CLARIANT

LIGHT & HEAT STABILIZERS

For the coatings industry

Clariant is a leading international producer of specialty chemicals with a global network of service and research centers and one clear focus: to provide our customers with safer, more sustainable and highly innovative chemical solutions that benefit the business of all who follow in the value chain because – ultimately – they make life better for the end consumer.

Business Segment Coatings & Adhesives offers a wide range of light and heat stabilizer chemistries adapted and formulated for use in modern coating systems, that help to deliver sustainable solutions for tomorrow. In addition to single additives, Clariant offers under its AddWorks® brand, ready-to-use additive solutions for various markets and applications.

TECHNICAL SERVICE

In order to efficiently respond to its customer's need, Clariant's Business Segment Coatings & Adhesives develops differentiated market-specific solutions from our state-of-the-art application development centers.

Our knowledgeable Technical Service Team offers customer specific support for the most demanding applications. As a result, we can turn your challenges into tailor-made solutions.

For further information please contact us:
adsorbents.additives@clariant.com

SUSTAINABILITY

Clariant's products that contain our EcoTain® label offer the most outstanding sustainability advantages. These products have undergone a systematic, in-depth screening process using our PVP which comprehends 39 criteria reflecting our most material sustainability areas across all life cycle phases.

EcoTain® products exceed sustainability standards, deliver best-in-class performance, and contribute to the sustainability efforts of our company and customers. We aim to continuously expand the number of EcoTain® products by innovatively addressing customer needs.

ECOTAIN®

Hindered Amine Light Stabilizers (HALS)
Protection made easy

	TECHNOLOGIES			APPLICATIONS					BINDER SYSTEMS				
	Water-borne coating	Solvent-borne coating	Powder coating	Auto-motive OEM	Car refinish	Coil coating	General industrial coating	Wood coating	2K-PU	Acrylic	Alkyd	Epoxy	UV curing
Hindered Amine Light Stabilizers (HALS)													
HOSTAVIN® 3050 LIQ		■			■	■	■		■	■			□
HOSTAVIN® 3051 P		■	■			■	■		■	■		□	□
HOSTAVIN® 3051-2 DISP	■			■	■		■	■	■	■		□	□
HOSTAVIN® 3053 LIQ		■		■	■	■	■	■	■	■			□
HOSTAVIN® 3055 LIQ		■		■	■	■	■	■	■	■	■	■	□
HOSTAVIN® 3058 LIQ		■		■	■	■	■	■	■	■	■	■	■
HOSTAVIN® 3065 LIQ	□	■		■	■	□	■	■	■	■		■	□
HOSTAVIN® 3070 P		■	■	■	□	■	■	■	■	■	□	□	■
HOSTAVIN® 3070 DISP	■			■	□		■	■	■	■	□	□	■
HOSTAVIN® 3123 LIQ		■		■	■	■	■	■	■	■	■	■	■
HOSTAVIN® 3292 LIQ	□	■		■	■	□	■	■	■	■		■	□

■ = Recommended
□ = Applicable

THE PRINCIPLE OF HALS

HALS act to inhibit degradation of the polymer by continuously and cyclically removing free radicals that are produced by photo-oxidation of the polymer in coating systems. Clariant HALS range contains three different types to fit specific requirements for todays' modern formulations.

NON-SUBSTITUTED HALS

Hostavin® 3050 LIQ, Hostavin® 3053 LIQ, Hostavin® 3055 LIQ Hostavin® 3065 LIQ and Hostavin® 3292 LIQ are basic, low molecular weight HALS with different structures, having their own specifications for compatibility, volatility and efficiency. Hostavin® 3051 P is also a low molecular weight HALS, with the advantage of low volatility. Hostavin® 3051-2 DISP is the corresponding dispersion, suitable for most waterborne high-performance coatings.

NON-BASIC HALS

Some specific coatings require non-basic HALS to avoid further interactions during crosslinking e. g. acid-catalyzed and oxidative systems. Hostavin® 3058 LIQ and Hostavin® 3123 LIQ are fulfilling these requirements. When it comes to plastic coatings over poly-carbonate, Hostavin 3058® LIQ is the most suitable HALS.

