Technical processing instructions for sintered stone

PARADYZ

TRI-D

SINTERED STONE

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TRI-D

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Introduction

TRI-D sintered stones is a new category of products by Ceramika Paradyż, which has been renowned for over 30 years for its bold and modern design, being highly valued by both professionals and conscious customers.

Through full-body colouring, TRI-D sintered stones retain their colour not only on the surface but also in the cross-section, making it an ideal finishing material for countertops, kitchen islands, windowsills, fireplaces, and other spatial objects. The sintered stones can be mechanically processed like natural stone, while being resistant to scratches, high temperatures, chemicals, staining from food items, and UV radiation. In addition to various surface decorations, some patterns of TRI-D sintered stones, with a thickness of 20 mm, feature decorative mineral veins visible in the cross-section of the slab.

The timeless design inspired by natural stone gives spaces a unique character and enhances their functional qualities. Moreover, the complementary nature of selected sintered stones with tiles from the Monumental collection allows for a cohesive arrangement both indoors and outdoors, thanks to their resistance to weather conditions.

TRI-D sintered stones are available in two formats: 1600x3200 and 1230x3200, and two thickness values, i.e. 12 and 20 millimetres. Each product guarantees quality, durability, and satisfaction with the achieved effect.

1. Product information

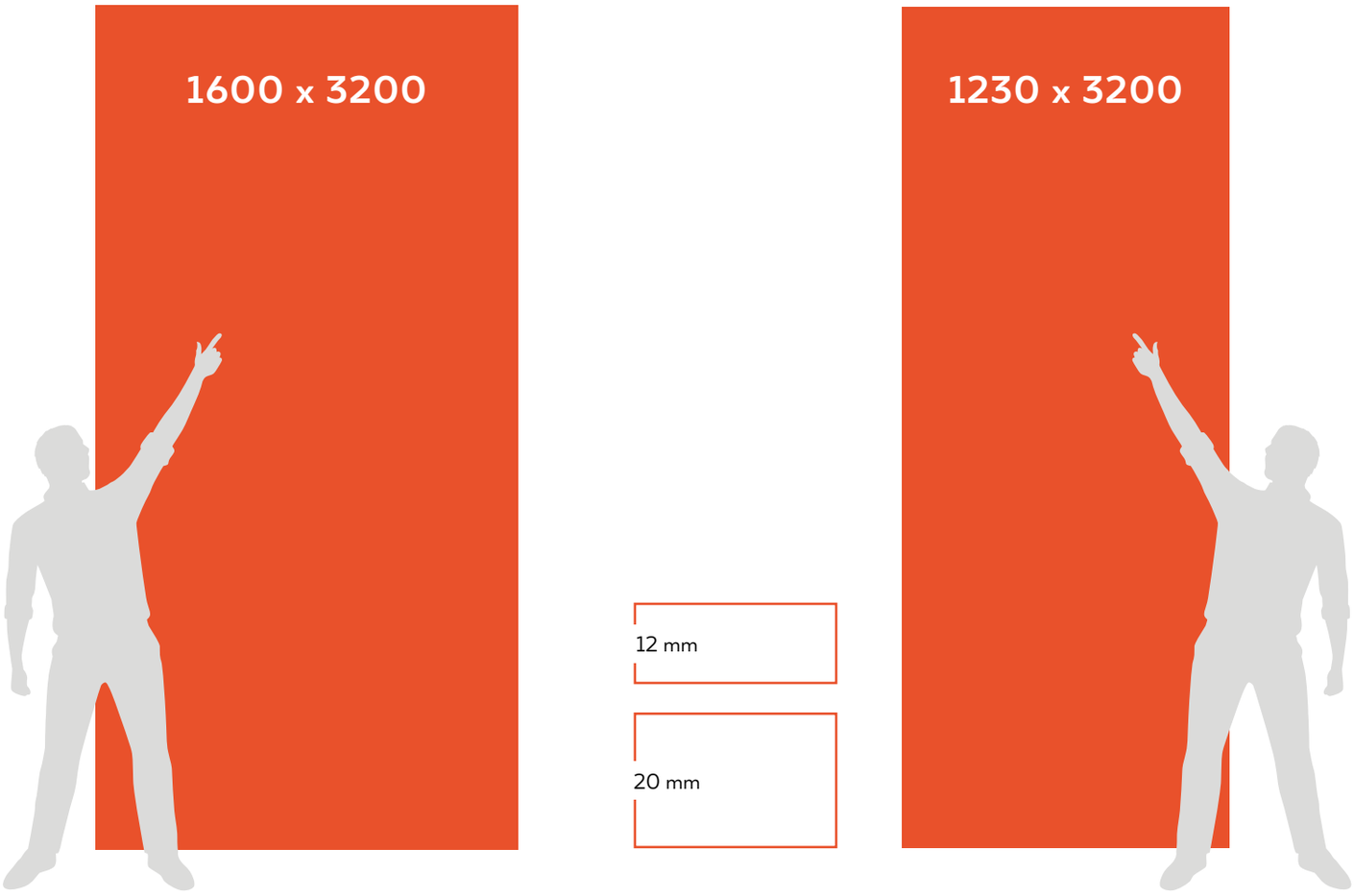
1.1 Product description

Due to their low water absorption, Ceramika Paradyż sintered stones can be used both indoors and outdoors. Thanks to the use of special material blends, TRI-D sintered stones are resistant to frost and demonstrate high resistance to stains, scratches, and water. Their low water absorption capacity prevents the formation of typical stains while also speeding up and facilitating the surface cleaning process. Ceramika Paradyż offers various formats and patterns of produced sintered stones, catering to the needs of most residential and commercial spaces.

1.2 Available formats

Sintered stones are produced from ceramic mass designed with the highest quality mineral raw materials. They are fired in a modern roller kiln under conditions that allow for the production of a product that meets the highest customer expectations.

Available formats and thicknesses:



full size 1600x3200 mm
thickness 12 mm
thickness 20 mm

full size 1230x3200 mm
thickness 12 mm
thickness 20 mm

The description „Full size" placed before the declared dimensions of the slabs means that the delivered sintered stones may have larger dimensions than the declared ones.

2. Properties of sintered stones according to EN 14411 standard

TRI-D

The parameters of sintered stones produced by the dry pressing method in accordance with the requirements of the EN 14411 standard, Annex G, Group BI_a - „Dry-pressed ceramic tiles with low water absorption Eb ⩽ 0.5%."

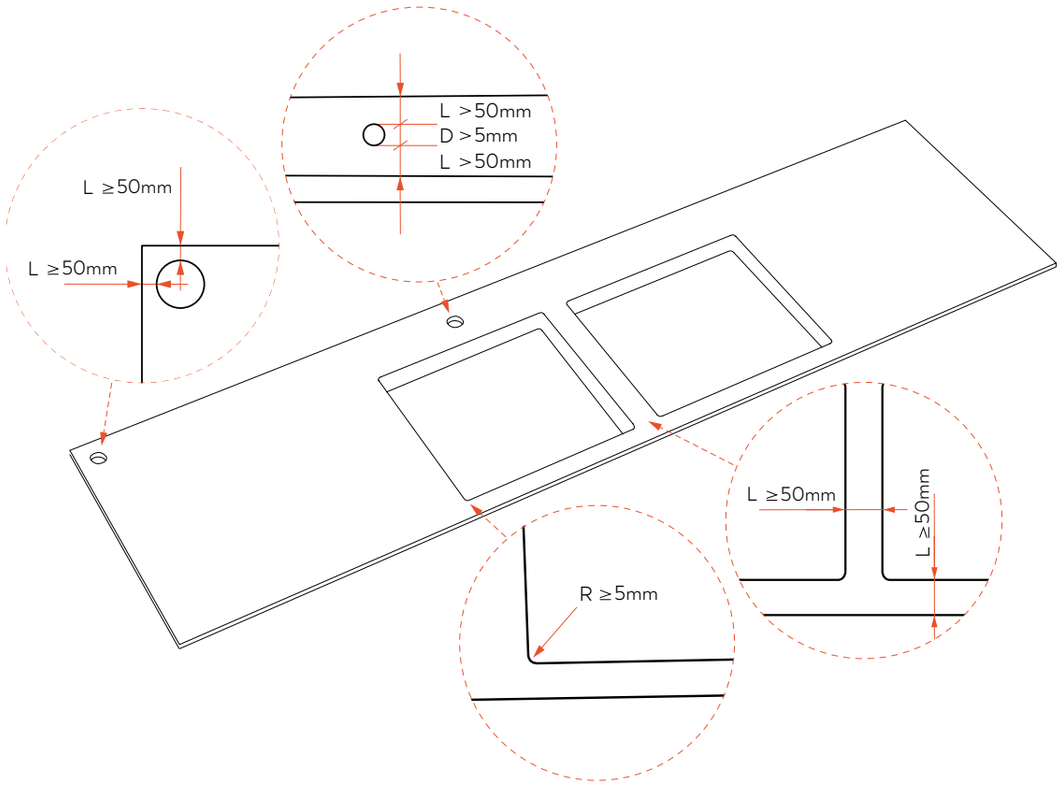
Physical and chemical properties	Standard-Method	TRI-D 12 mm thickness	TRI-D 20 mm thickness
Water absorption, [%]	EN ISO 10545-3	< 0,1	< 0,1
Bending strength, [N/mm^2]	EN ISO 10545-4	Min 50	Min 60
Breaking force, [N]	EN ISO 10545-4	Min 5000	Min 16000
Frost resistance	EN ISO 10545-12	Frost resistance	Frost resistance
Resistance to staining	EN ISO 10545-14	ISO-5 class (unglazed, min. ISO-3 class)	ISO-5 class (unglazed, min. ISO-3 class)
Resistance to acids and alkalis in low concentrations	EN ISO 10545-13	LA class (unglazed LA(V))	LA class (unglazed LA(V))
Resistance to household chemicals and swimming pool water additives	EN ISO 10545-13	A class (unglazed A(V))	A class (unglazed A(V))
Resistance to deep abrasion of unglazed tiles, [mm^3]	EN ISO 10545-6	Max 130	Max 130
Resistance to thermal shock	EN ISO 10545-9	Resistant	Resistant
Volatile organic compound (VOC) emissions	UNI EN 16000-9	A+ class	A+ class

