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Handling Guide



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Description

AquaVue® is a two-component water-based silicone acrylic hybrid coating designed for use as a colored coating on glass for interior and furniture application. The product is totally lead free and environmentally safe. After the application to the glass the applied coating cures to a tack-free hard film which has excellent adhesion and chemical rating.

Purpose

AquaVue® is designed to adhere to a variety of glass substrates. The product forms a hard, durable coating and is resistant to cleaning chemicals.

Application Equipment

Roll Coater

Roll Specifications

Reverse rotation with 40 grooves per inch will apply six (6) mils.

Coating Thickness: 101.6 to 152µm (4-6 mils).

Less thickness affects the product's durability.

Lighter colors may require a second coat for total opacification. It is the responsibility of the applicator to determine the need for a second coat.

Contact the machinery manufacturer to make sure that the cleaning material is compatible with the roll.

Spray

Coating Thickness: Spray: 4-6 mils (101.6 to 152 µm)

Less thickness affects the product's durability.

Lighter colors may require thicker coatings for total opacification.

General Material Handling

Aeration

Aeration of AquaVue® can occur with excessive agitation at or near the surface of a container. A moderate spinning dispersing blade near the bottom of the liquid in the container (~1 inch above the bottom of the pail) produces the best results with the least likelihood of introducing air. Excessive air entrapment may be removed by long term slow agitation. Depending on the amount of air entrapped, mixing may exceed one (1) hour.

Adhesion Promoter

AquaVue® coating requires the use of an adhesion promoter additive (KV-630).

The additive is included with each shipment. The use level for the additive is 1% by weight of coating.

Calculate 1% of this weight (1/100 by weight). For example: 100 pounds (lbs.) of liquid coating will require 1 pound (lb) of adhesion promoter; or 100 grams of liquid coating will require 1 gram of adhesion promoter.

Once the additive is introduced into the coating, it must be thoroughly mixed. Frequently scrape sides of container to ensure thorough additive incorporation. After pouring the adhesion promoter into the coating, there should be a 10-15 minute mix time before application.

Reduction

Water can be used to reduce AquaVue® base material for spray applications. Once AquaVue® is activated with the KV-630 additive, add water to reduce viscosity. Typical amount of reduction is 5-10% water by weight of base material. While the activated AquaVue® base is mixing, slowly add the water. Mix an additional 5 minutes prior to application.

Jobsite Protection of Coated Glass

Once architectural glass products have arrived on the job site, proper storage methods can help to ensure protection from damage caused by prolonged exposure to moisture, construction site dust and debris, caustic chemicals, and exposure to other construction chemicals and activities. Improper storage and handling can lead to damage of any architectural glass product. As well, failure to follow these instructions may void an ICD Warranty on the project.

Refer to the National Glass Association (NGA) Glass Technical Paper (FB03-03).
Open Storage: Over wrap with water-proof material.
Cased Goods: Line case with APPROVED barrier material

Material Coverage

Thickness:	152 μm (6 mils) wet film thickness
Square meters:	6.5 m^2/liter
Square feet:	70.5 ft^2/liter

Mixing Equipment Recommendation



Production Mixer



Air Mixer

A paint mixing (stir) stick will not accomplish a fine dispersion. Poor mixing of the material can result in color variances and potential poor coating because of the lack of adequate applied silicone and may lead to poor adhesion and future separation from the glass.

Blending should be done so as not to introduce air.

Overrun (Excess)

Any overcoat or excess should not be allowed to reach the reverse side of the glass being coated or, for that matter, any other glass. Excess must be removed before cure. If excess remains, extreme methods are required for removal. It may be impossible to remove. Please contact ICD office for further details.

Pot Life

Eight (8) hours once adhesion promoter has been added to base material.

Once mixed, the material can be used for up to 8 hours (while in a sealed container). Keep excess activated material in a tightly sealed container until ready to use. Also, keep all inactivated base material and additive tightly sealed when not in use. Both the base and the additive are moisture reactive.

Physical Properties

AquaVue® will attain maximum physical properties (full cure) in 3 to 4 days.

Repainting & Repairing AquaVue® Coating

Instructions to repair minor scratches at glass fabrication facility prior to shipping coated glass product to construction site:

1. Use of clean water and detergent
2. Thoroughly clean all dust residues from cured AquaVue® coating
3. Wash cured coating and rinse well
4. Allow coating to dry
5. Apply AquaVue® directly to prepared surface
6. Ambient cure

Safety

The uncured, liquid ink can cause eye irritation. Skin and eye contact should be avoided. In case of eye contact, flush eyes with water for at least 15 minutes and obtain medical attention. For skin contact, flush affected areas with water as soon as practical.

Shelf Life

Shelf life is twelve (12) months from date of shipment. Storage conditions can affect shelf life. Please contact ICD for information. Shelf life may be extended by storage in a cool environment.

Sealants and Adhesives

ICD performs compatibility tests on many sealants and adhesives. Each individual material is applied, cured, and tested with ICD products. These products are tested individually and not in conjunction with multiple sealants as the resulting test combinations would be endless. It is then important to consult each sealant manufacturer for compatibility information between sealants and other materials.

