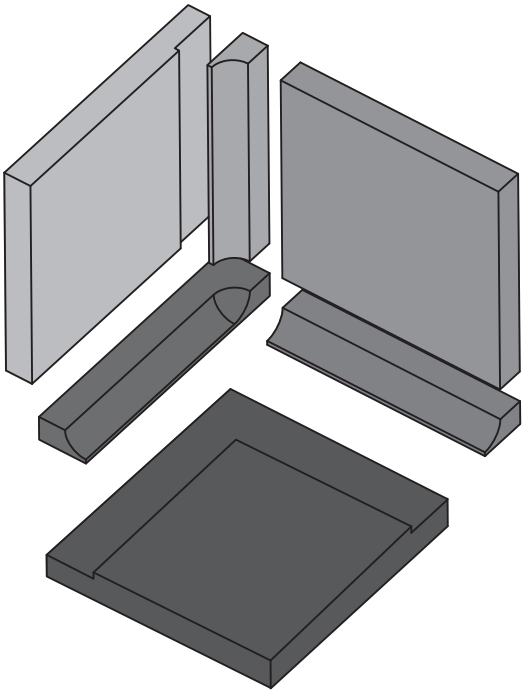
Note: these diagrams only show one way of making rear trims. Other techniques can be used.

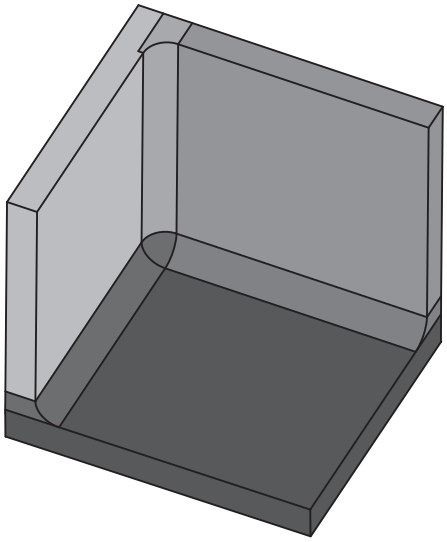
Use a rounded sanding block or a specific sander for correctly finishing the interior curve:



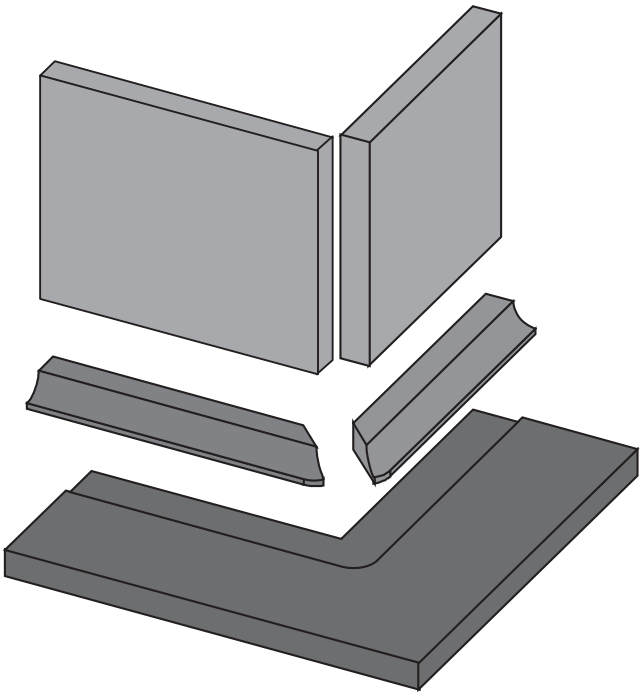


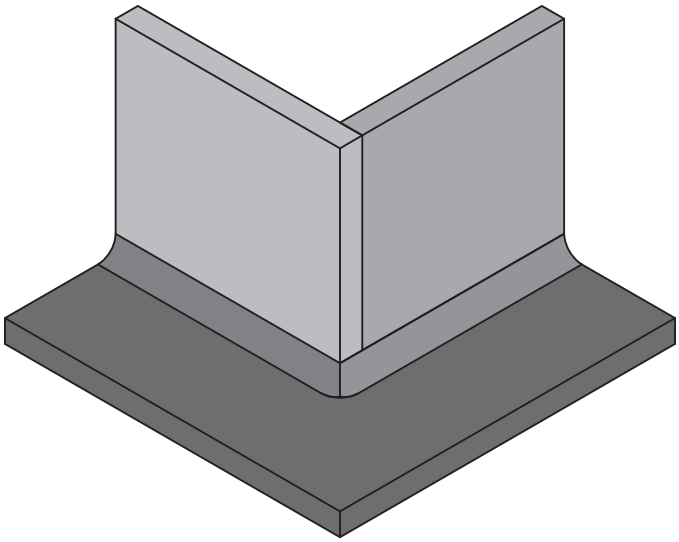
Inner corner of rear trim





Outer corner of rear trim



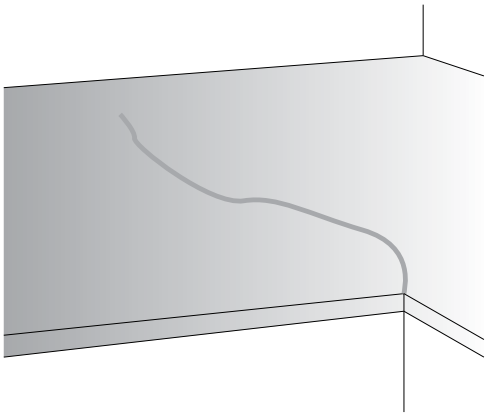


Inner corners

32.1- Interior corners.

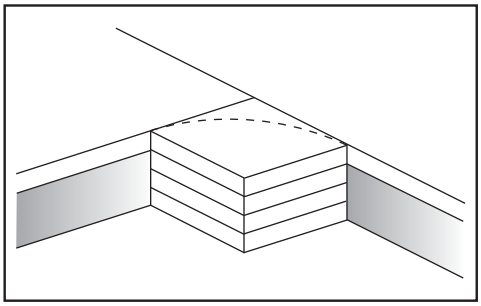
Interior corners must be given a rounded finish.

Straight angles cause stresses on the countertop that may cause breakage.

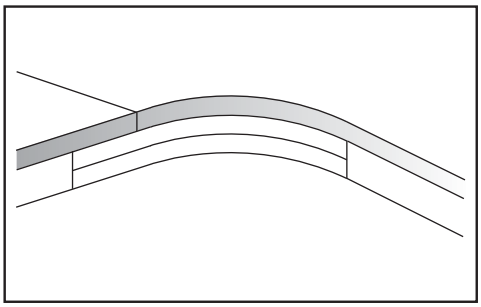


This operation must be reinforced to guarantee the useful working life of the countertop.

The construction method consists of making a front stack section with a square central piece occupying the whole area of the corner.



Next, mill the edge along the radius of the curve (use a template) and install the skirts for the adjacent areas.



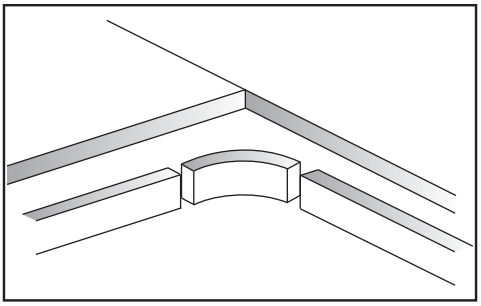
32.2- Thermoformed corners.

Interior corners must be given a rounded finish.

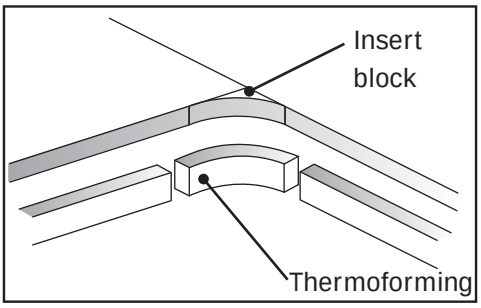
Straight angles cause stresses on the countertop that may cause breakage.

Interior corners can be made with thermoformed skirts using the following method:

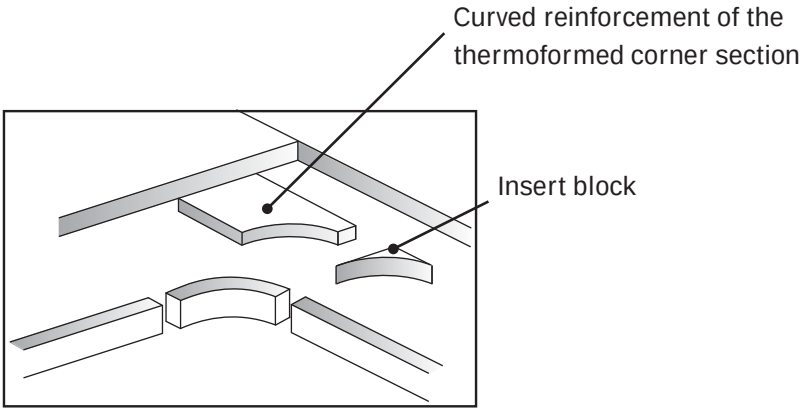
1. The skirt must be made with the required radius.



2. Then you will have to make a connecting piece between the countertop and skirt.



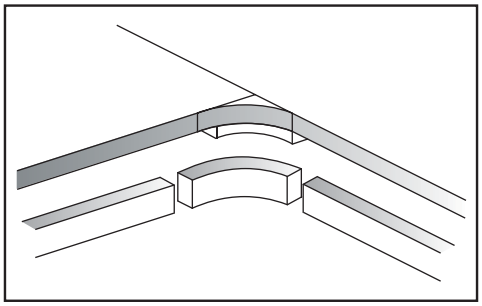
3. To end the process of making parts, make a reinforcement for the lower area.



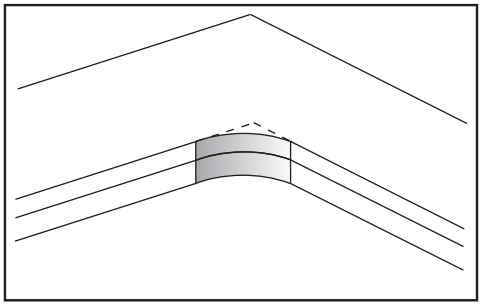
Inner corners 32

32.2- Thermoformed corners.

