spe

COLOR & APPEARANCE

CAD NEWS®

SPRING 2023 NEWSLETTER

ANTEC 2023

CAD SUSTAINABILITY

WHAT'S NEW IN SUSTAINABILITY & COLOR FOR PLASTICS

TECHNICAL ARTICLE

UVC DURABILITY TESTING OF COLORED COATINGS & PLASTICS

ANDY FRANCIS, SEAN FOWLER, BILL TOBIN, DAVID DUECKER, AND BRAD REIS

MEMBER SPOTLIGHT

CHRISTINE GEHRES

SPRING 2023 CHAIRMAN'S MESSAGE

Hello Color and Appearance Division (CAD), SPE members, and visitors to this Spring edition of CADNEWS.

Color and appearance continue to be in high demand around the globe. Opportunities for education, innovation and career choices gives CAD a chromatic outlook for the color application industry.

CAD continues to facilitate opportunities through financial support and collaboration with SPE. CAD recently contributed to the student attendee program to the upcoming 2023 ANTEC® in Denver March 27-30. CAD also renewed its commitment to the 2023 scholarship program run by our Endowment Committee (Chair Ann Smeltzer).

And of course, preparation for the 2023 RETEC in Columbus Ohio is underway! RETEC 2023 Chair Kimberly Williamson and vice-Chair Steve Esker along with the Technical Program committee are preparing a fantastic program not to be missed. This is a great opportunity for new professionals in your organizations to attend technical talks, table-top displays, and face to face connections.

And now, a sincere CONGRATULATIONS to BETTY PUCKERIN for being awarded the Honored Service Member class of 2023 of the SPE. A truly well-deserved award for the countless hours of hard work and mentoring Betty has provided the CAD division. Betty has provided outstanding service to many of the committees and RETEC programs and continues to lead the way. Be sure to congratulate Betty at the next RETEC event.

Board members that have made their way to this prestigious award all started with a VOTE. The 2023 Board of Directors Elections for new CAD board members are coming up, deadline for voting is May 19, 2023. Look for the Open Voting announcements then please take the time to read candidate's biographies and make your vote count!

Thank you everyone and have a chromatic Spring!

MICHAEL WILLIS
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Milliken presents

Milliken: The Color Experts

Milliken & Company understands the power and value of color as it relates to branding. Humans are visual creatures, and color plays a key role in purchasing decisions, as it helps to inform, personalize and speak the brand language.

The company continues to tap into its vast experience in this space to develop solutions for a wide variety of end markets and end-use applications.

Milliken's color journey began in 1964, when it launched its proprietary Versatint® washable colorants for textile identification. In 1981, it introduced its Reactint® range of colorants for polyurethane (PU). Five years later, Milliken unveiled its ClearTint™ polymeric colorants for use in NX® UltraClear™ polypropylene (PP), which can be made only with its Millad® NX® 8000 clarifier.

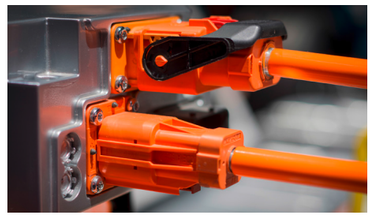
The year 2019 marked a major step forward, with the introduction of both its KeyPlast® products, as well as its KeyPlast RESIST™ high-performance colorants for plastics.

Milliken technology helps to color a vast range of sectors, including agriculture and turf; automotive and transportation; building and construction; coatings, paints and inks; home and laundry care; and plastics.

Milliken's KeyPlast RESIST colorants address another key challenge — coloring high-performance engineering polymers with bright and vibrant hues. These colorant are used in the high demanding applications such as high voltage connectors, control systems, structural parts and metal replacement.

Using KeyPlast RESIST colorants compounders and resin producers, offer a vast spectrum of stable and reproducible colors suitable for use with a wide range of resins such as Polyamides, PPA's, Poly Sulphones and other high heat polymer blends and alloys.

Additionally, Milliken continues to keep its finger on the pulse of end-user and market trends, which it documents each year in its ColorDirection report that forecasts the key shades and hues for the coming year. In doing so, it offers a palette of carefully curated colors, while providing the stories behind the inspiration and motivation driving their popularity. Brand owners can leverage this expert information to help capture the mood of consumers through effective branding and personalization.



Milliken's diverse portfolio of colorants can enable product makers to realize their aims to deliver on those colors that will help drive and shape consumer preferences in the coming year.

From the R&D lab to the production floor, Milliken's Chemical Division stands ready to help customers leverage color to design new products, reinvigorate existing products, and create opportunities to grow in new markets and applications.

For more details and information please contact us or visit us online at ***chemical.milliken.com***

EUROPE : eurochem@milliken.com | **NORTH AMERICA** : millichem@milliken.com
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Milliken™

SPE CAD SCHOLARSHIP

INFORMATION REMINDER FOR 2023 / 2024 SCHOOL YEAR

The Society of Plastics Engineers Color and Appearance Division has scholarships available for qualified individuals.

