



ABRAFATI SHOW

PROGRAM

INTERNATIONAL COATING CONGRESS

DRIVING INNOVATION,
RELATIONSHIPS, AND BUSINESS

**23-25
SEP
20
25**
SÃO PAULO EXPO

INTERNATIONAL COATING CONGRESS · SEPTEMBER 23, 24 & 25

SEPTEMBER 23

08:00 - 09:15	Short Courses
09:00 - 09:20	Opening Session and Abrafati Award Ceremony
09:20 - 10:30	Plenary Session
10:30 - 11:00	Coffee Break
11:00 - 13:10	Morning Sessions
13:10 - 14:30	Lunch Break
14:30 - 17:25	Afternoon Sessions

SEPTEMBER 24

08:00 - 09:15	Short Courses
09:00 - 10:30	Plenary Session
10:30 - 11:00	Coffee Break
11:00 - 13:10	Morning Sessions
13:10 - 14:30	Lunch Break
14:30 - 17:25	Afternoon Sessions

SEPTEMBER 25

09:00 - 10:30	Plenary Session
10:30 - 11:00	Coffee Break
11:00 - 13:10	Morning Sessions
13:10 - 14:30	Lunch Break
14:30 - 16:40	Afternoon Sessions



— TESTIMONY

LUIZ CORNACCHIONI

EXECUTIVE PRESIDENT OF ABRAFATI

BRAZILIAN COATINGS MANUFACTURERS ASSOCIATION

BUILDING THE PAINTS INDUSTRY OF THE FUTURE

In this year, as Abrafati celebrates its 40th anniversary, I would like to highlight the vision of the pioneers who created the International Coatings Congress. Back in 1985, they were already thinking ahead, understanding that it was essential for professionals in the sector to stay up to date with technological advances and to have a space for exchanging ideas and experiences. It was from this perspective that, in 1989, the first edition of our Congress took place, and since then it has become one of the driving forces for promoting research and innovation in the coatings industry.

Now, as we reach the 19th edition of this highly successful event, I want to express our recognition to those who, in the 1980s, were already working to establish a Congress that would be both relevant and an effective contribution to technological development.

As tradition has it, this year's program is highly diverse, which shows that research and development in the sector continue to follow multiple paths. Innovations are linked to products, processes, raw materials, technologies, and other aspects, leading to advances in sustainability, improved properties, enhanced performance, the addition of new functionalities, among others. This opens up new horizons for the development of ever-better coatings, capable of meeting the expectations of the most demanding users.

I would also like to highlight a highly topical subject, which is already gaining a privileged space in the lecture program: artificial intelligence. We will be able to understand how this technological revolution is already bringing about transformations in the coatings industry – and how it holds vast potential to be explored.

Finally, I affirm that this edition of the Congress, like the 18 before it, will leave an invaluable legacy for the sector, whose effects will extend over time. Much of what will be presented and discussed will be of great value for manufacturers and suppliers as they continue to advance in the development of the paints of the future.



TESTIMONY

JOÃO PAULO PICOLO
CEO OF NÜRNBERGMESSE BRASIL

BRAZILIAN COATINGS INDUSTRY ADVANCES IN STRENGTH AND RELEVANCE

It is with great pride that we celebrate the 19th edition of ABRAFATI SHOW, a gathering that, more than a business event, is an emblematic example of how innovation, knowledge, and business can come together to shape the future of the coatings industry. Not by chance, for the 2025 edition, we celebrate impressive figures: nearly 300 exhibitors and a 12% increase in exhibition space sold.

This year, in particular, the event takes place at a historic moment for Brazil. The country has reached 4th place in the global paint production ranking, demonstrating the strength and potential of a sector that continues to grow consistently.

Equally important as production and raw materials, topics such as sustainability, digitalization, and new functionalities are at the core of our discussions at the International Coatings Congress. These are themes that generate an impact beyond the industry itself, benefiting society as a whole, with whom we reinforce our commitment by bringing together experts, academics, and international representatives. Alongside the Congress, the Exhibition amplifies this movement, bringing to Brazil global companies and brands that stand out for their innovation know-how. ABRAFATI SHOW has become a true international hub, where global trends interact with our local particularities, creating a unique environment for exchanging experiences, building strategic partnerships, and generating new business opportunities.

As one of the world's leading business event organizers, we are proud to collaborate to ensure this gathering continues to grow in relevance and representation. We believe this not only highlights the strength of the coatings industry but also inspires pathways toward a more connected and innovative future. Being part of this market allows us to reaffirm our commitment to supporting such an important community. We provide opportunities that connect people, drive lasting transformations, and, above all, strengthen networks of knowledge and collaboration.



TESTIMONY

DR. SONJA SCHULTE

VP COATINGS DIVISION, VINCENTZ NETWORK

INNOVATION, CONNECTION, INSPIRATION: THE ABRAFATI SHOW AS A GATEWAY TO THE INDUSTRY'S FUTURE

Far more than a regional gathering, the Abrafati Show is regarded as one of the leading international events for the coatings industry and the most important meeting point in Latin America. Its hallmark is the powerful combination of a high-level exhibition with the International Coatings Congress, creating a platform where inspiration turns into action and ideas develop into real opportunities that cannot be replicated elsewhere.

At the heart of the Abrafati Show lies the International Coatings Congress, which brings together experts from industry and academia to share the latest findings and technical advances. The program highlights future-oriented topics such as sustainable solutions, smart functionalities, performance improvements and digitalisation in coatings. It is here that the state of the art is presented, collaborations are forged, and the community's bonds are strengthened—driving innovation forward across the globe. The exhibition reflects this spirit of innovation on a broad scale. Companies from around the world present new raw materials, technologies and equipment, turning the show floor into a vibrant marketplace of ideas and solutions. The Abrafati Show is a place where international trends meet the specific dynamics of Latin America, making it a unique hub for exchanging knowledge, building partnerships and developing business opportunities.

More than just an industry fair, the Abrafati Show is where the future of coatings is discussed, shaped and brought to life. It combines knowledge transfer, technological progress and high-quality networking in a way that inspires participants and strengthens the entire industry community.

At Vincentz Network, we have been committed to serving the global coatings sector for more than a century. With platforms for knowledge exchange, market intelligence and professional networking, we have always sought to support the industry in moving forward. We are proud to bring this heritage to Brazil, partnering with Abrafati as show and congress continue to expand their reach, quality and influence—connecting global innovation with the vibrant Latin American market.

ABRAFATI TECHNICAL AND SCIENTIFIC COUNCIL

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SUMMARY

PROGRAMMATION

INTERNATIONAL
COATINGS
CONGRESS

23 SEPTEMBER



MORNING SESSIONS

🕒 11:00 - 11:40

SESSION 01: ARCHITECTURAL COATINGS I

1.1 **Marlon Santos** 🇧🇷👑
BASF, Brazil
Winner of the 2024 American Coatings Conference Award
Novel Bimodal High Solid Polymer Dispersions for Architectural Coatings

SESSION 02: WATER-BORNE COATINGS I

2.1 **Juliane Santos** 🇧🇷👑
Indorama-Indovinya, Brazil
Improving durability of acrylic latex-based paints with reactive surfactant

🕒 11:45 - 12:25

1.2 **Denis Heymans** 🇧🇪
Hexion, Belgium
Vinyl ester-based emulsions for high-performance intumescent coatings

2.2 **Leandro Alves** 🇧🇷
Syensqo, Brazil
Additive solution to replace fluorocarbons in water-based paints

🕒 12:30 - 13:10

1.3 **Marlon Braidott** 🇧🇷👑
BASF, Brazil
Study of the ICI efficiency of HASE x HEUR modifiers in premium paints

2.3 **Juliane Santos** 🇧🇷👑
Indorama-Indovinya, Brazil
Resin emulsification for sustainable paints: impact of surfactants

LUNCH BREAK - 13:10 - 14:30

AFTERNOON SESSIONS

🕒 14:30 - 15:10

SESSION 01: ARCHITECTURAL COATINGS I

1.4 **Ingrid Meier** 🇺🇸👑
Evonik, USA
Impact of particle size on the matting and durability of coatings

SESSION 02: WATER-BORNE COATINGS I

2.4 **Arlene Kita** 🇧🇷👑
Lubrizol, Brazil
ADH-free 1K water-borne acrylic resin for hot tire pick-up resistant coatings

🕒 15:15 - 15:55

1.5 **Willian dos Santos** 🇧🇷
Klabin, Brazil
Microfibrillated cellulose: durability and sustainability in paints

2.5 **Diego Moreira** 🇧🇷
Dow, Brazil
Enhanced durability and renewable content in decorative paints

🕒 16:00 - 16:40

1.6 **Gilvan Felix** 🇧🇷
Polystell, Brazil
Multifunctional additive for solar reflectance and improved stability

2.6 **André Moreno Fernandez** 🇧🇷👑
BYK-Chemie, Brazil
Optimization of mechanical & dirt impregnation resistance in the dried film

🕒 16:45 - 17:25

1.7 **Josafá Rebouças** 🇧🇷
J J R de Lima Consultoria, Brazil
Colors Beyond Vision: Paints with Assistive and Functional Technologies to Promote Sensory Access to the World of Colors for People with Visual and Neurodivergent Disabilities.

08:00 - 09:15 · SHORT COURSES
09:00 - 09:20 · OPENING SESSION AND
ABRAFATI AWARD CEREMONY
09:20 - 10:30 · PLENARY SESSION

10:30 - 11:00 · COFFEE BREAK
11:00 - 13:10 · MORNING SESSIONS
13:10 - 14:30 · LUNCH BREAK
14:30 - 17:25 · AFTERNOON SESSIONS

SESSION 03: DIGITALIZATION

3.1 Pedro Henrique Nogueira 🇧🇷
UFMG, Brazil
Abrafati Award Winner -1st Place
| Self-healing biomass coatings: the potential of Eucalyptus sp. bio-oil in sustainable anticorrosive protection

3.2 Wilian Saraiva 🇧🇷
W2S Consultoria, Brazil
Application of artificial intelligence in coating formulation

3.3 Presentation under replacement

SESSION 04: BIO-BASED COATINGS

4.1 Alexandre Cordeiro 🇧🇷
Microcapsuletech, Brazil
Abrafati Award Winner - 2nd Place
| Next-generation smart epoxy coating with triple functionality (self-healing, hydrophobicity, and antimicrobial action) via a single multifunctional additive

4.2 Miriam Peralta 🇪🇸
Lubrizol, Spain
Plant-derived polyurethane dispersion for high-performance wood finishes

4.3 Xavier Raby 🇧🇷
Raby IP Consulting & Innovation, Brazil
Paints and Sustainability: Patent Landscape and Trends in Brazil

SESSION 05: PROTECTIVE AND EPOXY COATINGS I

5.1 Giovana Grillo 🇧🇷
Dow, Brazil
Influence of coalescents on the anticorrosive efficiency of DTM coatings

5.2 Laura Zanella 🇧🇷
Wacker Química, Brazil
Anti-corrosion technologies for high-performance industrial coatings

5.3 Angélica Mota 🇧🇷
Lubrizol, Brazil
Water-borne PUD based on polyamide for Direct-to-Metal applications



LUNCH BREAK · 13:10 - 14:30

SESSION 03: DIGITALIZATION

3.4 Guilherme do Lago 🇧🇷
Dow, Brazil
Enhancing formulation efficiency and sustainability with digital tools

3.5 Álann Bragatto 🇧🇷
Indorama-Indovinya, Brazil
Using digital and physicochemical tools to select additives

3.6 Julimar Lopes 🇧🇷
Pesquisador Autônomo, Brazil
DeepSeek and ChatGPT: AI for future paint formulators

SESSION 04: BIO-BASED COATINGS

4.4 Isabela Zani 🇧🇷
Rhodia, Brazil
Formulations decarbonization by the use of carbon-neutral raw materials

4.5 Paresch Tadas 🇻🇳
BSB Nanotechnology, Vietnam
Rice husk silica: a sustainable alternative for high-performance coatings

4.6 David Löf 🇺🇸
Primient Covation, USA
Functionalizing 100% bio-based 1,3-propanediol into reactive diluents

SESSION 05: PROTECTIVE AND EPOXY COATINGS I

5.4 Claudia Sá 🇧🇷
Evonik, Brazil
New amine hardener for ultra-low emission epoxy coatings

5.5 Paula Cousino 🇺🇸
Momentive Performance Materials, USA
Water-borne silicone resin for high temperature resistant coatings

5.6 Eliane Gama Lucchesi 🇧🇷
Lanxess Ipel, Brazil
Factors that influence the protection of the dry film of decorative paints

PROGRAMMATION

INTERNATIONAL
COATINGS
CONGRESS

24 SEPTEMBER



MORNING SESSIONS

SESSION 06: ARCHITECTURAL COATINGS II

SESSION 06: ARCHITECTURAL COATINGS II

🕒 11:00 - 11:40

6.1 **Rita Leticia Censi** 🇧🇷
Wana, Brazil
Modeling paint performance with new generation of rheological modifiers

7.1 **Otto Soidinsalo** 🇳🇴
Borregaard, Norway
Impact of microfibrillated cellulose on drying speed of one-pass coatings

🕒 11:45 - 12:25

6.2 **Marlon Braidott** 🇧🇷👑
BASF, Brazil
Contributions of hydrophobic dispersants in aqueous coatings

7.2 **Ziniu Yu** 🇺🇸
W.R. Grace & Co., USA
Next-generation matting agents for water-based coatings

🕒 12:30 - 13:10

6.3 **Edivaldo Borba** 🇧🇷
Advancion, Brazil
Activating paint surface for better indoor air quality

7.3 **Alexandre Decimoni** 🇧🇷
Clariant, Brazil
Smart emulsifiers for superior water-resistant binders

LUNCH BREAK - 13:10 - 14:30

AFTERNOON SESSIONS

SESSION 06: ARCHITECTURAL COATINGS II

SESSION 06: ARCHITECTURAL COATINGS II

🕒 14:30 - 15:10

6.4 **Ricardo Luiz** 🇧🇷
Dow, Brazil
Alternatives for regulatory restrictions on PFAS and APEO in paints

7.4 **Marcelo Dutra** 🇧🇷
Arkema, Brazil
Comparative study in the application efficiency of an APEO-free resin

🕒 15:15 - 15:55

6.5 **Cleiton Silva** 🇧🇷
Münzing, Brazil
Wax in matte acrylic paints to improve washability and cleanability

7.5 **Leandro Alves** 🇧🇷
Syensqo, Brazil
Sustainable alkyd emulsification for high-performance water-borne coatings

🕒 16:00 - 16:40

6.6 **Carlos Moraes** 🇧🇷👑
Imerys, Brazil
Application of diatomite for gloss control and polishing

7.6 **Dayane Freitas** 🇧🇷👑
BASF, Brazil
High-performance and sustainable resins for polyurethane coatings

