

# Application Manual

Heat Insulation Glass Coating Material GLC-1

~Cool in Summer, Warm in Winter~

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# How to Use This Manual

## ① How to Use This Manual

This is the most basic manual for applying the Heat Insulation Glass Coating Material GLC-1.

(1) The manager at site must instruct staffs according to this manual before application.

(2) It is the responsibility of the manager at site to keep and manage this manual.

## ② The role of the manager at site

(1) The manager at site must have constant command of the application flow. He must order and instruct staffs on each application method according to this manual to carry out management.

### (2) What to check at site before application

- Always visit the site before application to check the state of procedure of other operations and application conditions.

- When there are other ongoing operations at site, basically, application of GLC-1 starts after they are finished.

### (3) Safety

- Wear a mask, cap, protection glasses, long sleeves, long pants, safety shoes, safety gloves etc during application.

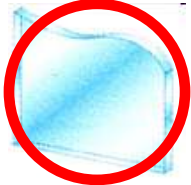



- When you sense danger or feel ill, tell the manager and stop working.

# Notice

## ~ Handling Windows ~

### ● Applicable Glass Surface

- Only for **float glass (indoor side)**
- Not for Figure Glass, Heat Reflective Glass, Heat Absorbing Glass or Wired Glass. Heat cracking may happen.
- Not for coating over another coat or on films.

<p><u>Float Glass</u> The most common kind is the transparent plate glass.</p>		<p><u>Figured Glass, Frosted Glass</u> Plate glass with one uneven surface (untransparent)</p>	
<p><u>Heat Reflective Glass,</u> <u>Heat Absorbing Glass</u> Glass with metallic oxide printing</p>		<p><u>Wired Glass</u> Glass with embedded wire netting or metal wire</p>	

### ● Glass Surface Condition

- Check if there are no scars, cracks etc on the glass surface before application.
- If a scar, crack etc is found, have the client check and confirm beforehand.
- If possible, check not only from the front but also from the back. Be careful in case you must apply at night for reasons. It is more difficult not to overlook surface damage than during daytime.

# Notice

## ~ Application Environment ~

### ● On Application

- During application, either move or cure the things around the glass to protect them from water, detergent etc
- The coating contains organic solvent. Keep good ventilation during application.
- Bad ventilation will cause 2~3 days of organic solvent odor after application. Keep good ventilation.

### ● Application Environment

※ Application must be carried out within the environment described in the picture.

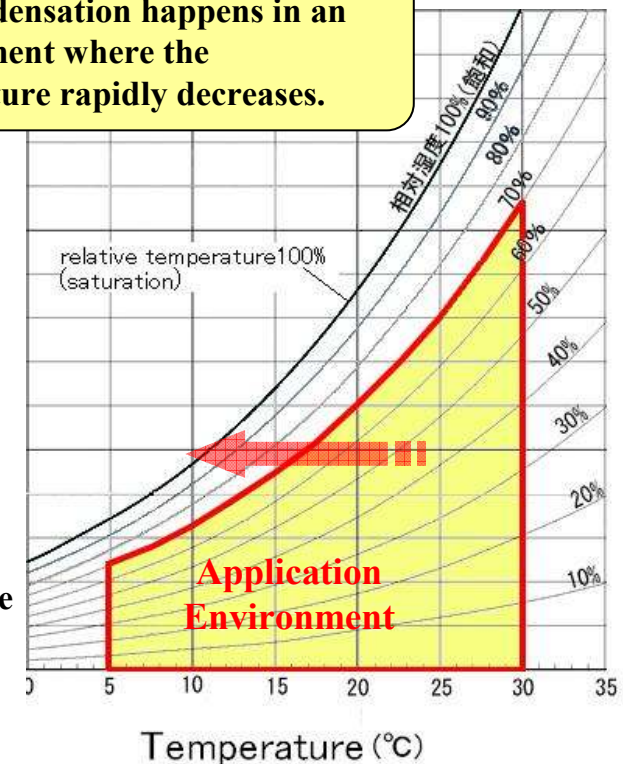
- **Temperature 5~30°C** ··· High temperature causes poor appearance.
- **Humidity below 70%** ··· Whitening may happen under high humidity.
- Do not apply when **rain or snow is expected** at site on the day of application.

※ Even if the environmental condition is within this picture, do not apply **when condensation is expected** at site (In an environment where condensation happens during or on the day after application and the applied surface catches dew.)

- Apply **between morning to daytime**.
- Avoid applying in the evening and night time. The range of temperature change is wide and it is impossible to check surface damage or the finished surface.
- Do not use air conditioning during application in winter.