Each year, scholarships are awarded in honor of some of those who have influenced our industry through education of up to $4,000 each. Additional full or partial scholarships may be awarded based on available funding and on the number of qualified applicants.	
Jack Graff Memorial Scholarship	up to $4000.00
Gary Beebe Memorial Scholarship	up to $4000.00
Bob Charvat Memorial Scholarship	up to $4000.00
Steve Goldstein Memorial Scholarship	up to $4000.00
George Rangos Memorial Scholarship	up to $4000.00

APPLICATION OPENS: MAY 1ST, 2023 **APPLICATION DEADLINE: JUNE 16TH, 2023**

For questions on applications or process please email Ann Smeltzer, or call Ann at 412-298-4373

Board of Directors Elections for Color & Appearance Division

VOTING will begin April 11th and end May 9th 2022

Be prepared to VOTE!

Board of Directors Voting

The Color & Appearance Division of the SPE is conducting its annual Board of Directors elections for the term 2022 - 2025. The election is open to current SPE members with CAD as their primary division. Members of the Board participate in the planning, organization and running of CAD activities including ANTEC programs, RETEC programs, Technical Programs, Scholarship Programs & Funding, as well as offering guidance and advice to other SPE members interested in coloring plastic resins.

Visit the **Color & Appearance Division Elections Portal** to vote for your choices.

WHAT'S NEW

in sustainability & color for plastics

DOREEN BECKER, Global Sustainability Director | Ampacet

We had a great panel discussion at our RETEC meeting in Orlando in September of 2022. Our esteemed panelists were:

Kari Bliss– Padnos
Mercedes Landazuri- Ampacet
Joe Machado- Alliance to End Plastic Waste
Doreen Becker (moderator)- Ampacet

It was a lively group with many interesting questions and different viewpoints on sustainability. We also received many questions from the audience. Here we have some of the topics discussed and also some emerging topics relating to sustainability.

There was a general consensus that plastic packaging was not going away any time soon. Although many brands are looking for alternatives such as paper, metal and glass, the bulk of their products are still being sold in plastic. There are several reasons for this and probably the first is content protection that retains the quality of the product. Cost seems to be the second reason plastics are still dominant in the packaging industry. Sustainability is certainly what most brands are thinking about and they certainly want to convey to their customers, shareholders and society that they are a sustainably-minded company but they realize that they must balance these initiatives with retaining the quality of their products as well their profitability. Many brands make statements on some of their packaging about being "plastic-free" or using less plastic but there are very few packages currently on the market that don't use a plastic liner or cap for content and quality protection. We have seen a lot of press recently about "paper bottles" but these are not necessarily plastic-free packages.

What can we do to stay ahead of the sustainable packaging curve & Why?
According to the United Nations Environment Programme, approximately 36% of all plastics produced are used in packaging and approximately 85% of that ends up in landfills or as unregulated waste. The problem with plastics is not plastic. It is the waste management of plastic. We thought we had a good solution with mechanical recycling but the recycling system has two big problems. The first one is that there is not enough infrastructure to keep pace with plastic disposal. Plastics are cheap and mechanical recycling is expensive so there isn't enough of it happening. The other problem is that mechanical recycling is not truly circular. Most plastics can be recycled only four to seven times before they lose most of their physical integrity. Most paper can only be recycled three to five times. Eventually that previously mechanically recycled plastic will need to be incinerated or landfilled. There are advanced recycling methods such as pyrolysis and solvolysis but many of these are still in development and could take years to become mainstream. These advanced techniques will replace many but not all of the mechanical recycling facilities that we use today but that won't happen soon or in many developing countries. Here are some strategies that we can use to provide our customers with sustainable solutions today using the current methods and technologies that are available.

WHAT'S NEW

in sustainability & color for plastics

- Create colored plastics that are more mechanically recycling friendly. There are a number of ways to this:
  - Use lower loadings of colorants to decrease opacity of finished product
  - Use black colorants that are transparent to the optical sorters
  - Add colors and artwork to a label that can be easily removed from the package
  - Replace ink labels with laser marked products to convey the same decorative effects or information
  - Create colorants that do not survive the recycling process. Colors that can be removed or disappear from washing, heat or UV exposure could help keep the recycling streams cleaner and easier to re-color after recycling.

- Create colorants that break down in residential composting sites. This could be a good market for natural dyes derived from plants, fruits, vegetables or mineral pigments.

- Calculate Carbon Footprint of colors and additives. This will help your customers choose the best materials that have the least impact on the environment and could be a great selling point.

- Develop colorants that do more than just color. Can they help stabilize the plastic, reduce warpage, protect the plastic from additional heat histories, etc

- Design materials and products that are re-usable. This includes colorants that are more stable to UV and other types of degradation. This will allow plastics to remain in use longer and not need to be replaced by new materials.

- Promote colorants that have higher tint strength. This will allow customers to add less colorants to achieve the desired effect without having higher concentrations of colors in the recycled plastics.

