Zinc Oxide: Warnings, Cautions, and Best Practices

By Sarah Sands

The use of Zinc Oxide in oils has been the focus of a lot of attention lately, especially around its potential to cause an increased rate and degree of embrittlement, cracking, and cleavage of oil paint films. Passionate positions have been staked out on all sides, while various studies have been cited and poured over, seeking confirmation that either all is about to crumble and crack or that the concerns are overblown and mistaken. But of course, there is also a more measured middle path through this sometimes-pitched battle – namely watchful and careful study, erring on the side of caution whenever possible, and most importantly, keeping everything in perspective and not overreacting.

In the pages that follow we will cover our own history and involvement with these issues and share the steps we are taking going forward. We describe the overall concerns with Zinc Oxide, which can be traced back to shortly after its introduction over 150 years ago, as well as some of the reasons why its use has persisted to the present day. We also present best practices for its use and answer some of the most frequent questions. Finally, we touch briefly on some of the past and current research involved in understanding of the role of Zinc White in oil paints. Sarah provides one of the most complete reviews for artists in the complex use of this historic color. This is a must read for oil painters!

Ulysses Jackson, Formulator, has been leading a long-term investigation into the lightfastness of several colors. We have been engaged with the ASTM Committee responsible for the quality standards for artist paints in an effort to update the almost 40-year-old research. Ulysses provides an in-depth look at our ‘go to’ Hansa Yellow colors, providing new insights into their permanency and introduces our new Benzimidazolone Yellows.

Greg Watson, Material Application Specialist, shares the launch of 7 new Williamsburg Handmade Oils – three warm, highly saturated hues, three transparent earth colors and a light color tint.

We are also delighted to share some of the recent happenings at GOLDEN, including a successful Benefit Auction for the Sam and Adele Golden Foundation for the Arts and our continued collaboration with Alliance for Young Artists & Writers for our Scholastic Residency Program.

As always, welcome your comments! Warmest regards, Mark

The Problem in Brief

At its most basic, the issue with Zinc Oxide in oils is that it is a highly reactive pigment that forms soaps in contact with free fatty acids found in drying oils, which can cause adhesion problems, while its unique crystalline structure appears to inhibit or interrupt the full curing of an oil paint film, leaving it weakened and more susceptible to cracking. While the mechanisms involved are just now being understood, the fact that zinc was susceptible to these issues was known since at least the late 19th century (Petit 1907, Church 1890). Why these problems are suddenly more pressing today is partly the subject of this article and touched on later. For now, it’s enough to know this general description.

Limits of the Problem in Acrylics, Watercolors

It is important to stress at the outset that the issues of embrittlement and Zinc Oxide are limited solely to oils and alkyds. There is no evidence of similar problems when using zinc in water-based paints, such as acrylics or watercolors, where it forms a stable film. That said, it is not known if using zinc in either of these systems would be safe as an underpainting for oils. It is simply not something that has ever been studied, although we have begun our own long-term testing in this area. Because of that, we do not recommend ever using zinc oxide in any material that will be used directly under oils. This would include not simply water-based paints, but any grounds, substrates, or even composite...
New Zinc-Free Versions Available
Persian Rose
Naples Yellow
Titan Buff (formerly Zinc Buff)
Brilliant Yellow Pale
Naples Yellow Reddish
Jaune Brilliant
Canton Rose
Montserrat Orange
Provence Violet Reddish
Provence Violet Blush
King's Blue
Sevres Blue
Turquoise
Sold in 150 ml Size Only
Titanium-Zinc White
Zinc White
Being Discontinued
Zinc Buff Yellowish
Silver White
SF Titanium-Zinc White
SF Silver White
Table 1 – List of colors being reformulated, discontinued or limited in offerings due to Zinc Oxide change.