Objaśnienie syboli			
H_2O	Low water absorption, less than 0.1%. No change even with prolonged exposure to water and moisture.		Resistant to all common detergents (acidic and alkaline).
	Frost resistance, resulting from low water absorption. Can be installed outdoors, regardless of weather conditions.	R9 $6 \leqslant a_{shod} < 10$	Marking of slip resistance class for selected products.
	Sunlight resistance. No change in the appearance of the slabs even with prolonged exposure to the and high temperatures.	PZH	Guaranteed safe use confirmed by the Hygienic Approval.
	Installation versatility. They work well both on the wall and on the floor.		Completely safe for contact with foods, confirmed by the Health Quality Certificate.
	Breaking force minimum 5000 N (12 mm thickness). Breaking force minimum 16000 N (20 mm thickness).		Superior application quality, resistant to hairline cracks.
	Minimum bending strength of 50 N/mm^2 (12 mm thickness). Minimum bending strength of 60 N/mm^2 (20 mm thickness).		Heat-resistant.
	Easy to clean, resistant to stains commonly found in the kitchen or bathroom.		Resistant to wear and scratches as well as daily use and cleaning under standard conditions of use. Warranty and colour fastness over the years.
	Highest class of chemical resistance, no change in surface appearance when exposed to acids, bases and salts used in swimming pools.		Natural, environmentally friendly made from natural raw materials, recyclable.
	Resistant to bacteria, mould and fungi development.		Cleaning-friendly for spaces with pets.
UV	A safe product with no radioactive substances in its composition, confirmed by the Radiation Hygiene Certificate.	CE	CE certified for use in the European Union.

3. Cutting sintered stones

Workers from companies involved in processing should conduct a visual assessment of the quality of the slab before starting work, after thorough cleaning of the surface. Any observed changes must be reported before commencing cutting. Otherwise, Ceramika Paradyż will not accept claims and complaints made after the start of processing and/or installation.

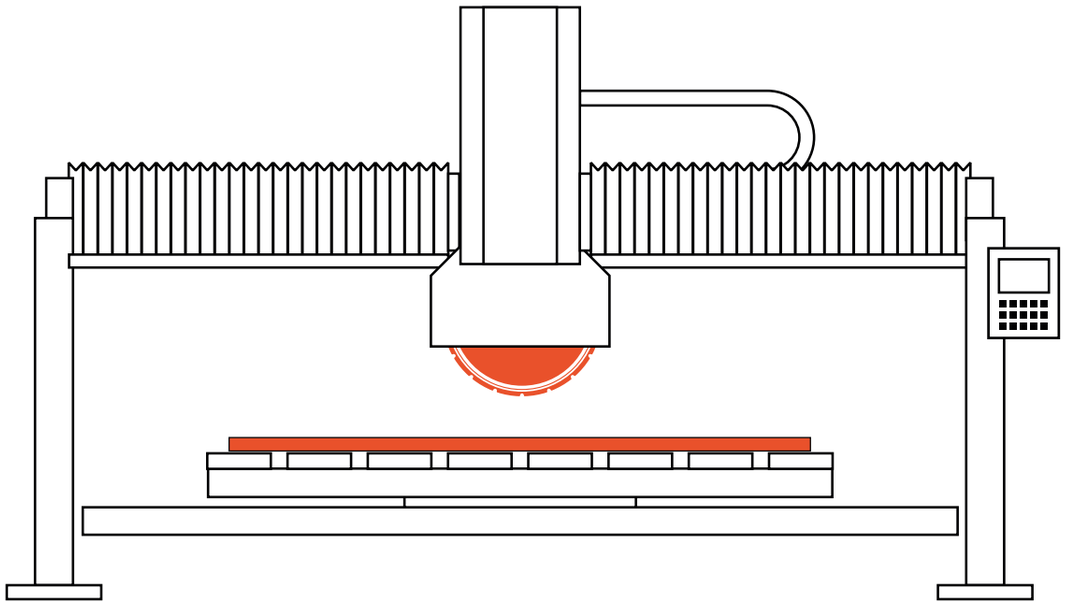
When using sintered stones for kitchen or bathroom countertops, the following minimum distances and dimensions should be followed to limit the possibility of damaging the stone during cutting. The minimum radius of corner rounding for openings should be 5 mm (cutting to a right angle is prohibited due to the possibility of cracks). Distances between openings or openings and the edges of the stone should not be less than 50 mm, and the diameters of the openings should be no smaller than 5 mm.



For sintered stones used as kitchen, bathroom, or island countertops, the maximum overhang (surface protruding beyond the supporting point) should be a maximum of 1/3 of the dimension relative to the supported part and should not exceed 200 mm. Installation should comply with the requirements specified in the relevant standards for the scope in which the slab is used.

Note!
Cut and finished side edges should be protected according to the instructions.

3.1 Cutting sintered stones using a bridge saw



- **WORK TABLE/REQUIREMENTS**
  - the table size should be larger than the size of the processed slab
  - the table structure should be solid and durable
  - the table surface should be leveled and flat

- **CUTTING DISC/REQUIREMENTS**
  - the cutting saw should be in good condition. We recommend using diamond saw blades dedicated to cutting sintered stones. When selecting a saw, pay special attention to ensure that the tool is compatible with the specifications of the machine it will be used on
  - properly cooled with water
  - tested on the material before starting the process

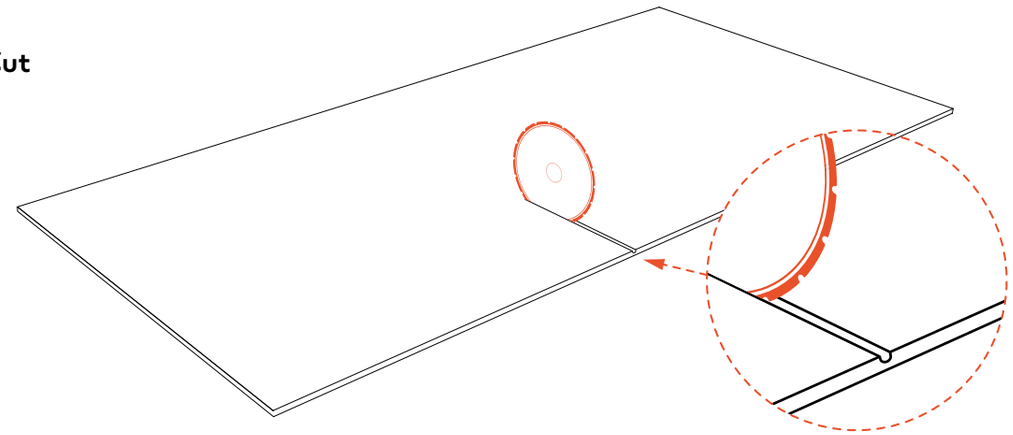
Examples of saw blades for cutting sintered stones:
ADW 500 JOKER H60: 500 mm blade diameter, 60 mm mounting
ADW 400 iKon V25 Silent H60: 400 mm blade diameter, 60 mm mounting

For companies starting work with TRI-D sintered stones, the manufacturer will provide a sample piece for testing to select the appropriate tools.