So why should we shift our strategies? There is new legislation looming globally to reduce or eliminate plastics from our societies. Some of it is already in place. Some of it has already been rolled back and some of it is imminent. Some of it will never happen! If we can demonstrate that we have sustainable alternatives to traditional materials we might be able not only to retain business but also grow new opportunities with higher profitability.

spe COLOR & APPEARANCE

SPE Color and Appearance Division Mission Statement

The Color and Appearance Division of SPE strives to educate, train, inform and provide professional interaction opportunities to the global community involved in visual performance and aesthetics of plastics.

INVITATION TO ATTEND CAD BOARD MEETING

The Color and Appearance Division (CAD) holds 4 Board of Directors (BOD) meetings each year, either in person or virtually. Any CAD members in good standing with in SPE and has Color and Appearance as their selected division are welcomed to attend these meetings. If interested in attending these meetings, please contact the current CAD Chairperson or any BOD for more information.

CADNEWS® Technical Content – Scott Heitzman

The Technical Content portion of our Spring 2023 edition of CADNEWS® comes with congratulations to Andy Francis. Andy was awarded with the "2021 RETEC® Best Paper Award" for his paper and presentation of, UVC Durability Testing of Colored Coatings. and Plastics. With the surge use of UVGI technology, it's a must first-time read or refresher for those who were at the RETEC®. The paper covers correlation and sample test results using UCV accelerated testing.

CADNEWS® Color Notes – Scott Heitzman

Welcome CADNEWS® Color Notes. The idea is to create discussion and provide comments regarding questions you may have related to color and appearance, color measurements, and colorants in general. Do not miss your opportunity to anonymously ask our team of experts a question. Use the link below to submit your questions. Our SPECAD Color Notes committee will provide a response to one or more of the submissions in the upcoming CADNEWS® letter.

http://specad.org/color-questions-for-cad/

UVC durability testing of colored coatings and plastics

Andy Francis, Sean Fowler, Bill Tobin, David Duecker, and Brad Reis

Q-Lab Corporation, Westlake, OH, USA

Abstract

UVC lamp technology has been in use for decades to disinfect air, water, and solid surfaces. DNA and RNA chemically break down under exposure to UVC energy, which makes it a very effective tool for deactivating viruses, bacteria, and mold spores, in a process called ultraviolet germicidal irradiation (UVGI). Interest in UVC technology increased sharply in 2020 as a result of the COVID-19 pandemic. UVGI devices have become increasingly popular for disinfecting rooms and other surfaces in medical facilities, aircraft, and public transportation vehicles. Other UVGI systems are being used in HVAC (heating, ventilation, air conditioning) systems or special light fixtures to reduce pathogen concentrations in indoor air.

This increased use of UVC light raises the question of what it does to synthetic materials such as plastics. Testing is required to understand how commercial, transportation, and personal protective equipment (PPE) materials will degrade when exposed to repeated UVGI cleaning cycles. UVA and UVB light is known well to cause damage to a range of materials, and UVC irradiance consists of even higher-energy photons, so this is a very relevant topic. This presentation will discuss some guidelines for UVC testing, although very few international standards exist yet for materials durability testing with UVC light. Results will be presented from UVC light exposure testing of several different types of materials, including painted panels and indoor vinyl materials. These materials have previously been tested extensively for their UVA and UVB resistance in natural environments, but results are significantly different for even relatively short exposure to UVC light.

Introduction

UVC lamp technology has been in use since the 1950s or earlier to disinfect air, water, and solid surfaces. DNA and RNA chemically break down under exposure to UVC energy, which makes UVC light a very effective tool for deactivating viruses, bacteria, and mold spores. These exposures are referred to as ultraviolet germicidal irradiation (UVGI) treatments. Not surprisingly, interest in UVGI technology increased in 2020 as a result of the COVID-19 pandemic. UVGI devices have become increasingly popular for disinfecting rooms and other surfaces in medical facilities, aircraft, and public transportation vehicles. Other UVGI systems are being used in HVAC (heating, ventilation, air conditioning) systems or special light fixtures to reduce pathogen concentrations in indoor air.

However, an important question arises. If UVC energy can chemically break down DNA, what does it do to synthetic materials such as paints or plastics? Will the materials in a room, aircraft, or other transportation vehicle degrade when exposed to repeated UVGI cleaning cycles? How will PPE materials hold up to UVC disinfection? We know that UVA and UVB irradiance cause damage to a range of materials, and UVC irradiance consists of even high-energy photons, so this is a very relevant topic.

This paper describes exposure of painted metal panels of a variety of colors, as well as indoor vinyl flooring, to UVC light at 254 nm using an UV fluorescent accelerated weathering test apparatus. For decades, material scientists and engineers have relied on these testers to determine how durable their materials are when exposed to natural light. This paper demonstrates that the same technology can now be used to test materials against today's UVC disinfection systems.