Storage & Reuse

Storage temperature should be at room temperature. Always ensure coating is kept between 1-24°C (34-74°F). Higher temperatures may be detrimental to product stability. Excess heat may accelerate chemical reactions.

Always keep lids securely fastened on buckets.

Vision Glass

AquaVue® is NOT recommended for vision glass or installation in vision areas.

Color

Batch Variations

ICD maintains rigid color matching specifications with AquaVue®. In any color matching program, there is the possibility of slight batch to batch variations in color. ICD recommends utilizing the same color batch on one project.

Color Matching on Proper Glass

When seeking exact color matches (particularly with light colors) specify exactly or send a sample of the glass on which AquaVue® will be used.

Remember also that glass will vary between manufacturers, and even between float plants it will sometimes not be the same (see below).

Dark and Light Colors

Extreme care should be taken when using darker colors and then lighter colors. The equipment should be thoroughly cleaned, especially when changing from a dark color to a light color.

Excellent Resistance

All the pigments used in AquaVue® are rated excellent in color retention.

Glass Color Variations between Float Glass Manufacturers

Glass color variations from different float glass producers are common. This variation of color is related to the different raw materials utilized in the manufacture of glass. The variations of color, specifically the greenish tint in clear float, can cause color differences. Variations in tinted float glass can cause significant color and shading differences. NEVER inter-mix glass types, colors, manufacturers on the same job.

Glass Substrate Color Matching

For proper matching of colors, the larger the sample of the color to be matched, the better the match will be by ICD. ICD must receive several samples of the glass on which the AquaVue® will be used or very exact specification of the glass that is going to be used. As well, any standard paint fan deck may be used, and that specific number conveyed to ICD for exact matching.

Light Colors

The lighter colors require a consistent, even coating so that there is consistent shading throughout.

The lighter colors may also need a thicker coating, depending on the opacity required.

Mismatches from Differing Application Methods

In the case of light colors, mismatching may occur if part of the job is applied with a roll coater and part is sprayed. If possible, it is always best to run the whole job using one application method.

Differing cures may also, with light colors, have detectable differences in the coating.

As with all things regarding color, consistency in all aspects of the job is preferred.

Samples

ICD will provide 100mm x 150mm (4" x 6") color matched samples for customer approval free of charge. Contact ICD for information on larger or additional sample requirements.

Charges for Samples

For standard sample requests (above), ICD does not charge for the color match or the sample.

However, under certain circumstances, charges for color matching and samples may be applied.

ICD does charge for air freight delivery.

Contact ICD to inquire about ordering color matches and samples.

Primary Colors

ATJ-40-149 Primary White	ATJ-46-660 Primary Light Blue
ATJ-41-019 Primary Black	ATJ-47-732 Primary Yellow Oxide
ATJ-42-048 Primary Phthalo Green	ATJ-47-733 Primary Yellow
ATJ-42-034 Primary Light Green	ATJ-47-734 Primary Light Yellow
ATJ-49-418 Primary Violet	ATJ-45-546 Primary Red
ATJ-45-547 Primary Red Oxide	ATJ-46-670 Primary Phthalo Blue
ATJ-48-010 Primary Orange	

AquaVue® for Spray

The base spray material must be stirred thoroughly for 15 minutes with good agitation prior to addition. The use level for the adhesion promoter additive is 1% by weight.

Calculate 1% of base material weight (1/100 by weight). For example, for 100 grams of base material you would use 1 gram of adhesion promoter.

If reduction of the coating is needed (reducing viscosity for better spray application), water can be added. While the AquaVue® base material and adhesion promoter are mixing, calculate 5% of base material weight (5/100). For example, for 100 grams of base material you would use 5 grams of water.

Add water to the activated AquaVue® base material. This is the starting amount of water to use. Mix for an additional 5 minutes.

An additional 5% water can be added for spray applications, if further reduction is needed, up to a maximum of 10% total.

Surface Preparation

A glass washing machine is recommended.

Surface preparation is required for successful use of AquaVue®. A good grade of detergent must be used so that proper adhesion will be assured. All foreign contamination must be removed from the glass surface before application of AquaVue®. Adhesion failure may occur where contamination is not removed.

Always clean and inspect glass just prior to the application of AquaVue®.

Hand washing, alone, is not a recommended method of surface preparation.

ICD recommends and endorses the following Vitro®'s "Recommended Techniques for Washing Glass" (TD-144).

Water temperatures should range from 100°F to 140°F to ensure solubility of detergents.

Once clean, handle glass with care. Even skin oils can lead to a lack of coating adhesion.

ALWAYS wear clean cotton gloves when handling clean glass.

Curing

Ambient Cure (Room Temperature Cure)

Curing in room temperature 20°C (70°F)/50% RH (Relative Humidity), requires minimum 8-12 hours and then coated glass can be carefully handled.

Allow 1-2 days before installation. Coating will reach maximum adhesion and physical properties within 3-4 days.

IR Cure

IR Oven: 3 to 6 minutes 300-325°F (149-163°C) glass temperature. Coating should be allowed to pre-flash before exposure to cure temperatures above 212°F (100°C). The amount of pre-flash time needed is variable upon conditions but should not require more than 20 minutes.