PRODUCT INFORMATION

	CHEMICAL CLASS	MOLECULAR WEIGHT [g/mol]	MELTING RANGE [°C]	SUPPLY FORM	CAS NUMBER*
Hindered Amine Light Stabilizers (HALS)					
HOSTAVIN® 3050 LIQ	Non-substituted HALS	604/632	N/A	Wax-like	N/A
HOSTAVIN® 3051 P	Non-substituted HALS	364	230	Powder	64338-16-5
HOSTAVIN® 3051-2 DISP	Non-substituted HALS	364	N/A	52% Aqueous dispersion	64338-16-5
HOSTAVIN® 3053 LIQ	Non-substituted HALS	604/632	N/A	80% Solution in xylene	95-47-6
HOSTAVIN® 3055 LIQ	Non-substituted HALS	407	N/A	Liquid	79720-19-7
HOSTAVIN® 3058 LIQ	Acylated HALS	449	N/A	Liquid	106917-31-1
HOSTAVIN® 3065 LIQ	Non-substituted HALS	370 (mono-ester) 509 (di-ester)	N/A	Liquid	N/A
HOSTAVIN® 3070 P	Oligomeric HALS	>1500	N/A	Powder	202483-55-4
HOSTAVIN® 3070 DISP	Oligomeric HALS	>1500	N/A	52% Aqueous dispersion	202483-55-4
HOSTAVIN® 3123 LIQ	Amino-ether HALS	737	N/A	Liquid	129757-67-1
HOSTAVIN® 3292 LIQ	Non-substituted HALS	370 (mono-ester) 509 (di-ester)	N/A	Liquid	N/A

* = CAS number of active ingredient only

OLIGOMERIC HALS

Hostavin® 3070 P is an oligomeric HALS with a high molecular weight, excellent resistance to migration and very low volatility. It has a unique profile as a non hazardous, label-free HALS. Hostavin® 3070 P is suitable for many applications with a specific focus on automotive OEM, plastic, wood and UV cured coatings. For waterborne applications where ease-of-use is required, Hostavin® 3070 DISP is recommended. Both products are classified as non hazardous. Hostavin® 3070 DISP is an ideal candidate for the Do-It-Yourself (DIY) and consumer goods market.

UV Absorbers (UVA)
Clearcoat defenders

	TECHNOLOGIES			APPLICATIONS					BINDER SYSTEMS				
	Water-borne coating	Solvent-borne coating	Powder coating	Auto-motive OEM	Car refinish	Coil coating	General industrial coating	Wood coating	2K-PU	Acrylic	Alkyd	Epoxy	UV curing
UV Absorbers													
HOSTAVIN® ARO 8 P		■	▒			▒	■	■		■	■		■
HOSTAVIN® 3130 LIQ	▒	■		■	■	■	■	■	■	■	■	■	▒
HOSTAVIN® 3206 LIQ		■			■	■	■		■	■	■	■	■
HOSTAVIN® 3400 LIQ		■		■	■	■	■	■	■	■	■	■	■
HOSTAVIN® VSU P		■	▒		■	■	■		■	■	■	■	■
HOSTAVIN® 3326 P		■					■	■	■	■	■		
HOSTAVIN® 3326 DISP	■			▒			■	■	■	▒	■		▒
HOSTAVIN® 3315 DISP ✿	■			■	▒		■	■	■	■	■	■	▒

✿ = Carries Clariant's EcoTain® label for outstanding sustainability advantages and best-in-class performance.
■ = Recommended
▒ = Applicable

THE PRINCIPLE OF UV ABSORBERS
is to prevent the degradation of coating systems and substrates by filtering off the UV radiations and dissipating the energy into non-destructive heat.

Selecting the right UVA depends on the end application. Benzophenone UV absorbers can be used for moderate stabilization requirement. As you move up in performance, you will need to enlist the help of oxalanilide UVA's. For increased protection, a range of benzotriazole UVA's should be considered. The highest level of performance can be achieved using triazine chemistry.