Experimental

Specimens were tested in a QUV/uvc accelerated weathering tester manufactured by Q-Lab Corporation (Fig. 1). This tester is based upon standard, well-established UV fluorescent weathering testers, which have been used since 1970 to conduct weathering exposure tests. UVC-254 lamps are used to deliver monochromatic light at 254 nm to specimens, controlled precisely by four specialized onboard irradiance sensors. Because of the potentially harmful nature of UVC light, additional light baffles and automatic safety shut-off features have been added to prevent any light escaping the chamber. Although UV fluorescent devices typically feature condensation, water delivery is not available in this test apparatus. This is because materials exposed to UVC light are typically indoor materials that are not exposed to outdoor moisture.

Figure 1. Painted metal panels mounted in a QUV/uvc tester

Exposure conditions in the QUV/uvc tester were as follows:

Irradiance: 6 mW/cm^2 (60 W/m^2) @ 254 nm

Temperature: 30 °C black panel

Duration: 200 hours

Evaluations: Color and gloss at 24, 100, and 200 hours

The irradiance setpoint was chosen because it falls in the middle of the achievable range of the test instrument, is within the range of typical low-pressure mercury lamps, and provides a reasonably high degree of test acceleration. Very few standardized tests exist for UVC resistance testing – those that are available specify irradiance setpoints of 1.0 mW/cm^2 or lower. The level of 6.0 mW/cm^2 nevertheless seems appropriate. In the absence of high temperatures and water, material degradation is caused entirely by light, and thus reciprocity may be a reasonable assumption.

The low temperature is chosen because most materials exposed to UVGI in service will be indoor materials at indoor ambient conditions. The elevated temperatures recommended in most weathering standards and some UVC tests are not representative of most actual use conditions. A black panel temperature of 30 °C is the minimum achievable in the chamber, since some heat is generated by the UVC lamps.

The duration of 200 hours was not selected at the start of the test, but results showed this to be a test interval after which little further degradation will take place.

Following the UVC exposure, UVB exposures were also conducted under typical test conditions, using UVB-313EL lamps. An all-light cycle was selected to better match the UVC exposure, even though UVB exposures usually include condensation steps.

Irradiance: 0.076 mW/cm^2 (0.76 W/m^2) @ 254 nm

Temperature: 50 °C black panel

Duration: 200 hours

Evaluations: Color and gloss at 100 and 200 hours

The painted specimens tested were nine color groups of painted Q-PANEL standard aluminium AL-35 panels. The paint was a general-purpose outdoor spray paint intended for wood, plastic, metal, and other surfaces. Paint and primer are included in a single application. The paint selected was affordable, of medium quality.

Vinyl flooring materials were also evaluated. Three different types were selected, all readily available at home good retailers.

Color was evaluated by L-a-b measurements with a Macbeth colorimeter. Gloss was measured by a glossmeter, 60° specular included.

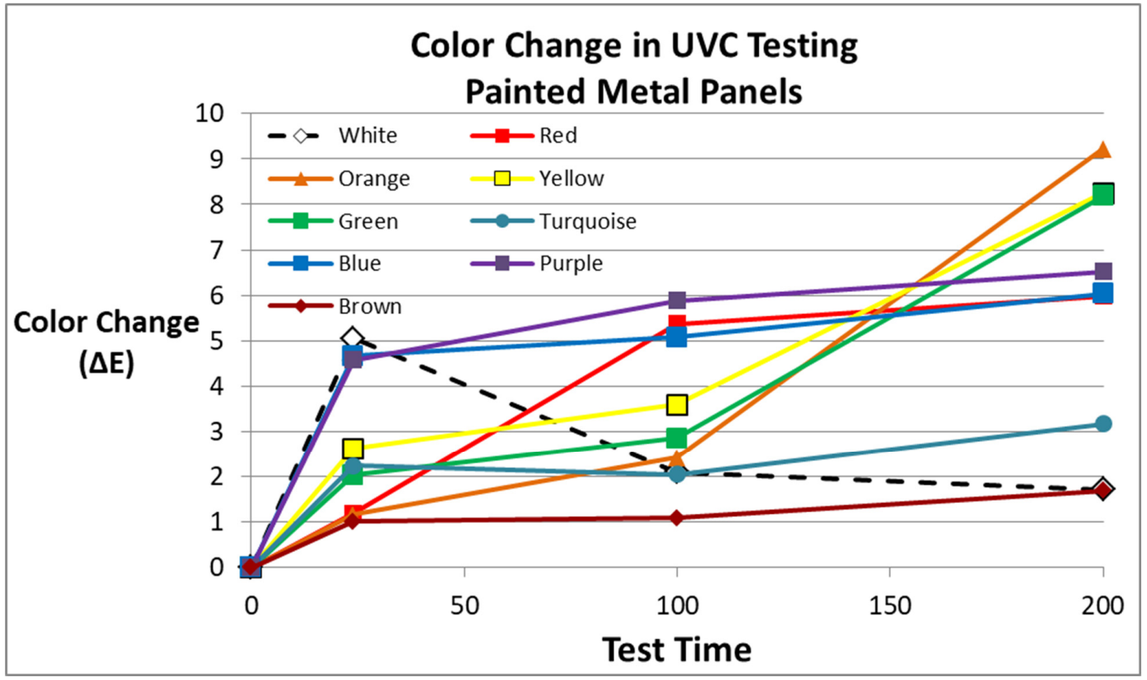
Evaluations were performed at 24 h, 100 h, and 200 h. The 100 h and 200 h evaluations were performed on the same specimens after the indicated intervals. The specimens tested at 24 are different specimens from the same lot. Degradation was unexpectedly fast after just 100 h, so fresh specimens were re-run for 24 h to evaluate the extent of damage after just one day.