🕒 16:45 - 17:25

08:00 - 09:15 · SHORT COURSES
09:00 - 10:30 · PLENARY SESSION
10:30 - 11:00 · COFFEE BREAK

11:00 - 13:10 · MORNING SESSIONS
13:10 - 14:30 · LUNCH BREAK
14:30 - 17:25 · AFTERNOON SESSIONS

SESSION 08: PROTECTIVE AND EPOXY COATINGS II

8.1 **Ap Heijenk**

Covestro, Netherlands

Productive and sustainable solutions for industrial metals

8.2 **Denis Heymans**

Hexion, Belgium

Aliphatic monomers for fluorine-free superdurable protective coatings

8.3 **Jesús Morales**

Eastman Chemical, USA

Novel TMCD-based hyperdurable resin showcases extreme weatherability

SESSION 09: ABRAFATI-RADTECH RADIATION CURING SEMINAR

9.1 **Luciana Souza**

IGM Resins, Brazil

Amines as effective synergists for improved cure in Type I systems

9.2 **Anderson Gomes**

Allnex, Brazil

Excimer: Combining low glare with high performance coatings

9.3 **Pamila Heitkoeter**

Allnex, Brazil

UVEB curing oligomers for coil coating

SESSION 10: NOVEL MATERIALS I

10.1 **Bruno Rodrigues**

OCQ, Brazil

A new national high-performance coalescent solution

10.2 **Marcus Hutchins**

Allnex, USA

Hyperdispersant for conventional and free radical chemistries

10.3 **Decio Fernandes**

BASF, Brazil

New sustainable light stabilizer blends to upgrade the coating performances



LUNCH BREAK · 13:10 - 14:30

SESSION 08: PROTECTIVE AND EPOXY COATINGS II

8.4 **André Luiz Oliveira**

Wana, Brazil

Sustainable innovation in durable coatings with polyaspartic resins

8.5 **Mauro Da Silva**

Westlake Exy, Brazil

Development of water-based epoxy coatings with low VOC levels

8.6 **Victor Noce**

USP, Brazil

Analysis of KPIs for the commercial representation of industrial paint

SESSION 09: ABRAFATI-RADTECH RADIATION CURING SEMINAR

9.4 **Sergio Medeiros**

BRChemical, Brazil

Radiometry: control and monitoring of the UV curing process

9.5 **Arthur Kassardjian**

IGM Resins, Netherlands

Formulating urethane acrylate oligomers for tough materials

9.6 **Ana Paula Cardoso**

Covestro, Brazil

High-performance, UV-curable dispersion to be used as such or as a booster

9.7 **Emerson Boni**

Eckart, Brazil

Energy-Curable metallic graphic inks

SESSION 10: NOVEL MATERIALS I

10.4 **Juliana Fonseca**

Wacker Química, Brazil

Innovative silane-terminated polymers for waterproofing solutions

10.5 **Will Imes**

Borchers, USA

Enabling better labeling and functionality in alkyds with novel catalysts

10.6 **Max Giudici**

Lamberti, Brazil

Microspheres: creating ultramatte, haptic and visual burnish-resistant effect

PROGRAMMATION

INTERNATIONAL
COATINGS
CONGRESS

25 SEPTEMBER



MORNING SESSIONS

SESSION 11: PIGMENTS AND FILLERS

SESSION 12: SUSTAINABLE SOLUTIONS

🕒 11:00 - 11:40

11.1 **Evandro del Divino** 🇧🇷
Clariant, Brazil
High performance in pigment dispersions
with polymeric dispersant

12.1 **Erika Maria Carneiro** 🇧🇷
Tintas Fortex, Brazil
Overview of sustainability in the world and
in the paint industry

🕒 11:45 - 12:25

11.2 **André Cabral Martins** 🇧🇷
Trucolor, Brazil
A new generation of metallic pigments
for use in water-based and solvent-based
systems

12.2 **Mariana Zanetti** 🇧🇷
MarianaGZ Consultoria, Brazil
Development of textured coating with
wood waste

🕒 12:30 - 13:10

11.3 **Mauricio Covarrubias** 🇲🇽
Sun Chemical, Mexico
Meeting the requirements of heat
management coatings with functional
pigments

12.3 **Bas Verhagen** 🇳🇱
Covestro, Netherlands
Architectural and construction solutions
for flooring and waterproofing

LUNCH BREAK - 13:10 - 14:30

AFTERNOON SESSIONS

SESSION 11: PIGMENTS AND FILLERS

SESSION 12: SUSTAINABLE SOLUTIONS

🕒 14:30 - 15:10

11.4 **John Poulakis** 🇺🇸
Magris Talc, USA
Innovative magnesium silicate anti-
corrosive pigment of extreme purity

12.4 **Militza Franco** 🇧🇷
Primient Covation, Brazil
100 % bio-renewable 1,3-PDO reducing
carbon footprint and dependency on fossil

🕒 15:15 - 15:55

11.5 **Phillip Myles** 🇩🇰
Coloursapes Europe, Denmark
Engineering the improved performance of
organic colour pigments isn't easy

12.5 **Maria Rita Demitró** 🇧🇷
ESG em Tintas, Brazil
Sustainable innovations in coatings:
reducing environmental impact

🕒 16:00 - 16:40

11.6 **Diogo Lima** 🇧🇷
Colormix Especialidades, Brazil
Application of Neuburg Siliceous Earth as an
abrasive in polishes and cleaning agents

12.6 **Josenildo de Matos** 🇧🇷
Galena Ind Com, Brazil
Trigamimation - a sustainable option for
repainting surface treatment

09:00 - 10:30 · PLENARY SESSION
10:30 - 11:00 · COFFEE BREAK
11:00 - 13:10 · MORNING SESSIONS

13:10 - 14:30 · LUNCH BREAK
14:30 - 16:40 · AFTERNOON SESSIONS

SESSION 13:
FUNCTIONAL COATINGS

13.1 **Maude Jimenez** 
Universidade de Lille, France
Self-stratifying and self-healing
recoverable coatings

13.2 **Adrien Lebeau** 
Universidade de Lille, France
Self-stratifying epoxy/TPU coatings
designed for aerospace applications

13.3 **Larissa Haddad** 
Evonik Corporation, USA
Silanes: high-performance additives for
coatings, adhesives and sealants

SESSION 14:
NOVEL MATERIALS II

14.1 **Joan Parareda** 
Stahl, Spain
Next-gen hyperfunctional carbodiimides
for safe and high-performance coatings

14.2 **Juan Guerrero** 
Covestro, Spain
Coating resins for paper and cardboard
food packaging

14.3 **Claudia Sá** 
Evonik in colab. with Caldic, Brazil
Fast curing, high UV resistance and EHS-
friendly epoxy coatings

SESSION 15:
POLYURETHANES AND ADDITIVES

15.1 **Jim Reader** 
Evonik, USA
Replacing fluorine-based additives in
coating formulations

15.2 **Nuno Castro** 
Elementis, USA
Next generation of thickeners to minimize
viscosity drop after tinting

15.3 **Marina Passarelli** 
Evonik, USA
The use of biosurfactants in paints and
coatings



LUNCH BREAK · 13:10 - 14:30

SESSION 13:
FUNCTIONAL COATINGS

13.4 **Abni Pacheco** 
Alfarben, Spain
Cool pigments - reduction of heat
absorption due to pigments TSR
technology

13.5 **André Luiz Oliveira** 
Wana, Brazil
Innovations in high water resistance with
acrylic and silicone emulsions

13.6 **Ingo Stohrer** 
Evonik Corporation, USA
Functional polymers for sustainable
lidding applications in flex packagings

SESSION 14:
NOVEL MATERIALS II

14.4 **Angélica Mota** 
Lubrizol, Brazil
Charting a new course: PTFE-free
innovations in powder and can coatings

14.5 **Patrick Dodds** 
MCassab, United Kingdom
Replacing traditional anti-corrosives with
smart inhibitors at low loadings

14.6 **Xavier Franc** 
Synthron, France
Optimization of adhesion and interlayer
cohesion through VOC-free additives

SESSION 15:
POLYURETHANES AND ADDITIVES

15.4 **Nuno Castro** 
Elementis, USA
Reducing environmental impact with
advanced renewable rheology modifiers

15.5 **Max Giudici** 
Lamberti Brazil, Brazil
Water-resistant paints: differentiating
waterproofing and water repellency

15.6 **Rafael Fernandes** 
FGV IBRE, Brazil
Eco-friendly water-borne PU coating with
EDA-GO for enhanced anticorrosion



SESSION 01

ARCHITECTURAL COATINGS I

SEPTEMBER 23 · 2025

01



01.1. WINNER OF THE 2024 AMERICAN COATINGS CONFERENCE AWARD

NOVEL BIMODAL HIGH SOLID POLYMER DISPERSIONS FOR ARCHITECTURAL COATINGS

SPEAKER: MARLON SANTOS, BASF, BRAZIL

ABSTRACT

Over the past few decades, the performance of water-based architectural paint has consistently improved. However, latex polymer dispersions used in water-based coatings are typically limited to 45-50% polymer solids. This is due to the close packing limit of the dispersed polymer particles and a sharp increase in viscosity at solid contents much beyond 50%. Consequently, this restricts the formulation options for water-based coatings, including achievable volume solids, rheology profile, and wet and dry film thickness. Additionally, conventional latex dispersions necessitate the transportation and storage of large quantities of water, and higher solid polymer dispersions could help reduce freight costs and/or enhance storage tank capacities. Here we present advancements in creating novel bi-modal latex dispersions that allow for over 60% polymer solid content. Furthermore, we explore new formulation possibilities in architectural coatings accessible with bi-modal high solid dispersions to achieve higher film build and maximize hiding performance. At the same time, we balance application feel, flow and leveling, and sag resistance for various application methods, including brush and roller applications.

01.2. VINYL ESTER-BASED EMULSIONS FOR HIGH-PERFORMANCE INTUMESCENT COATINGS

SPEAKER: DENIS HEYMANS, HEXION, BELGIUM

ABSTRACT

Intumescent coatings provide passive fire protection by expanding into a thermally insulating foam at high temperatures. This expansion prevents fire spread and protects structures. The thermal and viscoelastic properties of polymeric binders significantly impact the foam expansion in intumescent coatings. These resins also contribute to char formation. Their chemical structure, that governs their thermal decomposition mechanism, directly influences char formation and efficiency.

Vinyl neo decanoate, with its highly branched structure, is the preferred co-monomer for enhancing the intumescent properties. It enhances intumescent properties by improving foam expansion and stability, as demonstrated in our comparative study with waterborne binders of different chemical compositions vinyl-ethylene, acrylics, and styrene-acrylics.

The benefits of vinyl neo decanoate extend beyond its intumescent properties. This highly branched monomer enhances the water repellence due to its elevated carbon content. Consequently, the resulting coating exhibits improved weather resistance, and the in-can stability of the paint is increased, leading to a longer product shelf-life.

01.3. STUDY OF THE ICI EFFICIENCY OF HASE X HEUR MODIFIERS IN PREMIUM PAINTS

SPEAKER: MARLON BRAIDOTT, BASF, BRAZIL

ABSTRACT

The real estate paint segment, through the Quality Sector Program, PSQ, regulates the minimum requirements that a paint needs to meet in order to be included in a category. The best known on the market are economy, standard and premium paints. Speaking specifically of the premium line, this segment seeks to provide the market not only with paints that have excellent coverage and resistance to abrasion, but also with a top quality finish and leveling, with easy application and little or no splashing. To achieve these characteristics, work on the paint's rheological profile is essential. Currently, the most widely used thickener technologies in Brazil are associative acrylics (HASE) and polyurethanes (HEUR). This paper presents a rheology modifier, HASE technology compared to market products of the same or different technologies such as HEUR, showing equivalent and/or superior results in terms of ICI viscosity, abrasion resistance, leveling and yield of premium paints, allowing the formulator to modify the rheology of his paint to achieve excellent application properties.

01.4. IMPACT OF PARTICLE SIZE ON THE MATTING AND DURABILITY OF COATINGS

SPEAKER: INGRID MEIER, EVONIK, USA

ABSTRACT

Spherical precipitated silica has been demonstrated to enhance burnish and scrub resistance in interior architectural paints, and more recently, to improve the abrasion and scratch resistance of clear, matte wood coatings. Despite anecdotal evidence suggesting that both matting and durability improve with larger particle sizes, the question remains: Are larger particles always better?

This paper investigates the influence of increasing particle size on the performance of spheroidal precipitated silica, including a newly developed larger particle size variant, in enhancing the wet scrub, burnish, scuff, stain, and mar resistance of architectural paints. Furthermore, it examines how particle size affects the hardness and flexibility of powder coatings, as well as the effectiveness of these innovative silicas in matting both liquid and powder coatings.

01.5. MICROFIBRILLATED CELLULOSE: DURABILITY AND SUSTAINABILITY IN PAINTS.

SPEAKER: WILLIAN DOS SANTOS, KLABIN, BRAZIL

ABSTRACT

The search for sustainable solutions has driven innovations in the architectural paint industry, as a consequence of environmental awareness, legislation, and technological advances. In this context, micro fibrillated cellulose (MFC) emerges as an innovative ingredient, derived from wood pulp, capable of improving formulation performance and reducing the use of fossil materials.

This study evaluated the performance of two types of MFC in economical and premium architectural paints, analyzing their incorporation at different stages of formulation. Physical, optical, and stability properties of the paints were measured. The results showed a significant increase in wet abrasion resistance (washability), even with reduced resin content. The natural weathering of the films was equivalent to or superior to the evaluated market paints, with the least color variation (ΔE).

MFC emerges as a multifunctional and innovative additive, of renewable sources, enabling the development of high-performance formulations and significantly contributing to the transformation of the architectural paint sector towards sustainability.

01.6_MULTIFUNCTIONAL ADDITIVE FOR SOLAR REFLECTANCE AND IMPROVED STABILITY

SPEAKER: GILVAN FELIX SANTOS, POLYTELL, BRAZIL

ABSTRACT

This study presents the development of an innovative additive for architectural paints, designed to increase solar reflectance and reduce the thermal absorption of surfaces, contributing to greater thermal comfort and energy efficiency. The formulation incorporates a reactive metal oxide precursor, stabilized in aqueous media, combined with surface modifiers and high-performance dispersants, minimizing challenges such as hydrolysis and premature alterations of the active material.

Additional tests have confirmed good adhesion and compatibility with different polymeric matrices used in decorative and industrial paints.

The impact of this innovation reaches the construction and energy efficiency sectors, offering a sustainable and technically advanced solution for the passive thermal control of buildings. The possibility of integrating the additive into commercial formulations without the need for major adaptations to the production process reinforces its industrial potential, in line with demands for environmentally responsible, high-performance solutions.