4. Attach the reinforcement and filling sections using the normal methods.



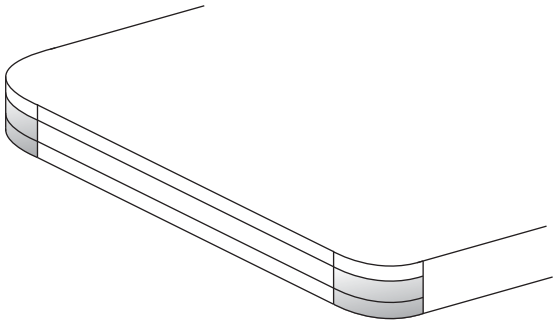
5. Attach the skirt and connect it to the adjacent skirts.



External corners 33

As far as possible, the external corners must also be rounded to avoid stresses that may cause breakage.

If making a structure such as the one shown in the diagram, several strips of KRION™ must be used, and once the adhesive has dried, shaped with the milling machine.

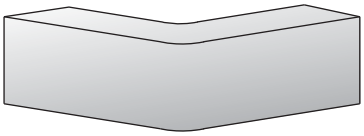


Thermoformed and stacked 34

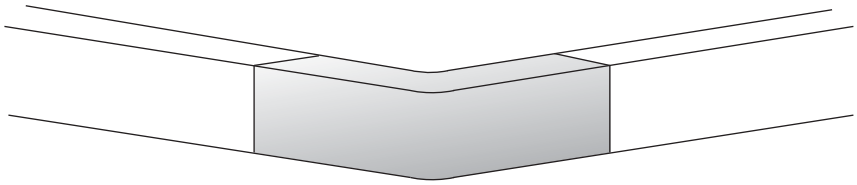
34.1- Thermoformed.

Mill the top of the countertop to the desired radius, and thermoform the skirt with the same radius.

1. Check that it fits perfectly.



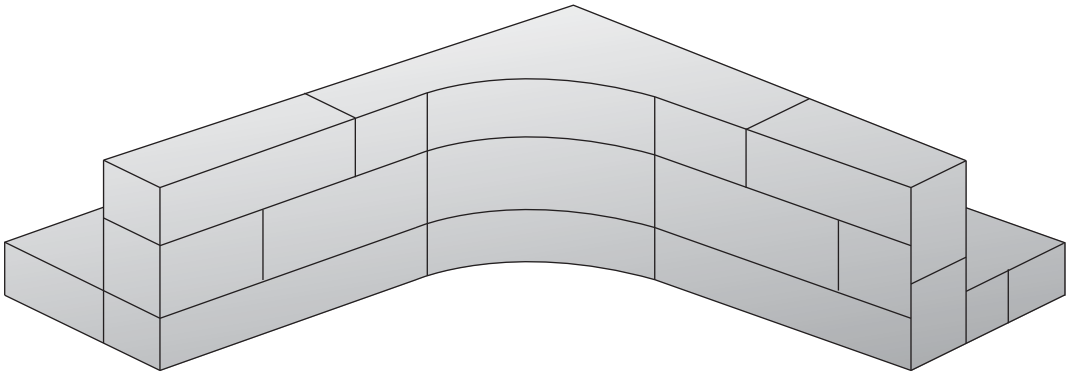
2. Finally, attach the sections using the indicated methods.



3. Once the adhesive is dry, sand until the seam is no longer visible.

34.2- Stack.

Several KRION™ sections can also be joined to produce a finish with a more solid appearance.



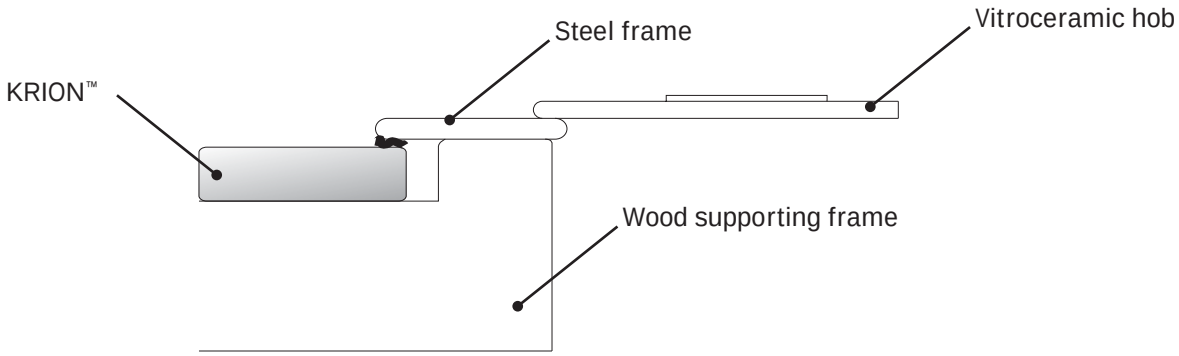
Mill the sections before creating the seams with a template, and make sure that the radii coincide perfectly. Level off the front section and curves by sanding as necessary.

Steel frame 35

To reduce the KRION™ sheet's exposure to heat from the hob, a steel frame can be used.

Supporting it on the wood base means that:

1. The vitroceramic hob will not come into contact with the KRION™ countertop.
2. There will be more ventilation space.



Use ceramic tape and aluminium tape to insulate the KRION™ sections closest to the vitroceramic hob.

Use the ceramic tape and aluminium tape provided by SYSTEMPOOL as these have been tested with our products and are the only ones that are valid for guarantee purposes.

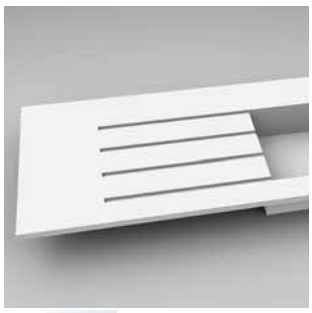
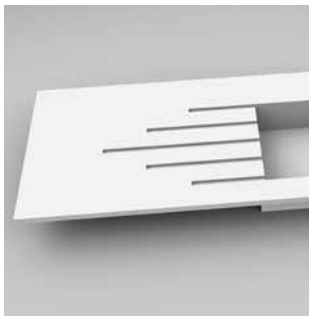
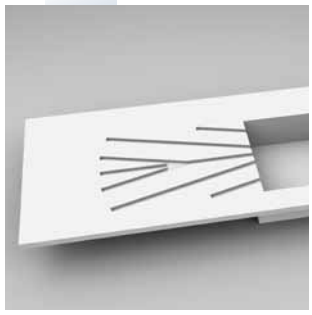
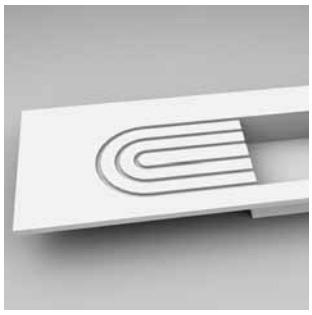
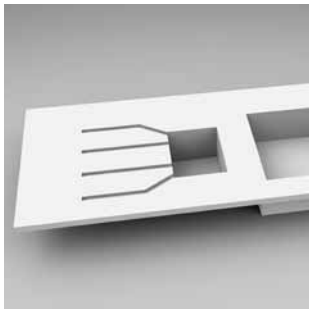
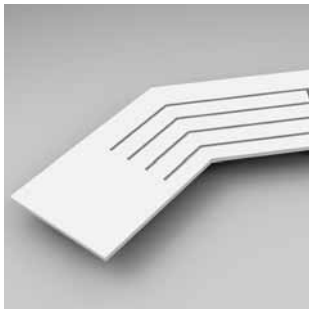
Note: Alternatively, this frame can also be made of KRION™. Try using a different colour to create a colour contrast.

If you do not take these precautions, the countertop will crack due to the thermal stress created by the heat.

Draining boards

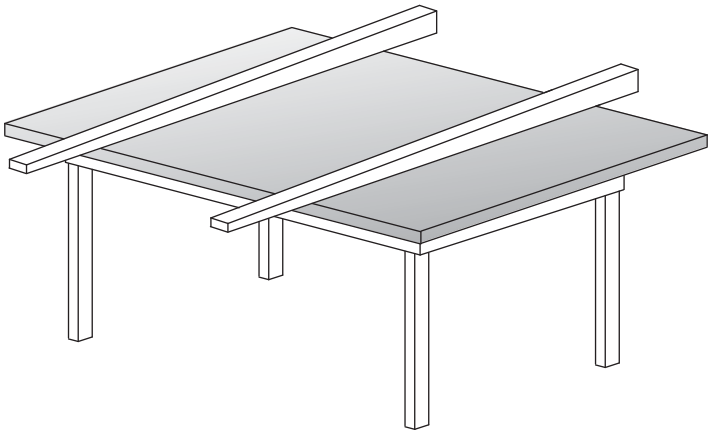
To make them, you must have a template with the necessary shape.

You must attach guides to the countertop so that the milling machine moves in the correct direction.

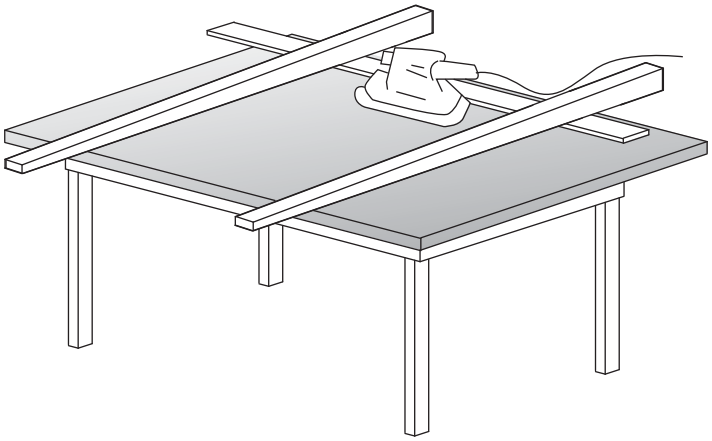
Lineal		Diagrama	
Fractar		Circuito	
Afluente		Quebrada	

36.1- Make a slope for the draining board.