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
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<tbody>
<tr>
<td>Zinc White</td>
<td>Zinc and Titanium-Zinc White</td>
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<tr>
<td>Titanium-Zinc White</td>
<td>While our color blends were one thing, zinc and titanium-zinc white presented altogether different issues. Both continue to be significant and important colors for a lot of artists who have used them carefully and often without incident for many decades. In addition, zinc possesses unique properties that are not easily replaced. Because of that, during this period when research is still ongoing and often inconclusive, we felt it was more important to educate artists about the known risks of using Zinc Oxide than to remove it completely from our offerings. This situation is not unlike other art materials, such as rabbit skin glue or Alizarin Crimson, which have been used for even longer periods of time despite being linked to equally well-known problems. While we are currently committed to making Zinc and Titanium-Zinc White available to artists, we will be selling them only in 150 ml tubes. In addition, we will discontinue completely our Silver White and SF Silver White (linseed and safflower versions of lead white – zinc oxide blend), as well as the safflower-based SF Titanium-Zinc White. By greatly limiting the number of products containing zinc, as well as the sizes they come in, we hope to reduce the casual or inadvertent use of Zinc Oxide while still making it available to those who truly want it and understand the risks involved. New Labels The 150 ml tubes of Zinc White and Titanium-Zinc White will showcase a new warning on the front and back of the label stating clearly that “Zinc Oxide is linked to embrittlement and cleaving of oil paint.” (Image 1) By placing the warning prominently on the front, in multiple languages, we hope it will be a highly visible and clear statement with great artists’ awareness of zinc issues. We will also encourage people to go to our website for more information about best practices at Williamsburg Oils.com</td>
</tr>
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Image 1: New Zinc White Label on 150 ml tubes

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Image 2: All samples are 6 ml droplets from 2010–2011. Rikke (top left) and Silver White (bottom left) are oxide-based with time, made with lead and zinc, showed extreme brittleness. Titanium White, which is zinc free, remained flexible even when bent over 1/8”. While Titanium-Zinc cracked easily at 1”.

Image 3: All samples are 6 ml droplets from 2010–2011. Rikke (top left) and Silver White (bottom left) are oxide-based with time, made with lead and zinc, showed extreme brittleness. Titanium White, which is zinc free, remained flexible even when bent over 1/8”. While Titanium-Zinc cracked easily at 1”.

Image 4: All samples are 6 ml droplets from 2010–2011. Rikke (top left), Orion (bottom left), Linseed Oil (top right) and Titanium-Zinc White (bottom right) are polyurethane (TPU) systems that are not easily replaced. Because of that, during this period when research is still ongoing and often inconclusive, we felt it was more important to educate artists about the known risks of using Zinc Oxide than to remove it completely from our offerings. This situation is not unlike other art materials, such as rabbit skin glue or Alizarin Crimson, which have been used for even longer periods of time despite being linked to equally well-known problems. While we are currently committed to making Zinc and Titanium-Zinc White available to artists, we will be selling them only in 150 ml tubes. In addition, we will discontinue completely our Silver White and SF Silver White (linseed and safflower versions of lead white – zinc oxide blend), as well as the safflower-based SF Titanium-Zinc White. By greatly limiting the number of products containing zinc, as well as the sizes they come in, we hope to reduce the casual or inadvertent use of Zinc Oxide while still making it available to those who truly want it and understand the risks involved. New Labels The 150 ml tubes of Zinc White and Titanium-Zinc White will showcase a new warning on the front and back of the label stating clearly that “Zinc Oxide is linked to embrittlement and cleaving of oil paint.” (Image 1) By placing the warning prominently on the front, in multiple languages, we hope it will be a highly visible and clear statement with great artists’ awareness of zinc issues. We will also encourage people to go to our website for more information about best practices at Williamsburg Oils.com |

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feel that Zinc Oxide should be removed from the majority of our paints, and that artists should be better informed about the risk of using paints containing zinc.

How Exactly Does Zinc Oxide Cause the Cracking? The actual mechanisms which cause zinc to form a brittle paint and have a high risk of cracking or delamination, are still a subject of research but a broad picture starts to emerge. Zinc is involved in the traits most commonly cited in the literature. On the traits most commonly cited in the literature involved a wrestling between pros and cons. Findings from 2-3 decades ago appear to entrap unsaturated free fatty acids, preventing them from oxidization and curing. Particularly, there are a number of other benefits that Zinc Oxide has been known for more than a century. Researchers are only now addressing both of those questions in "Selected FAQ". (page 6) At the same time, we are not ready to abandon Zinc Oxide as it provides benefits not easily replaced and the research is still ongoing and critical questions remain unanswered. Consequently, that we will continue to offer both our Zinc and Titanium-Zinc Whites in larger tubes, but with new warning labels stating clearly that Zinc Oxide has been linked to cracking and the leakage of paint films. We are taking this last step because we strongly believe that painters should be fully informed about the risks of using zinc while still being allowed the option to use it on their own. In the future we will know more – whether there are safe levels of zinc, or at least safer ways to use it.

