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Notes to Applicators

1. This product is a multi-functional wall plaster made from 100% natural materials.
2. Its use of 100% natural materials renders it unsuitable to strong trowelling pressure or rub skimming techniques.
3. Applicators working with this product for the first time that have questions about these application procedures are encouraged to ask our staff. We are ready to answer your questions.
4. Takachiho makes available a repair agent that can be used after applying this product. The repair agent can be used to correct blemish spots and white discoloration caused by shallow scratches left in the finished surface, left when moving furniture back or other forms of abrasion. Order from Takachiho and use to rework such surfaces.

Discoloration and color development

1. Color development is a major feature of this material. You will notice the surface blackens 2 to 5 hours after application. (Color variation may be alarmingly pronounced depending on the color code used.) Thereafter, about 8 hours later, the surface will slightly darken and gradually change to its true color as it dries. It takes about 3 to 4 weeks for the surface to reach its final color. Applications should accept this as a mysterious side effect owed to the use 100% natural materials.
2. Depending on the mining depth, the main component *Shirasu* will show variations in granularity and color which can cause color variation across production lots. This, however, is a feature that should be appreciated as a byproduct of using only 100% natural materials.

Notes before applying * Read these notes before applying.

- ◆ The method used to apply the base coat differs depending on the type of material it is made from. Contact us after checking the base coating material.
- ◆ **Avoid applying when the temperature is 5°C or cooler.** If this is unavoidable, control the room temperature as closely as possible.
- ◆ This is a low alkaline product so it is not necessary to mask where the surface meets doorways, frames, plinths, etc., with varnish or protective tape. This applies to all finishing work as well.
However, the use of masking tape is recommended for easy cleaning after application.
Apply 6-mm of masking tape to allow for a coating thickness of 5 mm and a 1-mm relief margin. Be careful when cleaning with a wet brush as moisture can cause white chalk-like powder on the finished surface.
- ◆ **Always obey the amount of water to add, and the mixing times for pre-mixing, settling, and final mixing.**
Insufficient mixing can cause red streaks or specks and other color imperfections.
- ◆ This product will begin hardening in about 1 hour due to the hydration reaction.
Be sure to complete all work from application to finish within 2 hours. Rubbing the surface once the material begins hardening will cause cloud-like color imperfections or pigment streaks.
- ◆ This product **cannot be applied in segments.** Always cover the entire surface one wall at a time. Using mixtures made from different mixing times on the same surface will produce variations in color.
- ◆ This product is designed for a coating thickness of 5 mm. Note that **a coating thickness of less than 5 mm may fail to harden properly, or show variations in color, or pattern defects caused by the aggregate rolling.**
- ◆ **Close windows and entrances during and up to 12 hours from application to protect the surface.** If left open, the material may fail to harden properly.
- ◆ **About 12 hours after application (the next day), thoroughly ventilate and dry. This will help prevent dry spots and mold.** We recommend the use of a fan* or dehumidifier during rain season or rainy weather to keep the room temperature and humidity low while providing air circulation. (* When using a fan, do not let the air blow directly on the wet surface.)

*** This product is made from 100% natural materials. Absolutely no mold prevention agents, preservatives, or other chemical substances are used. Note, this product is not a nutrient source for mold.**

* Water content per 1 m²: approx. 1.5 liters. (1 bag/7.5 liters)

◆ This product is for indoor application only. Do not use on exteriors. Also do not use in bathrooms, kitchens, and other areas constantly subject to water or steam.

◆ This product is a premixed plastering material. Do not mix other ingredients.

◆ **Notes on work during the summer season.**

(1) If direct sunlight can hit the substrate surface and cause the board to heat up,

(2) If the room temperature where the product is to be applied may rise above 35°C,

Cover any top lights or windows that allow direct sunlight to enter to prevent it from hitting the substrate. Remember that water set aside for mixing will also warm. Use tap water at room temperature, or take similar measures. (This will prevent the mixture from losing its moisture too quickly which could otherwise cause hardening defects and lead to variations in color.)

◆ **For any other concerns, call your nearest service representative.**

Before Applying

1. Items You Will Need

- (1) Pre-mixing container

* Ideally, the container should be large enough for mixing two 20-kg bags.