To create the slope for the draining board, first cut two wood strips with the same length as the drainer, and recess them to the required angle.



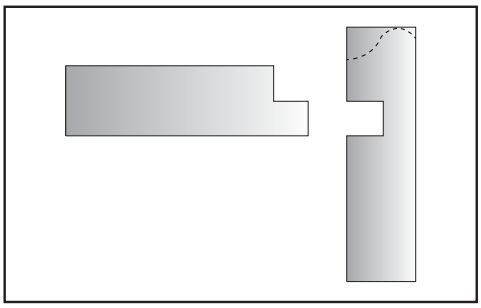
Use a guide to ensure the milling machine moves in the correct direction.



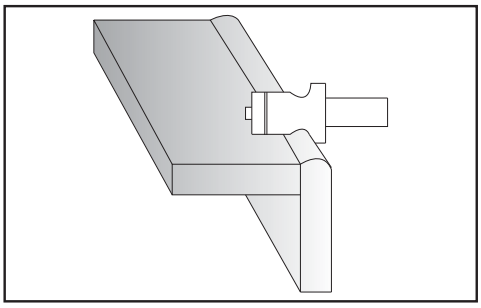
Non-spill edge

Option A)

To create a non-spill edge, the front skirt must be bonded using a tongue and groove joint higher than the upper edge of the countertop, as shown in the diagram.

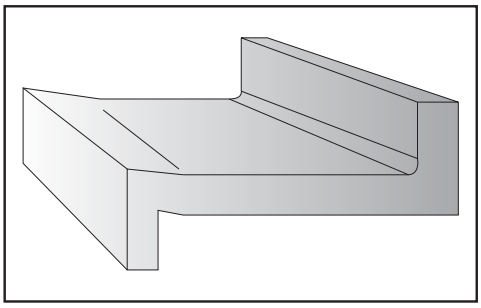


Once the adhesive has dried, mill the edge horizontally to achieve the required finish.



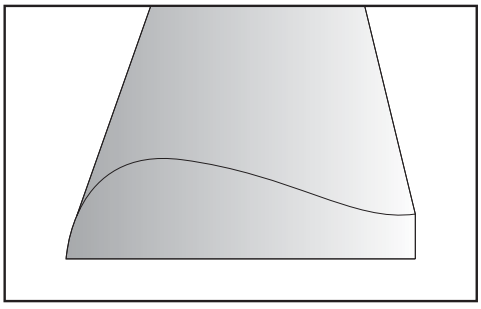
Option B)

You can also create a non-spill edge by slightly curving the edge of the sheet upwards.

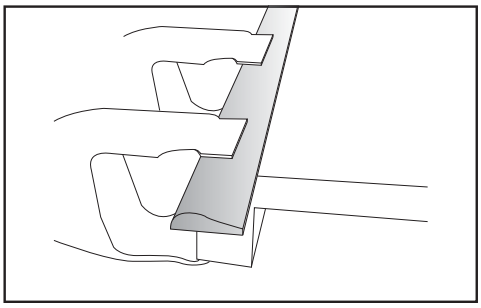


Option C)

1. Make a section with the shape shown in the diagram.

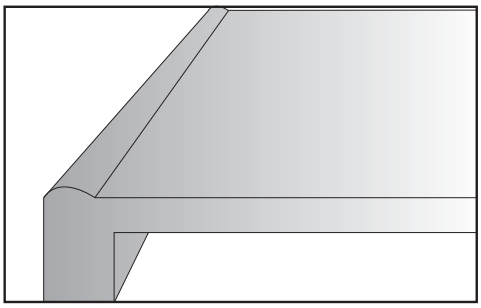


2. Attach it to the edge of the countertop.



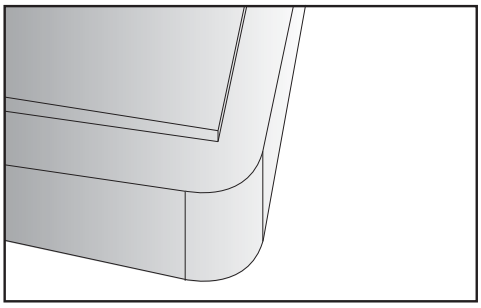
Option C)

3. Sand until the adhesive has been removed and add the skirt chosen by the customer.



Option D)

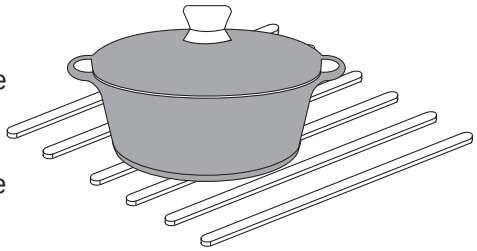
1. Rebate the edge 2 cm from the edge to create a depression.



Inox bars 38

38.1- Stainless steel bars.

To achieve better protection against extreme heat (pots, items removed from the oven, etc.) you can add steel bars or balls.

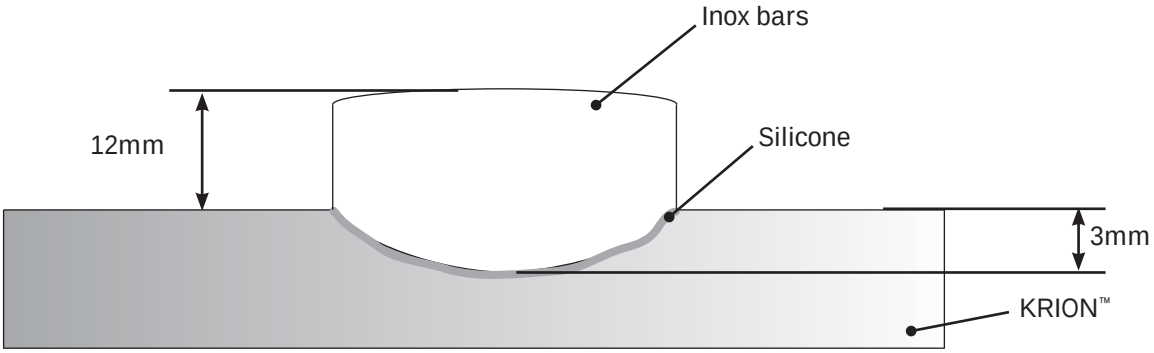


DO NOT use iron bars or materials containing iron, as these will damage the countertop.

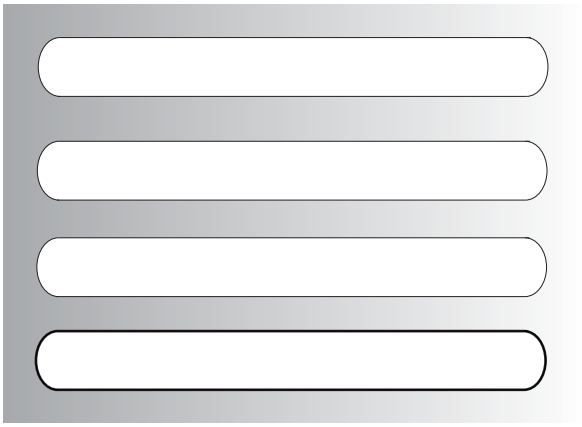
By inserting them into the countertop and adhering them with silicone, we will achieve the desired effect.

They must be inserted 3 mm into the countertop.
Round the tips so that they have the same radius as the bar.

A diameter of 12 mm is ideal for this purpose, although other sizes can also be used.
Carry out tests before deciding on a size and shape.



Separate the bars between 5 and 10 cm.



Remember that steel also expands.

Leave a margin of 2 mm to avoid damaging the KRION™ countertop when its temperature increases.

Protectors 39

39.1- Countertop protectors.

A small sheet of KRION™ (for example, measuring 30 x 20 cm) can be used as a perfect substitute for steel bars.

Give your projects added value by always giving this element to your customers as a free gift.

39.2- Cutting board.

A spare piece of KRION™ can be used to make this element.

Improve your professional image by giving a cutting board as a free gift with every countertop you install.

Make them by bonding two 12 mm sheets to create a surface of 24 mm.

It will be useful as replacement material if you have to make any repairs in the future.

Remember that these elements should not be washed in a dishwasher, as they may be damaged and not last as long.

Templates 40

Templates are very useful for making openings for bowls, or for taking the measurements of the kitchen countertops you are going to make.

Templates can be made out of the following material:

- Wood.
- Phenolic plywood.
- DM.

Keep all bowl opening templates together to ensure they are not lost.

When taking measurements for the installation, use a cardboard template so that you have a full size replica of the shape of the countertop.

Make any notes on the cardboard you need in relation to the countertop you are making.

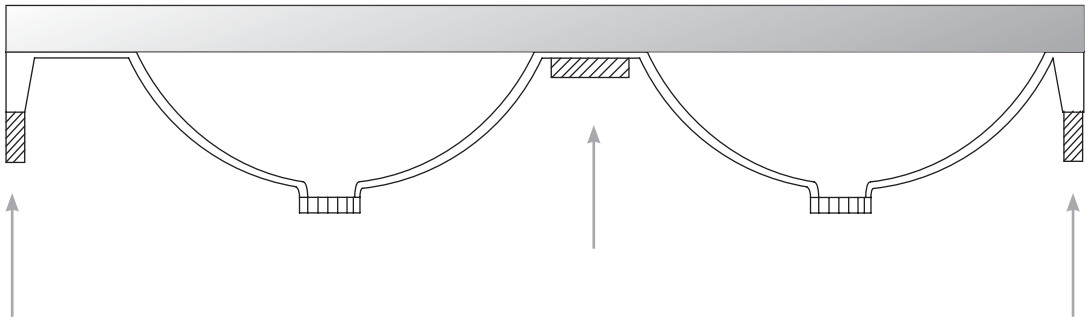
A template for the kitchen can also be made by joining wooden strips together.