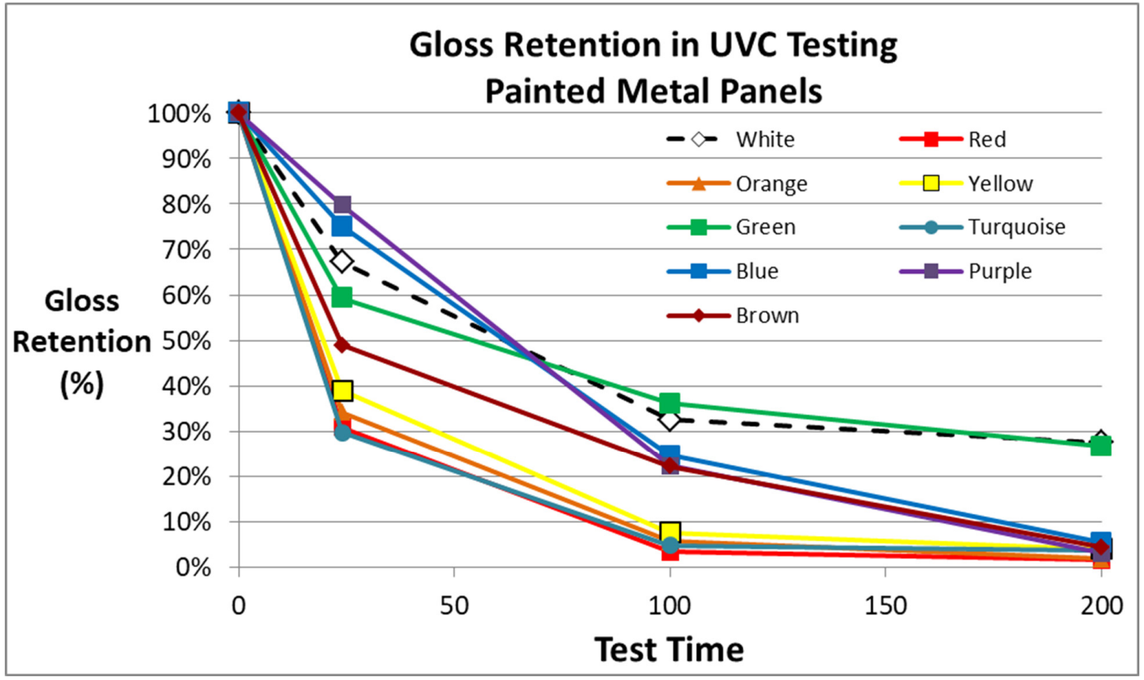
Results and Discussion

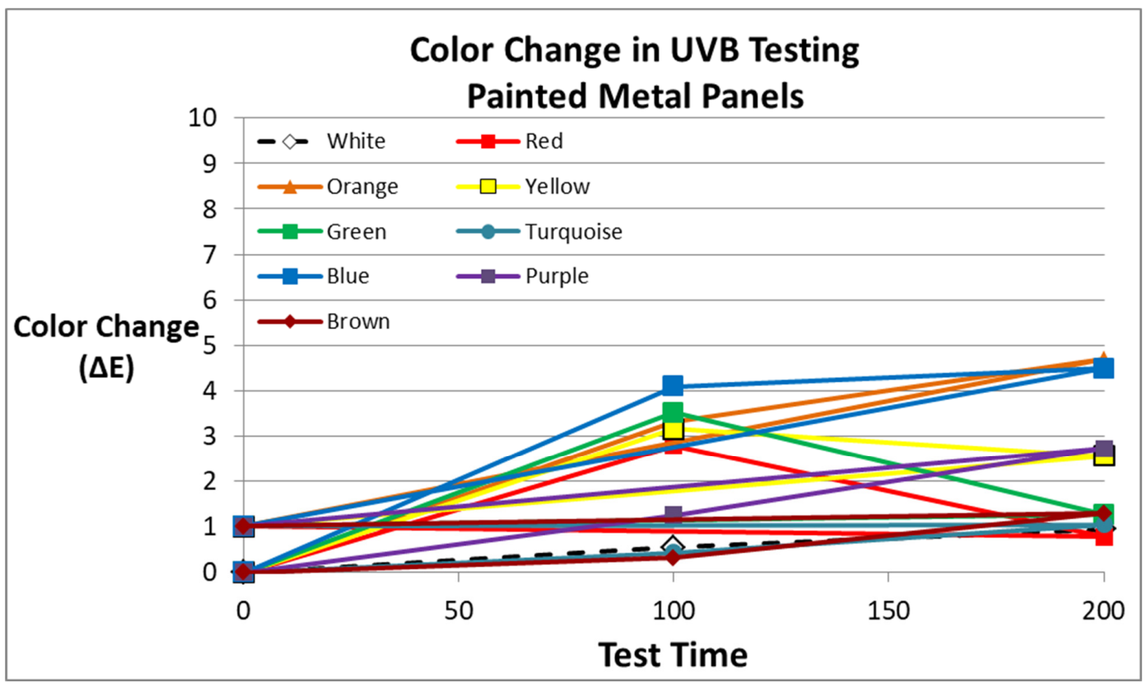
Painted Aluminium Panels

Color change and gloss results are presented in Fig. 2 and 3, respectively. Photographic images of specimens following 100 h exposures are presented in Fig. 4. The results are striking even after a very short period of exposure, especially with respect to gloss loss. Significant chalking is observed after just 24 h on all specimens, with gloss retention values ranging from 30-80%. After 100 h of exposure, all specimens have retained less than 40% of their original gloss, with some exhibiting completely matte finishes with just 5% retention. After 200 h, only the green and white paints exceed 25% gloss retention, with the remaining seven colors all below 5%.

The harshness of UVC light is evident from comparison with exposures to UVB-313EL lamps, which are themselves known for a harsh spectrum with significant shortwave UV light that is not present in terrestrial sunlight. Even so, the extent of color change in the UVB exposure is substantially