Adhesion Testing

Supplies:

- Coated glass sample, cured to proper temperature
- MEK
- Soft Cloth

Procedure:

1. Wet cloth with MEK
2. With cloth over finger rub one direction about 5cm (2 inches)
3. Repeat motion in the other direction
4. One back and forth motion is equal to one double rub
5. Repeat process 50 times or until the coating rubs off glass substrate
6. After 50 rubs, rewet the cloth with more MEK
7. Repeat process for 50 more double rubs or until coating rubs off glass
8. Rewet cloth with more MEK

9. Continue rubbing until 200 double rubs have been achieved or until coating rubs off glass (whichever occurs first).
10. If, after 200 double rubs, the coating is still adhered to the glass, you have a pass and cure has been obtained.
11. If adhesion failed in less than 200 rubs, you have not reached sufficient cure.

Shipping and Handling

Stacking

Do not stack until fully tested (24 hours).

Stack only with poly foam separators.

Shipping

For shipping, the substrates should be so packed that there will be no opportunity for abrasion of the AquaVue® by any rough or sharp objects.

Best packaging is 3mm (1/8") poly foam interleaved.

Paper interleaving should be approved by ICD.

No acidic material should be used for packing.

No materials with hydrocarbon base solvents should be used.

Crates should be lined with polyethylene.

Contact ICD with any further questions about shipping and handling.

Compatibility

Certain products such as neoprene or nitrite and some sealants and insulating materials may contain certain chemicals which react adversely when placed next to or on cured AquaVue®. All products used should be tested and approved by ICD.

Clean-up

Cleaning of the equipment can be accomplished using warm water and detergent. Application equipment should be cleaned immediately after use. Contact the machinery manufacturer to make sure that the cleaning material is compatible with the equipment.

Roll Coater Application Equipment

Reverse rotation with 40 grooves per inch will apply six (6) mils.

Roll Coater - The Process

Inspect Rolls

Carefully inspect rolls for debris and dust. Clean as required prior to beginning the process.

Inspect Coating

Always inspect coating in the rolls frequently.

Process

After proper blending and mixing of AquaVue®, place tape along the stainless-steel doctor roll. This helps identify fill levels as well as protecting the roll from cured material deposits. Start machine.

Pour a single line of coating into the rolls, pouring into the outer edge of the rolls first and then into the center. Material will naturally work to the center of the rolls.

Run a couple of glass samples through the coating line and check the coating for wet film thickness, coating quality, pin holes, and debris, etc. before beginning the project fabrication.

Quality & Wet Mil Thickness

Always inspect each substrate for coating quality and film thickness using a wet mil gauge.

Wet Mil Thickness Verification

Adjust the rolls, as per equipment manufacturers' specs or until the coating is checked and meets 152µm (6 mils).

Warning

WARNING; before working on the coating and doctor rolls, make sure that the power to the machine is OFF and cannot be turned on accidentally.

Spray Application Equipment

Air-assisted airless spray equipment is required for application on larger glass pieces. Please contact ICD to discuss application equipment needs.

Technical Services

ICD has experienced staff available for technical consultation. Unless special considerations are agreed upon, all technical support for AquaVue® is provided by way of remote communication (phone, email, video conference, etc.).

AquaVue® is not currently a product for which certification is required. Any requested site visits or field investigations may be permitted (if deemed necessary by ICD), but all expenses incurred by ICD will be billed to the requesting party.

Warranty

AquaVue® Limited Warranty

Warranties: All warranties for AquaVue® are dependent and contingent upon strict adherence to the methods, etc., laid out herein; so IT IS ABSOLUTELY IMPERATIVE THAT THIS GUIDE BE FOLLOWED EXPLICITLY.

Industrial Control Development, Inc. (ICD), Ridgefield, Washington, USA warrants only:

1. AquaVue® is an **Interior Only** application, to be used in non-exterior exposed surfaces (i.e. building facades are **not** an approved application).
2. That AquaVue® will meet ICD's sales and technical specifications which are in effect on the date those goods are manufactured; reserving the right, without prior notice, to change any such sales or technical specifications and other descriptive material, as the goods are altered or improved;
3. That AquaVue® will not flake, peel, chip, blister, develop any noticeable color change (>2 DE), and not to exceed more than a 20% change in gloss for a period of ten (10) years from the date of manufacture, when used, installed, and applied in accordance with the following terms and conditions:
 - a. That the finished product has not been damaged from mishandling, misuse, abuse, or purposeful neglect before, during or after application or installation of the goods.
 - b. That ICD will convey good title to the goods, and;
 - c. That the goods will be delivered free from any lawful security interest, lien, or encumbrance unknown to the original purchaser.

The above warranties are made in lieu of all other written or unwritten, express understanding that there is no implied warranty of merchantability and that there is no implied warranty of fitness for a particular purpose of the goods sold. Original purchaser acknowledges that it is not relying on ICD's skill or judgment to select or furnish goods suitable for any particular purpose and that no other representations were made to it or relied upon by it with respect to the quality and function of the goods.