Do not forget to take note of the measurements and all of the important details. These will be necessary so that the kitchen fits in its final position

Bathrooms (countertops, washbasins and shower trays) 41

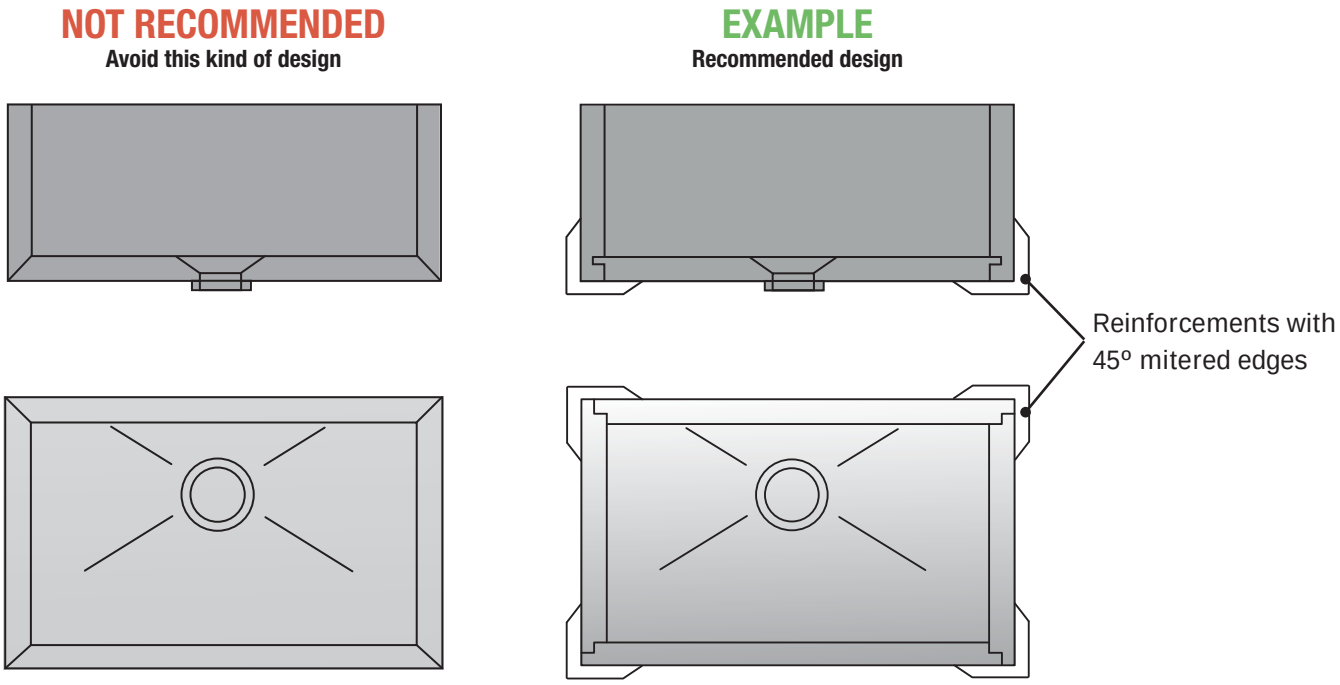
COUNTERTOPS

If you are making countertops for bathrooms positioned between two walls, make sure that they are correctly supported on wall brackets with a support between the bowls:



WASHBASINS

If rectangular washbasins are made, never create 45º mitre joints. Always remember that washbasins can sometimes be subject to thermal shocks.



Reinforce the seams with KRION™. Reinforcements subject to thermal shocks should always have 45º mitered edges.

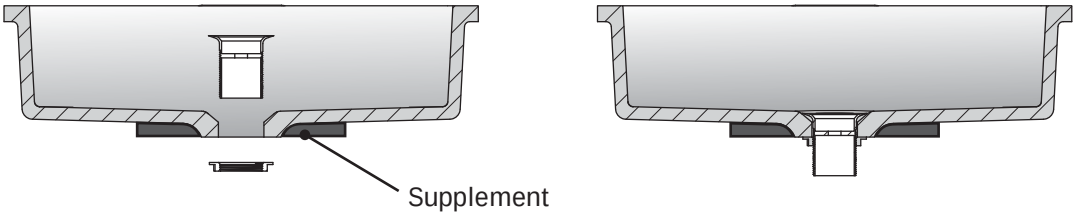
Bathrooms (countertops, washbasins and shower trays)

WASHBASINS

When washbasins are made of KRION™, make sure that:

► The base slopes down to the drain valve so that water drains away properly (with a minimum slope of 1 to 1.5º).

► The drain hole is made so that the drain trim is flush with the bottom of the basin or slightly below it.



► Make sure that the underside where the drain outlet goes has a flat surface. A 6mm-thick section of KRION™ can be used to ensure a flat surface.

SHOWER TRAYS

Shower trays are occasionally subject to thermal shocks (hot and cold water) and to loads of up to 100 kg on their top surfaces. As a result a series of precautions must be taken when designing and fitting shower trays.

For the sake of brevity, we will not list all the possible shapes and designs, but we will provide a series of tips and warnings so as to ensure a successfully fitted KRION™ shower tray.

The example shower tray shown in this section is inspired by the RAS shower tray from the SYSTEMPOOL catalogue. Read this section carefully and take note of all indicated warnings.

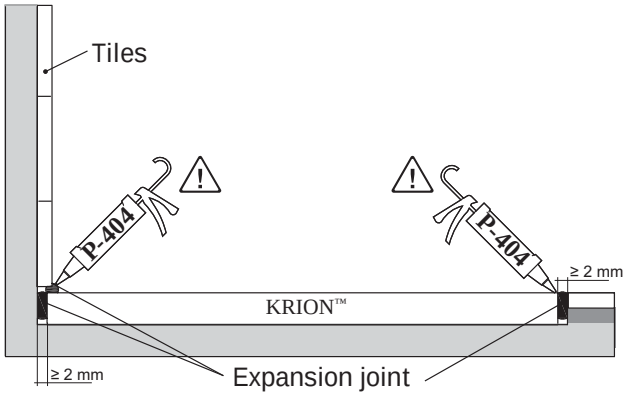
TAKING MEASUREMENTS FOR TRAYS:

► Visit the worksite to check the measurements of the tray to the made and the conditions of the shower area (the available space, possible columns, position of the drain, available depth etc).
The shower tray can be fitted between walls, recessed in the floor, semi-recessed or surface mounted on the finished floor.

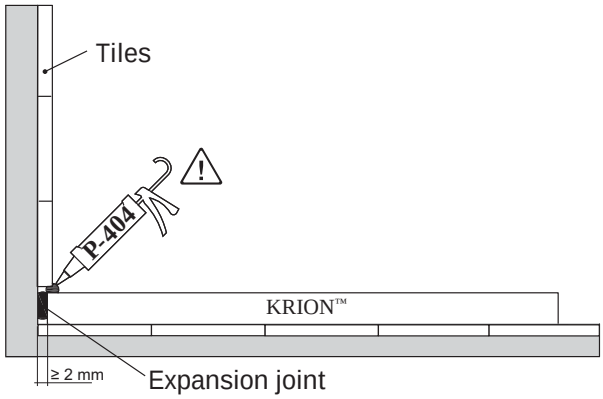
► Make sure accurate measurements and notes are taken of the area and design required by the customer, always leaving a margin of 2 or 3 mm around the perimeter of the tray for the expansion joint (otherwise the tray might break).

SHOWER TRAYS

Recessed/integrated into the floor



Surface mounted on the finished floor (recommended)



▶ The recessed installation method is dependent on the available depth of the floor and on the length of the final design. Bear in mind that the basin area of the shower tray should have a minimum slope of 1 to 1.5º so that water drains away properly.

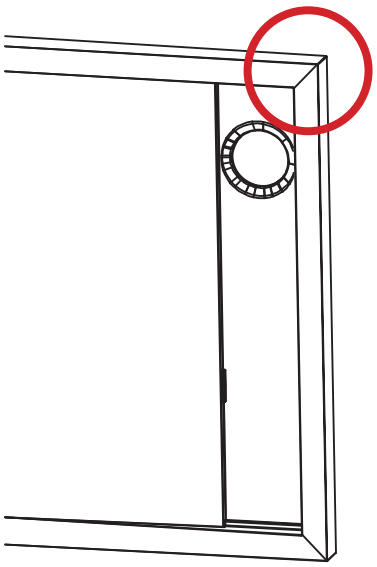
The size of the drain valve and height of the downpipe can also limit the possibility of this kind of installation system.

It is always better to design a shower tray with a bigger diameter drain valve (90 mm for instance) so that water drains away faster.

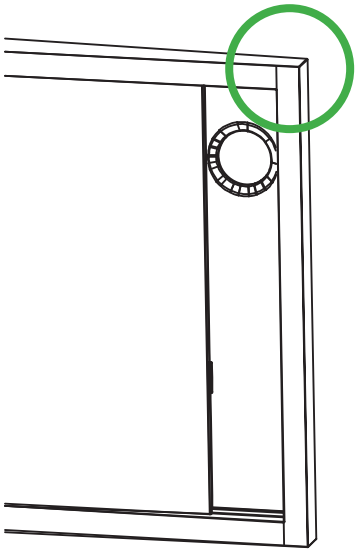
POSITIONING SEAMS AND REINFORCEMENTS:

▶ Never position seams close to corners mitered at a 45º angle.

NOT RECOMMENDED



RECOMMENDED EXAMPLE

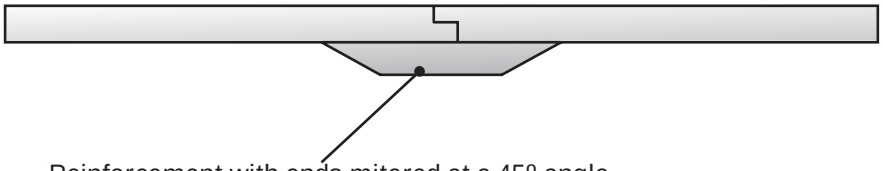


Bathrooms (countertops, washbasins and shower trays)

SHOWER TRAYS

When washbasins are made of KRION™, take care to:

► Reinforce the KRION™ seam, mitering the edges of the reinforcement strip at a 45º angle.

