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Sustainability High-
lights of Formulation
and Performance
Additives



Peter Bene /
Dr. André Kastler
Presenters



Andrea Schamp/
Kerstin Schurig
Chat



Sustainability Highlights of Formulation and Performance Additives

 **BASF**

We create chemistry



Peter Bene

**Technical Sales
Formulation Additives
EMEA**



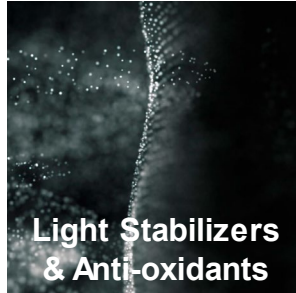
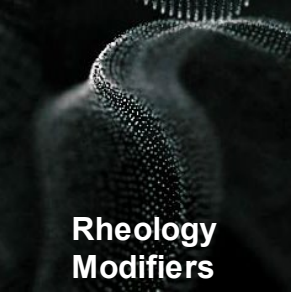
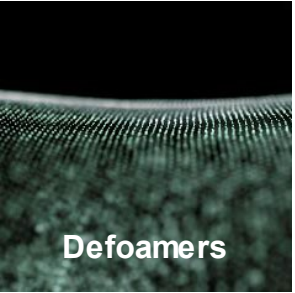
Dr. André Kastler

**Head of Technical Sales
Performance Additives**

Agenda

1. Introduction
2. Sustainability – Major Trends
3. Sustainability Portfolio Formulation Additives
4. Sustainability Portfolio Performance Additives
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Our comprehensive portfolio enables solutions for various industries



BASF is the premiere provider of **Performance & Formulation Additives** for the paints and coatings industry



Architectural Coatings



Industrial Coatings



Automotive Coatings



Furniture & Flooring



Adhesives



Construction



Printing & Packaging



Composites

Strong brands to empower your business

Water-based brands	Application	Solvent-based* brands
Dispex [®] / Dispex [®] Ultra	DISPERSING AGENTS	Efka [®]
Foamaster [®] / FoamStar [®]	DEFOAMERS	Efka [®]
Rheovis [®] (organic) / Attagel [®] (clays)	RHEOLOGY MODIFIERS	Efka [®]
Hydropalat [®]	WETTING AGENTS	Efka [®]
Loxanol [®]	FILM-FORMING AGENTS	Efka [®]
Tinuvin [®] / Lignostab [®]	LIGHT STABILIZIERS	Tinuvin [®] / Chimassorb [®]
Irganox [®]	ANTIOXIDANTS	Irganox [®] / Irgafos [®] / Irgastab [®]

*Efka[®] includes also High Solids and 100% Solid Systems

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Sustainability – what does it mean in paints & coatings

Additives are enablers for innovation and sustainability


- Enhance the environmental compatibility
- Enhance resource efficiency of your systems
- Improving the impact on health and wellbeing

Formulation additives:
every little helper contributes



[Sustainability ED2 video](#)

We make today's challenges tomorrow's solutions



Renewables
Enables high solids

Biocides
Low-odor

Low VOC

Tin-free

Food contact compliance

APEO-free

Global Registration

Lower emissions

Resource Efficiency

Regulatory requirements

Total Cost of Formulation

Durability

Higher line speed

Supports conversion to water-based

Major Sustainability Trends

- Our general **sustainability brochure** and our industry specific **quick guides** give an overview on the sustainability demands, trends and drivers in
 - Architectural
 - General Industrial
 - Printing & Packaging
 - Furniture & Flooring
 - Automotive
- **MIT-free**
BASF offers a broad range of formulation additives which are **MIT-free**.
- **Food contact compliance:**
BASF offers with the food contact brochure a quick guide for customers, with all relevant products included; more details are available in so called Food Contact Statements.
- **Renewables**
BASF offers a broad range of formulation additives **partly based on renewables** to cover the increasing demand for sustainable solutions.
- **Durability**
Our broad portfolio of **UV Absorbers (UVA)** and hindered **Amine Light Stabilizers (HALS)** ensures durability and the long-lasting beauty of your coatings.