less for these panels in UVB exposure than in UVC exposure. The difference is even greater when comparing gloss retention, where all colors experienced as much or more degradation in 24 hours of UVC exposure than in 200 hours of UVB testing.







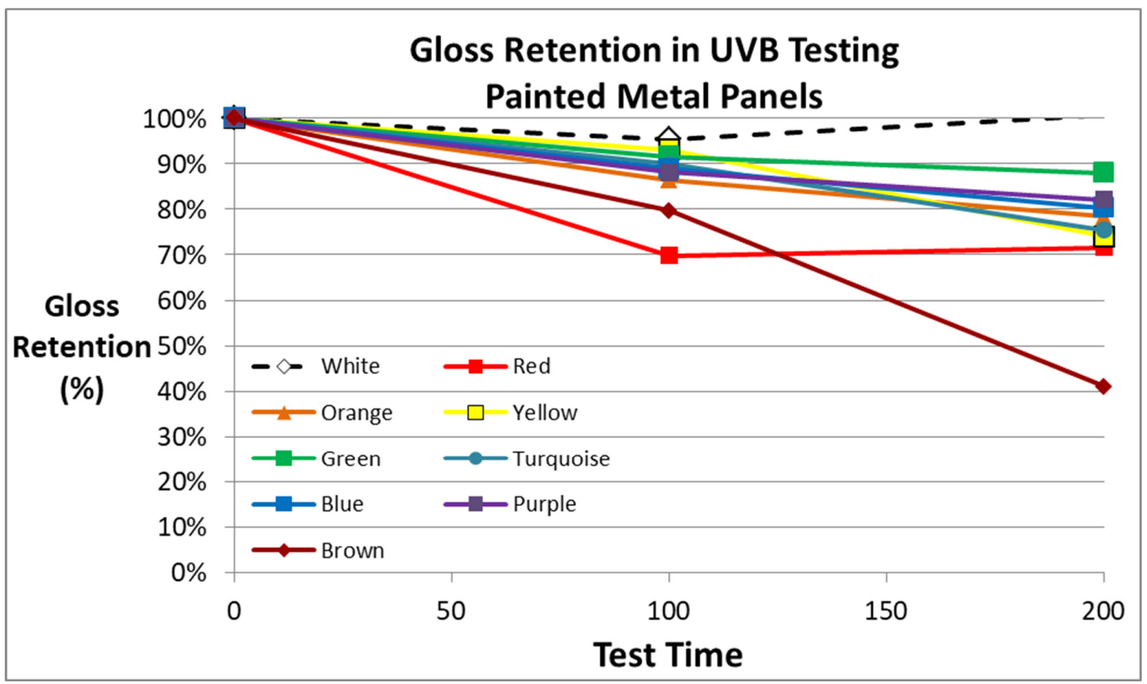


Figure 2. Color change for painted panels after UVC (top) and UVB (bottom) exposure.

Figure 3. Gloss retention for painted panels after UVC (top) and UVB (bottom) exposure.

Figure 4.Painted panels following UVC exposure.

This extent of degradation would typically take even longer in a standard weathering exposure, with times of 1000-3000 hours common in UV fluorescent and xenon arc testing using Day. These panels demonstrate that UVC light is not just high-energy, as is known from physics, but also readily absorbed by these materials and able to cause bond breaking and material degradation.

A natural question to ask is how this level of UVC exposure compares to existing test standards, and how the delivered radiant energy compared to that received by materials over repeated UVGI cycles.

