GLASS WASHING

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Understanding Glass Washing

To understand the importance of glass washing is to be fully aware of its consequences. From investigations of IG failures and customer quality audits, TruSeal Technologies (a division of Quanex Building Products) has found an association between detergent residues on improperly cleaned glass and IG failure. According to its document* no sealant will adhere to a detergent-contaminated surface, especially if the bonding is in contact with water. One way to reduce the risk of this detergent contamination is to use as little as possible or no detergent at all.

Contamination

Contamination can occur when detergent water is blown off the surface from the air knives of the glass washing machine. What remains after the water evaporates is a film of contaminant. Often it is not visible and sometimes not even under bright lights. The only way to prevent detergent contamination is with clean rinse water. Two-stage rinse cycles are widely used, where a rinsing with clean circulated water follows the glass washing. It is emphasized that as long as rinse systems are functioning properly, glass contamination, for all practical purposes will not happen. When there is a problem, it is either caused by a malfunction of the equipment or it has not been used properly.

Testing for Clean Water

Testing the water for cleanliness and possible detergent contamination is recommended and it can be done one of two ways: by using a finger to agitate water or taking a sample and shaking it. The bubbles or froth that appears, using either method, should disappear immediately, as long as the water is clear. Any signs of haze, milkiness or froth is an indication of high levels of contamination and the tank should be drained at once, thoroughly cleaned and refilled with fresh water.

** See TruSeal's technical bulletin G001 and PPG's technical bulletin TD-144 at www.fenzi-na.com Technical/IG Resources .*

Four simple tests can be used to determine a level of cleanliness: visual; a fog test; a rinse and froth test; and a contact angle test. (Details can be found in TruSeal's technical bulletin.)

PPG* offers the following on the use of detergents . A key part of providing optimum cleanliness is routine maintenance, including these three procedures for the pre-wash system:

1. Change filter cartridges on detergent solution and high pressure lines, whenever exhausted.
2. Clean or replace blocked or corroded nozzles on an occasional basis.
3. Drain holding tanks and rinse at least every 24 hours with a pre-wash system that makes use of re-circulating high pressure rinse water. (Details of a daily, weekly and monthly maintenance plan for a main line washer are included in its technical document (TD-144) which appears on the Fenzi website.

Although recommended, a detergent is not necessary in all washer systems. However, the most effective way to remove surface residues is with a detergent solution, rather than plain water. Any chance of scratching the surface is also reduced by using a detergent in the wash system.

A detergent will change the pH (acidity or alkalinity) of the water used in the wash section of glass washers. To achieve the best glass cleaning , use detergents that maintain a wash solution pH that is slightly acidic. Note: Although acidic detergents are more readily rinsed from glass surfaces, they may cause etching of some metal components. With detergents that have a pH of 11 or higher, is the possibility of scale and deposits in the washer and on the glass. Warm water does dissolve detergents more readily and the recommended temperature range for wash water in various washer equipment is between 100° and 140° F (38° and 60° C). The water quality of the rinse section is most important because it is the last liquid to come in contact with the glass before final processing.

There is no universally effective glass cleaning detergent because of the variables in water hardness or temperature. Here are questions to be asked when selecting a suitable detergent:

- Will the detergent foam excessively in the washer? (Refer to the document for an easy method to screen detergents)
- If a small glass sample is hand-washed with a one-percent detergent solution, is excessive rinsing needed to remove all traces of the detergent?
- Does the chemical composition of the detergent comply with local environmental requirements and does the discharge comply with local, state and federal EPA requirements.
- Will it be necessary to wear protective equipment?

Low-E Coated Glass

With the increased use of low-E coated glass, fabricators are cleaning their glass without using detergents.

One of the products for cleaning glass that PPG has evaluated and found to be acceptable is not a detergent.

I.G.W. concentrate, made by Effective Industrial Solutions, Inc. is not soap. It contains a chelating agent (molecules that have the ability to form more than one bond to a metal ion, as defined by wiseGeek.) that thoroughly cleans the glass but without leaving a residue, which is characteristic of soap and detergents and the reason why polysulphide and PIB's (polyisobutylene) lose their seal. Industry experts have referred to it as "the best cleaning product" used in the IG industry for cleaning glass, including hard and soft low-E glass.

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FENZI NORTH AMERICA

With a fifteen-year track record, I.G.W. offers these features and benefits:

- A waterborne cleaner that is non-toxic to people and the environment.
- A highly concentrated and effective dilution at 55:1.
- A biodegradable product. It is easily broken down.
- A no-VOC (volatile organic compounds) material that is non-corrosive, or no damage to cleaned glass surfaces or equipment.
- A low-foam product which means less mess around the tank. It removes wax, oil and grease.
- An anti-static formula which helps reduce static in the air knives of the washer.
- A clear solution. There are no dyes to leave stains.
- A non-flammable, non- combustible material.

I.G.W. concentrate, *which is not a soap*, contains a chelating agent. Recommended for hard and soft low-E glass, it is available in five-gallon pails.