Until then, we will continue to follow the research and conduct our own studies and make that information available to you. In the meantime, if you have questions or concerns, please contact us at help@goldenpaints.com or by calling 607-847-6154 / 800-959-6543.

Pros

Harder Paint Films Zinc White was often added to other colors to help provide a harder, less malleable surface, especially in paints that created notoriously soft films, like Titanium White, or which were particularly vulnerable to weathering outdoors. We see this mentioned repeatedly in the commercial literature and highlighted by the manufacturing process of zinc oxide at the time. And this use continues to this day. Ease of Milling and Pigment Dispersion

The reactive, soap-forming nature of zinc allows for easier and more efficient dispersing and wetting of pigments, especially ones that might otherwise be difficult to mill. Because this, whenever Zinc Oxide is removed from a blend, or the percentage greatly reduced, it will usually require additional milling and effort to achieve the same color development. In the past, zinc stearates were commonly used as a dispersing agent for commercial and fine art paints. Less Yellowing

Zinc Oxide greatly decreases the amount of yellowing associated with other white pigments, such as lead or titanium white, both in terms of the permanent yellowing that occurs with aging, as well as the more temporary phenomenon of dark yellowing. This property is still utilized by paint manufacturers and is certainly one of the reasons – along with film hardening – that the combination of titanium with a small percentage of zinc white is among the most popular blends.

Other Benefits in Commercial Paints

A number of other benefits were primarily important to the commercial house paint industry and had little to do with artists’ oils color per se. These included its ability to act as a mildewcide, to stabilize house paints being sold in cans, as well as provide washability, scrub resistance, and both moisture and UV protection. With the broad use of Zinc Oxide in commercial paints through at least the 1950s, it was only a matter of time before many of these products would be used by artists interested in industrial materials or simply seeking cheaper alternatives in larger, convenient sizes. So the two fields are not completely separate, and a lot of current conservation and art materials research builds upon the initial research literature generated by the commercial painting industry.

In-Between

Transparency

While the greater transparency of zinc was sometimes seen as a problem, especially in commercial applications where opacity and coverage were critical, it was also a trait that many artists prized as it allowed for cleaner, less chalky tones. It could also allow the use of more paints that migrate to the upper layer, causing ruptures and unwanted blemishes.

Best Practices

Coming up with a set of Best Practices is difficult on several fronts. First, it is impossible to predict what any one painting will do, especially when our current understanding and the complexity of the issues involved. Secondly, current conservation research has not identified a safe level of zinc, or reached consensus on all the factors that might lessen or increase the risk of cracking and delamination. So what remains is undoubtedly broad and general.

To limit problems linked to the use of Zinc Oxide, we would recommend the following:

- Use zinc sparingly and only when needed.
- Do not use it in underpaintings or layers.
- Keep applications thin. Do not apply thickly.
- Avoid stretching, bending, or flexing of the surface.
- Limit shipping whenever possible due to the potential for vibration, sudden shocks from dropping, or extreme changes in environmental conditions.
- Protect the paintings from anything pressing from the rear by using a backing board. Likewise, when shipping or moving, protect the front by use of a travel frame or shipping collar.
- Maintain the painting in as stable an environment as possible, following similar ranges recommended for museums and galleries of 16-25°C (60-77°F) and 40-60% RH.
- Work on an inflexible support. Ideally, one that is unresponsive to humidity and temperature, such as aluminum composite panel.

Overview

Removal of Zinc Oxide from 13 color blends, as well as the discontinuation of 4 others, is a big change and not something we have undertaken lightly. While the problems associated with zinc have been known for more than a hundred years, researchers are only now fully understanding the risks, even with levels of zinc that were once thought to be safe. For many painters this may raise a new level of concern about artworks they have done and paints they have purchased. We understand that and try to address both of those questions in “Selected FAQ”. (page 6) At the same time, we are not ready to abandon Zinc Oxide as it provides benefits not easily replaced and the research is still ongoing and critical questions remain unanswered. Consequently, that we will continue to offer both our Zinc and Titanium-Zinc Whites in larger tubes, but with new warning labels stating clearly that Zinc Oxide has been linked to cracking and the leakage of paint films. We are taking this last step because we strongly believe that painters should be fully informed about the risks of using zinc while still being allowed the option to use it on their own. In the future we will know more – whether there are safe levels of zinc, or at least safer ways to use it.