Vinyl Flooring

Three different types of commercially-available vinyl flooring materials were also exposed to UVC light, as shown in Fig. 5. After just 24 hours – an extremely short weathering test for durable materials – some yellowing discoloration is visible on two of the materials (center, right) and major yellowing can be observed on the other (left). This testing is still in progress.

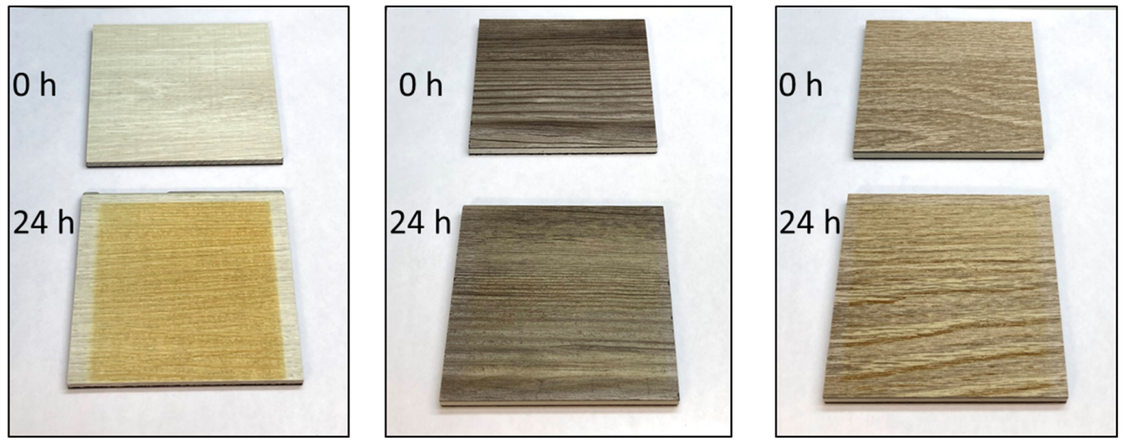


Figure 5.Vinyl flooring as-purchased (top) and following 24 h UVC exposure (bottom).

Published UVC Tests

The main international standard for UVC exposures is IEC 60335-1 *Household and similar electrical appliances – Safety – Part 1: General requirements*, a broad safety standard for a variety of electrical appliances. Annex T includes a UVC exposure for materials including electrical insulation for wires or other components. This standard includes exposure for 1000 hours at an irradiance of 10 W/m^2 (1.0 mW/cm^2) at 254 nm, for a total e of 3.6 kJ/cm^2. The temperature is measured by a black panel thermometer and set to 63 °C, a value taken from the ISO 4892-2 standard for xenon arc exposures of plastics.

Another published standard for a UVC exposure comes from the Business and Institutional Furniture Manufacturers Association (BIFMA). BIFMA HCF 8.1-2019, *Health Care Furniture Design Guidelines for Cleanability*, includes a UVC exposure test to simulate regular UVGI (ultraviolet germicidal irradiation) disinfection protocols over the product's service life. The test method requires an exposure dose of 291 kJ/m^2 (0.030 kJ/cm^2) at 254 nm. The recommended test duration is 12-24 hours (implying an

irradiance between 0.3 - 0.6 mW/cm^2), BIFMA allows an exposure that achieves the dose faster, as long as this adjustment is noted in the test report. The BIFMA standard does not specify an exposure temperature.

The BIFMA standard includes helpful information on the rationale for its exposure cycle. The test cycle in the BIFMA standard assumes that a piece of furniture will be exposed to weekly UVC cleaning cycles over a 7-year expected service life, resulting in a dose of 291 kJ/m^2 (0.03 kJ/cm^2), at 254 nm. Having been written prior to the COVID-19 pandemic, this method and its development appears particularly prescient, and the rationale for the exposure is sensible. The IEC method cited is a much longer test and delivers 124 times the UVC dose of the BIFMA method. The IEC method appears to be based on exposure of materials in an environment where UVC lamps operate frequently or continuously, such as within a germicidal UVC device, HVAC system with germicidal lamps, or UVC curing system. The higher dosage seems reasonable when compared to the BIFMA standard, which is mainly concerned with appearance properties of furniture after cleaning.

Correlation to Actual UVGI Exposure

Scientific literature on germicidal UVC exposures includes references to a wide range of doses for effective disinfection, from as low as about 2 mJ/cm^2 up to 1000 mJ/cm^2. One reason for the range is that some microorganisms are more resistant to the effects of UVC radiation than others, but significant differences are also linked to the "log reduction" of disinfection achieved or targeted in different studies and the large uncertainties surrounding many of the measurements. A "4-log" reduction in a pathogen refers to a 99.99% kill rate, while a "1-log" reduction refers to a 90% kill rate. 1-log reduction is also often called D90 disinfection and is a common threshold used in biological studies. Due to these differences, and to add a safety margin to the exposure, 1 J/cm^2 has been proposed as a typical UVGI cycle.