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Sustainability demands in furniture & flooring coatings

■ Formulation additives for furniture & flooring coatings enable formulators to produce finishes that preserve the beauty of coated wood while meeting the demand for efficient and environmentally compatible manufacturing...



Sustainability demands in furniture & flooring coatings

	Dispersing agents	Defoamers	Rheology modifiers	Wetting agents and surface modifiers
 Efficiency	Dispex® Ultra PX 4575 Dispex® Ultra PX 4585 Efka® PX 4330 Efka® PX 4350 Efka® PX 4701 Efka® PX 4751	FoamStar® ST 2438	Rheovis® AS 1130 Rheovis® HS 1162 Rheovis® PU 1191 Rheovis® PU 1291 Rheovis® PU 1331	Efka® FL 3670 Efka® SL 3299 Hydropalat® WE 3370
 Low odor		FoamStar® ED 2522		
 Low VOC	Dispex® Ultra PX 4575 Dispex® Ultra PX 4585	FoamStar® ED 2522 FoamStar® SI 2293 FoamStar® ST 2438	Rheovis® AS 1130 Rheovis® HS 1162 Rheovis® PU 1191 Rheovis® PU 1291 Rheovis® PU 1331	Efka® SL 3299
 Renewables	See general product list on slide 14 and 17			
 Enables water-based	Dispex® Ultra PX 4575 Dispex® Ultra PX 4585	FoamStar® ED 2522 FoamStar® SI 2293 FoamStar® ST 2438	Rheovis® AS 1130 Rheovis® HS 1162 Rheovis® PU 1191 Rheovis® PU 1291 Rheovis® PU 1331	Efka® SL 3299 Hydropalat® WE 3370
 Durability	Dispex® Ultra PX 4585 Efka® PX 4350 Efka® PX 4751			Efka® SL 3299
 Tin-free*	Dispex® Ultra PX 4575 Dispex® Ultra PX 4585 Efka® PX 4330 Efka® PX 4350 Efka® PX 4701	FoamStar® SI 2293 FoamStar® ST 2438	Rheovis® AS 1130 Rheovis® HS 1162 Rheovis® PU 1191 Rheovis® PU 1291 Rheovis® PU 1331	Efka® SL 3299 Hydropalat® WE 3370

*Not intentionally added. Product may comprise minor traces as ubiquitously occurring impurities cannot be excluded.

BASF's Formulation Additives with renewable content portfolio offerings

Product	Percentage renewable	Food contact compliance
Dispersing agents		
<i>Dispex® Ultra FA 4437</i>	34%	●
<i>Dispex® Ultra FA 4480</i>	20%	●
<i>Dispex® Ultra FA 4483</i>	8%	●
<i>Dispex® Ultra FA 4488</i>	45.5%	●
<i>Hydropalat® WE 3158</i>	12%	●
<i>Hydropalat® WE 3165</i>	5%	●
<i>Hydropalat® WE 3182</i>	30%	●
<i>Hydropalat® WE 3625</i>	70%	●
<i>Hydropalat® WE 3645</i>	24%	●
Wetting agents		
<i>Hydropalat® WE 3120</i>	30%	●
<i>Hydropalat® WE 3130</i>	52%	●
<i>Hydropalat® WE 3486</i>	19%	●



Dispex® Ultra FA 4480 and 4483

Universal wetting / dispersing agents for pigment concentrates



Application:

Dispex® Ultra FA 4480 / FA 4483 offer solutions for water-based and universal pigment concentrates. Dispex® Ultra FA 4480 is well suited for organic pigments and carbon black whereas Dispex® Ultra FA 4483 provides excellent dispersions with inorganic pigments. Together Dispex® Ultra FA 4480 / FA 4483 are in use to formulate APEO-free and glycol-free universal colorants..