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Image 666x67 to 1183x372

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Percentage has been set at 2% by weight and we will continue to and a harder, less tacky surface. Starting in February 2018 that adding Zinc Oxide to Titanium White – namely less yellowing in conservation literature, we have continued to reduce the requirement. If you have any questions about any of your paints, We are happy to exchange any of our paints containing Zinc Oxide for one of our new zinc-free formulations or for any other color that may be similar to zinc.

How do I tell if there is zinc in my paints?

We list all the pigments for each of our paints on the label. This means that you can easily check if your paints contain Zinc Oxide. If you have any questions about any of your paints, we recommend contacting the manufacturer of that brand for more information.

What percentage of Zinc Oxide is in your current Titanium-Zinc White?

While there is currently no acknowledged safe level of zinc in conservation literature, we have continued to reduce the percentage to a minimum and still achieve the benefits of adding Zinc Oxide to Titanium White – namely less yellowing and a harder, less tacky surface. Starting in February 2018 the percentage has been set at 2% by weight and we will continue to make further adjustments as needed based on testing and research.

Bismuth Vanadate Yellow: Bismuth Vanadate (PY 8) came into use as a pigment in the mid-1980’s. This synthetic, inorganic color is a bright, cool to middle temperature yellow. It occupies a color space between Cadmium Lemon / Cadmium Yellow Light and Permanent Lemon / Permanent Yellow Light. The opacity and density of this color is closer to Cadmiums, making even our current Permanent Yellows feel very translucent in comparison. This is a knockout color that will truly expand one’s gamut when making greens. Additions of the smallest amounts of Phthalocyanine Blue will create spiggy spring-time greens while Ultramarine Blue will yield more muted earth greens. Bismuth Vanadate is a wonderful addition to the palette for keying up colors in need of warmth and density. (Series 7)

Pyrolyte Orange: Pyrolyte-orange pyrrole (PR 73) belongs to the same chemical family as Pyrolyte Red and has a very similar feel and working qualities. It is more lightfast than our current Permanent Orange, more vivid and a touch more opaque. Like its red cousin, Pyrolyte Orange provides a non-Cadmium alternative to Cadmium Orange or Cadmium Red Light. (Series 7)

Pyrolyte Red: Pyrolyte-orange pyrrole (PR 254). Pyrolytes are synthetic organic pigments and like Bismuth Vanadate, were introduced in the 1980’s. They are highly resistant to fading and have proven their salt in the automobile industry. In our line, Pyrolyte Red finds its color space between Fanchon Red, Cadmium Red Medium and Cadmium Red Deep. As mentioned, it is a dense, opaque paint that feels very much like the Cadmium Reds with similar tinting strength, but mixes to a cleaner pink. This could be an important alternative to anyone wanting to avoid cadmiums because of concerns with heavy metals. Compared to Fanchon, Pyrolyte Red is more opaque and lightfast, a bit darker in masstone and tints to a cooler pink. Overall it is a deep middle red that becomes warmer when made into a wash and cooler when tinted with Titanium White. (Series 4)

Nickel Azo Yellow: Nickel Complex Azomethine (PY 150) is a chemical cousin to Williamsburg’s Green Gold, which is a Copper Complex of Azomethine. Like Green Gold, Nickel Azo Yellow has a similarly dynamic color quality. A difficult color to pin down, its almost angle-dependent masstone seems to shift from strong brownish green to a nut-like orangish-tan. This color is strikingly different in masstone from the undertone and tint. When scraped thin it is an absolutely stunning brilliant yellow which can be scumbled onto the surface without the addition of medium, as a chromatic golden veil or used in glazes to saturate and warm up an
underpainting. When added to white it turns to a unique mustard yellow, similar to the colonial yellows used on houses and primitive furnishings. Cooler than any other transparent yellow, including Cadmium Yellow, Transparent Yellow Iron Oxide. (Series 6)