- (2) Plastic bucket for plastering work for mixing and carrying (300-mm diameter.)

- (3) Agitator (high-speed)

To ensure a thorough mix, use a large agitator with a rounded blade to keep the loose strands in the mix from winding on it.

(Right photo)

Example: Ryobi Power Mixer PM-501, Toshiba 2-speed Mixer BMV-150A



Recommended propeller

- (4) Tap or filtered well water for mixing

- (5) Trowel

Stainless or plastic (to prevent rust-induced discoloration).

- (6) Trowel for reworking uneven patches

Stainless round-nose type (l = 255 or 270 mm, t = 0.3 mm).

- (7) Finishing supplies (sold separately)

- 1) Single-row paint brush (for soft hair line finish)
- 2) Coarse bristle brushed finish for making flattened grain line patterns
- 3) Ribbed roller (for making furrows)
- 4) Ridged roller (for making ridge-line patterns)
 - * Use a small finishing trowel for trowel finishing.
 - * Use a small square trowel for random trowel finishing.
- 5) Rubber blade (for smoothing out trowelling marks)



Single-row
brush



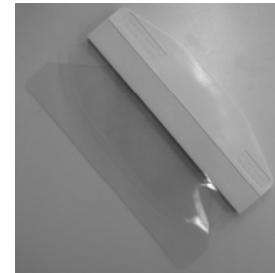
Coarse bristle
brush



Ribbed roller



Ridged roller



Rubber blade

2. Preparation and Mixing

(1) Fill the mixing container with the prescribed amount of clean water (about 7.5 liters per bag).

[Pre-mixing]

(2) Open the bag and pour the contents into the mixing container. Gradually add the prescribed amount of water while mixing thoroughly with the high-speed agitator.

* Mix for about 5 minutes.

(3) Let mixture stand for about 10 minutes.

[Mixing]

(4) Pour contents into a plastic bucket for plastering (300-mm dia.) and mix about 2 minutes with the high-speed agitator.

(5) If the mixture is stiff, add water using a dipper (make sure to add the same amount each time), mix, then apply.

* Do not use water used to clean hawks and trowels. Doing so will cause variations in color.

* Water contaminated with cement or mortar will cause hardening defects.

* Calculate the required amount of ingredients needed to cover one wall at a time in preparation for mixing.

* One bag covers approximately 5 m².

* The main ingredient, *Shirasu*, is porous so it will take time for the material to absorb the water.

Caution!

■ Never mix fresh new product with unmixed mixture. Doing so will result in hardening defects, inconsistent texture, and other imperfections.

■ Wash all utensils (container, bucket, trowels, hawk) after making and using each batch.

■ Avoid insufficient mixing as this can cause variations in color and blurry imperfections.

Hint

[Pre-mixing]

Add water and mix till stiff.



(Mixing container)

Let mixture stand about 10 minutes.



[Mixing]

Mix thoroughly with the agitator for about 2 minutes.



(300-mm dia. plastic bucket)

* Overmixing is desirable with this product.

* Check the stiffness of the mix constantly for at least 10 minutes after adding water to the pre-mix until you complete the final mix. If stiff, add water, mix, then apply.

* After mixing, finish applying within roughly one hour, then finish the surface.

[Finishing, Important Notes]

Follow these points:

Apply neatly

Finish quickly

Never rub too hard

Application

<For all finishing patterns>

(1) **Wet and rub** (approx. 2-mm thick)

The standard coating thickness is 5 mm but start by wetting and rubbing a base layer (approx. 2 mm thick).

The base layer does not have to be uniform at this stage.

(2) **Finish application** (approx. 3-mm thick)

About 10 to 15 minutes after wetting and rubbing, apply another coat to make a total coating thickness of 5 mm.

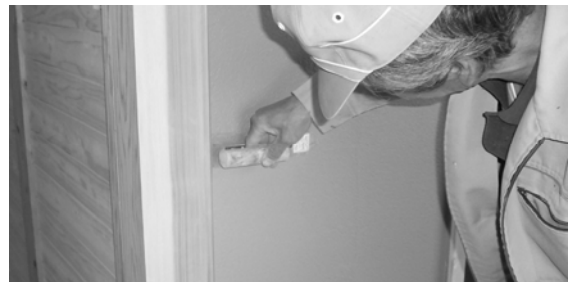
(3) **Skimming**

After Step 2, start skimming the surface to fix uneven areas. Do not wait too long or else the coating will dry.