※ If a poor appearance or whitening happens, stop application immediately and wipe off the coating with the GLC thinner.

e.g) Condensation happens in an environment where the temperature rapidly decreases.



# Notice

## ~Handling Paint~

### ●On Handling Paint

- After taking out the necessary amount of paint for application from the container, wipe the paint off the opening and close the lid.
- After application, dispose the remaining paint. Do not put it back in the container (or it will cause bubbles and dirt).
- To store the paint, seal it up, avoid direct sunlight and keep in a cool dark place.
- Use the paint during the usable period (6 months since manufacture date).

(On Lot No.)	LOT No. 1C-○○○○	1・・・2011年 (The one's place of the year)
C・・・3月 (A, B, C starting from Jan.)	○○○○・・・	Manufactured No.

### ●First-Aid Treatment

- If the paint touches the skin, wash it off with much soap and water. If there is pain or change in appearance, see a doctor.
- If the paint touches the eye, wash with pure water immediately for 15 minutes and see a doctor as soon as possible.
- If you inhale volatile component and feel sick, rest in clean air and see a doctor if necessary.

For details, refer to the MSDS.

# Coating Specifications

Applicable Glass Type	Float Glass (Indoor)
Characteristic	Clear membrane with heat reflection, heat insulation, UV protection properties
Item No.	Heat Insulation Glass Coating Material GLC-1
Liquid Property	1-packed solvent
Coating Method	Roller Coating (*Fixed Roller)
Amount of Coating	About 20 ml / m <sup>2</sup>
Pretreatment	Clean → Remove Oil → Wipe
Drying	Dry in Normal Temperature (Complete Cure: 7 days, 20°C)
Dilution and Removal Material	GLC Thinner
Storage	Store in a cold dark place (6 months from manufacture date)
Spreading Rate (Packaging)	15 m <sup>2</sup> (0.3kg)




# Application Procedures

Clean	① Clean	Remove dirt (sand dust, litter) from glass surface and clean with water, glass cleaner etc.
	② Remove Oil	Remove dirt (oil, tar) from the glass surface and clean it with an oil slick remover.
	③ Check Water Amenity	Check how clean the glass surface is by seeing how wet it is (water repellency).
	④ Cure	Take curing measures to keep paint off other things besides the glass surface.
Coat	⑤ Roller Coating	Use the Roller to coat the window glass.
	⑥ Poor Appearance and How to Fix	Check the finish of the coated surface.
	⑦ Dry	Dry the coat if the finish is fine.

※Keep good ventilation during application. Wear protection equipment.



# Tools

Tools for Cleaning					
Bucket, Cloth	Oil Slick Remover	Sponge	Squeegee	(Neutral) Detergent	Water Absorption Sponge
					
Tools for Coating					
Vinyl Mask, Masking Tape, Scissors	Siever (aperture 20 ~ 40 μ m)	Measure, Measure cup	Roller Set		
					
Others					
Thermostat	Waste Cloth	Measure	Protection Equip		
					

# ① Cleaning

**Remove dirt (sand dust, litter) from glass surface  
and clean with water, glass cleaner etc.**

▪ Look for damage on the surface along with looking for dirt.

※ If there is any, check with the client.

▪ Take curing measures to keep water and cleaners off other things besides the glass surface during cleaning.

※ Sand dust and litter cause surface damage and poor appearance later on.

※ Move or cure the things around the glass to protect them from water, detergent etc



Protect the surroundings from catching paint.

Necessary tools



# ②Removing Oil

Remove dirt (oil, tar) from the glass surface and clean it with an oil slick remover.

- Put oil slick remover on the watered sponge and wipe it till there is no repellence.
  - It is hard for the oil slick remover to work on the most dirty parts. Keep wiping till the slick oil remover sinks in.
  - After application, the slick oil remover dries and turns in to powder. Wipe the powder off thoroughly with waste cloth. Leave nothing on the surface.
- \*Incomplete oil slick removal causes poor appearance (repellence) and weak adhesiveness.
- Recommended oil slick remover <"Kiiro-bin" of PRO STAFF>
- Can be bought in home centers, car equipment shops and online.

Products with similar components and uses may be used as well.