Transparent Yellow Iron Oxide: Synthetic Hydrated Iron Oxide, Synthetic Iron Oxide (PW 6, PY 42, PR 101). With the removal of zinc oxide from all the Williamsburg blends, this color has been reformulated and renamed. Previously called Zinc Buff this very pale, pinking cream color is now made with Titanium White as the only white in the mixture. It still has the bright warmth of its predecessor and is a go to color for tinting without the cool, chalkiness of straight Titanium. It is perfect to use on its own, or for mixing light mass and highlights as they appear in warm light. (Series 1)

Titan Buff: Titanium Dioxide, Synthetic Hydrated Iron Oxide, Synthetic Iron Oxide (PW 6, PY 42, PR 101). With the removal of zinc oxide from all the Williamsburg blends, this color has been reformulated and renamed. Previously called Zinc Buff this very pale, pinking cream color is now made with Titanium White as the only white in the mixture. It still has the bright warmth of its predecessor and is a go to color for tinting without the cool, chalkiness of straight Titanium. It is perfect to use on its own, or for mixing light mass and highlights as they appear in warm light. (Series 1)

With ever changing availability and new developments in pigment manufacture and conservation, Williamsburg seeks to use every opportunity to improve our line and offer a full range of colors that are lightfast and stable, as well as useful. It is our hope that these new additions will provide entry into some hard to mix color spaces and greater opportunity for transparent and opaque application. We hope you enjoy these new colors. We look forward to hearing your feedback.

The Introduction of Benzimidazolone Yellow Medium (PY154) and Benzimidazolone Yellow Light (PY175)

By Ulysses Jackson

Golden Artist Colors is a company that has a very clear goal of making the best artist paints possible! In a time when so many companies see how far they can reduce quality before a consumer notices, GOLDEN continues to resist this trend and make improvements wherever possible regardless of cost. Artists and conservators place their trust in our materials because of our reputation and we take that trust very seriously! To remain at the forefront of our field, in the Lab at GOLDEN we constantly conduct tests and perform research projects to try to further improve the materials we produce by looking at features like stronger tint strength, brighter masstone, improved artist experience, or even striving to create something completely new for the marketplace.

In production there are various ways we monitor our quality, starting with a detailed incoming raw material analysis protocol, all the way through to ongoing re-checks of retained samples for long term shelf stability. Additionally, in Research and Development we bend paint, freeze paint, heat paint, peel paint, scratch paint, scrub paint, soak paint, stain paint, stretch paint, and give paint “suntans”. The last of which, for the purposes of this article is what we will focus on most.

On an ongoing basis we subject cured paint films to both actual and simulated sunlight through glass to verify the lightfastness of colors. So it was a surprise to us that in recent testing we started to see results from our old friends Hansa Yellow Medium (PY73) and Hansa Yellow Light (PY3), which were unexpected and sparked a desire to understand what may be going on.

Our testing also allowed us to develop some additional improved options in the same color space for the artist.

As the artist knows that our readers fall into two general camps - those who love detailed data and those who simply want to paint, we thought it appropriate to summarize the article that follows before it starts.

Summary

While GOLDEN educates artists about these new colors, Benzimidazolone Yellow Medium (PY154) and Benzimidazolone Yellow Light (PY175) are very similar to Hansa Yellow Medium (PY73) and Hansa Yellow Light (PY3) as they have a wide following, and are used in their qualities: tinting for Hansa Yellow Medium and the Masstone for Hansa Yellow Light. However, as it is our belief to give our consumer the most accurate information possible we will change the lightfastness rating on the label to the word “Fair” in order to reflect the test results we observed.

It is also very important to remember that accelerated aging is just that and if given a lower light input over a longer time, such as a display in one’s house, Hansa Yellow Medium PY73 and Hansa Yellow Light PY3 may not show the same degree of change. Unfortunately, as there is rarely an unexpended control or detailed notes on mix ratios, we are unable to look back and test this in a methodical way. What we can say, is older paintings we have reviewed on display containing various Hansa Yellows still look yellow. Artists have been using these colorants a long time and commonly due to yellow being a weaker tinting material overall, it is incorporated in mixes at larger quantities which would further reduce the risk of dramatic change. That said, should an artist feel concerned with the continued use of the two Hansa colors PY73/PY3 mentioned in this article and want to have their material replaced, simply contact a Materials and Application Specialist at GOLDEN and we would be more than happy to assist!

