



Paint Evaluation and Testing – No VOC paints

Criteria

Paint performance was assessed by practical evaluation and by a third party testing facility.

Practical evaluations were done using roller and/or brush and used actual wall areas or drywall as the substrates. The drywall was primed or pre-painted. Paint was applied according to the directions on the can, allowing appropriate dry time between first and second coats.

Laboratory testing was done using standardized test methods based on industry standard test methods for interior paint (MPI and ASTM test methods).

Additional laboratory tests were carried out to measure paint VOC.

Methodology

Practical evaluations were done on large pre-painted wall areas or on sections of drywall. For drywall boards, a grey and a black stripe were first painted on the board to aid assessment of hide. The first coat of paint was applied to the whole board and allowed to dry - typically for 2-3 hours at room temperature. The second coat of paint was then applied and allowed to dry. The quality of finish was assessed after 2-3 hours dry for smoothness, evenness of sheen and for hide. Practical evaluations were carried out at ICI laboratories and also at a Third Party Test Laboratory (all products sold into The Home Depot must be tested by this third party testing facility).

A number of paint property tests were carried out at both laboratories (ICI and Third Party) to assess product quality. White paints were sent for testing to the Third Party Test Laboratory under test numbers so that the actual product names were not known by that laboratory.

Some of the tests that were carried out:

- Tests were carried out on paints applied to test substrates at a specified wet film thickness. Paints were allowed to dry overnight for measurement of contrast ratio (instrumental hide) and reflectance (whiteness) using a spectrophotometer.
- Viscosity (thickness) measurements were carried out at room temperature and after oven ageing to assess paint stability on shelf.
- Paint films were allowed to dry for a week before testing for scrub resistance and washability. Typically, MPI tests require a four-week dry time for these tests – seven days dry is a minimum to allow the paint film to cure.
- Paint VOC was calculated based on the values determined for the total non-volatile (ASTM D-2369), the weight/gallon (using Parr densitometer) and the weight percent of individual volatile organic compounds (ASTM D-6886).
- Odor was assessed by painting actual wall areas or drywall.

Results

Practical application tests were carried out on a large selection of colored (tinted with color) Freshaire paints and also on pure white (Freshaire Base 1). Each color was tinted using a Freshaire No VOC colorant pouch and shaken for four minutes to mix the color.

All Freshaire colors gave complete hide over dark colors in two coats when applied on large wall areas.

Freshaire Pure White Flat was evaluated using primed drywall as the substrate with grey and black stripes to check hide. Benjamin Moore Aura Flat was tested at the same time. Both paints were applied using a 3/8" nap roller. The first coat of each paint was applied and allowed to dry for 2-3 hours before the second coat application. Both paints applied well. The Aura had only a slight advantage in hide after two coats and it is a slightly greyed white compared to the pure white Freshaire. Slight greyness typically increases hide but this is done at the expense of whiteness.

Freshaire Pure White was compared to Aura white at the Third Party Test Laboratory in May 2007. The paints were judged **comparable** for hide after two coats. Freshaire was **superior** for touch up and sheen uniformity.

Freshaire and Aura were tested in Flat and mid- sheens at the third party testing laboratory for scrub resistance and washability. Paints were applied at constant film thickness to a black test panel and allowed to dry for seven days before testing. The scrub test is done using a machine, which holds the test panels and moves an abrasive scrubbing pad up and down the test panels in repeat cycles. The test is continued until the black test substrate is visible through the test paint film.

The results were as follows:

Freshaire Flat	1143 scrub cycles to failure
Aura Flat	1106 cycles
Freshaire eggshell	>2500 cycles
Aura satin	1072 cycles

Freshaire outperformed Aura on this durability test.

Freshaire and Aura were tested in the same sheens for washability. This test evaluated ease of removal of four different stains applied to the paint films after seven days dry. The stains were pencil, crayon, lipstick and washable marker.

The results were as follows (max score 40):

Freshaire Flat	25
Aura Flat	29
Freshaire eggshell	34
Aura satin	31

Both paints had good washability: Freshaire was better in mid-sheen and Aura was slightly better in Flat.

VOC was measured instrumentally using ASTM test methods.

The results were:

Freshaire Flat	2g/L
Aura Flat	81.3 g/L

Freshaire is a No VOC paint (definition of No VOC is less than 5g/L of VOC). Freshaire VOC does not increase on tinting.

Aura is not a No VOC paint nor is it considered a low VOC paint. It will not be compliant for the new California SCAQMD VOC rules effective from July 1, 2008, which require less than 50 g/L of VOC for low VOC Flats. We have not been able to buy tinted Aura paint to measure VOC.

Odor was assessed for Freshaire Flat and Aura Matte during application to drywall. No odor was detected when applying Freshaire but once the Aura was opened a sharp paint odor was detected.

Conclusions

We have not been able to buy Mythic paint to evaluate performance. We have evaluated Freshaire white and Aura white paints. We also tested Freshaire colors.

We agree that Freshaire has no odor – Aura by comparison has definite paint odor.

Our VOC measurements show that, unlike Freshaire, Aura Matte contains significant levels of VOC and is not a low VOC Flat as defined by the July 2008 SCAQMD VOC rules (less than 50 g/L VOC).

Our results indicate that Aura Matte is slightly better than Freshaire Flat for applied hide in white. Both paints gave nearly complete hide over a black stripe in two coats. Aura white is slightly toned to improve hide. We did not find any sticking or sliding during roller application of Freshaire.

Freshaire colors gave complete hide in two coats over dark colors.

Test results from the third party testing laboratory show that Freshaire is better than Aura for durability as measured by scrub resistance in both sheens.

Freshaire was similar to Aura for washability – Freshaire eggshell was better than Aura satin and Aura was better than Freshaire in Flat/Matte.

Interior paint finishes are not normally assessed for durability using sandpaper. This is a test used for primers.