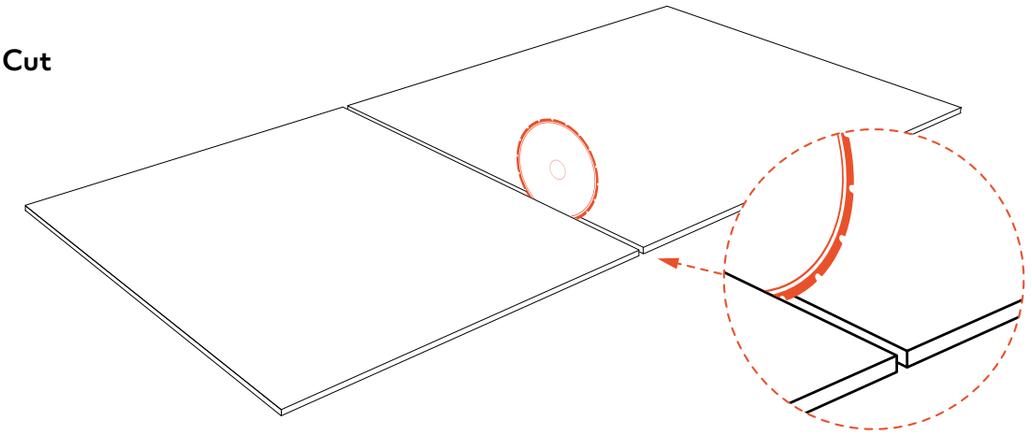
CUTTING TECHNOLOGY

The stone should be cut in a minimum of two tool passes. The first pass should cut the material to a depth of 6 to 8 mm for 20 mm thick slabs and 4 to 5 mm for 12 mm thick slabs. The second pass should cut the remaining part of the material. During the second pass, cracks may appear along the first cut due to the nature of the material. The cracks do not affect further processing of the material. If cracks appear, continue the sawing process until the slab is completely cut.

I Cut



II Cut

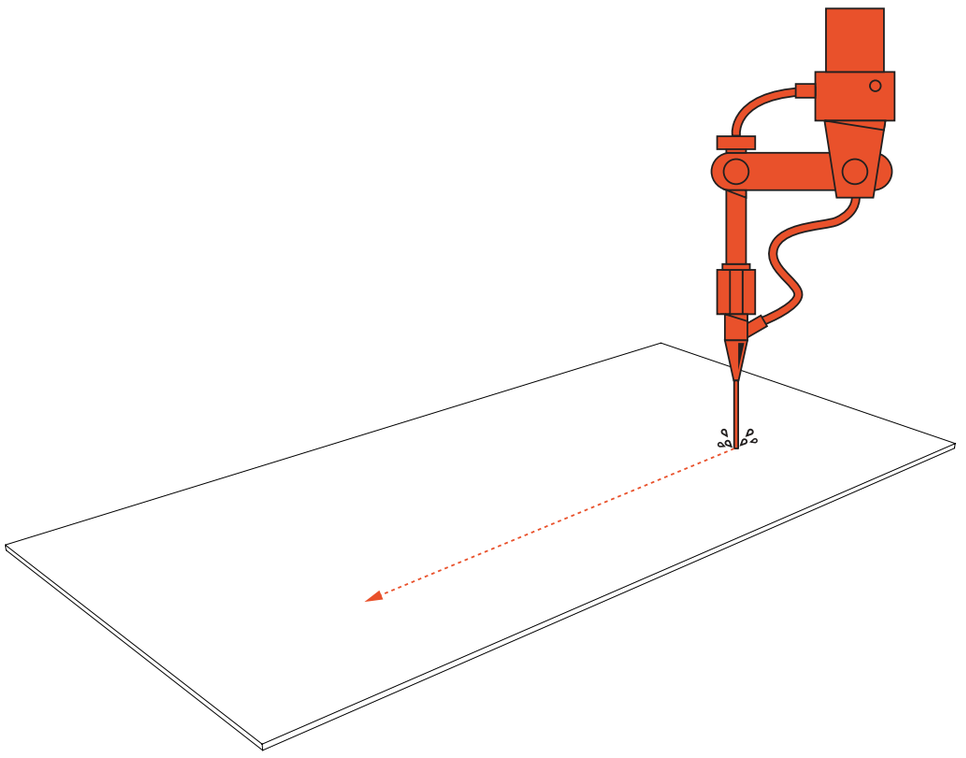


CUTTING PARAMETERS

Slab thickness	20 mm	12 mm
Cutting speed	0,6 m/min	1,2 m/min
Tool cutting depth into the work table	2 mm	2 mm
Recommended RPM for 400 mm blade diameter	1600-1900 RPM	1600-1900 RPM
Recommended RPM for 350 mm blade diameter	1900-2200 RPM	1900-2200 RPM

3.2 Cutting sintered stones with waterjet

- The work table should be set on a stable foundation. Ensure that the table leaves are positioned as close together as possible for proper support of the material.
- The “start hole” should be created using a pressure of 700 bar. Begin cutting the hole from the centre of the slab, moving the cutting line towards the edge.
- During linear cutting, the water pressure should be 3500 bar.
- It is preferable for the nozzle to be positioned approximately 3 mm above the porcelain slab being processed.
- For cutting sintered stones, abrasive material should be used at a rate of 600 grams per minute.
- Remember not to start cuts from a point near the edge of the processed sintered stone.



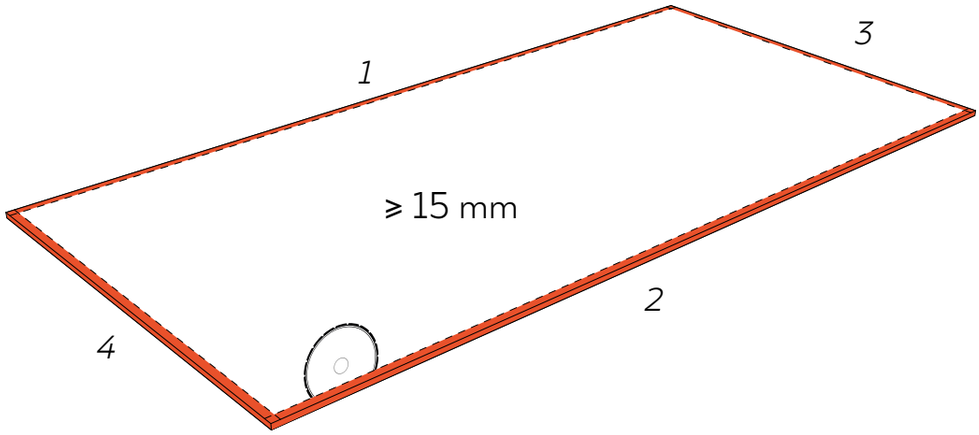
- **CUTTING PARAMETERS**

Slab thickness	20 mm	12 mm
Cutting speed	0,4 m/min	0,6 m/min

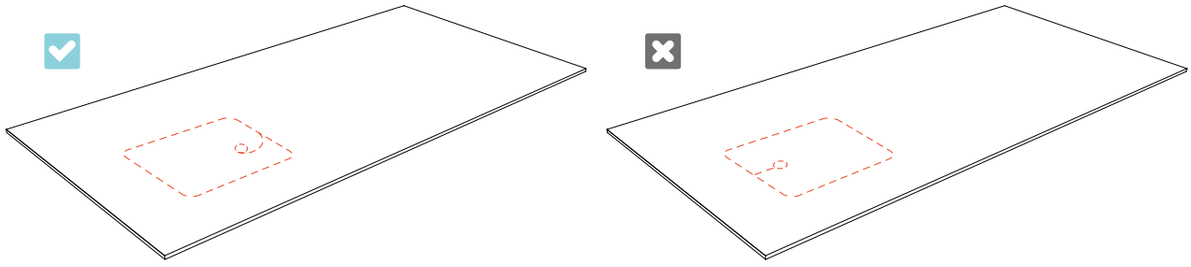
4. Guidelines for designing, processing, and cutting sintered stones

The material is supplied in the form of sintered stones with irregular edges that require processing to achieve the target dimensions. The standard thicknesses of sintered stones are 12 mm and 20 mm. Cutting and edge processing can be done using the mentioned cutting discs or water cutting machines, as well as CNC machines equipped with tools for processing ceramic or stonemasonry materials.

Before cutting the slabs, it is recommended to relieve stress by cutting off a minimum of 15 mm from each side, following the numbered steps below.



✦ STARTING THE CUTTING OF HOLES NEAR THE EDGE



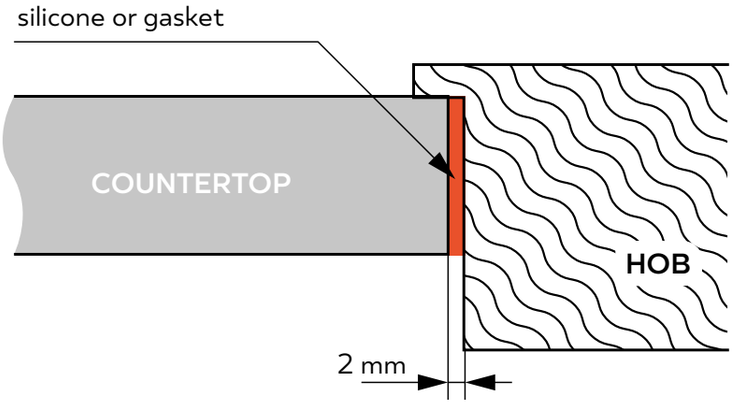
Depending on the user's needs, porcelain sintered stones can be used as both ceramic floor coverings and countertops, kitchen islands, kitchen and bathroom countertops. The quantity and placement of appropriate functional and assembly holes will be defined by the final product's purpose. Due to the thickness and proportions of the sintered stones, several technical guidelines should be followed to facilitate their proper cutting, processing, and use.

5. Installation of sinks and hobs in countertops

There are many models of sinks and hobs available on the market, which differ, among other things, in their installation method. Below are a few tips for installing standard appliances.