Before we get into the nitty-gritty of the testing and why we are changing color blends, let’s first introduce these two new colors next to their colortonic friends (left).

Reproducing images of paint, digitally or in CMYK ink, inherently reduces any subtle differences that would be observed in use, but one can still see that Benzimidazolone Yellow Medium (PY154) offers a very similar masstone to Hansa Yellow Medium (PY73) as well as coloristically similar tints. However, it is moderately weaker in tint strength and does not offer the dye-like brightness of Hansa Yellow Medium (PY73) in glazes.

Benzimidazolone Yellow Light (PY175) is very similar to Hansa Yellow Light (PY97) for color overall with the main difference being noticed in the masstone, where Hansa Yellow Light (PY3) is a very clean green base right out of the tube, and Benzimidazolone Yellow Light (PY175) requires the slightest touch of Titanium White (PW6) to bring out its greater qualities.

One may ask themselves, “GOLDEN, why the super hard to pronounce, tongue-twister names? Enjoy the challenge to fit long words on the label!” We also asked ourselves those questions and tried a lot of shortened versions, but in the end we feel the only way to correctly describe the chemical structures and differentiate these colors from other yellows is to give the full names. But like many of the other colors where GOLDEN provides the full chemical names, it does not mean that you, the artist, have to say them. Around the shop various nicknames have already been tossed around. Some gaining in popularity are Benz Yellow, Benz Yellow, and Bedford Yellow. If and when artists come up with their own variations, we would love to hear them!

With the introduction of Benzimidazolone Yellow Medium (PY154) and Benzimidazolone Yellow Light (PY175), we also gained the ability to reformulate the following 7 blends to include Benzimidazolone Yellow Light (PY175) for improved lightfastness.

Artists who are used to these colors can
specific level of exposure was originally chosen by ASTM because it gave results that corresponded to the degree of fading seen in various pigments, such as Alizarin Crimson and Rose Madder, found in historical paintings going back over a century.1

A very important detail in relation to ASTM D430 is that it is not explicitly required in the standard to do formulation specific testing, as there is a list of accepted Lightfastness ratings for previously submitted pigments within specific mediums. This means if a supplier is using a pigment that is accepted into the standard they only have to look up the ASTM rating for the pigment’s chemistry in question of exposure medium, and list that rating on the tube. This may lead to issues over time because the majority of pigments were submitted to the ASTM standard many years ago and some pigments may have changed for the better or worse since. These changes could be due to shifts in manufacturing and processing practices at the level of a pigment supplier, in which they may see that even though the components remained the same and the two Benzimidazolone Yellows look a lot like the existing Hansa Yellow Light and Medium colors so why go through all the effort to change? This is where being a scientific and data driven company comes into play, and what follows relates to a larger issue of testing for lightfastness.

It is expected, by the artist, that when they paint something it will look very similar for future generations if kept in gallery light conditions (fairly low lux). Unfortunately, as a manufacturer we do not have the luxury of being able to control a hundred years to develop and release new materials, so we impart accelerated aging conditions to highlight potential weaknesses. This testing is done based on the longstanding ASTM test method D4303 where paint samples are subjected to natural daylight under glass in Arizona or Florida during specific months of the year (October to May) until they receive enough energy required to achieve a measured value of 1260mj/m². Separately, samples are placed for exposure in a Xenon arc light chamber with a glass filter until 510kJ/(M²·nm) is reached. Xenon chambers are very fast and can be run year round. Often it is necessary to initially rely on a Xenon data set and then follow up with exterior testing under glass in order to confirm our findings. As Sarah Sands relays in her www.justpaint.org article, Lightfastness Testing at Golden Artist Colors: “This