Sustainability highlights:

- VOC-free acc. to EU 2004/421 and US-EPA Method 24
- APEO-free
- Solvent-free
- Low odour

Performance highlights:

- Excellent pigment stabilization, viscosity reduction and wetting and dispersing properties
- Improved stability and colour intensity of pigment concentrates
- Excellent compatibility with aqueous and solvent-based systems
- Anti-settling effect

Characteristic Values:

Property	Dispex® Ultra FA 4480	Dispex® Ultra FA 4483
Appearance	clear liquid	clear viscous liquid
pH	~ 6.5	~ 2
Active content	80%	30%

Other option:

- Hydropalat® WE 3158
- Hydropalat® WE 3165

Hydropalat® WE 3120

Non-ionic surfactant for water-based coatings



Application:

Hydropalat® WE 3120 is a low-foaming wetting agent and is recommended to be used in the formulation of aqueous paints, adhesives and printing inks. It shows excellent reduction of surface tension.

Sustainability highlights:

- Food Contact Compliances:
Swiss Ordinance
SR 817.023.21 B listed
FDA Regulations
21 CFR 175.105
- Solvent-free
- Low odor

Performance highlights:

- Fatty alcohol alcoxylate
- Excellent substrate wetting
- Strong reduction of surface tension
- Low foaming
- Water soluble

Characteristic Values:

Appearance	Colorless liquid
Density	~ 0.956 g/cm ³
pH value (1%)	~ 7
Cloud point	~ 29.5 °C

Other option:

- Hydropalat® WE 3130

BASF's Formulation Additives with renewable content portfolio offerings

Product	Percentage renewable	Food contact compliance
Defoamers		
<i>Efka® PB 2770</i>	49%	●
<i>Foamaster® NO 2306</i>	28%	●
<i>Foamaster® NO 2331</i>	>90%	●
<i>Foamaster® NO 2335</i>	91%	●
<i>Foamaster® ED 2522</i>	20%	●
<i>FoamStar® SI 2210</i>	30%	●
Others		
<i>Loxanol® CA 5330</i>	50%	●
<i>Loxanol® CA 5336</i>	68%	●
<i>Loxanol® MI 6430</i>	60%	●
<i>Efka® PL 5381</i>	~75%	●
<i>Efka® PL 5382</i>	~75%	●
<i>Efka® RM 1900</i>	~ 70%	●



FoamStar® ED 2522

High performance, ultra low S-VOC silicone emulsion defoamer



Application:

Foamstar® ED 2522 is an emulsion defoamer based on hyper-branched polymers and organo-modified silicones which shows an optimum balance between compatibility and defoaming efficiency/persistency. It is one of our best defoamers and is suitable for all types of aqueous premium paints and clear coats.

Sustainability highlights:

- VOC-free acc. to EU 2004/42 & US-EPA Method 24
- Water-based emulsion
- Does not contain mineral oils
- Low odor
- Designed to be used in paints with pro-environmental labelling (GS-11, Blue Angel, Ecolabel, German TUV)

Performance highlights:

- Excellent foam suppression in premium flat paints, mid to low PVC paints and clear coats
- One of the fastest for bubble break times
- Designed for zero to < 100 g/l paints
- Highly compatible, no haze, no fogging
- Excellent persistency and gloss
- Easy to incorporate in grind or let down

Characteristic Values:

Appearance	White liquid
Solids (%)	20 %
Density at 20°C	1.00 g/cm ³
Viscosity	1,500 mPa s
Flash Point	> 100°C

Efka® PB 2770

Silicone-free, 100% defoamer for radiation curing systems



Application:

Efka® PB 2770 is a new, silicone-free, 100% active defoamer for radiation curing systems offering excellent foam-breakdown and outstanding compatibility.

Efka® PB 2770 is an excellent deaerator and defoamer for universal use in clear and pigmented UV curable formulations, composites, gel coats, cast resins and adhesives.