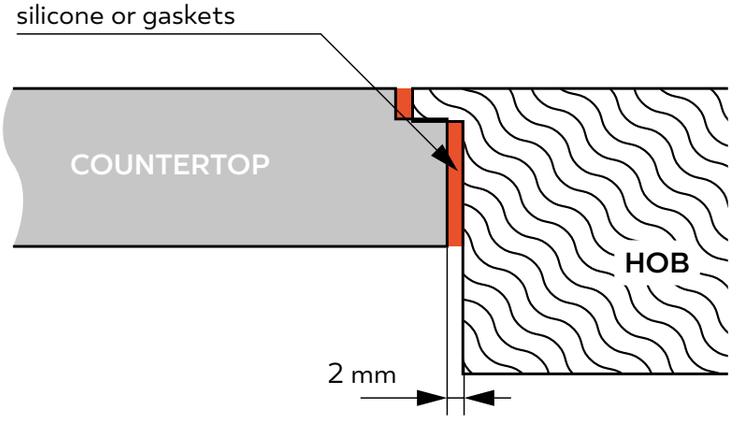
Hob: It is important to maintain a gap between the hob and the countertop as indicated in the diagram below. The left gap allows the material to expand under the influence of temperature. The remaining space should be filled with appropriate silicone. The design principles for cooktops installed in the same plane as the countertop are the same as for sinks. When installing induction cooktops, support should be applied.

- **HOB INSTALLED ON THE COUNTERTOP**

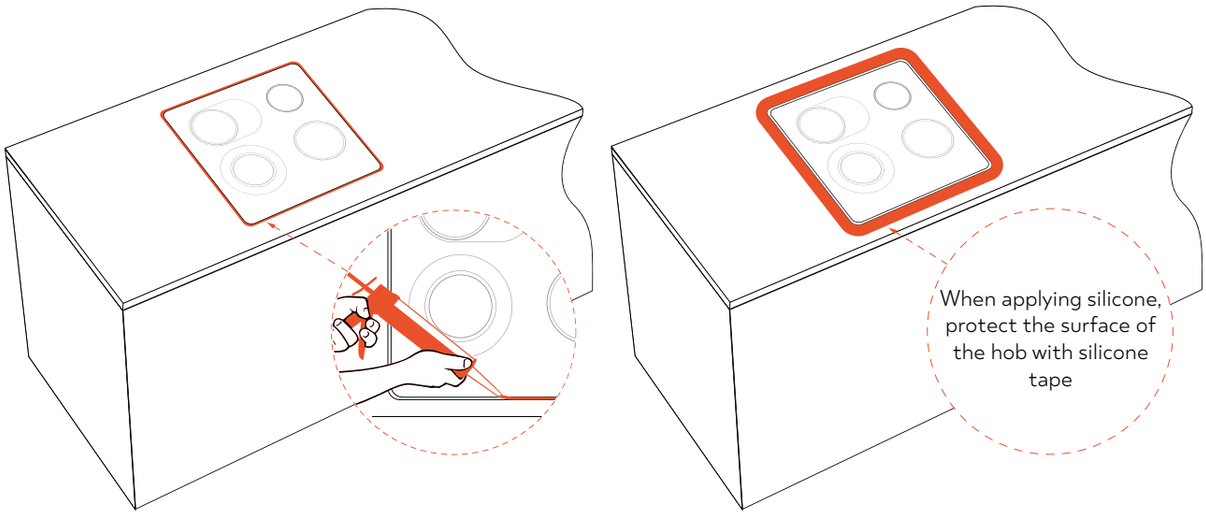


- **PLATE INSTALLED IN THE COUNTERTOP**

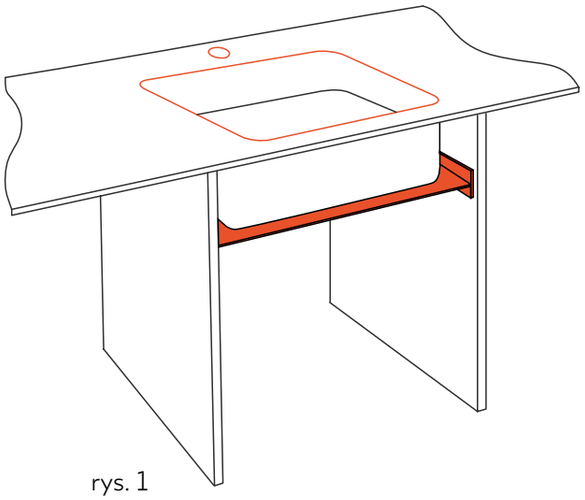
The maximum allowable recess in the countertop is 4 mm for a 12 mm thick plate and 6 mm for a 20 mm thick plate.



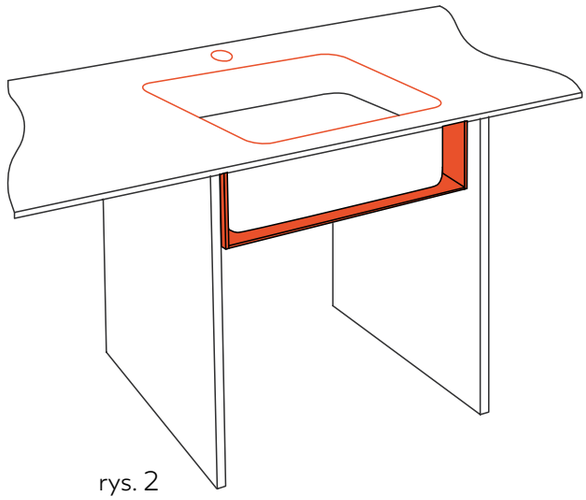
Before applying silicone, remember to protect the surface of the plate with protective tape.



Due to the variety of available sinks on the market, it is important to remember to provide additional supports in each case to bear the loads that may occur, such as when the sink compartments are filled with water.



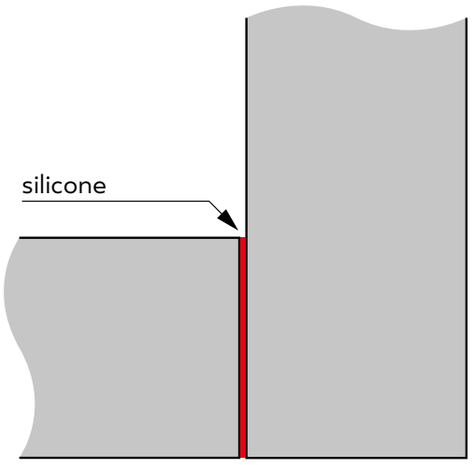
rys. 1

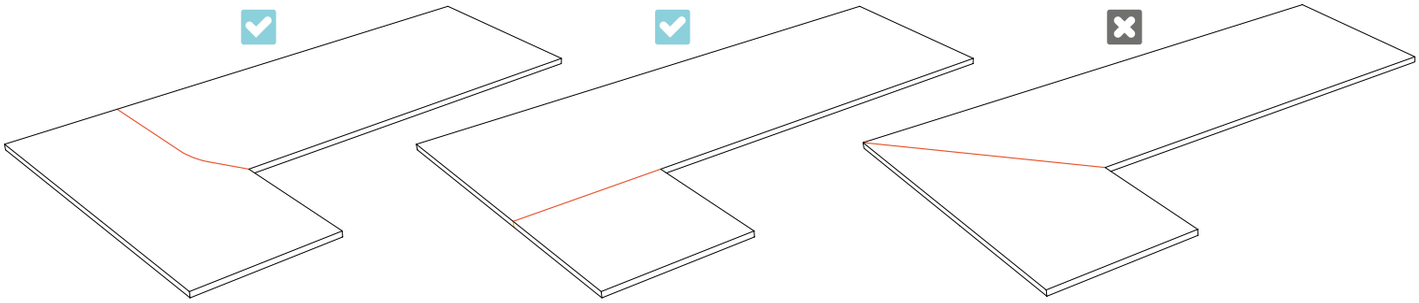


rys. 2

If there is a drawer beneath the sink or any limitations preventing support according to drawing number 1, you can use the support proposed in visualisation 2.

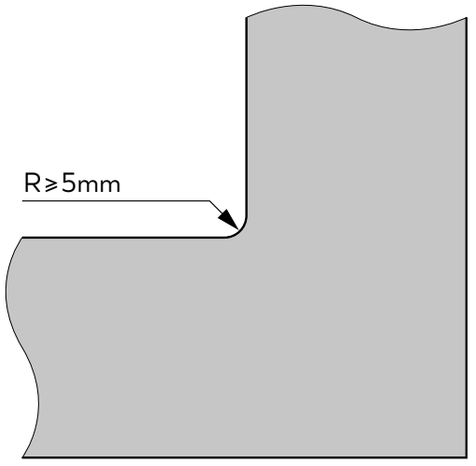
The diverse applications of sintered stones often require joining slabs together. Remember to pay attention to the graphic direction applied to the processed slab to ensure pattern continuity when designing the countertop. In the case of L-shaped countertops, it is recommended to make perpendicular connections. It is important to fill the joint separating the two slabs with the appropriate silicone.





When cutting an L-shaped countertop in one piece, special attention should be paid to the cabinet's design, which should be:
- perfectly level,
- fully enclosed,
- solid.