01.7_COLORS BEYOND VISION: PAINTS WITH ASSISTIVE AND FUNCTIONAL TECHNOLOGIES TO PROMOTE SENSORY ACCESS TO THE WORLD OF COLORS FOR PEOPLE WITH VISUAL AND NEURODIVERGENT DISABILITIES.

PALESTRANTE: JOSAFÁ REBOUÇAS, J J R DE LIMA CONSULTORIA - ARCO QUÍMICA, BRAZIL

ABSTRACT · NOT AVAILABLE

SESSION 02

WATER-BORNE COATINGS I

SEPTEMBER 23 · 2025

02

02.1.IMPROVING DURABILITY OF ACRYLIC LATEX-BASED PAINTS WITH REACTIVE SURFACTANT

SPEAKER: JULIANE SANTOS, INDORAMA-INDOVINYA, BRAZIL

ABSTRACT

The low water resistance significantly contributes to the poor durability of waterborne coatings, limiting their application in more demanding environments. This study is part of a continuous effort to improve the water resistance of waterborne coatings and explores the partial replacement of a conventional anionic surfactant with a new reactive nonionic surfactant in the emulsion polymerization of all-acrylic latex for wall paint, enamel, and the consolidation of porous substrates.

Acrylic latex with an MFFT of about 15°C, polymerized with an optimized ratio of conventional anionic and reactive nonionic surfactants, generated low coagulum formation in the reactor, a particle size close to 100 nm, a solid content of approximately 47 wt%, and nearly 100 wt% incorporation of the reactive nonionic surfactant into the latex particles.

This latex film absorbed about 80 wt% less water than a standard latex polymerized only with the conventional anionic surfactant.

According to surface tension results, low PVC colored paints exhibited lower exudation of surfactants to immersion water than the one formulated with standard latex.

02.2.ADDITIVE SOLUTION TO REPLACE FLUOROCARBONS IN WATER-BASED PAINTS

SPEAKER: LEANDRO ALVES, SYENSQO, BRAZIL

ABSTRACT

Regulatory pressures are driving manufacturers of water-borne coatings to develop eco-friendly formulations that eliminate hazardous chemicals such as Alkyl Phenol Ethoxylates (APEs) and Fluorocarbon Surfactants (FCS). However, replacing FCS remains a challenge due to their unique properties, particularly their role in providing early hot block resistance in low-VOC, semi-gloss to gloss coatings. FCS belong to the PFAS family, classified as Substances of Very High Concern (SVHC) due to their persistence in the environment and potential health risks. As a result, the coatings industry is seeking safer, sustainable alternatives. A study of water-based architectural coatings led to the discovery that a modified phosphate ester could effectively replace FCS while maintaining performance. This research resulted in the development of a new anti-blocking additive that delivers excellent early hot block resistance without compromising other application properties.

02.3. RESIN EMULSIFICATION FOR SUSTAINABLE PAINTS: IMPACT OF SURFACTANTS

SPEAKER: JULIANE SANTOS, INDORAMA-INDOVINYA, BRAZIL

ABSTRACT

Resins obtained by solution polymerization are essential components of high-performance paint formulations. However, most of these formulations are solvent-based, with a high socio-environmental impact due to the high VOC content and the toxicity of the solvents.

The emulsification of these resins by the phase inversion method, using special surfactants, allows the generation of stable oil-in-water emulsions, enabling the development of more environmentally friendly water-based formulations.

In this work, the effect of the type and content of surfactant on the emulsification of alkyd and epoxy resins of different viscosities was explored, evaluating the stability of the emulsions and the properties of the obtained films.

Alkyd emulsion films, using optimized compositions of driers, showed a drying time of less than 8 hours, and the respective paints formulated with these emulsions exhibited a gloss similar to solvent-based formulations.

Liquid epoxy emulsion films, cured with an appropriate curing agent and dried at 40 °C, showed excellent hardness development and MEK resistance compared to films of solid epoxy resin emulsions.

02.4. ADH-FREE 1K WATER-BORNE ACRYLIC RESIN FOR HOT TIRE PICK-UP RESISTANT COATINGS

SPEAKER: ARLENE KITA, LUBRIZOL, BRAZIL

ABSTRACT

Coatings for horizontal concrete surfaces, like walkways or garage floors, must endure demanding conditions such as foot and vehicle traffic. Key performance criteria include adhesion to various concrete and masonry surfaces, chemical resistance, and water whitening resistance for clear coatings. Traditionally, more costly and labor-intensive two-component (2K) epoxy or polyurethane coatings, in various systems, are used due to their high physical demands. There is a significant demand for achieving comparable 2K performance in a one-component (1K) water-based system. The hot tire pick-up work aims to develop a 1K water-borne acrylic resin with better resistance to tire staining and de-glossing, compared to traditional resins, at low VOC levels (50g/L or less) for garage floor applications, and without using ADH, a skin sensitizer. The study found that hot tire staining is correlated with the degree of cross-linking and the glass transition temperature (T_g), with higher T_g and cross-linking improving hot tire staining and de-glossing resistance. Various polymer modifications with higher T_g and increased cross-linker amounts were prepared to enhance these properties.

02.5. ENHANCED DURABILITY AND RENEWABLE CONTENT IN DECORATIVE PAINTS

SPEAKER: DIEGO MOREIRA, DOW, BRAZIL

ABSTRACT

In architectural paints, the main solvent used is water, replacing toxic and flammable organic solvents. This has been made possible by technological advances in the development of new materials such as acrylic or latex dispersions. Painting with water-based latex of petrochemical origin on masonry coatings remains the most widely used finish in Brazil. The function of latex paint is to protect and prevent substrate degradation, as well as to provide a decorative aesthetic appearance. Despite significant technological advances in this segment, properties such as dirt pick-up resistance, color retention, ease of stain removal, efflorescence resistance, crack resistance, water mark resistance, and non-renewable content remain a constant problem for formulators and a pain point for end consumers. In this context, this work aims to present new technologies in acrylic polymer dispersions, including self-crosslinking thermoplastic polymers and from renewable sources, to mitigate these defects and generate a positive impact on sustainability.

02.6. OPTIMIZATION OF MECHANICAL & DIRT IMPREGNATION RESISTANCE IN THE DRIED FILM

SPEAKER: ANDRE MORENO FERNANDEZ, BYK-CHEMIE, BRAZIL

ABSTRACT

The coatings are continuously impacted by environmental factors of the local in which they are inserted, reducing their protection and appearance. Depending on where the coating is inserted, the film surface suffers different kind of aggressions.

An external coating, for example, is subject to weathering, which can degrade its integrity, cause the exudation of soluble substances, staining or even proliferate fungi. Internal area coatings are more subject to abrasion forces, staining, chemical resistance etc.

Some families of additives, when incorporated into the formulation, can optimize the physic-chemical properties of dried films. Additives that have in their composition hydrophobic components favor water/moisture repellency, for example, as well as additives containing harder particles, increase the scratch & abrasion resistance. Reactive additives are incorporated into the polymeric matrix of the film optimize removal of stains and/or dirt.

SESSION 03

DIGITALISATION

SEPTEMBER 23 · 2025

03

03.1_ABRAFATI AWARD WINNER – 1ST PLACE

SELF-HEALING BIOMASS COATINGS: THE POTENTIAL OF EUCALYPTUS SP. BIO-OIL IN SUSTAINABLE ANTICORROSIVE PROTECTION

SPEAKER: PEDRO HENRIQUE BARBOSA DE OLIVEIRA NOGUEIRA, UFMG, BRAZIL

ABSTRACT

Polyurethane (PU) coatings offer a promising improving to corrosion mitigation, but traditional production relies on fossil resources. This study explored the feasibility of using Brazilian Eucalyptus bio-oil, a renewable alternative, in PU synthesis. We compared coatings made from pure, blended, and chemically modified bio-oil, assessing their thermal and corrosion protection properties. Chemical modification significantly increased the bio-oil's hydroxyl number, resulting in a PU coating with enhanced thermal stability (onset degradation temperature increased from 179 °C to 229 °C, residual mass reduced by 80%) and superior corrosion resistance (corrosion rate reduced from 1.1×10^{-2} mm/year to 2.2×10^{-3} mm/year after 30 days of immersion). These findings demonstrate the potential of modified Eucalyptus bio-oil to produce high-performance, sustainable PU coatings without the need for additives.

03.2_APPLICATION OF ARTIFICIAL ANTELLIGENCE IN COATING FORMULATION

SPEAKER: WILIAM SARAIVA, W2S CONSULTORIA, BRAZIL

ABSTRACT

The variation in formulation costs, especially raw materials, is a challenge in the paint industry, influenced by factors such as seasonality, exchange rates, and availability. To ensure competitiveness, the strategic management of a portfolio of alternative formulations (versioning) becomes essential. Advancements in technologies such as Artificial Intelligence (AI) optimize paint formulation by considering dynamic costs, maximizing procurement efficiency, and ensuring better cost management. Digital tools with prediction, optimization, and knowledge retention accelerate the development of new compositions, promoting greater control and formula management. Advanced techniques, such as deep optimization, significantly expand experimental possibilities, raising the level of innovation, efficiency, and competitiveness in the industry.

03.4_ENHANCING FORMULATION EFFICIENCY AND SUSTAINABILITY WITH DIGITAL TOOLS

SPEAKER: GUILHERME DO LAGO, DOW, BRAZIL

ABSTRACT

Dow's digital tool, Optionizer, offers significant benefits for formulators by streamlining their workflow and enhancing formulation accuracy. The tool simplifies the formulation process by leveraging advanced algorithms and data analytics, providing precise recommendations that help formulators achieve the desired outcomes. One key advantage from this tool is its ability to combine cost reduction with sustainability, by analyzing various formulations and identifying the most cost-effective; and supporting formulation carbon footprint reduction by optimizing raw materials selection. An example is TiO₂ replacement with plastic pigments, which can significantly reduce both costs and carbon footprint, since plastic pigment provides similar opacity and brightness while using less material. Another example is conventional binder replacement with a binder technology that optimizes TiO₂ usage level, providing improved hiding at lower pigment level, and enhancing resistance properties due to ambient crosslinking, which also results in cost savings and sustainability benefits, as less material is required to achieve the desired properties.

03.5. USING DIGITAL AND PHYSICOCHEMICAL TOOLS TO SELECT ADDITIVES

SPEAKER: ÁLANN BRAGATTO, INDORAMA-INDOVINYA, BRAZIL

ABSTRACT

The formulation of pigment concentrates requires the careful selection of dispersing agents, a complex process due to the high availability of products and the scarcity of technical data. This scenario hinders innovation and makes the formulation process time-consuming and inefficient.

The study demonstrates how the combination of digital tools, the use of high throughput equipment (HTE) and the use of physicochemical techniques to quantify the interaction between the additive and the pigment can make this selection process more rational, agile and assertive.

Throughout the paper, it is shown how the use of Hansen Solubility Parameters, both simulated and experimentally determined through the use of HTE techniques, are used to predict the interaction between the dispersant and the pigment, even if the composition of the components is unknown. Next, it is presented how the construction of adsorption isotherms makes it possible to quantify the interaction between the additive and the pigment, as well as the adsorption mechanism. Finally, it is shown how these techniques correlate with each other and with application results in the context of formulating water-based pigment concentrates.

03.6. DEEPSEEK AND CHATGPT: AI FOR FUTURE PAINT FORMULATORS

SPEAKER: JULIMAR LOPES, INDEPENDENT RESEARCHER, BRAZIL

ABSTRACT

The emergence of Artificial Intelligence is changing the rules of the game for professionals all over the world. In addition to the incredible benefits they bring to a huge number of human activities, there is also some concern that they may replace humans in some jobs, which is probably not true. Humans will always be needed! After all, any information that an AI has answered when asked has primarily been provided by humans. On the other hand, humans can replace humans, as long as they continue to reject technologies as they come along.

As a paint researcher for 45 years, I have seen many changes take place, but none as important as the advent of AI. They can be used by paint formulators to save batteries of tests, discover unexpected raw material combinations, deduce possible results more correctly, and of course, increase their competitiveness.

This presentation provides some examples of how to use AI in the day-to-day work of the paint formulator.

SESSION 04

BIO-BASED COATINGS

SEPTEMBER 23 · 2025

04

04.1. ABRAFATI AWARD WINNER- 2ND PLACE

NEXT-GENERATION SMART EPOXY COATING WITH TRIPLE FUNCTIONALITY (SELF-HEALING, HYDROPHOBICITY, AND ANTIMICROBIAL ACTION) VIA A SINGLE MULTIFUNCTIONAL ADDITIVE

SPEAKER: ALEXANDRE GONÇALVES CORDEIRO NETO, MICROCAPSULESTECH, BRAZIL

ABSTRACT

A microencapsulated additive solution will be presented, capable of transforming a conventional epoxy paint into a smart coating with triple functionality, combining self-healing, hydrophobicity, and anti-microbial action in a single component. We will address the working principle and proof of concept, demonstrating how this “plug and play” technology easily integrates into existing formulations and delivers clear results, such as increased contact angle, micro-crack closure, and inhibition of microbial agents. The proposal utilizes renewable raw materials, reinforcing industrial viability and sustainability, and opens up new possibilities for developing more durable and safer coatings. We will conclude by sharing Microcapsules Tech’s vision on future trends and co-development opportunities in microencapsulated additives for the paint and coatings industry.

04.2. PLANT-DERIVED POLYURETHANE DISPERSION FOR HIGH-PERFORMANCE WOOD FINISHES

SPEAKER: MIRIAM PERALTA, LUBRIZOL, SPAIN

ABSTRACT

Lubrizol presents a novel polyurethane dispersion (PUD) for wood coatings, synthesized from renewable plant base raw materials and chemically designed to enhance wood protection while maintaining environmental integrity.

The new polymer technology, derived from natural ingredients, offers a sustainable alternative to traditional fossil-based coatings, aligning with the principle of protecting natural substrates-such as wood-using natural solutions.

By introducing soybean oil, Lubrizol has developed a technology that not only protects wood but also considers the environmental and health impacts across the supply chain. This includes using non-food-competing soybean oil, ensuring safe handling for manufactures, and delivering low-VOC emissions for applicators and end-users.

The innovative synthesis design comes with an improved self-crosslinking mechanism eliminating the need for hazardous driers, maintaining exceptional performance and durability.

This paper will present how this new development sets a new standard in sustainable wood coatings, offering safer alternative to fossil-based polymers that aligns with the demands of modern environmental standards.

04.3_ PAINTS AND SUSTAINABILITY: PATENT LANDSCAPE AND TRENDS IN BRAZIL

SPEAKER: XAVIER RABY, RABY IP CONSULTING & INNOVATION, BRAZIL

ABSTRACT

The study compares the performance in sustainable paint patents between Brazil and the rest of the world, based on seven axes: water-based, low VOC, bio-based, durability, recycling, energy efficiency, and environmental functions. It also reviews the concept of patents and analyzes why the system remains underutilized in the paint sector in Brazil.