Minor trowelling marks are not a problem so do not try to iron them out. (Doing so will cause variations in color.)

* Always use a round-nose stainless trowel (0.3 mm thick) for this purpose.

* Use a rubber blade to remove trowel marks efficiently (refer to page 5).



Read the appropriate finishing technique for the desired pattern

1. Soft hair line finish [using a single-row brush]

(4) Finishing

Slowly brush the surface horizontally with the specified single-row brush to produce a soft hair-line effect. For best results, do not brush over long distances. Instead, use short strokes about 30 to 50-cm long.

Hint The best way to handle inside corners like that shown on the right is to start by swiping the brush from right to left.

Steps 1 (wet and rub) to 4 (finishing) should be completed without pausing within 30 to 60 minutes.



Your single-row brush should lie at an angle. It should only touch lightly against the surface when making the horizontal swipe.

When the bristles become dirty, wash with clean water, wring out all moisture, straighten the bristles, and repeat until the entire surface is finished.

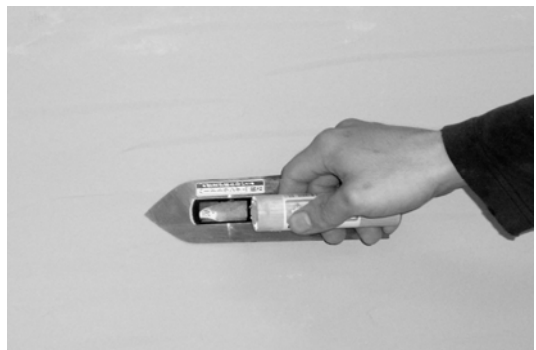
2. Drag and lift finish [Using a small finishing trowel]

(4) Finishing

Hold the small finishing trowel sideways and press the tip down while dragging it back about 15 cm. Lift off the trowel at the end of the stroke. Repeat to finish the pattern.

Hint Use a thin-blade trowel and drag from left to right without pressing too hard.

Steps 1 (wet and rub) to 4 (finishing) should be completed without pausing within 30 to 60 minutes.



Hold the trowel sideways and press the tip down while dragging about 15 cm, then lift off.

After washing the finishing trowel, wipe the water off completely and repeat the technique to finish the pattern.

* Maker's advice

The finished look of this pattern varies for each applicator. It is advisable for the actual applicator that will perform the work to make a sample for approval before commencing the work.

3. Coarse bristle brushed finish <flattened grain lines> [Using a coarse bristle brush]

(4) Finishing - 1

Slowly brush the surface horizontally with the specified coarse bristle brush to produce lines on the wet surface. For best results, do not brush over long distances. Instead, use short strokes about 50 to 70-cm long.

(5) Finishing - 2

Once the lines are done, check the firmness (wetness) of the surface for the desired effect and lightly flatten the grain lines by gently skimming a finishing trowel horizontally over the surface. Leaving just a few lines will give the surface a soft appearance, even if most of the lines are flattened.

Hint Using a rubber blade allows you to flatten the grain lines without having to check the wetness of the surface.

Steps 1 (wet and rub) to 4 (finishing) should be completed without pausing within 30 to 60 minutes.



When the bristles become dirty, wash with clean water, wring out all moisture, straighten the bristles, and repeat until the entire surface is finished.

After washing the finishing trowel, wipe the water off completely and repeat the flattening technique.

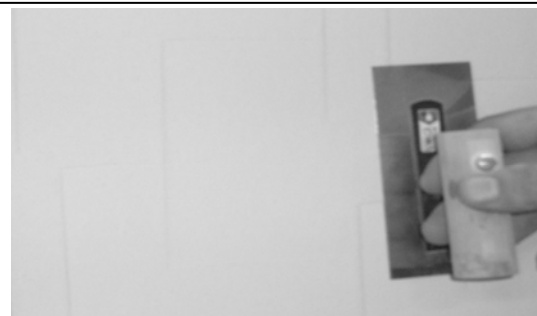
4. Random trowel pattern [Using a small square trowel]

(4) Finishing

Press the trowel down and move it horizontally about 30 cm to smoothen out the horizontal lines.