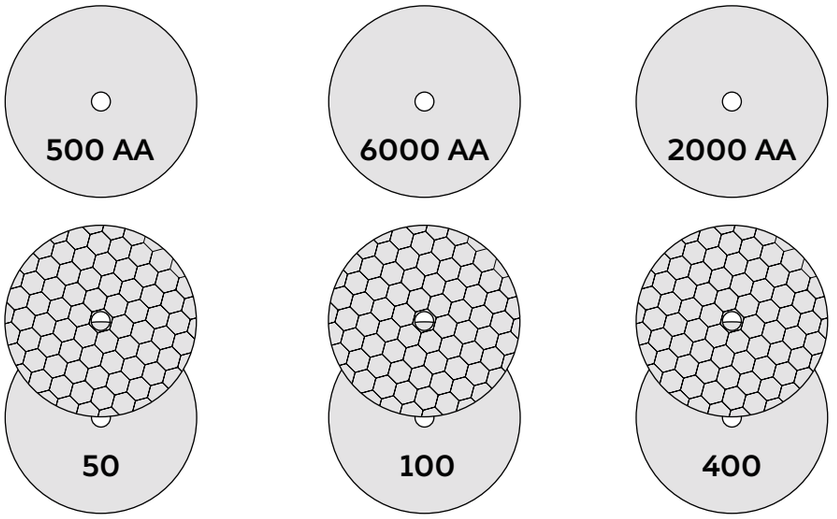
This type of countertop is very sensitive and prone to cracking, so special care must be taken during its transport and installation. The internal corner of an L-shaped countertop should have a minimum radius of 5 mm. Angled cuts are not allowed.



6. Manual processing

TIPS

- Before starting work, perform a test on a waste piece using the tool.
- The sintered stone should be processed using a wet system.
- Use tested tools to achieve the best cutting quality.
- For each hole you make, use a sharp tool in good condition.
- Use pads or brushes designed for processing porcelain tiles until you achieve a polished or matte surface.



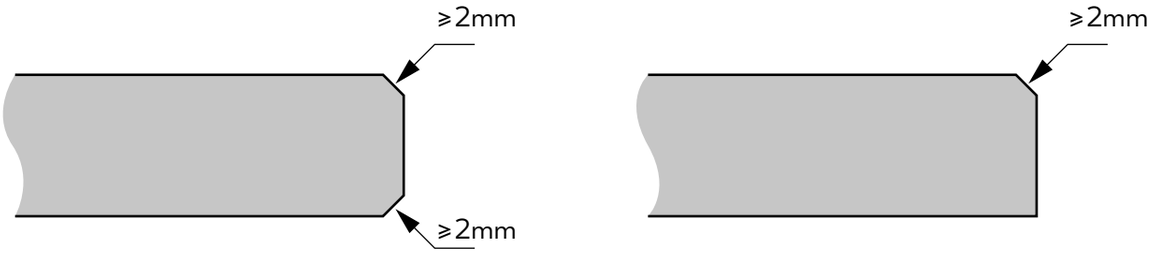
- To achieve higher quality parameters, it is recommended to impregnate/glue the edges of the tiles after processing. Note that when impregnating/gluing countertops that will come into contact with food, only use impregnators with food certificates.

*PLATINUM P+ liquid	*Anti-Stain Nano-Effect	*HG CEMENT REMOVER, ADHESIVE AND GROUT FILM REMOVER
Transparent, colourless adhesive (very light self-colour), epoxy acrylate-based, high strength, very quick surface drying, ready for further processing, food safe after curing (certified by an external institute)	Very strong stone protection against water, grease and oil. Protects floors, tables, bathroom, and kitchen countertops made of absorbent natural and artificial stones (such as marble, sandstone). For use indoors and outdoors. Stains do not penetrate the stone structure or can be easily removed. Protective action is achieved within a few minutes, and full protection is achieved after 2-3 hours. In most cases, it does not change the colour shade of the stone. Special substances create bonds on the surface, causing the so-called „water droplet repellent effect." Water droplets on the surface flow off the stone surface. Approved for contact with food (tested by an independent research institute)	A product designed to remove stubborn cement residue, among others, from porcelain tiles, stone pavement slabs, and acid-resistant natural stones such as Norwegian slate, granite, quartzite. Effectively removes adhesive residues and typical dirt generated during tiling and renovation works. A product for professionals - essential for the first stage of tiling works. Capacity: 1 litre of the product covers approximately 20-40 m^2.

* sample products for impregnation, maintenance, and cleaning of sintered stones

7. Machine edge polishing

- Feed rate: 0,6 m/min
- Pressure: 1.8 bar do 2.2 bar,
- Grit sequence: 50, 100, 400
- We recommend performing a bevelling phase with a width of at least 2 mm to increase the edge's resistance to impact.

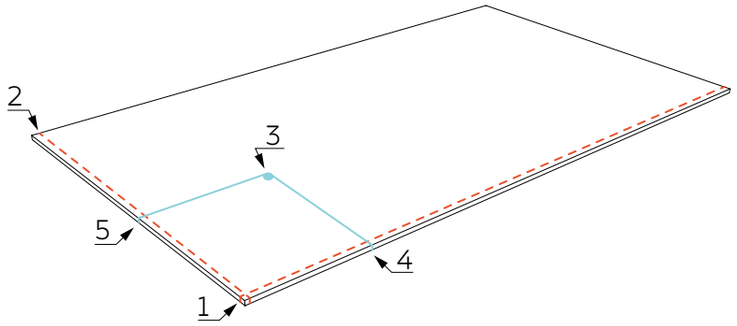


8. Processing on CNC machines

- Drill holes at a safe distance from the edge.
- Cutting should be done in one go.
- Apply the recommended parameters and use tools recommended by the manufacturer.
- All components should be supported.

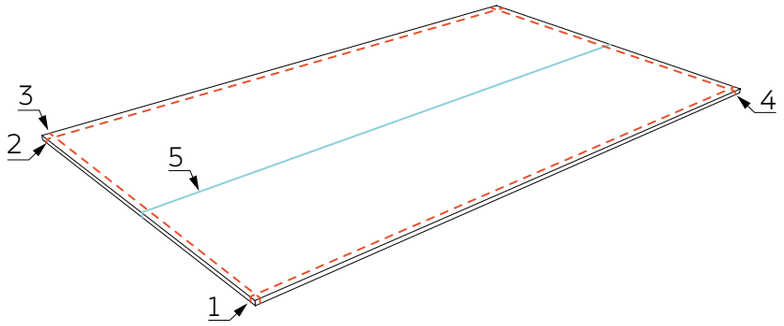
9. Sample cutting sequences for sintered stones

Figure I



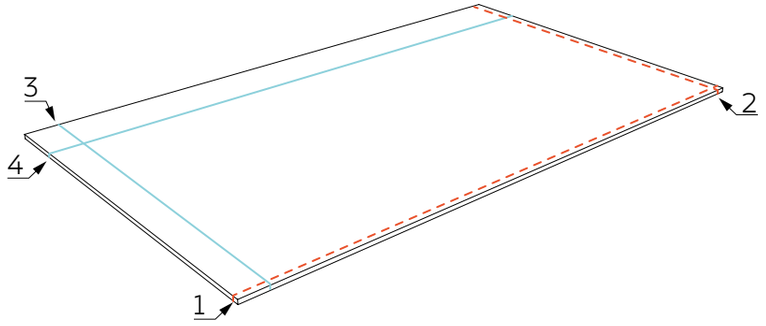
1. Dashed red line - relieving cut along the long side
2. Dashed red line - relieving cut along the short side
3. Drill a hole at the intersection of two cutting lines
4. Continuous blue line - proper cutting of the element along the short edge
5. Continuous blue line - proper cutting of the element along the long edge

Figure II



1 and 2. Dashed red line - relieving cut along the long side
3 and 4. Dashed red line - relieving cut along the short side
5. Continuous blue line - proper cutting

Figure III



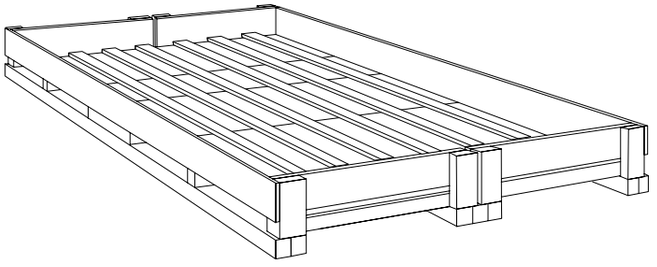
1. Dashed red line - relieving cut along the long side
2. Dashed red line - relieving cut along the short side
3. Continuous blue line - proper cutting along the short edge
4. Continuous blue line - proper cutting along the long edge

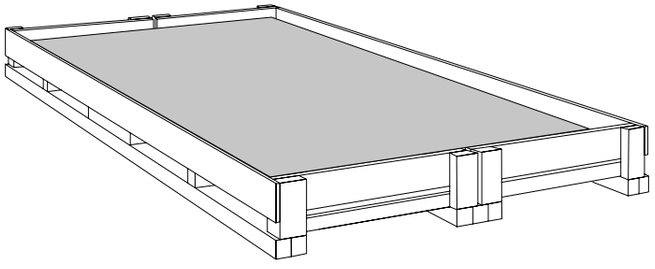
10. Storage and transportation

TRI-D

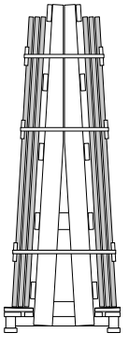
Ceramika Paradyż stores and delivers products in wooden crates or on wooden A-Frame stands. It is recommended to store products in their original packaging as supplied by the manufacturer. The slabs can be stored outdoors regardless of the weather conditions.