04.4_FORMULATIONS DECARBONIZATION BY THE USE OF CARBON-NEUTRAL RAW MATERIALS

SPEAKER: ISABELA ZANI, RHODIA, BRAZIL

ABSTRACT

The increasing demand for sustainability drives the Paints and Coatings Industry to pursue the decarbonization of its formulations. This technical paper explores the importance of reducing the Carbon Footprint (PCF) throughout the entire life cycle of these products, from the sourcing of raw materials to their application. The challenges and opportunities for incorporating innovative solutions that combine high performance and lower environmental impact will be discussed.

In this context, Rhodia, a company of the Solvay Group, presents alternatives such as Adipic Acid, Hexylene Glycol with a favorable VOC emission profile, and the Augeo line of renewable-based solvents, highlighting their technical attributes and their potential to contribute significantly to the decarbonization of formulations.

The analysis of the verified Carbon Footprint and the neutralization of emissions (scopes 1, 2, and 3, cradle-to-gate) of the presented raw materials demonstrate a promising path for the development of more sustainable paints and coatings, without compromising the technical performance required by the sector.

04.5. RICE HUSK SILICA: A SUSTAINABLE ALTERNATIVE FOR HIGH-PERFORMANCE COATING

SPEAKER: PARESH TADAS, BSB NANOTECHNOLOGY JOINT STOCK COMPANY, HO CHI MINH, VIETNAM

ABSTRACT

The growing demand for sustainable and high-performance materials in the coatings industry has led to the emergence of rice husk-derived silica (RHS) as a viable and eco-friendly alternative to conventional synthetic silicas. Extracted from agricultural waste, RHS is a form of high-purity amorphous silica with physical and chemical properties comparable to traditional fumed and precipitated silica. This paper explores the multifunctional roles of silica in paints and coatings—including matting, rheology control, and barrier enhancement such as thermal insulation and hydrophobicity—and demonstrates how RHS effectively fulfills these functions. In addition to matching performance, RHS offers significant environmental benefits by reducing carbon emissions, promoting circular economy principles, and lowering exposure to crystalline silica hazards. Commercial adoption is accelerating, especially in rice-producing regions, with manufacturers developing specialized RHS grades for coatings. As the industry shifts to low-VOC, bio-based formulations, RHS is poised to play a key role in next-generation sustainable technologies.

04.6. FUNCTIONALIZING 100% BIO-BASED 1,3-PROPANEDIOL INTO REACTIVE DILUENTS

SPEAKER: DAVID LÖF, PRIMIENT COVATION, SWEDEN

ABSTRACT

Using 1,3-propanediol (1,3-PDO) as a building block in high performance coatings allows downstream coatings producers to enter the high-end market with products that combine performance with a higher sustainable profile compared to corresponding fossil-based coatings. From sustainability point of view using 100% bio-based and renewable 1,3-PDO might be a good opportunity for many resin and coatings producers to full-fill their sustainability goals.

Since 1,3-PDO is end-functionalized, the possibility arises to use it as an effective building block in many polymeric applications for coatings. The end functionalized 1,3-PDO can be transformed into 1,3-PDO diacrylate and 1,3-PDO dimethacrylate. The diacrylates and the di-methacrylates can be carried out as reactive diluent for any UV-cured high end coating, including inks. As an alternative or a complement to fossil-based diols, the 1,3-PDO will provide new and alternative properties for the coating to be defined, on top of the sustainability benefits that 1,3-PDO brings into the coatings.

In this study we have functionalized our 1,3-PDO. Results revealing good results with improved properties in the final coating.

SESSION 05

PROTECTIVE AND EPOXY COATINGS I

SEPTEMBER 23 · 2025

05



05.1. INFLUENCE OF COALESCENTS ON THE ANTICORROSIVE EFFICIENCY OF DTM COATINGS

SPEAKER: GIOVANNA GRILLO, DOW, BRAZIL

ABSTRACT

Water-based protective formulations are effective solutions for most corrosive environments. Coalescents play a crucial role in forming a good film and creating a robust protective barrier against corrosion. This project aimed to evaluate the performance of four coalescents, a glycol ether with a boiling point of 230°C at 760mmHg (Coalescent A), a glycol ether with a boiling point of 275°C at 760mmHg (Coalescent B), a low-VOC coalescent with a boiling point above 300°C at 760mmHg (Coalescent C), and a C12 alcohol ester with a boiling point of 255°C at 760mmHg (Coalescent D)—in two formulations containing different styrene-acrylic emulsions with a film forming temperature of 38°C. The coalescents were evaluated based on abrasion resistance, gloss, and anti-corrosive performance using a salt spray chamber. Coalescents C and D demonstrated excellent overall performance. Specifically, coalescents A and C excelled in the abrasion tests. For gloss, coalescents A and B showed the best results on Resin A, while coalescents C and D excelled on Resin B. Coalescents C and D showed the best anti-corrosive performance in the salt spray chamber.

05.2. ANTI-CORROSION TECHNOLOGIES FOR HIGH-PERFORMANCE INDUSTRIAL COATINGS

SPEAKER: LAURA ZANELLA, WACKER QUÍMICA, BRAZIL

ABSTRACT

Protective anti-corrosive coatings are essential globally, used in industries, infrastructure, and transportation. They prevent metal degradation, extending the durability of structures exposed to moisture and chemical attacks.

The amino functional silicone resin is a hydrophobic and thermally stable material designed for high-performance coatings. It enhances durability, corrosion resistance, and hydrophobic properties, especially in harsh environments. With high efficiency and low application thickness, it combines with cycloaliphatic epoxy resins, forming protective films with excellent adhesion to metals and minerals, as well as resistance to weathering, UV radiation, and high temperatures.

Ideal for construction, automotive, and industrial applications, it protects against moisture, salinity, and thermal degradation. It reduces maintenance and lifecycle costs, outperforming conventional resins.

Aligned with sustainability and efficiency, the amino functional silicone resin is an innovative solution, supported by case studies, with the potential to transform the high-performance coatings market.

05.3. WATER-BORNE PUD BASED ON POLYAMIDE FOR DIRECT-TO-METAL APPLICATIONS

SPEAKER: ANGÉLICA MOTA, LUBRIZOL, BRAZIL

ABSTRACT

Due to concerns about the significant amount of solvents emitted during paint application and drying, the shift from solvent-based to water-based technology has become crucial. Lubrizol focuses on offering alternatives to solvent-based products to reduce volatile organic compound emissions in paints. Water-based paints, primarily composed of water, are now a viable option for high-performance applications, especially on metallic substrates and direct-to-metal applications. Lubrizol has developed polyamide-polyurethane waterborne dispersion technology, offering excellent anticorrosive properties, high surface resistance, and protection. These dispersions provide unique benefits such as good chemical resistance and higher hardness. Unlike conventional waterborne urethanes, which struggle with direct-to-metal applications, polyamide-based urethane dispersions offer superior corrosion resistance due to the hydrolytic stability of the polyamide segment and strong adhesion to metal substrates. This technology enables single-coat solutions with both corrosion resistance and protective features.

05.4. NEW AMINE HARDENER FOR ULTRA-LOW EMISSION EPOXY COATINGS

SPEAKER: CLAUDIA SÁ, EVONIK, BRAZIL

ABSTRACT

As environmental standards become more stringent, it is essential to reduce the VOC levels of paints and coatings, as they contribute to increased air pollution and carbon footprint. Epoxy coatings are known for their excellent resistances, ideal for high-performance protection. However, paints and coatings often contain solvents, which are necessary for their preparation and spraying. Thus, the development of ultra-low emission amine curing agents is critical for formulations with high solids content and minimal VOC.

In addition to VOC restrictions and improved sustainability, the coatings industry has the challenge of providing solutions that require rapid return to service when applied under low temperatures (5°C) and high air humidity. A wide application window allows for increased productivity, without compromising performance. The use of conventional accelerators in epoxy systems results in short pot-life, requiring expensive application methods. This article provides an overview of a VOC-free amine hardener, allowing minimization or complete elimination of solvents and plasticizers, as well as providing high productivity when cured under harsh conditions.

05.5. WATER-BORNE SILICONE RESIN FOR HIGH TEMPERATURE RESISTANT COATINGS

SPEAKER: PAULA COUSINO, MOMENTIVE PERFORMANCE MATERIALS, USA

ABSTRACT

Silicone-based polymers and additives are widely used for formulating highly durable coatings due to their inherent resistance to heat, UV, and chemicals. For specialty coating markets that require high temperature resistance up to 600° C, cross-linked silicone resins with phenyl functionality are preferred to meet performance and hardness. Such coatings are typically aromatic solvent-based. These solvent based silicone resins usually exceed volatile requirements and are not sustainable solutions in today's market. It is challenging to produce silicone resins that are solvent-free due to their high viscosity and reactivity. Also, producing these as water-borne emulsions pose challenges related to high reactivity and lack of shelf stability. In this paper, a new silicone resin emulsion will be introduced that overcomes these challenges. Model formulations were developed using multiple pigments. Formulations were easy to process, with excellent application profile, and became tack-free at room temperature in a short time. After thermal curing above 150° C the resulting coatings demonstrated excellent performance like thermal resistance, hardness, adhesion, and corrosion resistance.

05.6. FACTORS THAT INFLUENCE THE PROTECTION OF THE DRY FILM OF DECORATIVE PAINTS

SPEAKER: ELIANE GAMA LUCCHESI, LANXESS IPEL, BRAZIL

ABSTRACT

The market of decorative paint in Brazil is in the world top 5. The several manufacturers of paints and coatings must meet quality requirements set by ABNT (abrasion, wet and dry coverage). Due to its size, Brazil has different climates in each region, therefore the importance of microbiological protection for these products. For that, it is necessary to understand the determining factors in evaluating resistance to fungi in the laboratory based on ABNT NBR15987 (Petri dishes), with the aim of selecting fungicidal agents and the appropriate dosage level for each formulation that will ensure the quality of the paints and customer satisfaction. A standard matte acrylic was used for the study. The reference was NBR 15987 as established. Several important variables were chosen for results comparison.

The study aims to evaluate the influence of parameters such as leaching (static vs. dynamic), type of application (roller vs. brush), incubation time, dilution percentage, and type of fungal strain on the performance of the paints regarding resistance to fungal growth on Petri dishes.

SESSION 06

ARCHITECTURAL COATINGS II

SEPTEMBER 24 · 2025

06

06.1. MODELING PAINT PERFORMANCE WITH A NEW GENERATION OF RHEOLOGICAL MODIFIERS

SPEAKER: RITA LETICIA CENSI, WANA INDUSTRIA, BRAZIL

ABSTRACT

The rheology of architectural paints plays a fundamental role in the different techniques and forms of application, in leveling and in the final performance of the coating. Appropriate modelling of formulations based on the new generation of rheological modifiers (acrylic, acrylic-urethane and urethane) makes it possible to optimize viscosity, thixotropy, resistance to running and splashing, yield and coverage. This technical study used rheological modifiers with the latest approaches to polymer structures which, in different concentration curves (pure or combined), promote the achievement of suitable parameters to obtain high performance. The results obtained with the correct strategy in using the new generation of modifiers were achieved with standards of excellence combining the main characteristics of each structure such as a more structured rheological profile, high thixotropy and resistance to run-off of urethanes with leveling balance and viscosity stability of acrylics. Paint formulation modeling with the new polymeric generation of rheological modifiers enables high performance and meets market demands.

06.2. CONTRIBUTIONS OF HYDROPHOBIC DISPERSANTS IN AQUEOUS COATINGS

SPEAKER: MARLON BRAIDOTT, BASF, BRAZIL

ABSTRACT

The construction market is constantly changing when it comes to exterior coatings. Facades, slabs and buildings can be coated with various types of materials such as paints, textures, blankets and elastomeric coatings, but all these coatings have one thing in common: resistance to the elements, especially water. This resistance to water is directly linked to the durability of the coating and the level of protection it will offer to buildings. There are several ways to improve the resistance and durability of aqueous coatings to water. In this study we will present how the use of hydrophobically modified dispersants can help to increase water resistance, washability and stain reduction. In aqueous coatings, polyacrylate-type dispersants are widely used to stabilize pigments and fillers in an aqueous system. However, this type of dispersant has a hydrophilic character that often reduces the water resistance of these coatings, so hydrophobic dispersants are an effective alternative for improving this water resistance.

06.3. ACTIVATING PAINT SURFACE FOR BETTER INDOOR AIR QUALITY

SPEAKER: EDIVALDO BORBA, ADVANCION, BRAZIL

ABSTRACT

Driven by environmental, health, and safety concerns, coatings technologies have undergone a dramatic shift in the past few decades driven by the reduction of VOCs and other hazardous materials in coating formulations. A continuation of this trend emerging in the global coatings industry has been focused on the development of functional coatings that not only limit emissions of VOCs into the environment but actively extract and remove VOCs that have originated from other sources. A functional coating with VOC remediation capability could improve indoor air quality and scavenge VOC emissions from sources that have proven to be more challenging to address.

This investigation is based on two different methodologies. In a first part, ISO 16000-23 European standard has been used as an initial demonstration of the formaldehyde scavenging efficiency of a decorative paint containing tris (hydroxymethyl) aminomethane and 2-amino-2-ethyl-1,3-propanediol. A new methodology to intend experimentally measure the full capacity of adsorption, and also to test several pollutants present in indoor environment over formaldehyde, enabling to characterize the scavenging versatility of these additives.

06.4. ALTERNATIVES FOR REGULATORY RESTRICTIONS ON PFAS AND APEO IN PAINTS

SPEAKER: RICARDO LUIZ, DOW, BRAZIL

ABSTRACT

In the paint industry, materials like per- and polyfluoroalkyl substances (PFAS), nonylphenol (APEO), and biocides have raised significant environmental and health concerns. PFAS are valued for their unique properties but pose serious health and environmental risks. APEOs and biocides also present similar risks and face regulatory challenges due to their toxicity. Dow is committed to addressing these issues by developing innovative technologies that eliminate harmful substances while enhancing product performance. This work aims to present safer technological alternatives that comply with regulatory requirements and meet the needs of the paint market. An acrylic waterborne dispersion, with no intentional addition of PFAS, offering exceptional exterior durability, resistance to dirt, water, and surfactant leaching, and good stain resistance will be presented. Additionally, Dow has introduced products with no intentional addition of biocides, such as a new associative rheology modifier, and also developed products with no intentional addition of APEO, such as a new hydrophobic acrylic polymer suitable for primers and paints for cementitious substrates.