Sustainability highlights:

- Silicone-free
- 100% active

Performance highlights:

- Silicone-free, polymer-based defoamer
- Outstanding compatibility in various systems
- Excellent recoatability
- Suitable for typical F&F applications like roller and curtain coater

Characteristic Values:

Appearance	Clear yellowish liquid
Density at 20°C	~ 0.96 g/cm ³
Viscosity	~ 1,800 mPa·s

Foamaster® NO 2331

Environmentally sound, natural oil-based alternative to mineral oil defoamers with extremely broad food contact compliance



Application:

Foamaster® NO 2331 is a natural-oil based, VOC-free and low SVOC defoamer, which provides excellent performance and minimizes haze and fogging often seen with mineral oil defoamers. It is suitable for all types of aqueous premium paints (high PVC, premium flat & eggshell, semi-gloss), adhesives and emulsion polymerization processes where broad food contact compliance is required.

Sustainability highlights:

- VOC-free acc. to EU 2004/42 & US-EPA Method 24
- Low SVOC content
- Based on renewable oils
- Designed to be used in paints with pro-environmental labeling (GS-11, Blue Angel, Ecolabel, German TÜV)

Performance highlights:

- Quick foam suppression
- Highly compatible
- Excellent long-term stability
- Low influence on gloss
- Broad applicability
- Low fogging
- Excellent product stability

Characteristic Values:

Appearance	Yellowish hazy liquid
Density at 20°C	~ 0.93 g/cm ³
Viscosity	~ 1,250 mPa·s

Other options :

- Foamaster® NO 2335

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Example Durability & Efficiency

Performance additives for longer coating lifetime

Tinuvin® DW easily locks out UV radiation

- Our specific offer for waterborne applications keeps doors and windows in perfect shape.
- The high-quality light-stabilizing solution is designed to meet high performance and durability requirements of exterior water-based industrial and architectural coatings.
- All Tinuvin DW products are EUH 208 label-free and therefore grant green local labels like Ecolabel, Nordic Swan and Blauer Engel.

- Tinuvin® 477-DW (N)
- Tinuvin® 123-DW (N)
- Tinuvin® 5333-DW (N)



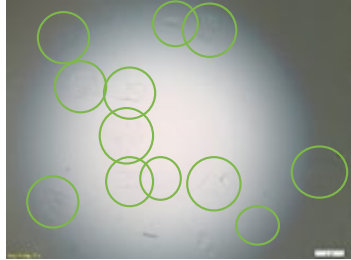
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Non-basic HALS: Tinuvin® 123-DW (N)

■ Does not interact with acidic components or sensitive binders

Tinuvin® 292



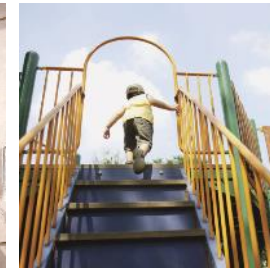
Tinuvin® 123-DW (N)



1K joinery acrylic dispersion
Addition of HALS
(1.0 % active on binder solid content)
2 hours contact time,
75 µm wet draw-down

Tinuvin® 123-DW (N)

Appearance	Off-white dispersion
Active content	30.0 %
Solid content	52.0 %
pH	7.0 – 9.0

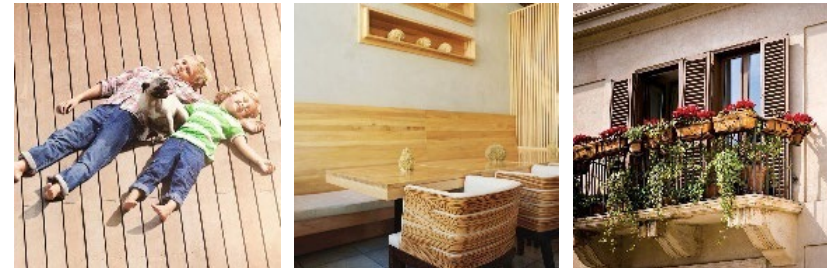


Red-shifted UV absorber for high performance waterborne coatings: Tinuvin® 477-DW (N)