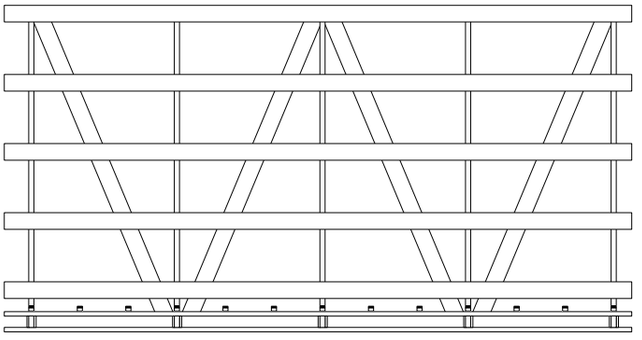
WOODEN CRATE

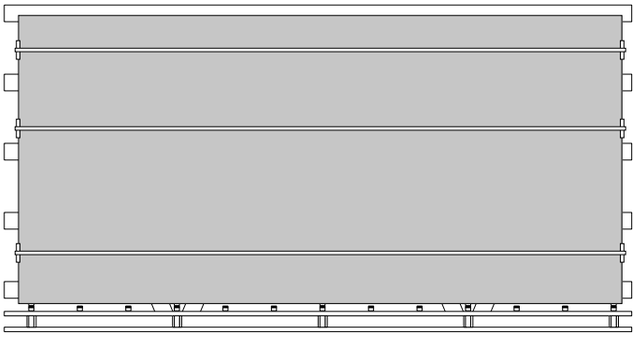




WOODEN A-FRAME STAND



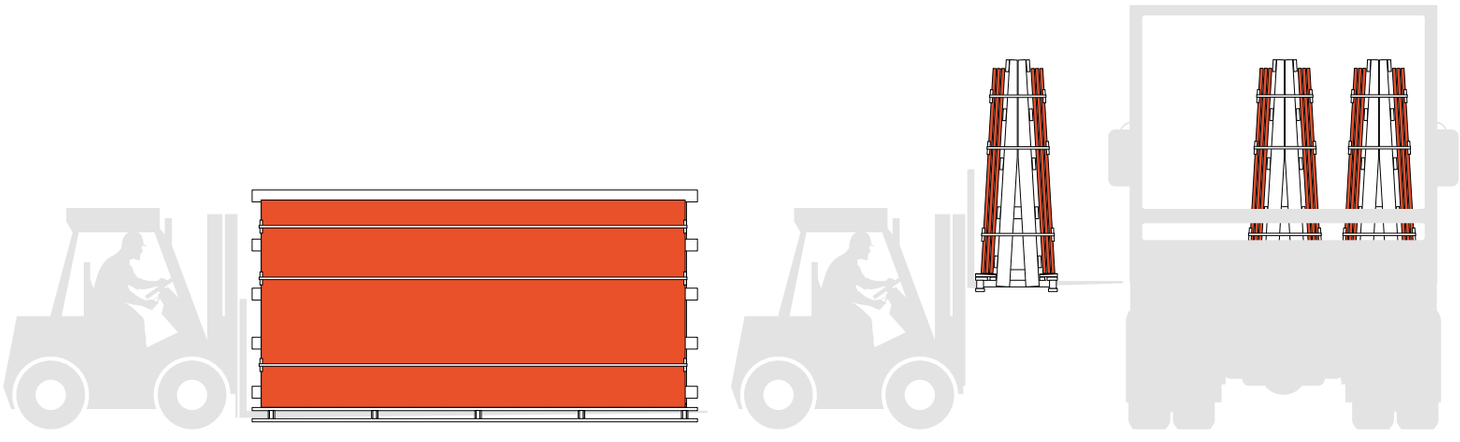




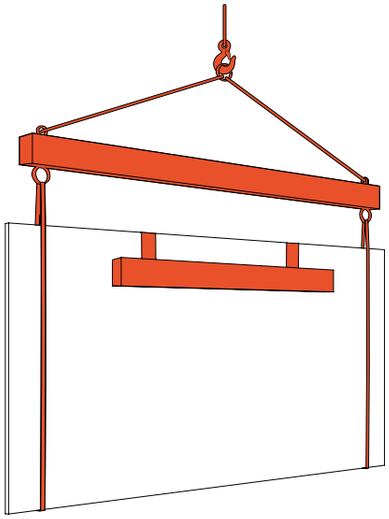
BOX 1400x3450x390				
PARADYŻ TRI-D 1230x3200	Number of pieces in a collective package	Number of sqm in a collective package	1 pc weight [kg]	Gross weight of a collective packaging [kg]
Thickness 12 mm	11	43,3	122	1 482
Thickness 20 mm	7	27,6	201	1 545
A-FRAME STAND 750x3300x1480				
Thickness 12 mm	14	55,2	122	1 858
Thickness 20 mm	8	31,5	201	1 756

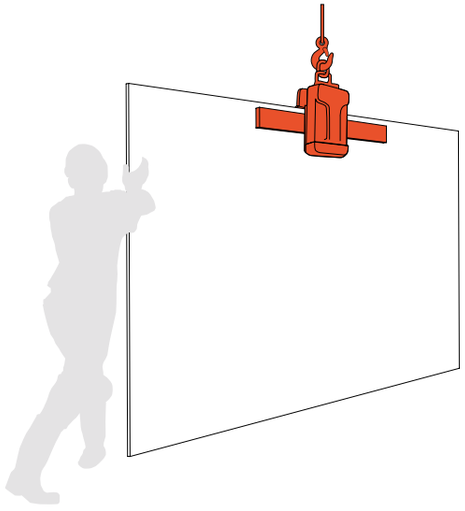
BOX 1760x3430x390				
PARADYŻ TRI-D 1600x3200	Liczba sztuk w opakowaniu zbiorczym	Ilość m^2 w opakowaniu zbiorczym	Waga 1 szt. [kg]	Waga brutto opakowania zbiorczego [kg]
Thickness 12 mm	11	56,3	159	1 905
Thickness 20 mm	7	35,8	261	1 987
A-FRAME STAND 750x3300x1480				
Thickness 12 mm	12	61,4	159	2 074
Thickness 20 mm	8	41,0	261	2 248

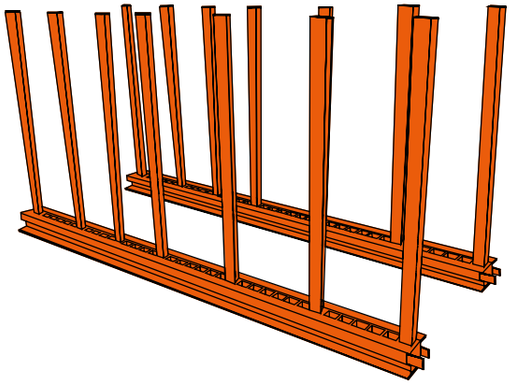
When unloading carriers with products, it is recommended to use a forklift truck with the highest possible load capacity. Transportation should be carried out by gripping the carrier transversely with forks of at least 1200 mm in length and a load capacity of at least 3500 kg.

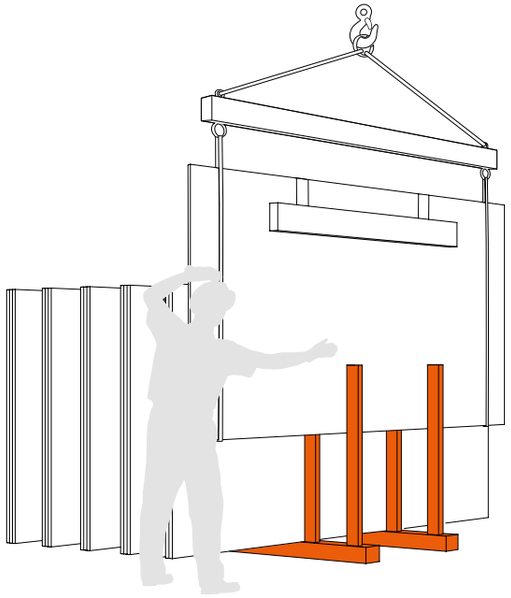


Slabs should be unloaded from the carrier while observing all safety regulations using appropriate equipment. Such operation should be performed with sufficient workspace, avoiding twisting and bending. Special attention should be paid to avoid accidental damage to the assortment, especially on the edges. After unloading, the slabs can be stored on the manufacturer's racks or dedicated warehouse racks designed for large-format slabs. It is recommended to use additional styrofoam, foam, or wooden spacers to protect individual slabs from surface scratches.