Component	Ceric oxide
Liquid Component	Water based (neutral)
Use	removing oil slick and cleaning car windows and glass mirrors



**Wipe with the oil slick remover for water repellence**



**Wipe it off after drying.**

Necessary Tools



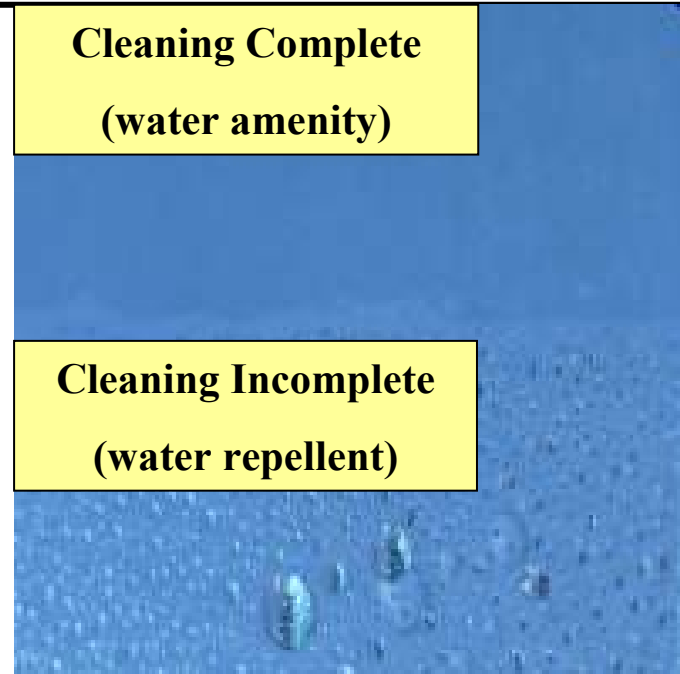
# ③ Checking Water Amenity

Check how clean the glass surface is by seeing how wet it is (water repellency).

- Take a sponge damp with clean water and wipe the glass surface to check how wet it becomes.
- If the cleaning is not enough, the water will repel. In that case, repeat the oil slick removal.
  - \* Incomplete oil slick removal causes poor appearance (repellence) and weak adhesiveness.
- After checking the water amenity (no water-repellence), take the remaining water off the glass surface (applied surface) with a squeegee or waste cloth.
  - \* Application on leftover water causes whitening.
- **Complete the cleaning process by wiping the glass surface with waste cloth, damped with the GLC thinner.**

**Cleaning Complete  
(water amenity)**

**Cleaning Incomplete  
(water repellent)**



Necessary Tools



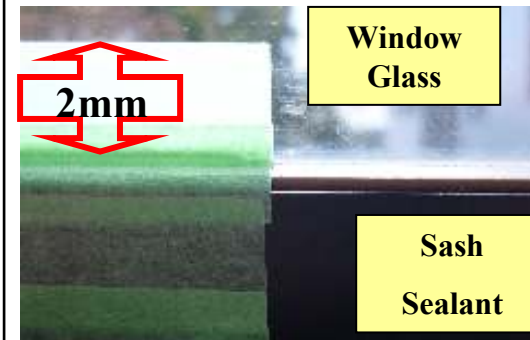
# ④Curing

Take curing measures to keep paint off other things besides the glass surface.

- Cure by covering the sash and sealant completely. Attach the tape to the window. Let it stick out **about 2mm**.
- If the window glass has a key or a lever, remove them or cure by vinyl mask.



## Cure surroundings



## Necessary Tool



# ⑤ Roller Coating

## The Coating Process

### <What to Check>

Calculate the amount of paint from the window glass size (area) and quantity.

Calculate the necessary amount beforehand for efficient application and little loss.

(e.g.) amount of paint per sheet of glass

$$\square\square\text{m}^2 \text{ (area)} \times \text{about } 20\text{ml/m}^2 \text{ (amount of paint)} = \star\star\text{ml (amount of paint per sheet of glass)}$$

$$\star\star\text{ml (amount of paint per sheet of glass)} \times \odot\odot \text{ (number of sheets)} = \blacktriangle\blacktriangle\text{ml (total amount of paint)}$$

\* Insufficient paint on the roller causes poor appearance (lines) or less heat insulation ability. Also, excess paint causes other troubles (sagging etc).

### <The Coating Process>

Coat 1 sheet of glass per time (coat → check finish → <fix> → next sheet)

#### ■ 1st sheet

※For the 1st coat, prepare ☆☆ml (amount to use) + about 10ml (to remain on the roller after application) on the roller

→ coat → check finish → <fix> → next sheet

#### ■ 2nd sheet~

From the 2nd sheet and on, prepare ☆☆ml (amount to use) on the roller

→ coat → check finish → <fix> → next sheet

Necessary Tools



Keep good ventilation during the coating process. Avoid application under bad ventilation.