06.5. WAX IN MATTE ACRYLIC PAINTS TO IMPROVE WASHABILITY AND CLEANABILITY

SPEAKER: CLEITON SILVA, MÜNZING, BRAZIL

ABSTRACT

The premium paint market demands solutions that combine aesthetics and performance, especially in super-washable products with a matte finish. This paper presents a practical approach to improving washability and stain resistance by incorporating functional waxes into matte acrylic formulations. Different waxes were tested, with different particle size ranges and in varying concentrations, keeping the focus on not exceeding the Class 1 limits defined by ABNT NBR 15079-1. The formulations were evaluated in terms of wet abrasion, ease of cleaning and angular gloss (85°). The results indicate gains in dirt repellency and greater efficiency in stain removal, without compromising the matte appearance or exceeding the critical wear thickness.

The proposed approach contributes to the development of products with greater added value and in compliance with the technical requirements of the PSQ for Real Estate Paints, combining functional innovation with the aesthetic preservation of the matte finish.

06.6. APPLICATION OF DIATOMITE FOR GLOSS CONTROL AND POLISHING

SPEAKER: CARLOS MORAES, IMERYS, BRASIL

ABSTRACT

We have developed a mineral solution based on high-purity natural diatomite, with a content of over 96% silicon dioxide (SiO₂), designed for applications in the decorative paint segment. This is an innovative solution designed to promote matting effects and gloss control after polishing, contributing to finishes with a high aesthetic and technical standard. Its mineralogical composition provides functional properties that meet the performance and sustainability requirements of the sector, while providing a differentiated aesthetic.

The new diatomite has excellent compatibility with paint systems with different levels of Pigment Volume Concentration (PVC), and can be used in formulations ranging from the Economic to the Super Premium line. In typical concentrations according to the needs of each formula, diatomite significantly reduces gloss and provides uniformity in the surface texture, expanding the possibilities of formulation and final finishing by controlling gloss after polishing.

SESSION 07

WATER-BORNE COATINGS II

SEPTEMBER 24 · 2025

07

07.1.IMPACT OF MICROFIBRILLATED CELLULOSE ON DRYING SPEED OF ONE-PASS COATINGS.

SPEAKER: OTTO SOIDINSALO, BORREGAARD, NORWAY

ABSTRACT

There is a strong interest in the industry to move from applying several thin layers of coating to one thick layer (up to 5 mm). One-pass coatings will lead to savings in manpower, allow faster return to service and increase the capacity of industrial coating lines.

Microfibrillated cellulose (MFC) is a biobased and multifunctional product made of cellulose, consisting of fibrils with lateral dimensions below micron size and lengths up to micron scale. The primary function of MFC is to significantly increase the low shear viscosity with minimal impact on mid shear (KU) and with no impact on the high shear (ICI). In addition, MFC shortens the drying time of coatings by preventing skinning and therefore allowing the water to evaporate faster.

In this work, the effect of MFC on drying speed was studied with two high build water-borne formulations; an insulation coating based on 100% acrylic binder and a basement coating based on acrylic copolymer binder. We will demonstrate how MFC shortens the drying time of coatings as well as improves the applicability and the final performance of the coatings.

07.2.NEXT GENERATION MATTING AGENTS FOR WATER-BONE COATINGS

SPEAKER: ZINIU YU, W.R. GRACE & CO., USA

ABSTRACT

Modern water-borne industrial coatings require the highest standards in performance and quality. A majority of the finishes are currently semi-gloss, but there is a trend towards deep-matte and natural-looking coatings. The development of deep-matte water-borne coatings, especially one-pack, remains a challenge because of loss-of-film properties such as chemical resistance, transparency, and mechanical integrity. Approximately 80% of all waterborne wood coatings contain silica-based matting agents to enhance the aesthetic appeal to customers, as well as offer protection to the wood. Silica offers several advantages as a matting agent including various morphologies, structural and charge properties. The goal of the presentation is to highlight the impact of matting agents on the performance of water-borne industrial wood coatings, and to present a new concept of silica matting agents for these formulations.

07.3. SMART EMULSIFIERS FOR SUPERIOR WATER-RESISTANT BINDERS

SPEAKER: ALEXANDRE DECIMONI, CLARIANT, BRAZIL

ABSTRACT

The new reactive emulsifiers enable resin synthesis by emulsion with greater efficiency than conventional emulsifiers, resulting in high water resistance performance after paint application. Containing reactive groups in their surfactant structures, they are able to anchor themselves to the polymer chains of the resins during polymerization, preventing their migration to the surface and therefore reducing leaching after the film has cured. This new technology has non-ionic and anionic versions and can be applied to the production of various types of resin, such as pure acrylic, styrene-acrylic, methyl-methacrylate and others. The improvement in resin stability is remarkable, reducing coagulation and achieving smaller particle sizes compared to conventional non-reactive emulsifiers.

07.4. COMPARATIVE STUDY IN THE APPLICATION EFFICIENCY OF AN APEO-FREE RESIN

SPEAKER: MARCELO DUTRA, ARKEMA, BRAZIL

ABSTRACT

Water-based acrylic emulsions are one of the preferred technologies to provide more durable, sustainable and low-VOC solutions for several markets, including architectural paints for exterior walls and wood. Replacing hazardous materials is a good approach to obtain more sustainable and safe products for end use. The risks of using APEO (alkyl phenol ethoxylates) surfactants in emulsions are well known, with risks to human health and the environment. The objective of this work is to present the application data of an APEO-free resin in decorative paints compared to a resin containing APEO. This study will analyze the characteristics of the polymers used, as well as the properties of the paints produced with these polymers (scrub resistance, gloss, blistering, stability and other properties). It will be possible to confirm that there is a possible way to replace this raw material, without losing performance and without a relevant impact on the final cost of the product.

07.5. SUSTAINABLE ALKYD EMULSIFICATION FOR HIGH-PERFORMANCE WATER-BORNE COATINGS

SPEAKER: LEANDRO ALVES, SYENSQO, BRAZIL

ABSTRACT

The shift from solvent-based to water-based coatings is accelerating due to stringent VOC regulations and increasing demand for sustainable alternatives. Alkyd emulsification offers a viable solution, enabling the development of high-performance, low-VOC coatings while maintaining the key advantages of traditional alkyd resins, such as durability, adhesion, and gloss retention. However, achieving stable alkyd emulsions presents challenges, including phase inversion, long-term stability, and process optimization.

This study explores innovative surfactant solutions designed to facilitate the emulsification of alkyd resins, allowing for seamless integration into existing formulations with minimal process adjustments. The results demonstrate that strategically selected surfactants can effectively stabilize alkyd emulsions, leading to enhanced performance in architectural coatings. Furthermore, these advancements contribute to significant CO₂ reductions, improved air quality, and compliance with evolving regulatory frameworks. By leveraging novel emulsification technologies, the transition to waterborne alkyd systems can be simplified, cost-effective, and environmentally responsible.

07.6. HIGH-PERFORMANCE AND SUSTAINABLE RESINS FOR POLYURETHANE COATINGS

SPEAKER: DAYANE FREITAS, BASF, BRAZIL

ABSTRACT

Two-component polyurethane coatings are essential in the industrial paint market, offering high durability, excellent adhesion to various substrates, and high chemical and mechanical resistance. Their composition includes polyols, which are chemical compounds containing hydroxyl groups (-OH), and polyisocyanates, which contain isocyanate groups (-N=C=O) and act as crosslinking agents in the system. When mixed in stoichiometric proportions, they form a highly resistant three-dimensional network. Among the available technologies, polyols and polyisocyanates for water-based and high-solid systems stand out as high-performance alternatives with lower environmental impact compared to conventional solvent-based systems. This work presents polyols and polyisocyanates for water-based systems and high-solid systems for application in industrial two-component polyurethane coatings, exhibiting high gloss, excellent weather resistance, chemical resistance, corrosion resistance, and outstanding hardness development.

SESSION 08

PROTECTIVE AND EPOXY COATINGS II

SEPTEMBER 24 · 2025

08

08.1. PRODUCTIVE AND SUSTAINABLE SOLUTIONS FOR INDUSTRIAL METAL

SPEAKER: AP HEIJENK, COVESTRO, NETHERLANDS

ABSTRACT

With increasing competition and demand for efficiency, paint and coatings manufacturers are seeking faster and more sustainable innovations. A new water-based acrylic dispersion for direct-to-metal (DTM) application eliminates the need for primers, accelerating the process, reducing costs, and providing high corrosion resistance. Another approach utilizes modified acrylic resins in high solids systems, enabling faster drying, up to 48% energy consumption reduction, and a lower carbon footprint. Polyaspartic technology for 2K high solids coatings allows curing without an oven, reducing costs and CO₂ emissions. Additionally, Covestro's polyaspartic range contains up to 38% bio-based raw materials and can be combined with sustainable polyisocyanates. These solutions drive productivity and sustainability in industrial metal coatings.

08.2. ALIPHATIC MONOMERS FOR FLUORINE-FREE SUPERDURABLE PROTECTIVE COATINGS.

SPEAKER: DENIS HEYMANS, HEXION, BELGIUM

ABSTRACT

This paper explores the influence of methyl groups and alkyl structure branching in binders on the performance of various decorative and protective coatings. The focus is on tertiary acid-derived monomers and their impact on surface energy, hydrophobicity, durability, and sustainability.

Vinyl esters and glycidyl ester, derived from branched tertiary acids, offer a compelling solution for developing fluorine-free, highly durable protective coatings. Their unique molecular structure, characterized by a high concentration of methyl groups, imparts low surface energy and enhanced hydrophobicity to the resulting coatings.

The consistent performance improvements observed across various coating applications highlight the potential of methyl-rich tertiary acid-derived monomers to enhance coating durability and longevity. Improved resistance to weathering, corrosion, and additive leaching minimizes environmental impact during the coating's lifecycle. Reduced maintenance and replacement needs lead to lower overall resource consumption and carbon footprint. These improvements contribute significantly to long-term sustainability goals in the coatings industry.

08.3.NOVEL TMCD-BASED HYPERDURABLE RESIN SHOWCASES EXTREME WEATHERABILITY

SPEAKER: JESUS MORALES, EASTMAN CHEMICAL, USA

ABSTRACT

Protective coatings need to be resilient and tough. These coatings encounter many elements of weathering – photo-irradiation, moisture changes, wind, rain, chemicals, pollution, etc. There is an immense global pressure for companies to keep assets in service longer by increasing performance, all compounded by ever-changing environmental and sustainability regulations. To address these challenges, formulators are on the hunt to find a resin that is not a material of concern and can provide maximum gloss retention and appearance. Eastman has developed a novel TMCD-based hyperdurable resin that delivers exceptional weatherability and maintains appearance at 10,000 hours of accelerated weathering testing. This paper will showcase the exceptional weatherability of this unique resin and compare the performance to incumbent resins such as commercially available acrylics, polyesters and fluoroethylene vinyl ether (FEVE) along with blending suggestions for those applications required to use FEVE and want to limit their usage but not compromise on performance.

08.4.SUSTAINABLE INNOVATION IN DURABLE COATINGS WITH POLYASPARTIC RESINS

SPEAKER: ANDRÉ LUIZ OLIVEIRA, WANA INDUSTRIA, BRAZIL

ABSTRACT

Polyaspartic resins are polymeric technologies for the formulation of high-performance coatings, offering superior properties compared to traditional systems. This technical paper deals with the development and application of high-tech polyaspartic resins for use in paints with high resistance, durability, chemical and mechanical resistance, as well as application efficiency, which are fast curing at varying temperatures, highly resistant to abrasion, UV rays and aggressive chemicals with standardized evaluations, allowing them to be used in various types of application environments such as industrial applications, flooring, infrastructure and protective coatings. This study also takes into account the environmental advantages of this technology, such as the reduction in VOC emissions and its structure with sustainable levels, with results from laboratory evaluations and field applications that will demonstrate innovation. This technical work presents the possibility of expanding knowledge of new polyaspartic resin technologies for the paint market, promoting their technological versatility, innovation and sustainability.

08.5. DEVELOPMENT OF WATER-BASED EPOXY COATINGS WITH LOW VOC LEVELS

SPEAKER: MAURO DA SILVA, WESTLAKE EXY, BRAZIL

ABSTRACT

The coatings industry is undergoing a paradigm shift towards sustainable and high-performance solutions, with water-based epoxy coatings emerging as a key technological advancement. These coatings have gained significant traction due to their low volatile organic compound (VOC) content, improved environmental footprint, and enhanced regulatory compliance. Historically, solvent-based epoxies have dominated the market due to their superior durability and chemical resistance. However, advancements in polymer chemistry, nanotechnology, and hybrid curing mechanisms have enabled water-based epoxies to reach performance levels comparable to their solvent-based counterparts. This paper explores the latest developments in water-based epoxy coatings, emphasizing their formulation strategies, performance improvements, and industrial applications.

08.6. ANALYSIS OF KPI'S FOR THE COMMERCIAL REPRESENTATION OF INDUSTRIAL PAINT

SPEAKER: VICTOR NOCE DE BERNARDI SAMPAIO, UNIVERSIDADE DE SÃO PAULO, BRAZIL

ABSTRACT

This study explores how Key Performance Indicators (KPI's) can transform the management of a B2B commercial representation company in the industrial paints sector. KPI's, or key performance indicators, are essential tools for measuring efficiency and directing new performance strategies. The main objective of the work was to analyze the descriptive indicators and sales performance in the industrial painting segment. Data was collected. The variables evaluated were the locations of operation, volume of paint, market niche, order price range and customer size. The analysis was carried out with tools such as Microsoft Excel and the IBM SPSS statistical program, allowing a clear and organized view of the data. The results showed that, with the strategic use of KPIs, companies can obtain significant improvements in operational efficiency and identify better niches and strategic conditions to increase sales and profitability. The conclusion of the study emphasizes the importance of adopting innovative and technological practices to maintain competitiveness and improve the profitability of B2B companies in the paint industry.

SESSION 09

ABRAFATI-RADTECH RADIATION CURING SEMINAR

SEPTEMBER 24 · 2025

09

09.1. AMINES AS EFFECTIVE SYNERGISTS FOR IMPROVED CURE IN TYPE I SYSTEMS

SPEAKER: LUCIANA SOUZA, IGM RESINS, BRAZIL

ABSTRACT

Tertiary amines have been well established as hydrogen donor molecules needed to produce free radicals with Type II photoinitiators. Although their presence in Type I photosystems is not required for free-radical generation, their existence in these systems may help boost the curing performance. To help validate this claim, the synergistic benefits of a wide range of tertiary amines with various Type I photoinitiators are evaluated in this study. Their reactivity and yellowness effects in Type I photosystems is explored when exposed to both conventional mercury and LED light sources. Using the correct combination of Type I photoinitiators and tertiary amines, a good compromise may be reached to obtain a better surface reactivity/yellowing balance for sensitive and other applications.