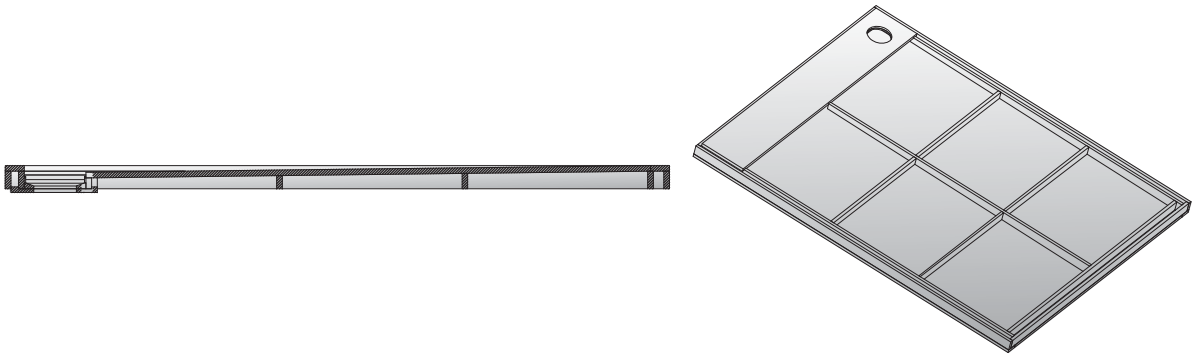


Reinforcement with ends mitered at a 45º angle

► As a general rule, when a shower tray is being designed, avoid too much of a difference in the thicknesses of sections exposed to thermal shocks (cold/hot water).

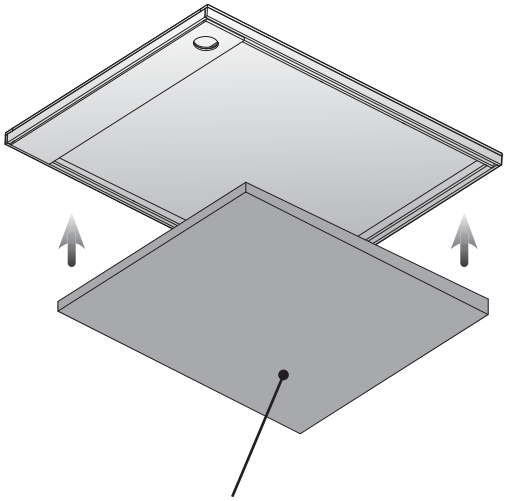
Reinforcement points are necessary and they lead to differences in the thickness of the tray. Do not forget to miter the edges at a 45º angle, particularly if they are situated in areas subject to thermal shocks.

► Reinforce the load-bearing area of shower trays with supporting crosspieces that rest on the levelled base.

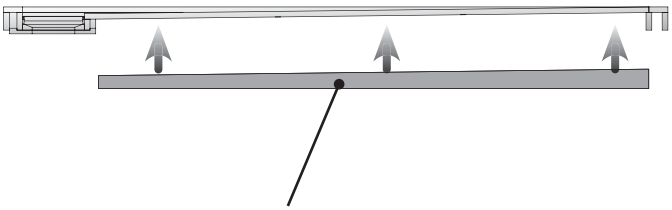


Another way of stabilizing the load-bearing area is to use high-density waterproof polyurethane board, adapting it to the size of the gap underneath the tray and levelling it until the tray rests on top of it.

SHOWER TRAYS

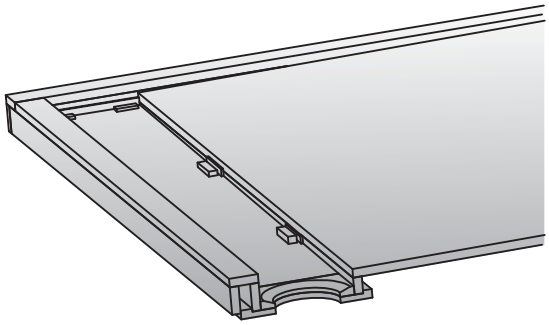


Bond the board with a flexible sealant like P404 by Butech.



Bond the board with a flexible sealant like P404 by Butech.

► The drain hole should be made in such a way that the valve is flush with the surface so that water drains away properly. It is always preferable to design the tray so that it includes a larger diameter drain valve (for instance 90 mm) so that it has a bigger drainage capacity.



FITTING THE SHOWER TRAY (PRE-INSTALLATION SHEET):

When KRION™ washbasins are made, take note of the following:

The document “Installing KRION™ shower trays” can be downloaded from the “Technical Data Sheet” section of our website http://www.krion.es/affinity/.

The document contains the minimum instructions needed to install trays properly. (Failure to follow these instructions might result in a broken tray).

Print out this technical data sheet and hand it to the customer or person responsible for fitting the KRION™ shower tray and make sure that the said instructions have been fully understood. This technical installation sheet is also shown on the following page.

Walls coverings

If you have to attach KRION™ to an unlacquered steel or glass substrate. Polyurethane sealant can also be used (P-404).

If adding some type of mechanical fixing (recommended), drill a hole in the KRION™ sheet and insert a flexible rubber tube so that the metallic anchor does not cause the sheet to crack.

42.1- Wall coverings.

6 or 12 mm KRION™ sheets are ideal for many different types of wall coverings.

They are easy to install and can be attached to nearly any type of solid substrate:

- Waterproof plasterboard.
- Water resistant plywood.
- Phenolic plywood.
- MDF.
- Solid tiling.
- Plasterboard.

Take the following factors into account when installing wall coverings:

1. Cut the sheets to cover the walls and check if the dimensions are correct. Leave a gap of at least 3 mm for expansion (1.5 mm per linear metre). Remember to also leave a gap in the corners at the top and bottom of the sheet.

2. Clean the back of the KRION™ sections with denatured alcohol and a white cotton cloth.

3. Apply a continuous strand of adhesive at a distance of 25 mm from the edge around the perimeter.

Apply beads of silicone of approximately 30 mm at a distance of approximately 200 mm from each other on the sheet. Apply a continuous strand of silicone 20 mm from the edges of any openings (for plugs and other elements).

42.1- Wall coverings.

Make sure that the supporting wall is clean from dust, grease and other substances that may affect the structural integrity of the panelling.

Avoid using KRION™ to panel walls or surfaces with humidity or water leaks.

This will cause a wide range of problems: incorrect adhesion, bulging of the wall, breakage of the seams (we recommend P-404 polyurethane sealant from Butech™).

You can use double-sided adhesive tape, silicone or hot wax to attach the KRION™ sections to the substrate until the adhesive dries (P-404).

Hold in place with the specified adhesives either manually or using mechanical means until the adhesive (P-404) dries. Otherwise, it will not be possible to guarantee correct adhesion to the wall.

Push the KRION™ panels firmly in place against the wall to make sure that the adhesive spreads correctly, using your hands, shoulders, body, head and feet.

Never lift large KRION™ panels on your own: always work in pairs to avoid accidents.

KRION™ panelling must not touch the floor. Use wood blocks or wedges to keep the panels raised by around 4 mm.

Fill this 4 mm gap with silicone.

42.2- Rebate/tongue and groove vs invisible seam.

When planning to cover large surfaces with KRION™, it is important to take into account that expansion joints will be necessary.

These can be inserted in the corners, points where different materials meet, ceilings, etc.

It will be necessary to consider for each specific application whether to create a seamless surface by bonding sheets together with adhesive, or if it is better to fit sheets side by side with open joints.

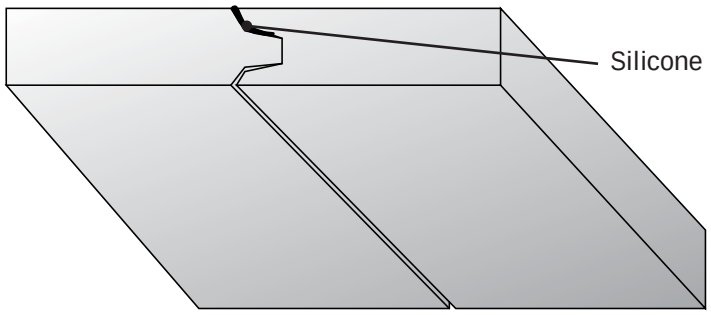
Open joints can be an attractive option if designed correctly (straight joints, designs, etc.). This will also mean that the KRION™ sheets can move more freely with temperature changes.

This type of mounting method will require less installation time, as it will not be necessary to prepare the edges of the sheets to bond them, use adhesive to bond them, or sand them to create a final finish with invisible seams.

Also, it will take time to make the tongue and groove edges. This can be done with a milling machine and bit for creating tongue and groove joints (male and female milling bits).

This can also be done with a CNC machine.

Apply silicone to the back of the tongue and groove seams. This will keep the panels together and allow them to move freely.



42.3- Levelling walls.

If the supporting wall is not perfectly flat, this must be done by the installer.

Use wooden strips or waterproof plywood boards to achieve a straight, flat substrate for panelling.

This will take longer, but if the substrate is not suitable, the resulting work will not be high-quality.

42.4- Seams.

It is important to correctly study the number and position of the seams for several reasons:

- Seams close to heat sources are potential breakage points.
- Minimising the number of seams means leaving less room for error and results in a more resistant structure.
- Carrying out a thorough study before beginning the project reduces the amount of work and material involved, which is important when quoting prices for projects and being competitive.
- It will also allow us to manage our time more efficiently and optimise costs.

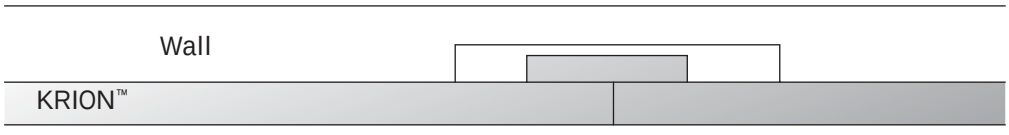
42.5- Expansion.

As a general rule, leave a 1 mm expansion gap for each metre built out of KRION™.

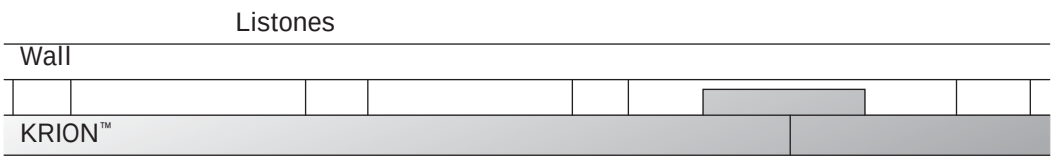
42.6- Seam reinforcement.

The seams must be reinforced from behind to ensure a correct bond.