# ⑤ Roller Coating

## Preparing to coat the window

〈How to Coat〉

① Prepare the Roller

- Use a roller that has a stopper. Stop the roller from rotating to paint.
- Put paint only on one side of the roller

② Prepare Paint

Use a sieve (aperture 20~40 μ m (about #400 mesh) to filter the paint.  
Filter as much as you need.

■ Recommended Roller <HM6S-EB (Ohtsuka Brush Mfg. Co., Ltd.)>

Can be bought in home centers and online.

Products with similar components and uses may be used as well.

Stick the roller to the end to stop it from rotating.



Paint type	For solvent based paint
Size	6inches
Hair length	12mm
Characteristics	Little bubbles and hair loss



Necessary Tools



Keep good ventilation during the coating process. Avoid application under bad ventilation. 15/20

# ⑤ Roller Coating

## Coating the window

〈How to Coat〉Order: **Spreading Process** → **Finishing Process**

While coating, press the roller to the glass surface with adequate pressure to keep the paint from leaking out.

The maximum area to paint in one go is about 1.5m<sup>2</sup>.

### ● Roller Movement

#### ① Spreading Process

Sideways (right to left, left to right) from top to bottom to coat the whole glass window.

※ Do not leave any area unpainted.

#### ② Finishing Process

From top to bottom in one go. Do not stop in the middle.

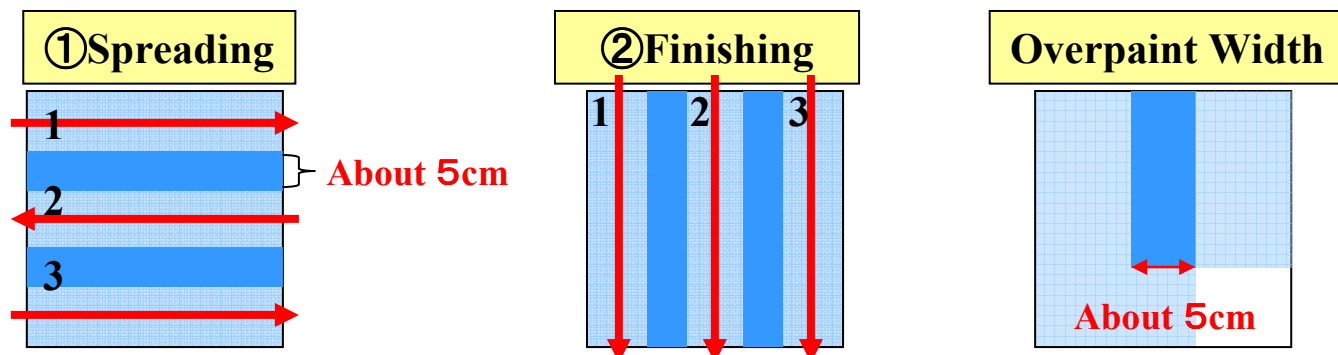
※ Stopping in the middle leaves unwanted patterns. It causes poor appearance.

### ● Overpaint width

Overpaint about 5cm

● Check the appearance immediately after finishing coating and fix defects if any.

● Change rollers if there is an interval of over 30 minutes (e.g. recess time).



Keep good ventilation during the coating process. Avoid application under bad ventilation. <sup>16/20</sup>

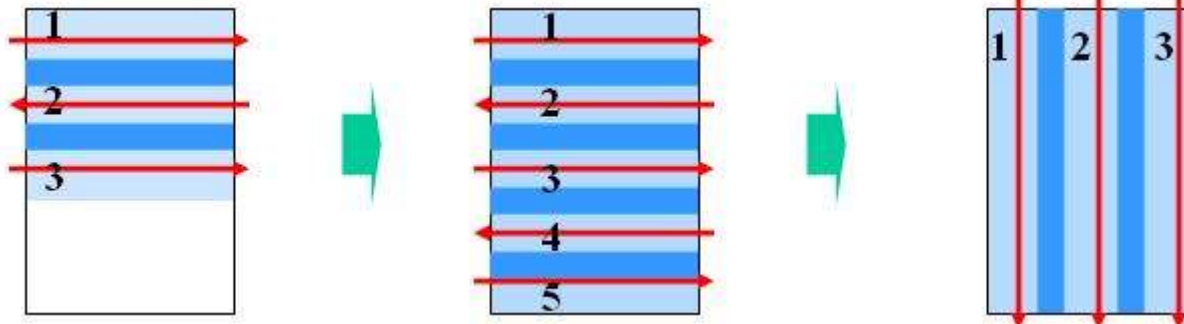


# ⑤ Roller Coating

(Example) Coating a large window (  $1.5\text{m}^2\sim$  )