09.2. EXCIMER: COMBINING LOW GLARE WITH HIGH PERFORMANCE COATINGS

SPEAKER: ANDERSON GOMES, ALLNEX, BRAZIL

ABSTRACT

UV/EB curing is used for various industrial applications in high-gloss paints and varnishes. However, matte coatings have currently gained a lot of focus due to their low gloss characteristics and exquisite texture. The excimer is a pulsed gas laser operating at a wavelength of 172 nm which allows the light to be absorbed by the material, and its penetration depth is extremely low, causing minimal deformations to the substrate, contributing to the varnish having an extremely low gloss. In order to meet the growing market demand for ultra-matte products, we will present applications using resins and UV/EB additives to achieve this effect. A tetrafunctional urethane resin contributes to chemical resistance to stains, and among the additives we can highlight a silicone-modified aliphatic acrylate urethane that helps make the process more robust. In general, the increase in demand for low-gloss, high-performance coatings shows that specific resins for UV/EB application with excimer are extremely important for the market.

09.3_UV/EB CURING OLIGOMERS FOR COIL COATING

SPEAKER: PAMILA HEITKOETER DE MELO , ALLNEX, BRAZIL

ABSTRACT

UV/EB curing coatings for coil coating applications offer a highly effective and environmentally friendly solution that meets regulatory and performance requirements. This technology offers important advantages such as instant curing, without a heating process, which allows for faster production cycles, increasing productivity. In addition to saving energy, UV/EB curing eliminates the need for high-temperature ovens, significantly reducing energy consumption. It also contributes to reducing VOC emissions, as the UV/EB system is 100% solids. The application of UV/EB radiation curing coatings in coil coating adds to the process benefits, as thermoset systems offer excellent chemical and scratch resistance, making them ideal for aggressive environments, including those prone to weathering and corrosion. We will be presenting a range of UV/EB curable oligomers and monomers suitable for coil coatings. These products offer excellent flexibility, meeting post-forming requirements, along with excellent scratch resistance, hardness and chemical resistance.

09.4_RADIOMETRY: CONTROL AND MONITORING OF THE UV CURING PROCESS

SPEAKER: SERGIO MEDEIROS, BRCHEMICAL, BRAZIL

ABSTRACT

In order for the system to work perfectly and obtain satisfactory results, it is necessary to control the curing process. By carrying out this control, it is possible to analyze whether the lamp is emitting enough energy at the desired wavelength, measure the amount of energy the material receives during exposure, establish the curing parameter for different substrates, paints and varnishes, and establish the ideal setting for the curing equipment, allowing the process as a whole to be perfected. This control is carried out using a radiometer. This is a device that uses various electronic circuits and optical filters which together make it possible to analyze the actual condition of the UV lamps in a curing system. The equipment reports the values of the essential parameters for controlling the UV curing process: dose and intensity. For effective control of the UV curing process, the dose and intensity must be analyzed, thus enabling total safety during production. As mentioned above, the dose is directly related to the exposure time of the material, but it is not solely responsible for curing.

09.5. FORMULATING URETHANE ACRYLATE OLIGOMERS FOR TOUGH MATERIALS

SPEAKER: ARTHUR KASSARDJIAN, IGM RESINS, NETHERLANDS

ABSTRACT

The shift from rapid prototyping to durable good manufacture via 3D printing has steadily increased the performance demands of the resins used in 3D printing, primarily by demanding greater toughness characteristics in the mechanical properties of the finished products. Additionally, toughness is a desirable property for durability not only 3D printed objects but also in adhesive and coating applications as well. Herein experimental data for the cured properties of formulations based on urethane acrylate oligomers is shown. Tensile mechanical properties, glass transition temperature, and cure-induced shrinkage properties are related back to the urethane acrylate oligomer, diluent level, and diluent type used in the test formula.

09.6. HIGH-PERFORMANCE, UV-CURABLE DISPERSION TO BE USED AS SUCH OR AS A BOOSTER

SPEAKER: ANA PAULA CARDOSO, COVESTRO, BRAZIL

ABSTRACT

Radiation curing is a technology that is increasingly being used in industrial wood coatings as an environmentally friendly solution with high-performance, high productivity and energy efficient outcomes. We introduce a new UV-curable polyurethane dispersion that allows the transformation of a standard air curing water-borne (WB) system into a radiation-curing solution, thus improving both performance and productivity

09.7. ENERGY-CURABLE METALLIC GRAPHIC INKS

PALESTRANTE: EMERSON BONI, ECKART, BRAZIL

ABSTRACT

Energy-cured inks, such as UV, LED, and EB, have gained prominence in the graphic ink market due to their versatility, high performance, and greater sustainability appeal compared to conventional solvent-based systems.

However, many clients still face challenges with the stabilization of metallic inks (produced with aluminum and bronze) formulated in these radiation curing systems.

Eckart, a specialist in the production of metallic pigments, offers a wide portfolio of UV, LED, dual-cure, and EB curing inks, as well as metallic pigment concentrates, enabling printers and ink manufacturers in the flexographic and offset markets to add value to the final product without compromising productivity during the printing process. We will present the new launches of UV/LED dual-cure flexographic inks, with a highly glossy finish, which serve as alternatives to metallization and hot stamping, based on Metalure (VMP) type pigments, as well as inks formulated with carefully selected raw materials to comply with European low migration regulations.

We will discuss the appropriate conditions for best production practices to meet these standards and offer solutions for a wide range of applications, from labels and stickers to inks for packaging in indirect contact with food.

SESSION 10

NOVEL MATERIALS I

SEPTEMBER 24 · 2025

10

10.1. A NEW NATIONAL HIGH-PERFORMANCE COALESCENT SOLUTION

SPEAKER: : BRUNO RODRIGUES DE SOUZA, GRUPO OCQ, BRAZIL

ABSTRACT

The OCQ group, which operates across various sectors such as construction, adhesives, packaging, paper, and textiles, and is established as the largest producer of resins and other raw materials in Brazil, is launching a new coalescing agent for paints. This launch is a successful example of the incorporation of Elekeiroz in 2023 and all the knowledge and investment in innovation made by the group. Elekeiroz, the only producer of oxo-alcohols in Latin America, has in its product portfolio isobutyraldehyde, produced at the Camaçari plant, which is the main raw material for this coalescent. Having local production of this aldehyde is crucial for the production process, as the material is susceptible to oxidation and is flammable, making its storage and transport complex.

Based on this raw material, the production technology for this alcohol ester was developed using internal R&D resources, which faced challenges such as adapting the reaction technology, controlling the system's exothermicity to ensure a safe process with the appropriate composition, optimizing the formulation to reduce by-products, and developing treatment steps to ensure the product met the necessary quality for good performance in application.

This is a 100% Brazilian product, with national raw materials and technology developed internally, which made this project viable in Brazil. After developing the bench-scale process, tests were carried out in a pilot plant, along with various industrial process simulations, to successfully scale up production to one of Elekeiroz's manufacturing plants in Camaçari, reducing the need for CAPEX in equipment and enabling the use of an existing plant.

To validate the developed product, several application tests were conducted in the OCQ paint laboratory, where the performance of the coalescing agent was evaluated in semi-gloss, premium matte, and economy matte paints. The tests compared the new Elekeiroz development with an imported product that is a market reference. For the application tests, the amount of coalescent incorporated was up to 2% of the total paint mass, and the results showed good compatibility with the paint, improved film formation, and a consequent increase in gloss and abrasion resistance. Overall, the coalescent performed equivalently to the imported product, as seen in the 126 washability cycles for the OCQ 6074 semi-gloss paint formulation versus 125 cycles for the imported product.

For this successful development, collaboration between the companies and experts within the group was essential, and it represents the first product of a coalescent platform currently under development, with the goal of creating a product portfolio with low VOC and renewable content that meets market needs and further expands the products and solutions that OCQ already offers its clients.

10.2. HYPERDISPERSANT FOR CONVENTIONAL AND FREE RADICAL CHEMISTRIES

SPEAKER: MARCUS HUTCHINS, ALLNEX, USA

ABSTRACT

Hyperdispersant(s) can be defined as a high-molecular polymer with anchoring groups that can attach to the surface of the pigment but also provide a steric hindrance to prevent the pigment particles from agglomerating once separated in a liquid medium. If appropriately designed, hyper dispersants keep the pigment from re-agglomerating, resulting in low grind viscosity, excellent color development and stabilization plus providing anti-flocculation (rub-out), anti-sedimentation and opacity. The ultimate design would be a hyperdispersant that works in multiple chemistries, such as conventional or free radical polymerization and behaves equally in 100% solids, solvents, or aqueous mediums that can be used in direct grinding and pigment paste production (Binder free). This presentation will discuss a new hyperdispersant technology that offers outstanding pigment wetting, intense color, opacity, and stability in various conventional and free radical chemistries. This new technology will open the door to replacing multiple dispersants with one high-performance dispersant across aqueous and solvent borne solutions.

10.3. NEW SUSTAINABLE LIGHT STABILIZER BLENDS TO UPGRADE THE COATING PERFORMANCES

SPEAKER: DECIO FERNANDES-LIMA, BASF, BRAZIL

ABSTRACT

Regulations are affecting more and more the daily life of coating formulators and the development of high-performing paints and varnishes. It is becoming very difficult to combine sustainability (respectively labelling) whilst keeping the overall performances of the final coatings.

In this presentation, it will be showed that it is possible to formulate sustainable waterborne and solvent-borne coatings without imparting negatively their original performances. As a matter of fact, by replacing state of the art light stabilizer blend, whose severe labelling cannot meet major eco-labels specifications, with a new generation of light stabilizer blends that do not have this severe labelling, the overall performances of the final paints can even be improved.

It will be demonstrated that the higher photo-permanence and photo-stability lead to a better and lower discoloration of the substrate, even on wood. There is no more incompatibility with, for instance, acidic components, so that the protection of the paint surface is fully guaranteed.

Other positive aspects of these new products, like the absence of VOC and their lowest inherent color will be showed in this paper, too.

10.4. INNOVATIVE SILANE-TERMINATED POLYMERS FOR WATERPROOFING SOLUTIONS

SPEAKER: JULIANA FONSECA, WACKER QUÍMICA, BRAZIL

ABSTRACT

Silane modified polymers have been available over decades for many applications globally. The excellent adhesion profile, the ease in formulation and handling have driven the success in the markets served. Nevertheless, many demanding applications continue to be dominated by polyurethane technology both due to its durability and elasticity.

Some specific applications now dominated by aliphatic polyurethane waterproofing require a fully transparent membrane e.g. refurbishment and protection of balconies or waterproofing of atriums, roof lights, and greenhouses. Even the protection of roofs and balconies against frost, carbon dioxide, acid rain, and applications that require high resistance of vehicle traffic can be an issue.

Silane modified polymers are already used as the key ingredient in waterproofing liquid membranes, showing good weather stability certified in the highest class of ETAG 005.

However, new polymers with shear strength values of greater than 6 N/mm² and 300% elongation have been developed, tear-resistance values greater than 30 N/mm, thus suggesting suitability for waterproofing liquid membranes, with outstanding transparency and greater traffic resistance.

10.5. ENABLING BETTER LABELING AND FUNCTIONALITY IN ALKYDS WITH NOVEL CATALYSTS

SPEAKER: MICHAEL KRAMER, BORCHERS, USA

ABSTRACT

As regulations on volatile organic content (VOC) tighten, and as coatings manufacturers strive to develop alternatives to solvent-borne coatings, cobalt driers, and anti-skinning stabilizers like methyl ethyl ketoxime (MEKO), coating additive suppliers have developed alternatives to enable VOC reduction as well as the removal of cobalt and MEKO from alkyd-based coatings. High-performance catalysts (HPCs) were designed to help achieve these goals, simplify drier packages, and in some cases, eliminate the need for anti-skinning additives. Additionally, these cobalt-free technologies can help bring performance enhancements in adhesion, corrosion resistance, and reduced color development. More recent work has identified its broad-based utility in water-borne as well as solvent-borne coatings. Further developments have led to the introduction of new low-VOC HPCs that are designed to reduce VOC levels. This presentation will show how HPCs can enable reduced formula complexity, eliminate the use of cobalt, or lower VOCs, while facilitating higher performance features in both solvent-borne and water-borne alkyd-based coatings. We will also demonstrate HPC use with MEKO-free anti-skins.

10.6.MICROSPHERES:CREATING ULTRAMATTE,HAPTIC AND VISUAL BURNISH-RESISTANT EFFECT

SPEAKER: MAX GIUDICI, LAMBERTI, BRAZIL

ABSTRACT

Matte and deep matte coatings are increasingly popular as they appear stylish and sophisticated while concealing surface imperfections, but common matting technologies used alone in those paints, such as silica powder or wax dispersions, have a limit in gloss reduction capacity and low burnishing resistance. Durability of the paint is a key to sustainability and is also influenced by the technology chosen for gloss control.

The study covers testing of different organic and inorganic matting technologies and comparison of properties as rheology/viscosity, pigment compatibility, whiteness, hiding power, gloss, burnishing and wet scrub resistance. The results show that the particle size, the shape, and the chemistry of the added matting agent are important for overall paint properties and its durability.

The work includes investigation of both haptic and visual effects (e.g., in clear wood coatings, where the goal is to maintain a natural wood appearance without compromising substrate protection) and shows that is possible to achieve an optimal balance between gloss control, improved paint properties, and an aesthetically pleasing finish when compared to traditional matting agents.



SESSION 11

PIGMENTS AND FILLERS

SEPTEMBER 25 • 2025

11



11.1_HIGH PERFORMANCE IN PIGMENT DISPERSIONS WITH POLYMERIC DISPERSANT

SPEAKER: EVANDRO DEL DIVINO, CLARIANT, BRAZIL

ABSTRACT

The dispersion of pigments requires specific agents. Styrenes are commonly used for organic pigments and polyacrylates for inorganic pigments. However, the diversity of pigment surfaces and qualities makes the process more complex, requiring lengthy pre-testing phases to identify the ideal agent. The aim is to obtain fluid, low-viscosity, stable preparations with adequate tinting performance in water-based paint systems.

The introduction of a universal polymeric dispersant offers a solution to simplify this process, enabling high-performance preparations for various types of pigments. Comparative tests on organic and inorganic pigments have shown their effectiveness in terms of storage stability and color intensity development in aqueous systems.

This presentation addresses the value proposition of the polymeric dispersant, highlighting its superior performance, sustainable profile and examples of savings in pigment formulations.

11.2_A NEW GENERATION OF METALLIC PIGMENTS FOR USE IN WATER-BASED AND SOLVENT-BASED SYSTEMS

SPEAKER: ANDRÉ CABRAL MARTINS, TRUCOLOR, BRAZIL

ABSTRACT

The use of water-based paints, or with low content of volatile organic compounds, is a growing demand from society and goes along with sustainability policies, ESG, and respect for the environment.

