

Insulating Glass Unit Maintenance

General Principles.

The fundamental principles underlying the correct glazing of well made insulating units in order to achieve a long service life are: -

- Prevention of prolonged contact to moisture with the edge seal of the unit.
- Compatibility between the edge seal of the units, the glazing materials and if applicable, coatings on the glass.
- Protection of the edge seal of the unit against sunlight.
- Quality of workmanship.

It is important to realise that insulating glass units are fundamentally different from most single glasses, in that they have an organic seal. However well they are glazed, insulating glass units cannot be expected to have the same life expectancy as single glass.

Moisture Attack

The major enemy of insulating glass units is liquid water. If liquid water is trapped against the edge seal of a unit for a long period. Failure of the adhesive bond of the sealant to the glass will result. This will allow liquid water and / or moisture to pass between the edge sealant and the glass, which leads to excessive moisture vapour in the unit cavity and ultimately to condensation on the internal glass surface.

Under prolonged contact with liquid water, the insulating glass unit will fail prematurely. Even if failure of the adhesive bond of the sealant does not occur, the presence of liquid water in the glazing rebate will lead to premature failure of an insulating glass unit.

Water in the form of moisture vapour is able to permeate through the edge sealant into the insulating glass unit cavity. The rate of permeation of moisture vapour is dependant on the properties the edge sealant and on the concentration of moisture vapour. However low the rate of moisture vapour permeation, it is inevitable that, after a period of time, excess moisture in the insulating glass unit cavity will occur and condensation on the internal glass surface will result. Moisture can penetrate to the frame rebate area, either through or around the glazing system, or through frame joints into the glazing system, from a variety of sources such as: -

- Rainwater
- Window Cleaning Operation
- Condensation with Frame Sections
- Condensation on the room side or outside glass surfaces.

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WE RECOMMEND THAT IN ALL INSTANCES GLASS COMPLIES WITH BS 6262 - 1982

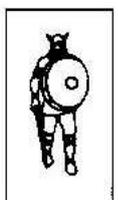
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All glazing systems must protect the edge seal of the insulating glass unit, either by preventing access of water to the seal, or by ensuring that any water which penetrates as far as the edge seal is soon removed by drainage / ventilation of the rebate area.

Glazing Workmanship.

Site facilities and conditions and the skills of operators can vary considerably. Supervision is difficult and as a result the quality of workmanship may vary widely and with it the durability and reliability of the system. The workmanship for on site glazing must conform to BS 8000 Part 7 and to Glass and Glazing Federation Data Sheet 4.2. Compared with site glazing, factory glazing has the advantages of being easy to control the quality of workmanship and of being carried out in a clean, dry atmosphere without problems of access to frames. Glazing contractors should be properly trained and conversant with good glazing practice.

Unit Handling and Storage.

All insulating glass units must be handled with care. Insulating glass units should be checked on arrival and that they conform to specification.

If the insulating glass units are found to be wet, they must be dried.

All insulating glass units must be stored inside away from sunlight (if stored outside, under an opaque cover and not under transparent sheeting) to avoid thermal stress. All insulated glass units must be stored on their edge, in dry conditions, with adequate support to prevent distortion or bowing.

Suitably soft surface supporting blocks should be used to prevent edge damage.

Insulating glass units, which absorb a considerable amount of heat (solar control units), are particularly vulnerable in service if the edge is damaged.

Maintenance.

Materials used in insulating glass units have been tested during their manufacture and after completion of the insulated glass unit and have been selected for their suitability in respect of long term, relatively maintenance free service life.

However, inspections should be carried out after approximately one year and periodically thereafter as deterioration could take place as a result of incorrect application, vandalism or damage caused by birds.

Where gaskets have been displaced or damaged allowing liquid water to enter the rebate, a competent person with correct materials should repair them.

Inspections should be carried out to check that the drainage holes or slots have not become blocked with debris. It is advisable to examine the effectiveness of the seal of the exposed frame joints, which may determine the weather-tightness of the rebates.

Failure to make the frames watertight may lead to excessive movement occurring due not only to swelling and shrinkage of the components but also to distortion. This will then cause excessive movement and stress in the glazing components, which may well exceed their movement capability resulting in failure of the glazing system, putting the insulating glass unit at much greater risk of premature failure.

Washing of Insulated Glass Units Using Uncoated Glass.

Glass needs to be periodically washed to remove visible dirt and to prevent accumulations of dirt from bonding to or attacking the surface. ***Glass should be cleaned as frequently as is needed to keep its appearance acceptable.***

In some locations, and for some building owners, this cleaning will be more frequent than for others.

Glass is very durable when exposed to normal atmospheric conditions, but alkaline solutions, and some acids, can damage it. Cleaning materials from other parts of a building or leaching and efflorescence from concrete, bricks and mortar, and run-off from oxidising steel, can be particularly harmful. For this reason it is important to prevent any visible accumulation of deposits from remaining on the glass surface where they can slowly attack it.

Some deposits may not be directly harmful in themselves but by retaining moisture they can cause glass staining and etching. Other deposits may cause damage indirectly simply by being so firmly attached to the glass that it is damaged by the overly aggressive cleaning actions needed to remove the deposits.

When cleaning glass, note that there is usually a layer of abrasive dust resting lightly on the surface. The abrasiveness of this dust can easily scratch the glass if too much pressure is applied with too little cleaning solution. Proprietary window cleaning liquids, or dishwashing liquid detergents, in low concentrations (10 to 15 drops per 3 to 4 gallons) can be used as cleaning solutions.

Dried paint splashes on glass can be removed with paint solvents, followed by detergents and water washing, taking care that the solvents do not damage glazing materials and the frame. Careful use of the flat edge, not the corner, of

a new safety razor blade can be used to remove paint drops from plain, non-coated annealed glass. Razor blades or any metallic scraper should not be used on heat strengthened or fully tempered glass as fine scratches, which are only visible in full sunlight, can be created.

Recommended Procedure for Manually Cleaning Uncoated Glass:

Commence cleaning as soon as the glass is visibly dirty.

Avoid cleaning heat absorbing tinted glasses in direct sunlight, as the glass will be excessively hot for optimum cleaning.

Flood the surface with water or cleaning solution to remove loose dust and grit.

Hand wipe with clean wet cloths, using an approved detergent solution, until the glass is visibly clean.

Rinse with clean water.

Dry immediately with a clean lint-free cloth or squeegee. Do not allow metal squeegee holders to touch the glass surface.

Washing of Insulated Glass Units Using External Coated Glass (Activ or Bioclean)

Once all work is completed, rinse the glass well with water as soon as possible to remove all traces of dust, abrasives, etc.

Rinse with clean water* to activate the coating after any prolonged dry spell. Any moisture remaining will soon evaporate to leave surface clean.

Avoid using a squeegee or any other metallic tools to clean the glass coating as this will damage the coating and the self-cleaning properties of the system will not work. Do not use any proprietary items containing silicone, as this substance will hinder the self-cleaning properties of the coating.

*If the water quality is very hard (greater than 180ppm combined content of calcium carbonate CaCO_3 and magnesium carbonate MgCO_3 , rinsing water should be softened with a domestic water softener or by adding a couple of drops of detergent (such as dishwashing detergent) to a litre of water.

The information contained in this document is offered for assistance in the application flat glass products, but **IT DOES NOT CONSTITUTE A WARRANTY OR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.** Actual performance may vary in particular applications.