Graph 1 – Representation of change allowed from an unexposed control for ASTM lightfastness levels to increase in Tint strength that may be performed where we would expect to see a few surprises! As one can see from Table 1 (left), Hansa Yellow Opaque (PY74) tested very close to an ASTM LF1 in both Arizona and Xenon testing, and the following of multiple lot testing in Xenon are returned values ranging from DE* 2.7 to 3.81, all of which in relation to the Arizona test results of DE* 2.45, still provide us confidence in Hansa Yellow Opaque’s listed ASTM rating, but the values returned for the other two Hansa Yellow colors gave us pause. While listed as ASTM LF1, looking back at some historical lots (Graph 2, left) at 40% in Xenon testing we started to see a trend of Hansa Yellow Medium (PY73) moving from the equivalent of a LF2 rating to what would be considered LF3 or Fair when mixed 40% with white. For Hansa Yellow Light (Graph 3, left) we saw a more surprising degree of change that made us want to look not only at our historical batches but also how PY3’s paints from other competitors performed. In reviewing historical batches of Hansa Yellow Light (PY3) we see performance that is in line with ASTM LF2 until 2012 when we start to see results trend above the delta 8 maximum. There was also a parallel increase in Tint strength that may possibly relate to more fine dye like particles being present in the pigment.

Table 1 – Lightfastness results of PY74 vs. PY5 and PY73 in time.
In Graph 4 (above) we see that across brands PY3 mixed to 40% reflectance with three exceptions, two of which performed much worse and one that performed much better. However, the exception that performed better was very weak in tint strength requiring over 200-500% more color than the other brands to reach the same 40% tint. This may mean that there is dramatically more pigment present in the system acting to insulate the pigment, or the crystal structure of the PY3 being used is larger.9 It should also be mentioned that in lightfastness testing of Williamsburg Oil paints and QoR® Watercolor we observed that colors containing PY3 performed well for lightfastness and we do not have any concerns for using these colors in those systems at this time.

The interesting thing is that the masstones of Hansa Yellow Light and Medium continue to test very well, which made us wonder whether the weakness of the pigment is a result of negative synergy between Titanium White (PW6) and the organic pigments.10 In order to pursue this further we made various blends of each yellow with different ratios of Titanium White (PW6) and separately Regular Gel Gloss. (Graph 5, below). The results from mixtures with Regular Gel Gloss are fairly night and day with even as low as a 10% addition of color offering degrees of change that if in a tint, would fall within the ASTM LF1 rating. A ladder study with various amounts of Titanium White (PW6) offered a very different story and we begin to see where mixtures with 50% white or less perform as LF1 and LF2 where higher amounts perform only fairly for lightfastness. This same effect was also noted in various color blends containing the Hansa Yellows where the Masstones performed much better than 40% tints with white, which further informed our desire to reformulate the blends we produce.

This may be a good time to show (page 13, Graphs 6 & 7) the lightfastness of the two Benzimidazolone Yellows and color blends containing it. These new clean mixing organic yellow colors are rock solid both mixed with white and in glazes as can be seen in the chart below. They are used as performance pigments in both the aerospace and automotive industry and Golden Artist Colors is excited to now offer them to the fine artist market. In conclusion, Golden Artist Colors continues to be devoted to providing rock solid both mixed with white and in glazes as can be seen in the chart below. They are used as performance pigments in both the aerospace and automotive industry and Golden Artist Colors is excited to now offer them to the fine artist market. In conclusion, Golden Artist Colors continues to be devoted to providing rock solid both mixed with white and in glazes as can be seen in the chart below. They are used as performance pigments in both the aerospace and automotive industry and Golden Artist Colors is excited to now offer them to the fine artist market.

Footnotes
1. ASTM D 4303 and the Blue Wools.
2. OTG-1A, 4E.

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Golden Foundation's 20th Anniversary Art Auction Benefit

“Neither snow nor rain, nor heat….” 

By Barbara Golden

In 1992, when the town of Columbus, NY, the oldest town in the US (named after Christopher Columbus), was asked how they would be celebrating the 50th anniversary of Columbus’s arrival in America, Golden Artist Colons with support from the community, held a stirring Gallery exhibition of Native American artwork by renowned artists Kay WalkingStick, Joe Kari, Jonathan and Elizabeth Woody, Tom Huff, Joanne Osburn-Bigtiefer, Jaquie Quick-To-Smith, and more, and was curated by Phil Young. There was a thunderous thunder and lightning storm, with torrents of rain and loud continuous rumbling thunder, as the doors opened to this evening event. However, it didn’t stop the show. In fact, a record attendance of hundreds of community friends and neighbors attended that night, as they bid against each other to get the best possible prices for the artwork. What are the odds of having two GOLDEN employees with auctioneer backgrounds?! Bill Martine’s family had previously been in the cattle auction business and Keith Rifenburgh’s experience was with antiques. Their booming voices, infectious energy and movement on the stage to a rhythm of “yup!” “yup!” “yup!” created an infectious energy and sustained future growth.