Schlenk's new line of metallic pigments comes to meet this demand, and a new surface treatment (in reality an encapsulation) based on silica and other substances was developed for this purpose. As a result, we have an aluminum encapsulated in an isopropyl alcohol paste that has compatibility with water-based and solvent-based systems.

Due to this surface treatment, unique properties were given to this family of metallic pigments, such as:

- Excellent chemical resistance (both to acids and to alkaline media);
- Excellent resistance to gas formation;
- Improved dispersibility;
- Resistance to circulation (in plants where the paint keeps circulating in the pipelines for long periods);
- Better adhesion between layers.

We fully believe in the development of technologies that improve our products, generating benefits for our customers, and at the same time enabling the formulation of more ecological paints, contributing to the preservation of our environment and sustainable practices.

11.3_MEETING REQUIREMENTS OF HEAT MANAGEMENT COATINGS WITH FUNCTIONAL PIGMENTS

SPEAKER: MAURICIO COVARRUBIAS BARBA, SUN CHEMICAL, MEXICO

ABSTRACT

The rising demand for thermal management in coatings is driven by climate change, energy efficiency, and durability requirements across sectors such as architecture, construction, automotive, and general industry. A key strategy involves controlling NIR (near-infrared) absorption to reduce heat buildup while preserving color aesthetics. This requires replacing traditional NIR-absorbing pigments with functional alternatives that maintain color fidelity. Next-generation black pigments address this by eliminating undesirable green or violet hue shifts and enhancing thermal stability and resistance to metal marking. These pigments also support LiDAR reflectivity, critical for autonomous vehicle systems. The presentation explores how pigment selection influences thermal and optical performance, demonstrating the advantages of NIR-functional pigments across a spectrum of shades using advanced measurement techniques. These innovations offer a comprehensive solution to meet evolving thermal management and functional design needs in modern coatings.

11.4_INNOVATIVE MAGNESIUM SILICATE ANTI-CORROSIVE PIGMENT OF EXTREME PURITY

SPEAKER: JOHN POULAKIS, MAGRIS TALC, USA

ABSTRACT

A magnesium silicate of extreme purity has recently been developed as a high performance anti-corrosive pigment which is properly modified to provide low oil absorption and long-term corrosion protection to demanding industrial coatings. The high purity of this pigment (averaging over 99% talc content) eliminates the presence of soluble salts, whereas the unique ore morphology and controlled OA, ensure low viscosity and enhanced hydrophobicity. The pigment can be easily dispersed in any industrial coating resin with very high loading potentials. The pigment was incorporated into an epoxy formulation, sprayed onto 4x6 inch 16 gauge thick rolled steel panels that were abrasive blasted to white metal blast (SSPC SP 5) on both sides with a profile of 1.5 to 2.5 mil (blasted panels), and tested in the salt fog apparatus per ASTM B-117. The panels were tested for 4000 hours. Even after 4000 hours in the salt fog, no rust was seen below the scribe on the panels after they were scraped.

11.5_ENGINEERING THE IMPROVED PERFORMANCE OF ORGANIC COLOUR PIGMENTS ISN'T EASY

SPEAKER: PHILLIP MYLES, COLOURSCAPES EUROPE, DENMARK

ABSTRACT

High performance pigments give higher levels of durability for colour stability, however, they carry with them a cost, also they don't have the flexibility to perform in the wider ranging applications where classical Azo pigments will.

Classical Azos are much more tailorable to applications, they are also more commoditised for cost. Meanwhile, the technical knowhow required to engineer new derivatives of Azos for improved performance in wide ranging applications, is often underrated, especially with regards to regulatory compliance.

11.6_APPLICATION OF NEUBURG SILICEOUS EARTH AS AN ABRASIVE IN POLISHES AND CLEANING AGENTS

SPEAKER: DIOGO LIMA DA SILVA, COLORMIX ESPECIALIDADES, BRAZIL

ABSTRACT

The efficiency of the individual components in polishes and cleaners, alone and in combination, will be interpreted on the basis of their morphological structure and chemical composition. The focus of the discussion will be on selected grades of Neuburg Siliceous Earth, which have found wide acceptance as abrasives or grinding agents in such products.

Based on the physical structure of the abrasives, a theory has been developed for the function of Siliceous Earth grades in such formulations. Intentionally, a purely empirical approach was chosen to interpret the existing relationships between the raw materials, rather than attempting to develop mathematical or physical models. The report should be understood as a guideline for practical work, and not so much as a theoretical dissertation.



SESSION 12

SUSTAINABLE SOLUTIONS

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12.1.OVERVIEW OF SUSTAINABILITY IN THE WORLD AND IN THE PAINT INDUSTRY

SPEAKER: ERIKA MARIA DA SILVA OLIVEIRA CARNEIRO, TINTAS FORTEX, BRAZIL

ABSTRACT

Recent global events, such as climate change and COVID-19, have made it essential to deepen discussions on the importance of sustainability, environmental preservation, and social impacts. Sustainable development has become a priority for countries, governments, investors, and companies. The high competitiveness of the market drives businesses to change their strategies and adopt sustainable practices to remain viable. In this context, the paint industry has been making increasing efforts to implement sustainability; however, this remains an underexplored field of study, particularly in developing countries. This paper presents a bibliographic review covering key milestones from the Vienna Convention to the present day, including significant events such as the Rio 92 Summit, the Kyoto Protocol, and COP 24, as well as topics like ESG (Environmental, Social, and Governance) and the SDGs (Sustainable Development Goals). The main objective of this study is to analyze the concept of sustainability by gathering data and conducting a literature review, allowing for the identification of major theories and approaches related to the topic, as well as exploring previous studies and their impacts.

12.2.DEVELOPMENT OF A TEXTURED COATING WITH WOOD WASTE

SPEAKER: MARIANA ZANETTI, MARIANAGZ.CONSULTORIA, BRAZIL

ABSTRACT

The search for sustainable materials in construction has driven the development of new coating formulations. This work investigates the technical feasibility of a masonry coating incorporating wood waste and sawdust, providing a textured finish similar to spatulated acrylic coatings. The research covers everything from formulation to material characterization, evaluating adhesion, mechanical resistance and durability. The proposal aims to reduce wood waste, promoting the circular economy and alternatives with less environmental impact for the paint and coatings sector.

12.3_ARCHITECTURAL AND CONSTRUCTION SOLUTIONS FOR FLOORING AND WATERPROOFING

SPEAKER: BAS VERHAGEN , COVESTRO, NETHERLANDS

ABSTRACT

As the fifth-largest paint producer in the world and a leader in Latin America, Brazil plays a crucial role in the region's sustainable development. In line with the United Nations' Sustainable Development Goals (SDGs), it is essential to adopt practices that protect the planet, promote responsible consumption and production, and implement measures to mitigate climate change, preserving resources for future generations.

Committed to this responsibility, Covestro will present a portfolio of innovative, sustainable, and high-performance solutions, using water-based raw materials or low-VOC content. Solutions for wood applications will be showcased, from sealers to finishes, for both indoor and outdoor environments, with mono and bi-component options. For flooring, topics such as drying, gloss, chemical resistance, and abrasion resistance will be covered.

Additionally, Covestro has invested in sustainable technologies, making its solutions highly competitive in the market. Bio-based resins will also be introduced, contributing to reducing the carbon footprint of coatings for the construction sector.

12.4_100 % BIO-RENEWABLE 1,3-PDO REDUCING CARBON FOOTPRINT AND DEPENDENCY ON FOSSIL

SPEAKER: MILITZA FRANCO, PRIMIENT COVATION, BRASIL

ABSTRACT

The use of 100 % bio-based renewable building blocks is more than ever a strategic choice resin and coatings producers make today to reduce dependency on fossil fuel and to reduce carbon footprint without compromising on performance. Bio-based building blocks are challenged by the need of equal to better performance, price competitiveness, availability in large quantities and must be nature friendly. Susterra 1,3-propandediol is such a building block which can be used in a variety of coatings and paint applications. This paper will focus on explaining sustainability aspects of the feedstock, carbon footprint reduction opportunities compared to fossil alternatives and will showcase the potential applications as building block for 100 % bio-based polyols, PU resins and several other usages resulting in bio-based solutions for future coatings or as a basic replacement for glycols as a bio-solvent.

12.5. SUSTAINABLE INNOVATIONS IN COATINGS: REDUCING ENVIRONMENTAL IMPACT

SPEAKER: MARIA RITA DEMITRÓ, ESG EM TINTAS, BRAZIL

ABSTRACT

The growing concern for sustainability has driven the search for innovative alternatives in the coatings industry to reduce environmental impact.

This study presents sustainable solutions for coating formulations, highlighting innovations that minimize environmental impact without compromising product quality and performance.

Strategies involving the use of bio-based resins, biodegradable additives with high renewable carbon content, and more efficient manufacturing processes lead to a new approach for the sector. These innovations contribute to reducing the carbon footprint, lowering pollutant emissions, and promoting the circular economy.

The adoption of these practices can significantly contribute to a more sustainable coatings industry, anticipating regulatory trends, meeting the increasing market demand for environmentally responsible products, and proactively fostering a more responsible approach in the sector.

12.6. TRIGAMINATION - A SUSTAINABLE OPTION FOR PRE-PAINTING SURFACE TREATMENT

SPEAKER: JOSENILDO DE MATOS MACHADO MACHADO, GALENA IND COM , BRAZIL

ABSTRACT

Pre-treatment of white sheet metal, black sheet metal, galvanized sheet metal, galvalume, aluminium profiles and sheet metal, by immersion, rubbing or spraying, at room temperature or heated, without the need to use demineralized water. In the final stage, before drying, before painting.

There is no need to remove scale from black plates by eliminating acid blasting or sandblasting, which eliminates the use of strong acids that emit acid gases, such as hydrochloric, hydrofluoric and sulphuric acid, as well as not emanating nitrous fumes from the phosphoric acid/nitric acid process, characteristic of phosphating. A huge saving in water, physical space and processing time, as only one step is required in the case of manual scrubbing, or two or three steps in the case of dipping or spraying before painting.

In the case of dipping or spraying, the first stage involves degreasing and converting the oxides FeO, Fe₃O₄, Al₂O₃, ZnO or their mixtures, in the case of galvalume, all oxides present on the metal surfaces being treated, into nanoceramics.



SESSION 13

FUNCTIONAL COATINGS

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13.1.SELF-STRATIFYING AND SELF-HEALING RECOVERABLE COATINGS

SPEAKER: MAUDE JIMENEZ, UNIV. LILLE, FRANCE

ABSTRACT

Environmental sustainability is currently driving coatings design and applications. The ultimate challenge is to develop multi-functional one-pot coating materials that can be effectively recovered and even recycled. The eco-efficient self-stratification process allows the spontaneous formation of complex polymer multilayers in only one step of formulation, application and curing. Our objective is to take advantage of the rapid development of a novel family of polymers - the vitrimers - to design partially / fully recyclable one-pot coatings, leading to a virtuous sustainable cycle. Vitrimers behave like traditional thermosets at room temperature, but tend to be reshapable, and recyclable when exposed to specific stimuli, due to their inherent dynamic covalent bonds. In this presentation, various self-stratifying coatings (bio-based epoxy / vitrimer silicon, vitrimer epoxy / vitrimer silicon, vitrimer epoxy / fluoro polymer and vitrimer epoxy / vitrimer benzoxazine) will be presented. Their design and characterization will be described, and their self-healability and recoverability will be highlighted.

13.2.SELF-STRATIFYING EPOXY/TPU COATINGS DESIGNED FOR AEROSPACE APPLICATIONS

SPEAKER: ADRIEN LEBEAU, UNIV. LILLE, FRANCE

ABSTRACT

To functionalize the surface of a material, coatings with diverse properties (adhesive, antibacterial, flame-retardant, etc.) are often required, typically as multi-layer systems. These involve complex application and curing steps, increasing by-products, energy consumption, and processing time, which hinder industrial efficiency in aeronautics and raise environmental concerns. Additionally, interlayer adhesion failure and aging can cause severe defects, leading to corrosion on airplanes. Reducing the number of layers while maintaining or enhancing performance is crucial. Self-stratifying coatings offer a promising solution by forming multilayer structures in a single step, optimizing adhesion and surface properties in one pot application and curing step. Each layer serves a distinct role: the bottom ensures adhesion and protection, while the top provides aesthetics and environmental resistance. This study replaces a two-layer epoxy/polyurethane (PU) system for aerospace applications with an eco-efficient self-stratifying epoxy/thermoplastic polyurethane (TPU) coating. The design, stratification process, challenges, and full coating characterization are discussed.

13.3. SILANES: HIGH PERFORMANCE ADDITIVES FOR COATINGS, ADHESIVES, AND SEALANTS

SPEAKER: LARISSA HADDAD, EVONIK CORPORATION, USA

ABSTRACT

Coatings, adhesives, and sealants (CAS) are used in every application imaginable from kitchen tables to cars and for a variety of reasons including visual appearance, surface protection, and material bonding. The use of organofunctional silanes offer many protective properties, such as improving substrate adhesion, altering surface chemistry, and increasing crosslink density. Additionally, silanes provide a specific benefit to adhesives and sealants by improving mechanical properties like tensile strength and elongation as well as its functionality as a moisture scavenger. These effects positively impact durability by boosting corrosion resistance, water repellency, and chemical resistance. In addition to their performance benefits, silane additives can extend the lifespan and therefore the longevity of the application, leading to a reduced need for replacements. Environmentally friendly aqueous silanes and oligomeric silanes provide performance improvements while reducing the emission of volatile organic compounds (VOCs) compared to traditional monomeric silanes. High performance silanes are an effective solution for enhancing the performance and durability of CAS formulations.

13.4. COOL PIGMENTS - REDUCTION OF HEAT ABSORPTION DUE TO PIGMENTS TSR TECHNOLOGY

SPEAKER: ÁBNI LEHMKUHL PACHECO, ALFARBEN, SPAIN

ABSTRACT

This study examines sustainable alternatives to traditional black pigments, focusing on their role in addressing the Urban Heat Island effect. UHI causes urban areas to heat up more than rural areas due to the use of heat-absorbing materials like carbon black in roads and buildings. This leads to higher energy consumption for cooling. The study explores "Cool Pigments," particularly Chromium Iron Oxide (PBr 29), as solution.

UHI is driven by the absorption of solar radiation, reduced cooling from limited greenery, and heat from human activities. Traditional black pigments absorb significant solar radiation, raising urban temperatures and increasing cooling energy demand. The U.S. EPA estimates that UHI increases cooling energy consumption by 5-10%. Sustainability standards like LEED promote materials with high reflectance to combat UHI.

PBr 29, compared to other black pigments, showed superior solar reflectance, particularly in the IR spectrum. While it may not completely replace carbon black in color and strength, innovative solutions are being developed to address these differences. PBr 29 offers a sustainable, energy-efficient alternative for reducing the UHI effect and energy use.