You may need to cut a groove into the supporting wall so that the reinforcement strip fits.



Also, if you use strips to level the wall, you can use the gaps between them to position the reinforcement strips.



Internal corners in panelling

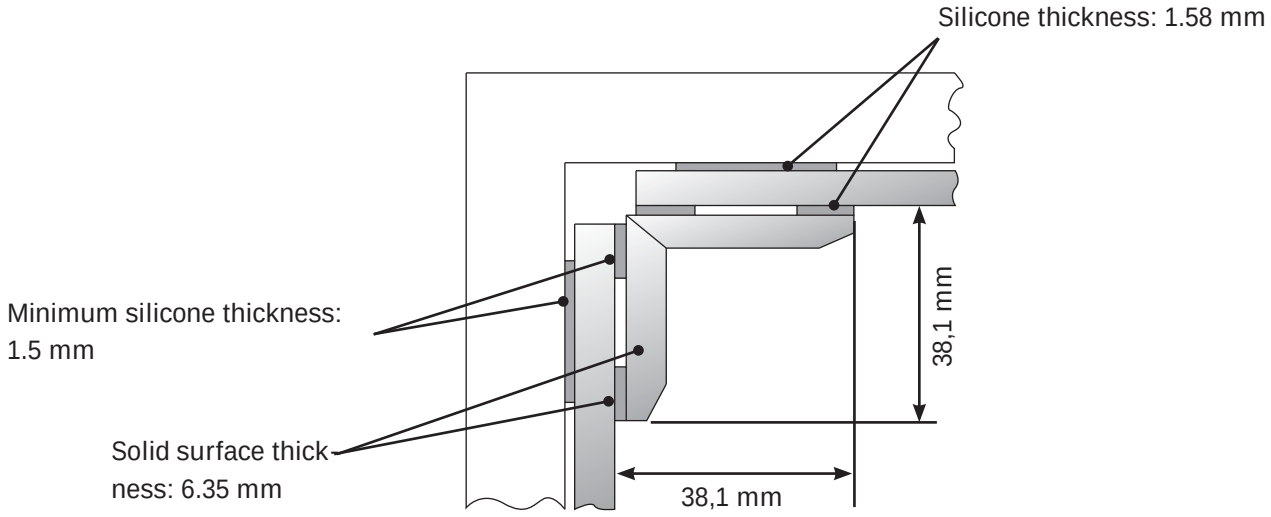
There are several solutions available to create internal corners and also leave a gap for the KRION™ to expand.

Use silicone to fill in the gaps, which will allow the material to expand.

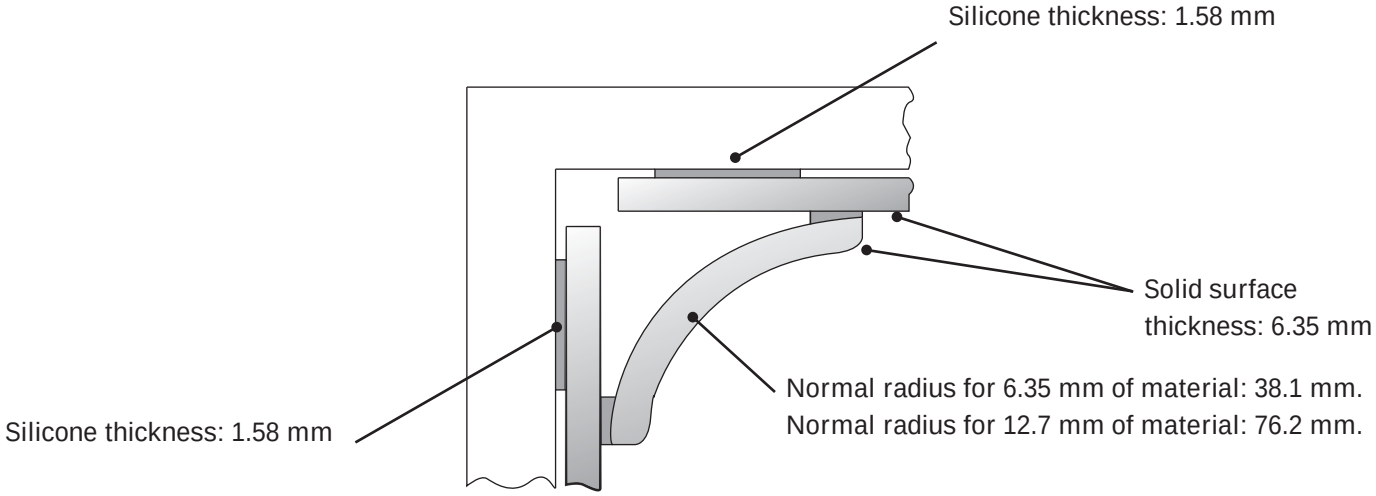
Make the corner section and cut it to the required size.

Finally, attach it in place and bond it to the walls of the KRION™ using silicone.

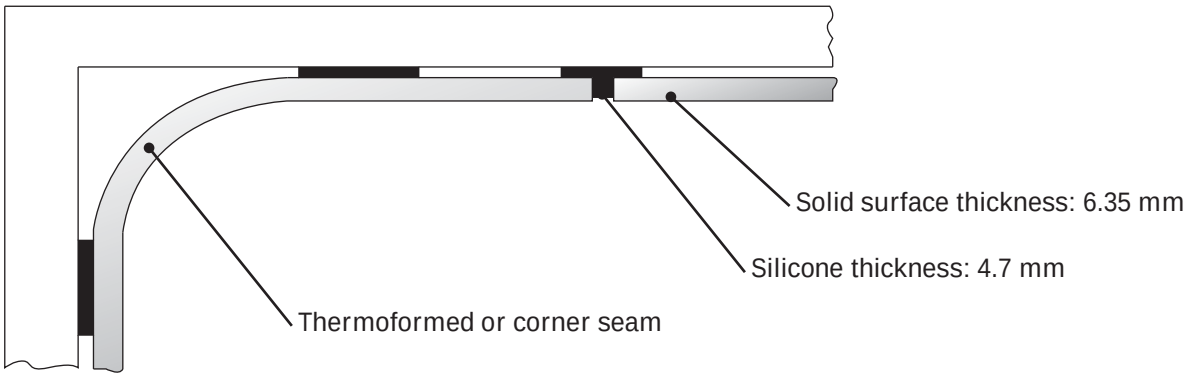
Option 1: Create a corner by connecting two strips using a mitered corner.



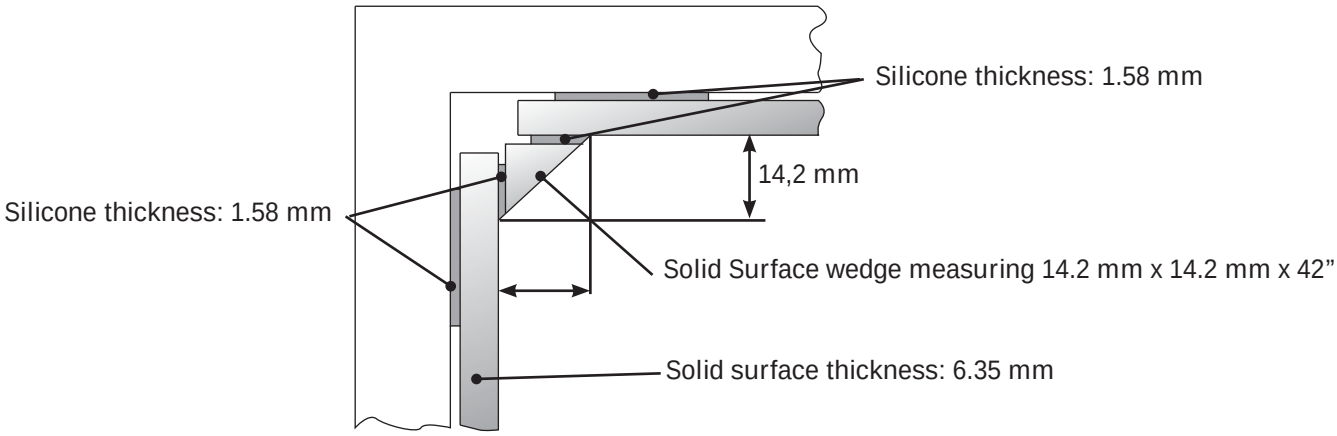
Option 2: Thermoform a section with the correct radius.



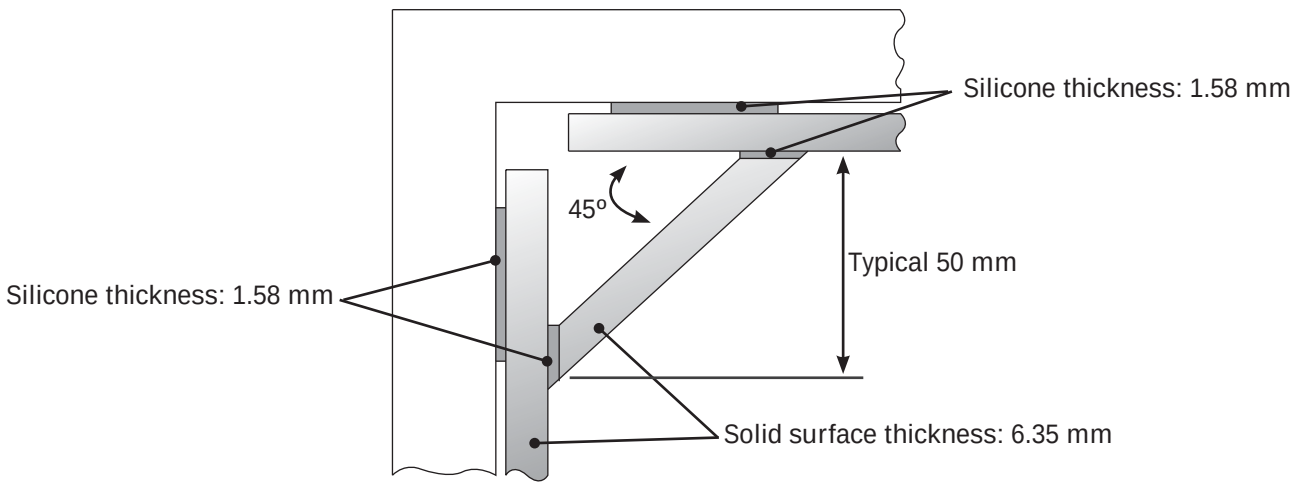
Option 3: A variation of the previous option is to thermoform a large section and to position the expansion joint far from the corner.