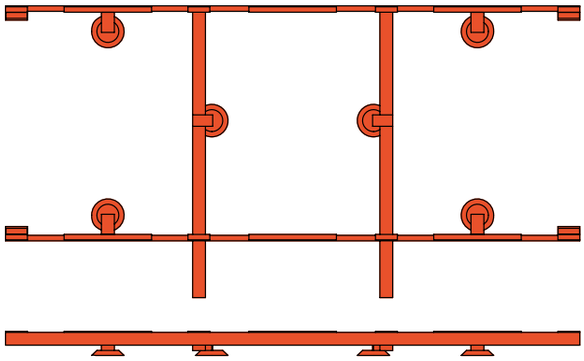


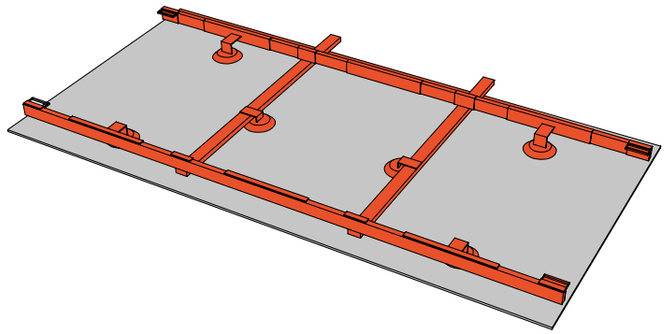


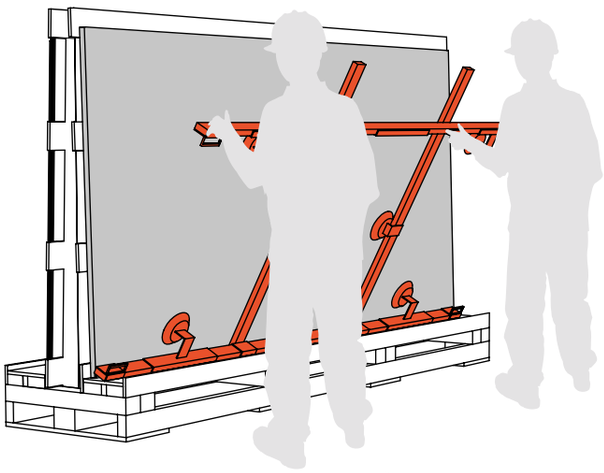


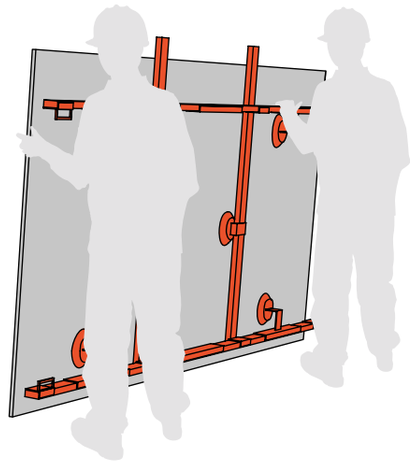


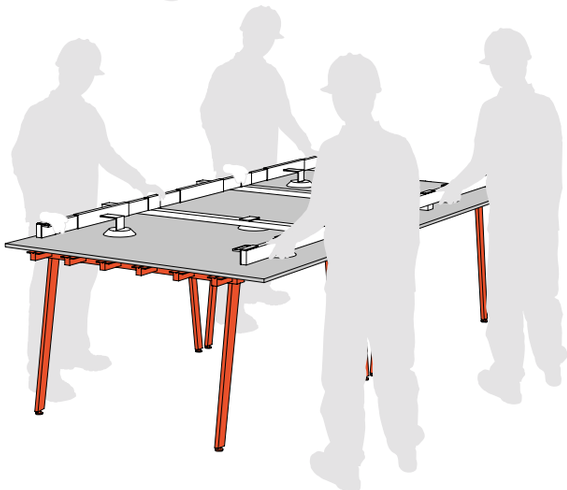
Unloading should be done using devices equipped with suction cups with multiple gripping points or a grab with an arm covered in rubber. Chains or steel rods should not be used for this purpose due to the risk of damaging the slabs. When transporting structural slabs using suction cups, special attention should be given to ensure that the selected pressure provides adequate grip on the slab.

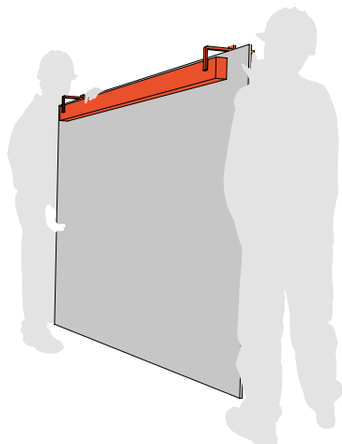




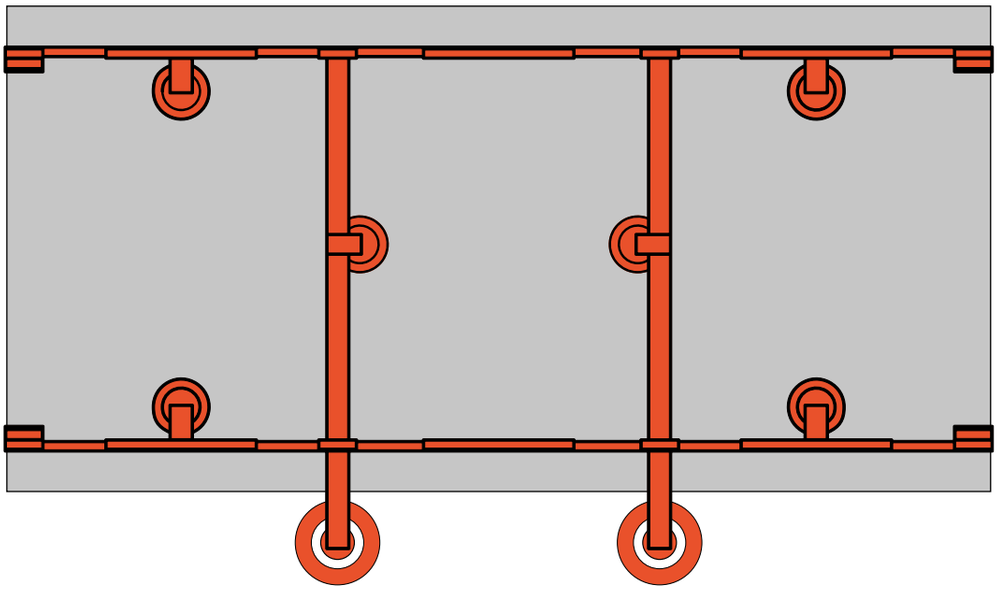


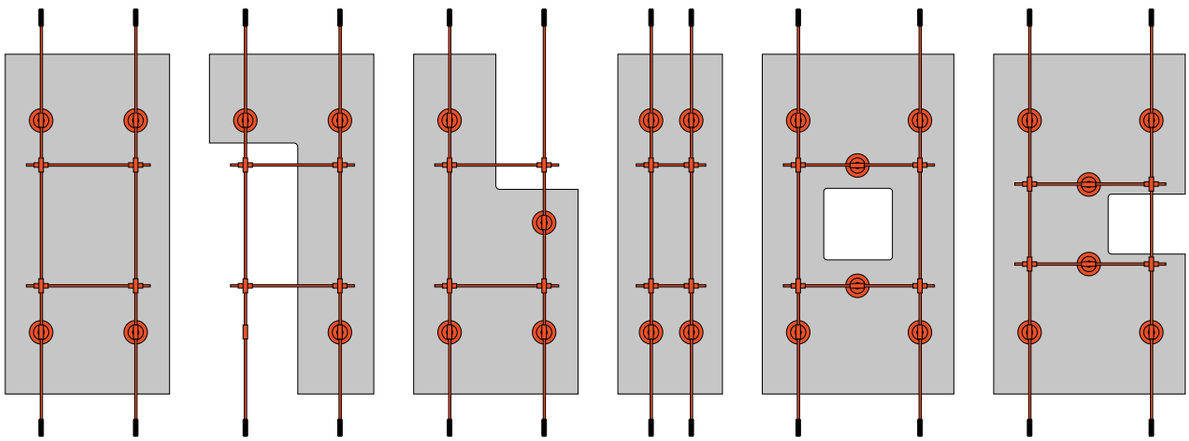






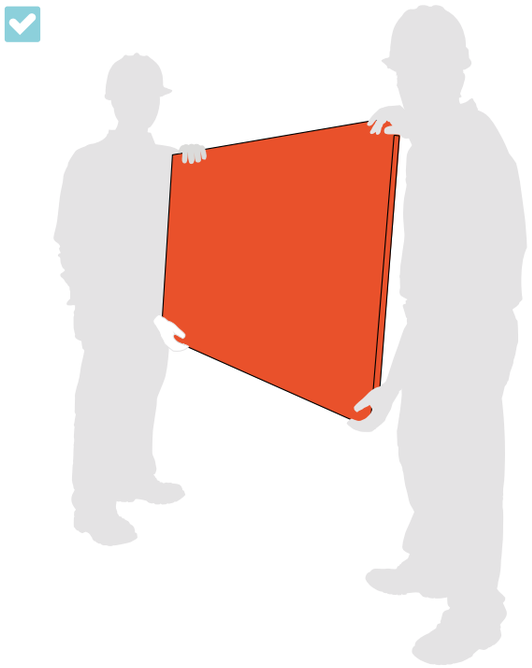
Finished products intended for installation should be carried in a vertical position using special handles and tools dedicated to such elements.