Hint Press the square trowel down and release pressure as you move it to the right. Try to stagger the horizontal lines.

Steps 1 (wet and rub) to 4 (finishing) should be completed without pausing within 30 to 60 minutes.



After washing the trowel, wipe the water off completely and repeat the technique to finish the pattern.

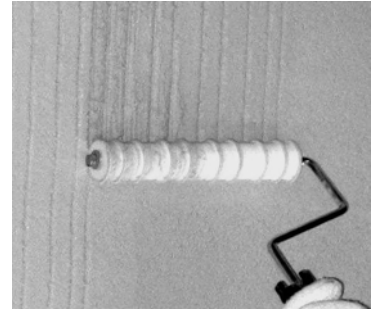
* Maker's advice

The finished look of this pattern varies for each applicator. It is advisable for the actual applicator that will perform the work to make a sample for approval before commencing the work.

5. Furrow pattern [Using a ribbed roller]

(4) Finishing - 1

Roll the specified ribbed roller slowly up and down to make the pattern. Move the roller one groove width to the right and make another pattern, this time narrowing the width of the furrow.



When the grooves become dirty, wash with clean water, wring out all moisture, and repeat the technique.

(5) Finishing - 2

Once the furrow lines are done, check the firmness (wetness) of the surface and lightly flatten the peaks by gently skimming a finishing trowel vertically over the surface.

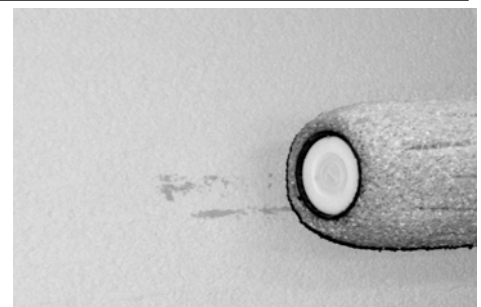
Wring out the finishing trowel the same way and finish the surface.

Hint Using a rubber blade allows you to flatten the grain lines without having to check the wetness of the surface.

Steps 1 (wet and rub) to 4 (finishing) should be completed without pausing within 30 to 60 minutes.

6. Ridge-line pattern [Using the ridged roller]

* Note: Soften the ridged roller sponge by soaking it in a bucket of clean water 30 minutes before you begin finishing. Wring the water by hand thoroughly from the roller before use.



Roll the ridged roller gently and slowly moving downward.

(4) Finishing

Roll the specified ridged roller slowly moving downward. Overlap the pattern by about 3 cm and create another vertical strip of pattern. Repeat to finish.

When the roller grooves become dirty, wash with clean water, wring out all moisture, and repeat the technique to make more patterns.

Hint To make the pattern consistent, hold the roller about 30 degrees to the surface and keep this angle as you pull it downward. Any changes in this angle will change the amount of force applied on the sponge which can determine whether or not the pattern appears.

Steps 1 (wet and rub) to 4 (finishing) should be completed without pausing within 30 to 60 minutes.

Other Important Notes

This product is subject to change without notice due to product improvements.

Use this product only for its intended purpose.

[Handling precautions]

Biocera is a refined natural product made from a pyroclastic substance called *Shirasu*. *Shirasu* is weak in alkaline and therefore harmless under skin contact or contact with clothing. However, the following precautions must be observed when handling.

- This product is not edible. Do not consume by nose or mouth.
- In the event of eye contact or inhalation, seek medical attention and take the appropriate measures.
- Store out of reach of small children.
- For best results, use within 40 days.

[Precautions for use]

- Obey the application procedures and be careful not to apply too thickly. Do not let surface dry too quickly from exposure to strong ventilation drafts and sunlight. Cover with a sheet as necessary.
- Do not add or mix with other materials. Do not knead the material. Use within one hour after adding water to the mixture.
- Do not add new product to unmixed mixture.
- This product uses natural ingredients which may result in slight color variations.
- Keep dry during transport and storage. Dispose of appropriately as industrial waste.