This can be readily compared to the UVC energy received by the specimens in this paper. A single cycle of UVGI of around 1 J/cm^2 is achieved at this test irradiance (6.0 mW/cm^2) in just 167 seconds (almost 3 minutes). This means that the first 24 hours of testing in the QUV/uvc tester delivers the same UVC energy as nearly 1.5 years of daily UVGI exposures. The full test duration of 200 h corresponds to nearly 12 years of daily UVGI exposures.

The nature of UVGI exposures and UVC test apparatuses is therefore such that degradation of materials exposed to UVC light has the potential to be evaluated very quickly in the laboratory. Future work should be conducted to confirm the correlation between laboratory test results and actual material property changes over repeated UVGI cycles. Testing should also be conducted on a wide range of materials used in healthcare, transportation, and HVAC, systems, including colored polymers, to evaluate their resistance or susceptibility to UVC light.

Summary and Conclusions

The recent increase in the use UVGI technology for disinfecting indoor surfaces and environments raises questions about the durability of the materials exposed to these UVC treatments. Painted metal specimens of a variety of colors were exposed to UVC light in a weathering test apparatus and evaluated for their color and gloss loss. All colors exhibited noticeable color change and severe chalking and loss of gloss in just 24 hours. Most specimens had an entirely matte finish after the full 200 hour test interval. This demonstrates that UVC light can cause significant degradation to materials and that this can be simulated in the laboratory in a short time frame. Vinyl flooring specimens also exhibited significant yellowing behavior after just 24 h of exposure. Further testing will be conducted to evaluate the effects of UVC light on a range of materials, including colored plastics. This research will start to build correlation between accelerated testing and actual UVGI exposure, and to help inform the development of new accelerated testing standard protocols for UVC light.

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MEMBER SPOTLIGHT

christine gehres

WE WANT TO INTRODUCE OUR BOARD MEMBERS TO THE CAD MEMBERSHIP

tell us about yourself.

I started in the Specialty Chemicals Industry right after College (Germany and the UK) at Hoechst (organic pigments) in Frankfurt. After 4 years, I moved to our pigment plant in RI as an ex-pat… Here I had the opportunity to further my studies and received an executive MBA from URI. I have lived and worked on three continents and in five countries, always in marketing / tech / sales / management roles in Specialties – and I always gravitated back into the world of color.

I joined SpecialChem in July 2022 after 34 years in the industry – now I help people in roles that I used to have, grow their businesses and become (more) digital. I was a client of SpecialChem already in 2002 and many times over the years, so it was a natural move.

My two children were born in northern NJ and I still live there. My son is already working, and my daughter is a freshman in college. Both speak, read and write German – and my parents still live close to Frankfurt, Germany. They are very happy that they can communicate in German with their grandchildren who still love to visit “Oma und Opa” every chance they get. More recently, I have been able to work from Germany as well, and our dog “Strudel”, a seven year-old rescue Jack Russel Terrier mix is usually not far from me.

when did you join the board?

I finally joined the board in 2022 to fill a vacancy and want to continue to serve. It is a way for me to “give back” to an industry that has given a lot to me over the last decades.

how long have you been attending cad meetings and/or been a member?

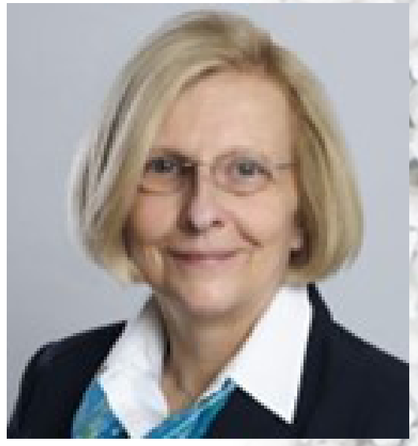
My first CAD RETEC was in 1993 – I had been in the US 11 months, and that is also when I became an SPE member.

what do you like about the cad group and our meetings?

I like this group because we truly focus on color and we have all the expertise you could ever want when it comes to the coloration of plastics. It is a fun group and people have known each other for many years, although we care in some cases competitors, or customers or suppliers, we have great camaraderie and all work together to support our industry and specifically anything having to do with color.

any suggestions about things cad should improve or increase?

Our membership is changing, and it has to change further. Young(er) colleagues may not yet be as involved, and we must find ways to attract that talent for SPE/CAD just like employers attract new talent – so relevant topics, new developments, digital ways of communicating and educating, further and convenient reach.



any fun facts about you?

- **HOBBIES**
  - I have been a skier and sailor most of my life, golf is so-so but fun – and I love to read detective stories, biographies and I enjoy cooking and entertaining friends. Travel, theater…I have been able to get my kids into skiing, and they love to travel and they like my cooking – so that is how we share some of our time
- **HIDDEN TALENTS**
  - I do have a sense of humor although I am German
- **FAVORITE SPORTS TEAMS**
  - My favorite sport to watch is soccer/Fussball, and my team has been Bayern Munich ever since I can remember (and when they were not as popular as they are today)
- **ETC**
  - I run a not-for-profit German Saturday School as the principal

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