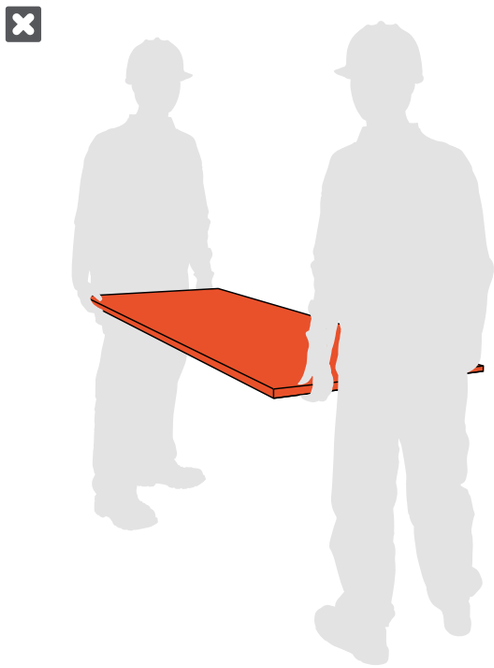


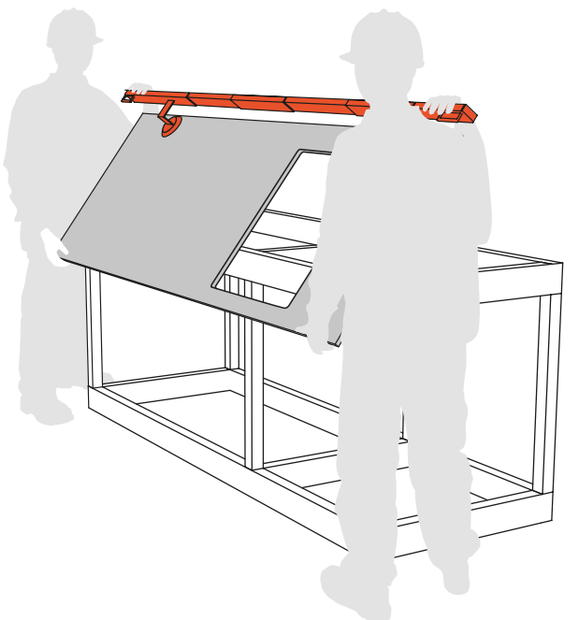


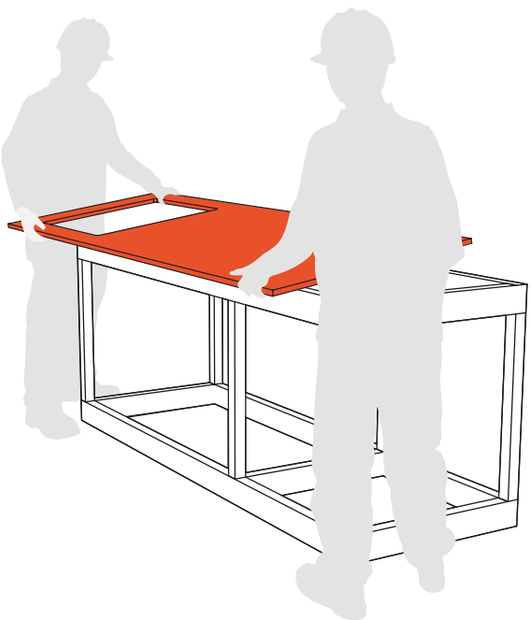
An example of the proper use of a handle for transporting finished products.

Slabs should be manually carried in a vertical position, with particular care, by qualified individuals and while wearing personal protective equipment (gloves, safety footwear). It is important to insert the slab onto the furniture surface during placement to minimize slab deflection.









11. Initial cleaning and daily maintenance

TRI-D

The material is supplied in the form of slabs with irregular edges that require processing: cutting, drilling, generating a large amount of dust during material grinding. This dust, when in contact with the water used for cooling, dries on the slab surface, giving an unfavourable appearance. Therefore, it is important to properly clean the slab immediately after cutting. If done incorrectly, it may result in the presence of stains that are difficult to remove. Residues from cutting should be rinsed off the plate surface with a large amount of water, and repeat the procedure until the surface is completely clean. Do not leave the wet surface to air dry on its own. Excess water should be removed with a soft sponge or microfibre cloth.

Sintered stones are easy to clean and maintain hygiene; they can be washed with water and popular, conventional detergents. They also do not retain dirt that can lead to the accumulation of bacteria and microorganisms on their surface. All these properties remain valid as long as the product is selected and installed considering its intended use and expected mode of operation. For removing everyday dirt, use alkaline cleaning agents, while periodically using acidic agents is recommended for removing scale from evaporated water. It is essential that each cleaning or surface reconditioning process involves the interaction of three complementary factors: the activity of the cleaning agent, mechanical action, and time. The initial stage, which is the dissolution of contaminants aimed at separating them from the porcelain surface, determines the effectiveness of cleaning the cladding. The selection of cleaning agents should be consulted with manufacturers and distributors of chemistry intended for the maintenance of porcelain products.

Examples of stain removal agents:
- cleaning agents with acidic pH, e.g., descaling agents (remove rust, cement, plaster, wine, aluminium scratches),
- cleaning agents with alkaline pH, e.g., degreasers, ammonia (remove grease, oil, coffee, tea, ice cream),
- solvents, e.g., universal solvent, thinner, turpentine, acetone, alcohol (remove grease, oil, ink, coffee, gum, epoxy adhesives, candle wax, resin, markers),
- oxidants, e.g., diluted hydrogen peroxide or bleach (remove ink, iodine, blood, fruit juices).

The dosing of cleaning agents should be done in accordance with the manufacturer's recommendations. Before using them, a test should be conducted in the least visible area. The manufacturer bears no responsibility for any surface changes resulting from the use of an improper cleaning agent or its application method.

12. Warnings

- Avoid using cleaning agents with abrasive particles on the surfaces.
- Avoid using wax or lacquer-based products for maintenance.
- If cleaning agents are not removed immediately after cleaning, they may leave stains that may be difficult to remove from polished surfaces.
- Metal objects such as cutlery, pots, and knives can cause scratches on the surfaces.
- Use cutting boards and pads.
- Avoid direct contact with flames to prevent the accumulation of stubborn soot.
- When carrying plates in a vertical position, avoid twisting them.
- Do not use sintered stones in a manner inconsistent with their intended use.
- Avoid overloading, such as standing or sitting on the surface. This may cause cracks, especially in delicate areas such as sink and hob cutouts or less supported spaces.

13. Waste management

Sintered stones are environmentally safe products. Waste generated during construction, renovation, or dismantling can be reclaimed and used, for example, for land consolidation. They can also be disposed of with municipal waste according to local waste management regulations. Packaging materials should be collected selectively for recovery and recycling, following the categories below:
- paper and cardboard,
- plastics (film, straps),
- wood.

14. Safety principles

The delivered product is classified as safe under normal conditions and does not pose a threat to health and the environment. However, dust generated during cutting, grinding, or mechanical processing of the product may cause irritation. Therefore, it is recommended to use wet methods for mechanical processing. Where there is a risk of inhaling dust, mechanical exhaust ventilation is recommended. Use the required personal protective equipment (safety glasses, protective gloves, dust mask). Handling, storage, assembly and other phases that do not involve machining and cutting the panels do not involve the risk of inhaling mineral particles or dust.

14.1 Manual handling

The term “manual handling” refers to any type of transporting or supporting objects, loads, or materials by one or more persons, including lifting, carrying, stacking, moving, sliding, or transporting.
When performing manual handling, adhere to several main principles: - use auxiliary equipment to reduce the strain on the musculoskeletal system, especially the spine,
- avoid large twisting movements and unnecessary bending of the torso,
- strive for a body position as close to natural as possible,
- the most advantageous height for lifting objects is the height of the table surface, and this height should be individually adjusted,
- the base area between an individual and an object should be as large as possible, but should not increase the load on the lower limbs,
- use appropriate methods when lifting atypical objects of large size or weight,
- large-size and heavy objects should be carried by a team while observing all safety measures and recommendations regarding lifting and carrying objects.

Auxiliary equipment refers to means aimed at reducing hazards and discomfort associated with manual moving of objects, loads, or materials, as well as facilitating the performance of these activities. These means include, in particular, straps, ropes, slings, levers, grippers, clamps, handles, manual hoists and winches, rope rings and multiple rings, movable ramps, trolleys, etc.

Note!
To prevent occupational diseases, accidents, and reduce risks, it is necessary to comply with preventive and protective safety measures in accordance with the applicable health and safety legislation.

15. Notes

15. Notes

SALES ADDRESSES FOR SINTERED STONES:

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STONE MARKET DEPARTMENT

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Issued on 01/07/2023

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