Option 4: Make a solid 24 mm strip joining two 12 mm strips together, and bevel to 45º.

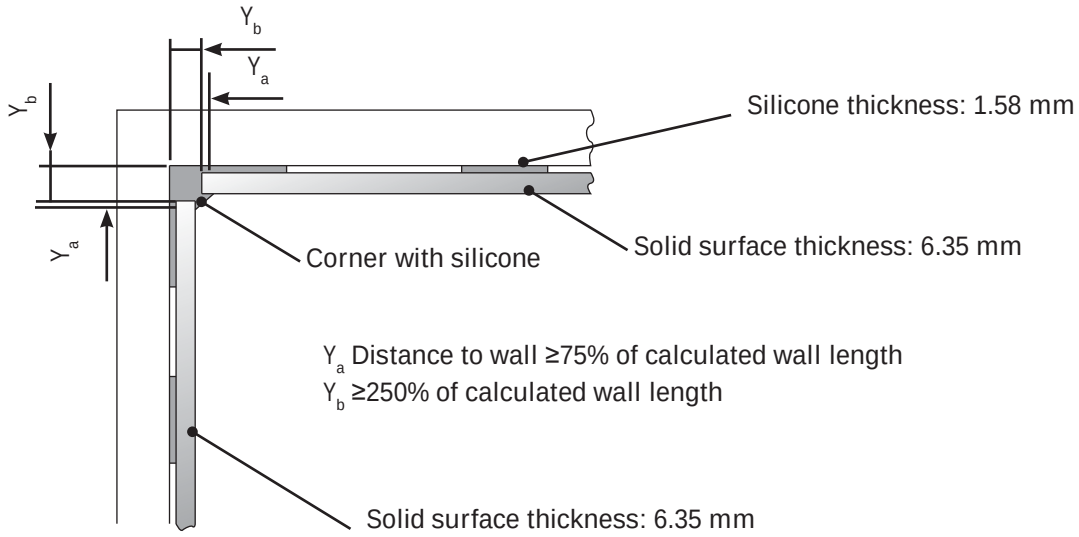


Option 5: Use a strip of KRION™ and bevel the edges to 45º.

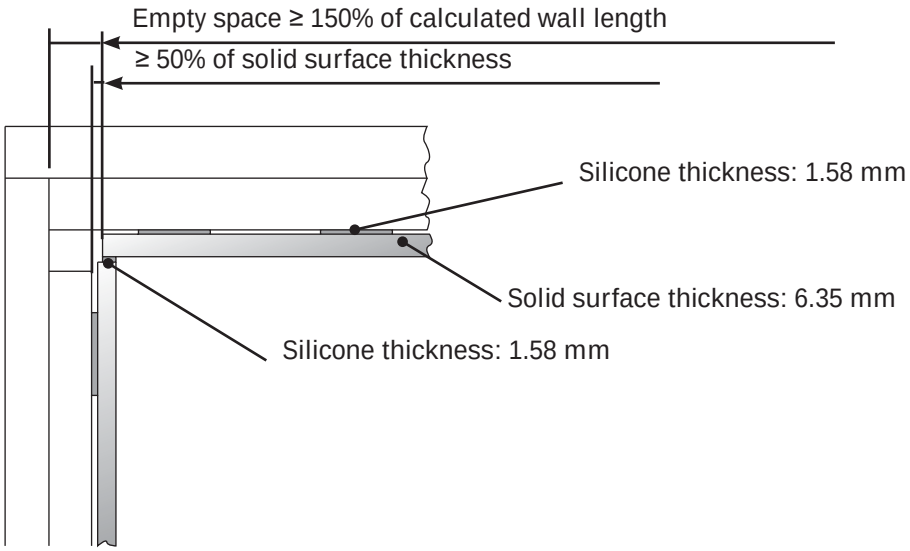


Internal corners in panelling 43

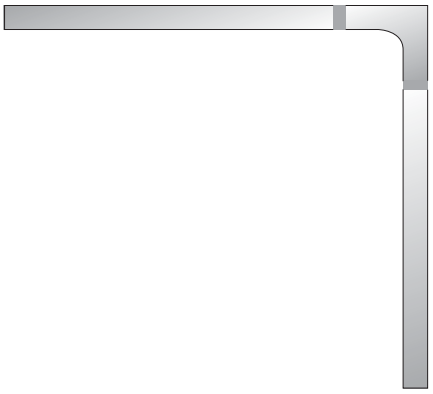
Option 6: Fill in the corner with silicone without adding KRION™ sections.



Option 7: Overlay one KRION™ wall over another and fill the space with silicone.



Option 8: Make a 24 mm strip by connecting two 12 mm strips and mill a quarter round.



Shelves 44

KRION™ can be used to create window ledges or shelves.

Make sure you leave a gap of 2 mm between the KRION™ and the wall to allow for expansion movements.

Attach the shelf with flexible adhesive to allow for movement (P-404, outdoor silicone, etc.).

Do not leave sharp edges and make sure the shelf has a solid support.

Sunlight / UV 45

45.1- Exposure to sunlight.

KRION™ is extremely resistant to outdoor conditions.

UV rays do not affect the resistance of KRION™ surfaces or cause any damage.

With some dark colours, prolonged exposure to sunlight in extremely sunny climates may slightly age the pigment, causing some whitening.

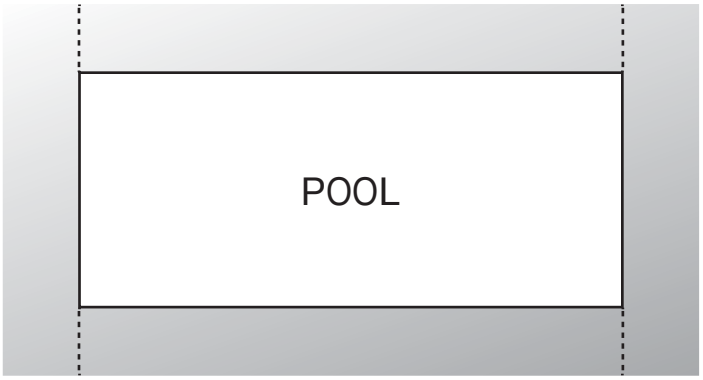
This can be solved by gently sanding the KRION™, as it has a uniform composition throughout its entire thickness. This will recover its initial beauty without any major effort.

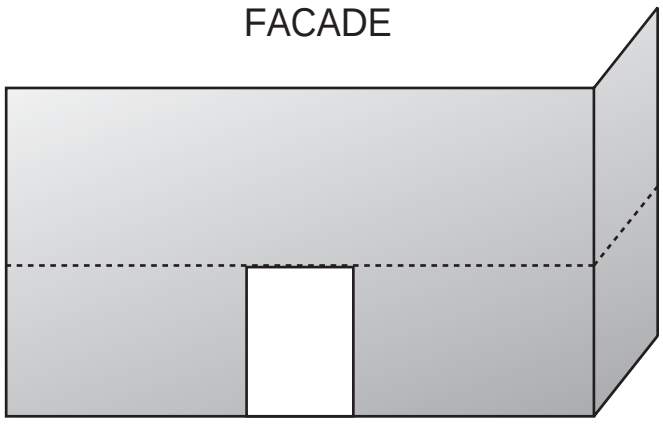
Colours from the series with a high contrast between the colour of the resin and chips will absorb sunlight differently, heat up differently, and may lead to deformations and breakage of the seams

If you are creating projects that will be exposed to sunlight, do not forget to properly study the expansion joints, as in these cases the KRION™ will expand and contract more.

External panelling made of KRION™ cannot be made without joints. Visible expansion joints must be included.

Avoid exposing these colours to direct sunlight.





For further information, see http://www.krion.es/es/affinity

Inlays 46

Well designed inlays can add a unique appearance to creations in KRION™.

An inlay is an opening made in the material that is then filled with other materials.

Use a manual milling machine for simple inlays, and a CNC machine for more complicated projects.

The materials that are compatible with KRION™ are:

- KRION™.
- KRION™ adhesive.
- Epoxy resin.
- Methacrylate.
- Stainless steel.
- Aluminium.
- Brass.
- Wood.
- Ceramics.
- Glass.
- Tiling.

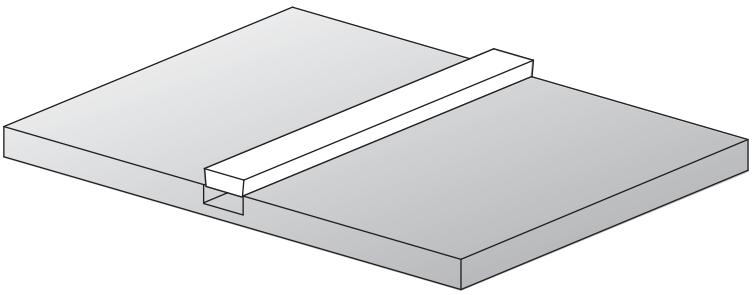
Materials that expand or contract differently to KRION™ sheets, such as iron, must not be used.

Round all interior corners, avoiding angles that may cause unwanted stresses.

If you insert different materials into KRION™, use a flexible adhesive that allows the materials to move in different ways.

Example:

Inserting a strip of KRION™.



Inlays

Do not use inserts in sheets less than 12 mm thick.

A 6 mm KRION™ sheet can be used to obtain the inserts required.

Warning!
The strip must not be inserted into the groove completely.

Make the slot 1 mm smaller than the strip of KRION™ you are going to insert.

The slot must be 1 mm deeper than the thickness of the material being inserted.

Example:
If the strip you intend to insert measures 700 mm wide x 6 mm thick, make the slot 699 mm wide and 5.5 mm deep, so that it can then be sanded manually to achieve a perfect fit.

Never leave 90º corners: always round off interior and exterior edges.

- ► Slightly reduce the lower edges of the strip.
- ► Clean the opening and strip with denatured alcohol.
- ► Fill the slot with adhesive and push the strip until it slides in fully.
- ► Keep the pressure on by using grips or clamps.