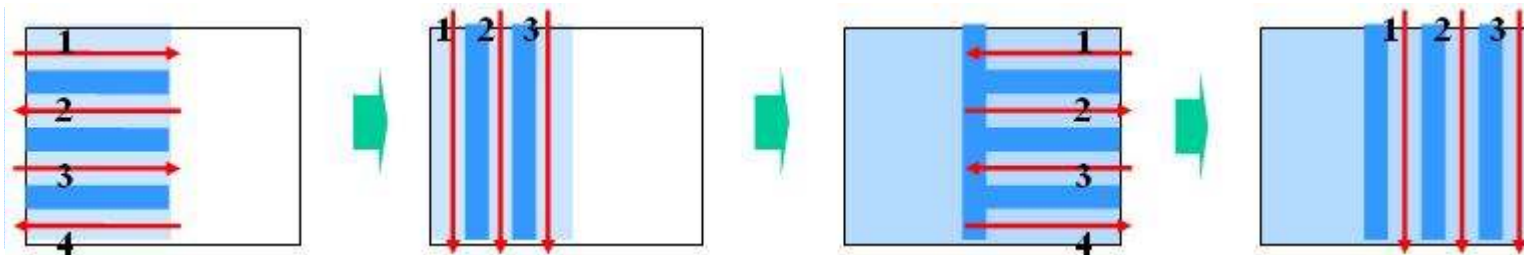
〈Example 1〉H2000mm × W1000mm (2m<sup>2</sup>)

Apply about 1/2 the required amount of paint to the roller, and paint about 1/2 ~ 2/3 of the window glass. Apply the remaining paint to the roller and resume the basic coating process.








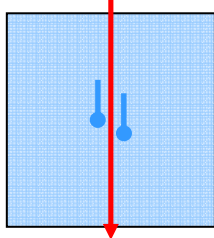
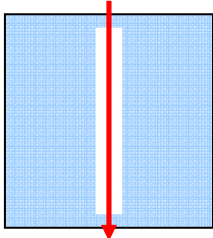
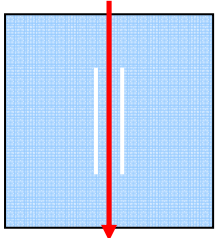
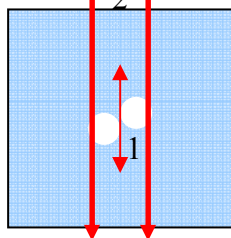
〈Example 2〉H 1500mm × W 2000mm (3m<sup>2</sup>)

Coat 1/2 surface each time or coat with 2 people.



# ⑥ Poor Appearance / How to Fix

## Check the finish of the coated surface.

	Sagging	Unpainted Areas	Lines	Repellence	Whitening
Defect					
Cause	Too much paint on the roller / Pressing the roller too hard	Bad overpaint width	Not enough paint on the roller High temperature	Dirty window	High humidity / Condensation on the surface / Leftover water after cleaning
How to Fix					
	Extend paint as in the finishing process	Put a small amount of paint (about 5ml) on the roller. Paint as in the finishing process for fixing defects.  If it is impossible to fix, remove the paint and start over from the cleaning process (use GLC thinner to remove paint).			<b>FIXING IMPOSSIBLE.</b> Remove paint and stop application.

# ⑦ Drying

Dry the coat if the finish is fine.

● After application, check the appearance. If there is no problem, remove the masking tape immediately.

\*Do not touch the painted surface during removal.

● The surface seems rather blue for a while immediately after application. About 1 hour later, the paint becomes a transparent membrane, set to touch.

\*The time required for drying differs depending on the season (temperature / humidity).

● Keep good ventilation for 2~3 hours after paint application.

● After application, do not touch the painted surface for 1 week.

(For precautions after application, refer to P20 Handling Windows After Application)

● **Immediately after application**



blurred blue



● **1 hour later**



transparent membrane

# Notice

## ~Handling Windows After Application~

### ●Precautions After Application

**The manager at site must inform the following precautions to the client.**

- Do not touch the painted surface for 1 week after application.

Be especially careful in opening and closing windows and blinds.

- Do not clean the window for 1 month after application.

Use a clean and damp cloth or soft sponge to clean the painted surface.

For intense cleaning, use a glass cleaner (neutral~weak alkaline).

Do not use detergents of strong acid, weak alkaline, abrasives (cleansers etc) or solvents.

- Do not put stickers, tapes etc on the painted surface.