- For substrates requiring a strong UV-A protection (i.e. wood)
- Long term performance
- High photo permanence
- Does not leach out
- Not to be applied onto substrate with high alkalinity

Tinuvin® 477-DW (N)

Appearance	Slightly yellowish dispersion
Active content	20.0 %
Solid content	42.0 %
pH	7.0 – 9.0



UVA/HALS blend for high performance waterborne coatings for wood: Tinuvin® 5333-DW (N)

- Aqueous dispersion of high-performance UVA and non-interacting HALS
- Excellent long-term performance combining high photo permanence, color and gloss retention
- No settling behavior

Tinuvin® 5333-DW (N)

Appearance	Slightly yellowish dispersion
Active content	40.0 %
Solid content	52.0 %
pH	7.0 – 9.0



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Important topics to remember

- Sustainability **quick guide** and related brochure give an overview on the sustainability demands, trends and drivers incl. product offerings for the respective industry
- **Food contact compliance** – availability of a broad range of listed products (see Food Contact Brochure)
- BASF offers a broad range of formulation additives **partly based on renewables** to cover the increasing demand for sustainable solutions
- Our broad portfolio of **UV Absorbers (UVA)** and **Hindered Amine Light Stabilizers (HALS)** ensures durability and the long-lasting beauty of your coatings.
- BASF offers a broad range of formulation additives which are **MIT-free** to fulfil various Eco-labels.

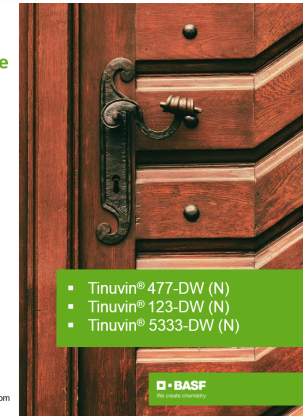
→ **BASF offers a comprehensive portfolio of Formulation and Performance Additives to serve sustainable needs of our customers.**



Example Durability & Efficiency Performance additives for longer coating lifetime

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Solution Finder Tool for Formulation Additives



The **Solution Finder Tool** offers you the best additive solution for your formulation needs across all industries (www.basf.com/solution-finder)

Features & Benefits

- Formulation Additives guide for Paints and Coatings, Adhesives and Construction*
- Understand the benefits of our products (Dispersing Agents, Defoamers, Rheology Modifiers, Wetting Agents and Surface Modifiers, and Film-Forming Agents) by application, and with technical information
- Order samples or email us for detailed consultations
- Available on BASF web, Apple Store and Google Play Store**

*The product list and sample ordering for adhesives and construction are only applicable in Europe. It also comprises recommendations for Performance Additives

**To use this tool on your Windows device, please visit our website for details

Scan QR
code for
details



Lab Assistant for Architectural Coatings



Lab Assistant is a web-based application that makes it easier for you to find BASF dispersions and additives for Architectural Coatings in Europe (www.lab-assistant.basf.com)

Features & Benefits

- Get product recommendations and formulation ideas according to the final properties of the paint, technical data, complete recipes and ingredient calculator
- Access formulation expertise to gain new insights and ideas
- All relevant data (e.g. MSDS, TDS, Reach, sustainability aspects, brochures, value cards, etc) available in one location
- Compare products or formulations
- Individualize your own account and share content with your colleagues
- Order samples or get in touch with our experts
- Runs on your PC / laptop / tablet / smartphone

Scan QR code for details



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There is more to come...

Next series of Webinars starting September 1st

Next series of webinars starting mid of January 2021.

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We create chemistry

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■ Safety

When handling the mentioned products, please comply with the advice and information given in the safety data sheets and observe protective and workplace hygiene measures adequate for handling chemicals.

■ Note

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