It is with great joy that we are able to announce the Foundation’s ability to offer free residencies to the 30 artists who will be selected to attend in 2018 and 2019. A goal of the Foundation since the inception of the residency program in 2012 has been to support an artist’s ability to attend at little or no cost to them. Our endowment has been growing for over 20 years, and this year’s benefit auction was the event that helped us achieve that goal!

From all of us at the Foundation, we thank these generous communities for their support.

Read more about the Sam & Adele Golden Foundation at www.goldenfoundation.org

Scholastic Educator Residency Fosters Experimentation

By Emma Golden

Now in its fifth year of collaboration, Golden Artist Colons has again partnered with the Scholastic Art and Writing Awards to celebrate educators across America who support and encourage the creative process! Lucy Harackiewicz from Westwood, MA; Elizabeth Stainton from New York, NY; and Rebecca Buchanan from Hillsboro, OR joined us at the Sam and Adele Golden Foundation Residency Barn for a 14 day artist residency experience. Lucy, Elizabeth and Rebecca were selected from a pool of over 300 applicants through a process conducted by Scholastic and the NAEA. While here in Upstate NY they were engrossed with material knowledge and studio time and celebrated as artists as well as teachers.

How lucky their students at home are to have such incredibly talented teachers in the classroom!

While in her studio, Lucy explored color and layering with new materials and tools. When we entered Lucy’s studio at the end of her time here, you could immediately tell that she didn’t sleep much, as her paintings filled the studio space.

Rebecca loves color! Bright, vibrant and fluorescent color! She was also very much inspired by the landscape of Upstate NY. The rolling hills and farmlands around New Berlin allowed Rebecca to explore these colors and forms. This landscape is easy to fall in love with.

Elizabeth came to the residency mainly as an oil painter. Her ability to capture subtle light as well as powerful curiosity, gives you a sense of truly being in that city or that space at that time. You want to peer around the corner of the building to see what’s there. She also allowed herself to discover and play with its acrylics and watercolor, which opened up a new venue for exploration.

The studio and living space provided to these Scholastic Educators included 24/7 access to individual studios, and is situated right down the road from the GOLDEN paint factory. This unique program provides access to all paint materials produced by GOLDEN, including acrylics, oils, watercolor, and custom products. Over the 14 days, Material and Application Specialists from Golden Artist Colons delivered an in-depth survey of different techniques and materials to the artists. Emphasis was also placed on the importance of developing one’s own artistic process, while gaining access to the most innovative processes and techniques in art making.

Experimentation was encouraged.

In 2017 students in grades 7-12 from across the U.S., submitted over 100,000 works of art across several different categories of art and writing. In recognition of the Alliance’s efforts to support the arts, Golden Artist Colons delivered a $1,000 gift certificate to these Scholastic Educators whose students were awarded top honors within the Alliance program, with a $1,000 gift certificate for their personal use.

To learn more about Scholastic, GOLDEN and the Golden Foundation: www.scholastic.com/artandwriting/ and events/golden-residency/ www.goldenpaints.com www.goldenfoundation.org
As artists redefine our concepts of traditional media, we embrace the opportunity to challenge perceived limitations and capabilities of painting and seek to empower artists everywhere. The mission for Just Paint remains: inform and empower artists in the realization and preservation of their creative vision.

Our role in the arts community has been to provide artists with the best tools to meet their needs. This includes an obligation to provide the most complete information available on artists’ materials from our laboratory, research, and collaboration with other innovators and material scientists.

Since 1980 we have been champions of the acrylic medium with the GOLDEN Acrylic brand. In 2010 we were entrusted with the legacy of an amazing oil paint, Williamsburg Handmade Oil Colors, and in 2014 we introduced QoR®, a unique modern watercolor.

We also know that there is more to a paint company than making paint. By joining our mailing list, you will receive content pertaining not only to materials, but the story of Golden Artist Colors, its growth, its legacy, exhibition events and its commitment to social responsibility.

Be sure you don’t miss the latest news from GOLDEN and sign up today!!