Once the adhesive is dry, sand to remove the excess KRION™ and adhesive.

46.1- Inserts with adhesive.

Using liquid inlays makes it possible to achieve a more complex, artistic finish to your projects.

First, mill the chosen design.

A CNC machine will allow you to create beautiful, highly detailed designs.

A depth of 2 mm is sufficient for this type of work.

Never leave 90º corners: always round off interior and exterior edges.

Clean the opening with denatured alcohol.

Fill in the milled openings with KRION™ adhesive, taking care to avoid air bubbles that will ruin the final finish.

As a safety measure, add extra adhesive to ensure that the design is completely covered.

46.1- Inserts with adhesive.

Sand off the excess adhesive once it is dry.

KRION™ adhesive is less resistant to sanding than KRION™ sheets, so take care not to apply excess pressure on the adhesive, as this may cause holes and depressions.

If you fill in a cavity with KRION™ Lux adhesive, it cannot be any wider than 4 mm.

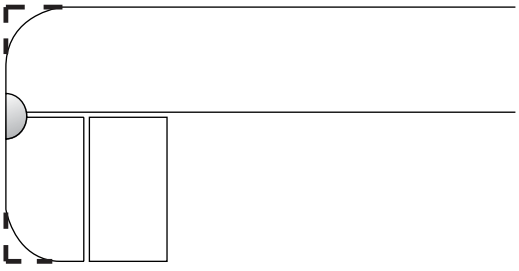
Greater widths will cause air bubbles that will ruin the final finish, as it is difficult to apply adhesive perfectly on large open surfaces.

46.2- Inlays in stacked skirts.

Inlays can be used to decorate the skirts of your countertops.

1. Use a strip of KRION™ in the required thickness and bond it between the upper sheet and the strip that increases the thickness of the skirt:

2. Mill a groove on the skirt seam and fill it with adhesive in a different colour.



This will serve as a decorative element and help to conceal the seam between the sections.

46.3- Sublimation.

Working with high pressures and temperatures, it is possible to insert an image into a sheet of KRION™. The surface can be thermoformed and sanded without affecting the image.

Quality 47

To ensure that your work is of the necessary high standard synonymous with Porcelanosa Group, follow the guidelines in this manual.

Devote time to planning, measuring and fitting KRION™ parts.

Pay attention to the finish, since customer satisfaction will be dependent upon this last step.

One of the most important operations in processing KRION™ is the creation of seams.

Take great care during this stage of the process in order to ensure a professional finish.

Bear in mind that one of the most important reasons why customers choose KRION™ for their homes or workplaces is because it offers the possibility of continuous sections of KRION™ with invisible seams.

With a view to guaranteeing customer loyalty, make sure that you provide a HIGH STANDARD of work and are friendly and attentive to customers. Clarify all questions of a technical or maintenance-related nature.

Although you are a skilled fabricator who is highly familiar with all aspects of KRION™, remember that your customers are not and so you should be attentive and understanding.

Your customers confide in the quality and image of Porcelanosa Group and they invest in its products. As a result, whenever you install KRION™, stick the “KRION™ Porcelanosa Solid Surface” monogram in a visible place.

Ventilated façade 48

The ventilated façade systems are supplied by Butech. For further information please use the “KRION™ technical-note” in ventilated façades.

Hotel Rafinity / Casablanca · Morocco (Building)

Bershka / Jordi Castel, Jefe de proyecto / Madrid · Spain

Pole Optique / Burdeos · France (Building)

Customer satisfaction 49

49.1- Guaranteeing customer satisfaction.

PROVIDE INFORMATION ABOUT MAINTENANCE

Always leave your customers a copy of the “KRION™ Maintenance Guide” which details cleaning methods, care tips, how to remove minor scratches and other advice to guarantee a long life for the newly fitted product.

USE VACUUM CLEANERS

Try not to fill the whole of the customer’s home with dust when working with KRION™. Portable vacuum cleaners will help you to clean up the dust produced when cutting, sanding and polishing.

LEAVE EVERYTHING CLEAN WHEN YOU HAVE FINISHED

Remove your tools, paper and waste material before leaving the customer’s home. Sweep up areas where there is dust, and try to leave the area as you found it.

USE BLANKETS OR CARDBOARD

Remember that your customers have paid significant amounts of money for the floor they feel most comfortable with (tiles, parquet, marble, etc.).

Avoid scratching it when dragging elements made of KRION™ (countertops, furniture or structures), when leaving machinery in place or moving KRION™ elements over it by using blankets. This will allow you to move heavy elements with less efforts, protecting your customers’ floors at no cost to you.

MAINTENANCE MANUAL

Always provide your customers with a copy of the KRION™ maintenance manual and explain the essential points to them.

49.2- Code of conduct.

- Always address the client in an appropriate manner.
- Wear clean clothing.
- Take care of your personal image and hygiene.
- Use appropriate language.
- Do not smoke in the customer’s house.
- During lunch breaks, do not eat in the customer’s house.
- Behave in a polite, friendly manner.
- Do not consume drugs or alcohol.

Comments and care instructions 50

Save a piece of the sheet used to make the kitchen for any future repairs.

Do not pour boiling water directly onto the KRION™ washbasin as this may cause it to break in the area around the bond or drain.

Open the cold water tap when pouring in boiling water.

Do not overtighten drains, taps and other items as the expansion produced may cause breakage.

Never stand on a structure made of KRION™ (countertops, units, countertops etc.) as your weight may cause it to break.

If your customer asks for a project made of KRION™ that does not comply with the measurements and precautions detailed in this manual, write a document explaining the construction details that are not being respected and send copies by certified mail to the customer (or their architect), to SYSTEMPOOL and the Porcelanosa showroom you work with.

If they decide to go ahead with the project, inform them that the job will be carried out at the customer's responsibility.

See our website – www.krion.es - for updates of our technical data sheets and to consult details of new additions to the KRION™ range, the minimum radius for thermoforming, recommended bonding angle and compatibility of different adhesives.

Guarantee 51

GUARANTEE CERTIFICATE FOR KRION™ SHEETS

KRION™ sheets are manufactured with great care, passing strict technical controls before leaving the factory. However, should any problem occur during the guarantee period, please read this certificate carefully and contact the establishment where you purchased the product made of KRION™ sheets.

COVERAGE

SYSTEMPOOL offers the following limited guarantee coverage for the original buyer of the KRION™ sheet. This guarantee is applicable worldwide, and the requirements of applicable national legislation will prevail. The company will repair or replace the countertop as it considers appropriate, in accordance with the following terms and conditions:

TERMS & CONDITIONS

1. SYSTEMPOOL offers a 10-year limited guarantee for all of its KRION™ sheets installed indoors. All of these installations and/or products must have been manufactured and installed according to the technical instructions established by SYSTEMPOOL and by a certified KRION™ processor/installer. This guarantee is applicable from the date when the product was installed for the first time. Unless demonstrated to the contrary, this date will be as shown on the proof of purchase.

2. This limited guarantee consists of the free repair or replacement, according to the manufacturer's criteria, of manufacturing faults, depending on the amount of time that has passed since the date of purchase. Replacement or repair work under guarantee must be approved by SYSTEMPOOL in writing, and will only be carried out by a certified KRION™ processor or installer.

Between the first and third year, SYSTEMPOOL will cover 100% of the material and 100% of the labour costs. From the fourth to the sixth year, SYSTEMPOOL will cover 75% of the material and 50% of the labour costs. From the seventh to the ninth year, SYSTEMPOOL will cover 50% of the material and 25% of the labour costs. In the tenth year, it will cover 25% of the material and 0% of the labour costs. In any event, these percentages will only be applicable when liability for the defect is attributable to a manufacturing fault made by SYSTEMPOOL.

3. Our limited guarantee does not cover defects, damage or faults caused by:

- Negligent use and/or abuse, including physical, chemical or mechanical damage.
- Unsuitable or insufficient use, care or maintenance (residential or commercial).
- Extreme heat as a result of insufficient insulation.
- Acts of nature (lightning, earthquakes, floods, etc.).
- Subsequent modifications without the authorisation of SYSTEMPOOL (a certified processor/installer).
- Certain additional limitations referred to in technical and commercial documents.
- Inadequate installation or failure to comply with the technical instructions indicated by SYSTEMPOOL.

- Damage caused by optional equipment not supplied by SYSTEMPOOL.
- Worktops not found on its original installation place.
- Situations of force majeure.1º.
- Fabricators non-authorized by SYSTEMPOOL.

4. The manufacturer's liability shall be limited to the repair or replacement as defined in paragraph 2. Under no circumstances shall the guarantee be extended to cover any direct or indirect damage caused to persons or objects that cannot be attributed to manufacturing defects. Neither shall the guarantee cover the cost of any work that may be necessary prior to the repair, replacement or maintenance of the KRION™ as a result of lacking easy access to the different parts of the same.

5. Any claims or notifications of possible defects must be made to the establishment where the product was purchased within two months of their appearance, by presenting the guarantee together with the bill of sale. Should you be unable to contact the establishment where the product was purchased, contact any certified distributor of KRION™ sheets.

6. If SYSTEMPOOL is unable to repair or replace the KRION™ it considers to be defective as covered by this guarantee, SYSTEMPOOL will only pay the percentage of the purchase price according to the period of time that has elapsed as detailed in paragraph 2, within a period of 3 months of receiving notification of the defect and providing the client returns the product.

7. This guarantee shall only cover products or decorative features made after 1 January 2011.

8. This limited guarantee is transferable within a period of 10 years.

9. SYSTEMPOOL shall be the only body authorised to certify processors/installers of KRION™ sheets.

10. Together with the purchase invoice, this certificate is the only valid guarantee given by SYSTEM-POOL, S.A. for all products sold as from August 1st 2010. No modification to this guarantee shall be accepted. In the event of a dispute regarding the interpretation and/or application of this warranty certificate, the competent law courts are those of Vila-real in Castellón (SPAIN), with the exception of claims by consumers or users, which must be dealt with through:

- Consumer Arbitration.
- The law courts of the consumer or user's place of residence and of the place of compliance with the obligation.

KRION®
PORCELANOSA SOLID SURFACE

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