13.5. INNOVATIONS IN HIGH WATER RESISTANCE WITH ACRYLIC AND SILICON EMULSIONS

SPEAKER: ANDRÉ LUIZ OLIVEIRA, WANA INDUSTRIAS

ABSTRACT

The growing demand for innovative and efficient water-resistant solutions focused on water repellency and waterproofing in the real estate sector has driven the development of water-repellent paint and coating formulations with elastomeric properties and technological differentiators. This technical study evaluates the behavior and performance of different chemical structures of acrylic polymers and silicone-based compounds in paint formulations and other surface protection and protective products, analyzing their properties in terms of water repellency, adhesion, water resistance, elasticity, durability, and environmental impact. The evaluations were carried out on various substrates used in the real estate sector, applicable to both vertical and horizontal surfaces. The results demonstrate that each emulsified polymer technology—from different acrylic polymers to emulsified silicones—offers significant advantages, especially in terms of water repellency and elastomeric capacity, enabling considerable innovations with versatility in formulation types, substrates, and applications.

13.6. FUNCTIONAL POLYMERS FOR SUSTAINABLE LIDDING APPLICATIONS IN FLEX PACKAGINGS

SPEAKER: INGO STOHRER, EVONIK CORPORATION, USA

ABSTRACT

Functional polymers are used as binders in heat seal lacquers for various applications. A heat seal coating must ensure a secured sealing of the packaging and enable an easy peel opening behavior. Additionally heat seal coatings should enable the usage of new packaging designs based on paper, mono-materials or recyclable materials like PET.

Binders based on methacrylate hybrid polymers support this change process not only in dairy application, they also allow the development of new environmentally friendly packaging solutions in pharma packaging, cosmetics, coffee capsules and furthermore. Next to the choice of material used for the packaging heat seal binders offer coating solutions without the use of a primer, fast solvent evaporation during drying, a broad sealing window in final application and thin layer coatings.

The hybrid polymer heat seal coatings can be applied with a very low coating weight and therefore aid in the overall recycling process due to the coated material being NIR detectable.

Next to the reduced complexity of the coating process the sustainability of packaging is increased due to the general given recyclability and reduced material use.



SESSION 14

NOVEL MATERIALS II

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14.1.NEXT-GEN HYPERFUNCTIONAL CARBODIIMIDES FOR SAFE AND HIGH-PERFORMANCE COATINGS

SPEAKER: JOAN PARAREDA, STAHL, SPAIN

ABSTRACT

Crosslinking is essential for enhancing the durability and resistance of coatings, especially in demanding environments such as industrial applications. Conventional crosslinkers such as aziridines and isocyanates, often provide excellent performance but come with significant regulatory and safety concerns. This study explores the development and evaluation of a novel hyperfunctional crosslinker designed to overcome these limitations. The crosslinker demonstrates a high degree of reactivity with carboxylic acid groups, forming dense 3D polymer network that improve coating hardness, chemical resistance, abrasion resistance, and pot-life. Comparative testing was conducted against standard polycarbodiimides, aziridines and polymeric aziridines across several parameters including Hardness, chemical resistance, gloss, dry adhesion & pot-life under various curing conditions. Results indicate that the novel crosslinker achieves superior performance in early-stage curing and maintains extended pot-life without compromising final film properties. These findings present a promising route for safer, high-performance crosslinking that aligns with evolving environmental and regulatory standards.

14.2.COATING RESINS FOR PAPER AND CARDBOARD FOOD PACKAGING

SPEAKER: JUAN GUERRERO, COVESTRO, SPAIN

ABSTRACT

Currently, a large amount of food packaging made of paper and cardboard that requires high barrier performance is laminated with barrier materials such as polyethylene (PE) or aluminum. This protects the food inside the packaging and extends its shelf life but also inhibits the repulpability of the paper and the recyclability of the packaging, leading to undesirable packaging waste. One potential solution is the use of dispersion coatings that provide barrier functionality without preventing paper recycling. Covestro will present a portfolio of products and recent developments in dispersion coating resins that offer barriers against water, grease/oil, and moisture, enabling a transition to recyclable functional food packaging. In addition to barrier performance and sustainability demands, resins with bio-based content will also be introduced to reduce the carbon footprint of paper and cardboard coatings.

14.3. FAST CURING, HIGH UV RESISTANCE AND EHS-FRIENDLY EPOXY COATINGS

SPEAKER: CLAUDIA SÁ, EVONIK IN COLLABORATION WITH CALDIC

ABSTRACT

Fast cure floor coatings that increase productivity while maintaining durability and aesthetics, remain a priority in the construction market. However, rapid curing is often accompanied by issues related to durability, UV resistance, adhesion, working time, and environmental, health and safety (EHS) requirements. To achieve rapid curing, accelerators such as phenolic compounds are commonly added to two-component epoxy systems, which speed up the curing process but often raise concerns about worker safety due to the use of unfriendly substances. In addition, other accelerators, such as phenolic tertiary amines, can significantly compromise UV resistance.

This paper presents an amine hardener designed for epoxy systems and that addresses the performance and EHS gaps in today's commercially available systems, allowing for a quick return to service, exceptional aesthetics at ambient and low temperatures – high blushing resistance, excellent UV resistance, and extended work times.

14.4. CHARTING A NEW COURSE: PTFE-FREE INNOVATIONS IN POWDER AND CAN COATINGS

SPEAKER: ANGÉLICA MOTA, LUBRIZOL, BRAZIL

ABSTRACT

Polytetrafluoroethylene (PTFE) in micronized powder form has brought desirable properties to coating and paint applications, including excellent mechanical properties, chemical resistance, and a low coefficient of friction.

In 2019, the Stockholm Convention began restricting the use of raw materials containing >25 ppb of perfluorooctanoic acid (PFOA). This global restriction on PFOA and its salts as persistent organic pollutants (POPs) impacted traditional PTFE. The need for PFOA-compliant or PTFE-free alternatives was significantly accelerated.

In the article, Lubrizol present new technologies that serve as viable alternatives to PTFE. These PTFE-free formulations offer properties similar to those containing PTFE, either with significantly improved mechanical resistance and a low coefficient of friction or by creating textures in powder coating. Therefore, they are perfectly suitable as functional substitutes for PTFE-based additives. The advantages of halogen-free additives are characterized by good compatibility in paints and coatings and, due to their lower density compared to PTFE, they are easier to disperse and process

14.5. REPLACING TRADITIONAL ANTI-CORROSIVES WITH SMART INHIBITORS AT LOW LOADINGS

SPEAKER: PATRICK DODDS, MCASSAB, UNITED KINGDOM

ABSTRACT

Traditional corrosion inhibitors require relatively high loadings to provide protection- there is increasing demand for solutions at lower loadings to reduce inhibitor costs, CO₂ demand and material usage. A new design of organic inhibitor has been developed that offers long term corrosion protection at loadings as low as 0.5-3%. The new smart materials have a low specific gravity and controlled, intelligent release mechanism, providing more protection per weight of material.

The pigments have been tested at the electrochemical level in the laboratory, followed by traditional accelerated testing and then independently tested in extreme environments, including exposure trials in the Celtic Sea and coastal railway stations, where the pigments demonstrated significant levels of corrosion protection. C5 corrosion testing in salt spray chambers and Scanning Kelvin Probe analysis will be presented to demonstrate performance and reduced corrosion kinetics.

By enhancing long-term coating durability while reducing material usage, these new pigments provides a low loading level, high-performance alternative to zinc phosphate, making it a sustainable and scalable solution.

14.6. OPTIMIZATION OF ADHESION AND INTERLAYER COHESION THROUGH VOC-FREE ADDITIVES

SPEAKER: XAVIER FRANC, SYNTHRON, FRANCE

ABSTRACT

Adhesion is a fundamental issue in many applications. In coatings, where the main objective is to protect and decorate, adhesion promoters contribute to extending the durability of the coating and improving the protection of the substrate. Choosing the right additive provides a simple solution to correct adhesion problems and improve the quality and durability of the coating. Therefore, understanding the mechanisms related to adhesion is essential for the development of high-performance coatings. Modified phosphoric ester epoxy polymer-based adhesion additives go beyond the conventional. They not only form bonds directly with metal substrates to improve adhesion, but also bring additional benefits to the system, such as improved anti-corrosive protection and increased film flexibility, providing better performance in deformation and impact. To improve adhesion between paint layers, the technology involved is different. In this context, the additive acts by increasing the energy and polarity of the surface of the first layer and contributing to improving adhesion and leveling of the next layer, being an essential element in achieving the perfect surface appearance.

SESSION 15

POLYURETHANES AND ADDITIVES

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15.1.REPLACING FLUORINE-BASED ADDITIVES IN COATING FORMULATIONS

SPEAKER: JIM READER, EVONIK, USA

ABSTRACT

Many coatings formulators are now having to find alternatives to fluorosurfactants responding to potential or increased regulations. Lack of availability of mainstream technology is also another major reason for many to seek alternates. Reformulation can be difficult, due to the unique multifunctional properties and chemical stability of the fluorosurfactants, so often replacement is not 1:1.

Fluorosurfactants and additives are relatively low molecular weight additives containing fully (per) or partly (poly) fluorinated carbon chains connected to different functional groups. These additives are highly efficient at lowering the surface tension of liquid coatings to improve slip and wetting of substrates and eliminate film defects.

Formulators seeking alternatives to fluorinated additives need to consider all the potential effects that these additives can bring to a formulation and then identify alternatives that can provide similar performance. This paper will compare different additive families and review how these additives or combinations of additives can be used to replace fluorosurfactants when needed.

15.2.NEXT GENERATION OF ADDITIVES TO MINIMIZE VISCOSITY DROP AFTER TINTING

SPEAKER: NUNO CASTRO , ELEMENTIS, USA

ABSTRACT

Intense colors renew the spaces of a home, changing the atmosphere according to the taste of the owners. This trend has become more pronounced after all the time we spent in our homes during the pandemic crisis.

Paint industry has been struggling to overcome the tremendous drop in paint viscosity after tinting. An approach used for many years was to release the base paint at a high viscosity. This could compensate for the drop in viscosity after tinting, allowing the colored paint to be delivered in an acceptable viscosity range. However, this strategy generates excessive costs due to the high dosage of thickener and great difficulties in tinting thicker bases.

In this work we will show how new functional additive technology for tinting systems and colorants is providing effectively minimizing drop in viscosity after tinting. The benefits are better color development for medium colors and less dosage of thickener in the base paint for deep colors, translating into cost savings.

15.3. THE USE OF BIOSURFACTANTS IN PAINTS AND COATINGS

SPEAKER: MARINA PASSARELLI, EVONIK, BRAZIL

ABSTRACT

Surfactants are essential in a wide range of applications, including coatings, paints, and inks. For coating and ink formulators, surfactants enable effective pigment and substrate wetting and color strength. However, most of the surfactants are fossil-based and pose significant challenges in terms of health and environmental impact. As industries and customers increasingly move away from fossil-based products to address climate and regulatory concerns, bio-based alternatives are emerging as a promising solution. They offer a more sustainable option by using 100% renewable raw materials and meet the growing demand for products that are both high-performing and environmentally friendly.

Biosurfactants are innovative in the industry. They offer an environmentally friendly alternative to conventional substrate and pigment wetting additives, meeting the increasing environmental standards and the needs of customers in the coatings and inks industry. This paper will present the use of this type of products in applications such as water-borne architectural, wood, and industrial coatings as well as pigment concentrates.

15.4. REDUCING ENVIRONMENTAL IMPACT WITH ADVANCED RENEWABLE RHEOLOGY MODIFIERS

SPEAKER: NUNO CASTRO, ELEMENTIS, USA

ABSTRACT

In response to the global shift towards safer, more sustainable, and higher-performing paint formulations, Elementis introduces an innovative additive package based on C14 verifiable biobased renewable ingredients. Sourced primarily from waste streams of sugar canes, crops, and mixtures of vegetable oils, these additives represent a significant advancement in eco-friendly paint technology without compromising performance.

This presentation will showcase Elementis' latest Non-Ionic-Synthetic-Associative-Thickeners (NiSAT), which boast over 90% verifiable biobased content derived from sugar cane molasses waste streams that do not compete with the food chain. These products meet eco-labeling standards, being free from VOC, Tin, APEO, MIT/BIT, and TEA. Performance lab results indicate that NiSAT matches non-biobased alternatives and, in some formulations, even shows higher efficiency while being suitable for various binder chemistries and PVC levels.

Join us to explore how these groundbreaking biobased solutions can support the future of more sustainable paint formulations.

15.5. WATER-RESISTANT COATINGS: DIFFERENTIATING WATERPROOFING AND WATER REPELLENCY

SPEAKER: MAX GIUDICI, LAMBERTI BRASIL, BRAZIL

ABSTRACT

Sustainability has been one of Lamberti's pillars since its foundation in 1911. Our way of contributing to a sustainable way of life is through innovation in specialty chemicals, enhancing the quality and durability of the materials we produce and consume daily.

Our presentation will showcase a great example of this premise – the use of water-based polyurethane dispersions (PUDs) in the formulation of efficient waterproofing coatings. We will also address the differentiation between well-known concepts that often cause some confusion in the architectural coatings market: water repellency vs. waterproofing.

These concepts are essential to meeting the growing demand for waterproofing coatings with high performance.

We will provide a technical explanation of what constitutes water repellency versus waterproofing, the most commonly used products for each effect, along with their advantages and disadvantages. Additionally, we will present formulation results using polyurethane dispersions (PUDs), which inherently exhibit low water absorption, while also analyzing their potential impacts on other key paint properties such as washability, dirt pickup resistance, and drying time to touch.

15.6. ECO-FRIENDLY WATER-BORNE PU COATING WITH EDA-GO FOR ENHANCED ANTICORROSION

SPEAKER: RAFAEL FERNANDES, FGV IBRE, BRAZIL

ABSTRACT

This study examines graphene oxide (GO) as an additive in water-borne polyurethane (WPU) for eco-friendly anticorrosive coatings. While WPU's hydrophilicity limits corrosion resistance, adding GO (0.01–1.3 wt%) and ethylenediamine (EDA)-functionalized GO improved protection for carbon steel. Electrochemical tests in 3.5% NaCl showed 0.01 wt% GO-EDA/WPU had optimal performance: high E_{corr} (–117.82 mV), low i_{corr} (3.70×10^{-9} A cm^{-2}), and 99.60% corrosion inhibition efficiency. Raman imaging revealed GO agglomeration at higher concentrations, enabling corrosive pathways. In UV/condensation tests, 0.01 wt% GO-EDA coatings outperformed pristine WPU, with minimal corrosion. EDA-enhanced cross-linking and GO's large lateral dimensions improved dispersion and barrier properties, highlighting GO's potential for sustainable corrosion protection.

ACKNOWLEDGMENTS

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