

## Crystal Guard - Plus

Crystal Guard Plus, a liquid compound, is designed for surface treatment of float glass as well as other applications like tiles, ceramics, enamels, etc., and provides durable protection against environmental influences. One of the prime product properties is its protective coating feature which is due to the hydrophobic (waterrepellent) and oleophobe (grease repellency) action of a polymer film. This prevents the accumulation of dirt, thus significantly reducing the glass cleaning frequency.

Crystal Guard Plus further protects glass surfaces from aggressive conditions, which include acid rain, pollution and constant condensation. In different ways all three media have a severe deteriorating impact on the quality of the glass. Crystal Guard Plus protected glass helps prevent the risk of a chemical attack through these conditions. In particular, it provides effective and long lasting protection against glass blinding (leaching) due to condensation. This feature is significant since increasingly stringent thermal insulation requirements for buildings lead to increased condensation on the outside pane.

Crystal Guard Plus can easily be applied to previously cleaned glass both manually and mechanically. Once that process is completed, the excess material can be wiped off the treated surface. This is suitable for both new and already installed glass panes.

### Recommendations for Industrial Scale Application

These recommendations are exclusively for float glass applications. To ensure perfect quality of the protective Crystal Guard Plus coating the given steps should be followed:

- Precleaning
- Application of Crystal Guard Plus
- Cure Times
- Postcleaning

### Precleaning

Prior to applying Crystal Guard Plus the glass surface has to be thoroughly cleaned. Cleaning can be performed either in a standard washing machine (commonly used in the insulating glass line) or by hand.

When Crystal Guard Plus is applied to previously assembled insulating glass units, proper care should be taken to ensure complete cure of the seal. No sealant residue should remain on the surface to be coated. For optimum adhesion of Crystal Guard Plus the surface has to be free from impurities, particularly oil, grease and dust.

To ensure a completely clean surface we recommend the use of our residuefree, chemical cleaning agent Crystal Guard Pre-clean. It should be used with warm water at approx. 86 - 95°F (30 - 35°C) at a dilution of 4 g to 1 litre of water.

After cleaning, the glass surface should be free of visible water residues. A completely dry surface is not necessary. To prevent renewed contamination, Crystal Guard Plus should be applied immediately after cleaning the surface of the glass.

### Application of Crystal Guard Plus

Crystal Guard Plus can be applied either manually or mechanically. A homogenous liquid film should be generated on the glass surface

To make application easier it is recommended to use the FineCoat low-pressure spray guns Turbine 6000 S and 7000 from the company Wagner. The equipment has to be modified in order to allow a direct connection to the 500 ml containers. Please contact ACW concerning this equipment.

After application, the glass pane shows a uniform opaque coating.

### **Curing of Crystal Guard Plus**

In the curing process, the Crystal Guard Plus film undergoes a chemical reaction which is temperature dependent. The following curing times for different temperature ranges have to be followed before starting the postcleaning process:

- at a glass temperature of approx. 15 °C Crystal Guard Plus should react at least 55 to 65 minutes
- at a glass temperature of approx. 25 °C Crystal Guard Plus should react at least 20 to 25 minutes

If the curing time is too short the chemical bonding to the glass surface will not be complete and Crystal Guard Plus will not show its full effect. Too long curing leads to a visible polymer film which might spoil the visible aspect and which needs a special post-cleaning effort (see post-cleaning, break 3).

Be sure to meet the instructions given in the Material Safety Data Sheet.

If there are any further questions, particularly concerning automatic curing equipment, we will be glad to assist you.

### **Post-cleaning**

As a final step, the treated glass panes should be thoroughly cleaned with CG-Afterclean. For the cleaning process it is recommended to dilute 10 g Afterclean in 1 liter of warm water, at approx. 86-95°F (30 - 35°C). After cleaning the glass will be clear and protected with the Crystal Guard Plus film.

If the post-cleaning was not carried out thoroughly, surplus material, in the form of a greasy film, can still remain after the drying of the surface. We recommend to immediately repeat the post-cleaning in this case. If waiting too long, Crystal Guard Plus residues might polymerize in such a way that the cleaning efforts increase. We would then recommend for a polishing step with a cotton cloth or the use of 3% acetic acid.

If the reaction time is exceeded clearly by the Crystal Guard Plus, also here a more intense post-cleaning might be necessary. We recommend the post-cleaning in combination with a white pad. If the hydrophobicity should decrease due to the stronger cleaning efforts, the coating can be refreshed with the Crystal Guard Refresher.

Permanence towards cleaners

The coating is constant towards almost all standard cleaners. We recommend the use of neutral cleaners.

### **Handling**

Crystal Guard Plus is classified and labelled in accordance with EC directives or respective national laws as "highly flammable", "harmful" and "dangerous for the environment". When applying Crystal Guard Plus we recommend the use of suitable gloves. Provide sufficient air exchange and/or exhaust in work rooms. Do not breathe vapour. Do not breathe spray.

For more safety information please see our Material Safety Data Sheet.

### **Storage**

Stored in well closed containers at temperatures between 5 and 40 °C the minimum shelf life of Crystal Guard Plus is:

500 ml and 10 l container: 6 months

After opening a container, the content has to be used within 24 hours.

**Crystal Guard Plus is available as:**

500 ml container (Aluminium bottle)

10 l container (Aluminium bottle)

01/2004 Dr.Hue/Dr.E/trad. Dr.Em

Crystal Guard ® Plus is a registered trade mark of Chemetall

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