Hostavin® ARO 8 P offers stabilization for general applications e.g. solventborne wood coatings. Hostavin® 3206 LIQ and Hostavin® VSU P, based on oxalanilide chemistry, are suitable for various solventborne and powder coating systems.

In addition, Hostavin® 3130 LIQ is the newest benzotriazole in the portfolio, which is a workhorse UVA absorber for many coatings applications.

Hostavin® 3326 P is based on halogenated benzotriazole chemistry which is also available as a dispersion. Hostavin® 3326 DISP has been specially formulated for ease-of-use for all waterborne coatings. The broad UV absorption of this chemical class makes it suitable for exterior wood coating systems.

The best performing UVA dispersion in the Clariant range is Hostavin® 3315 DISP, which is based on the highest class of benzotriazole chemistry. Hostavin® 3315 DISP was developed to meet Clariant's EcoTain® hallmark for sustainability. It is an ideal candidate for the DIY and consumer goods market.

Hostavin® 3400 LIQ is completing the range, as a high performance UVA based on triazine chemistry. It is recommended for the most demanding applications, e.g. OEM automotive clearcoats and coatings with low film thickness.

PRODUCT INFORMATION

	CHEMICAL CLASS	MOLECULAR WEIGHT [g/mol]	MELTING RANGE [°C]	SUPPLY FORM	CAS NUMBER*
UV Absorbers					
HOSTAVIN® ARO 8 P	Benzophenone	326	Min. 47	Powder	1843-05-6
HOSTAVIN® 3130 LIQ	Benzotriazole	637 (monomer) 975 (dimer)	N/A	Liquid	104810-48-2
HOSTAVIN® 3206 LIQ	Oxalanilide	453	N/A	80% Solution in xylene	82493-14-9
HOSTAVIN® 3400 LIQ	Triazine	647	N/A	80% Solution in methoxypropanol	153519-44-9
HOSTAVIN® VSU P	Oxalanilide	312	126–128	Powder	23949-66-8
HOSTAVIN® 3326 P	Halogenated Benzotriazole	316	138-141	Powder	3896-11-5
HOSTAVIN® 3326 DISP	Halogenated Benzotriazole	316	N/A	52% Aqueous dispersion	3896-11-5
HOSTAVIN® 3315 DISP	Benzotriazole	442	N/A	52% Aqueous dispersion	73936-91-1

* = CAS number of active ingredient only

Solutions & Antioxidants
Tune your stabilization

	TECHNOLOGIES			APPLICATIONS					BINDER SYSTEMS				
	Water-borne coating	Solvent-borne coating	Powder coating	Auto-motive OEM	Car refinish	Coil coating	General industrial coating	Wood coating	2K-PU	Acrylic	Alkyd	Epoxy	UV curing
Solutions													
ADDWORKS® LXR™ 308 AP		■			■	■	■		■	■	□	■	■
ADDWORKS® LXR™ 313	■	■		■	■	■	■	■	■	■	■	■	■
ADDWORKS® LXR™ 314	■	■		■			■	■	■	■	■	■	■
HOSTAVIN® 3212 LIQ		■			■	■	■		■	■	□	■	■
HOSTAVIN® 3225-2 DISP	■					■	■	■	■	■	□	■	■
Antioxidants													
HOSTANOX® O 3 P	□	■	■	■	■	■	■			□		□	
HOSTANOX® P-EPQ® P		■	■	■	■	■	■		□	□		□	□

IBC = Industrial, Building, Construction
LXR = Multiple industry applications
■ = Recommended
□ = Applicable

THE PRINCIPLE OF SOLUTIONS
is to identify the performance requirements of the coatings systems and match the UVA and HALS package to deliver the optimal protection.

Hostavin® 3212 LIQ has been formulated to meet the demands of industrial coatings, automotive refinish clearcoats and UV cured coatings. Hostavin® 3225-2 DISP is an optimized solution for waterborne exterior wood coatings.

AddWorks® LXR™ 308 AP has been specially formulated for less demanding automotive refinish systems that still require good in-can color and moderate durability.

AddWorks® LXR™ 313 and AddWorks® LXR™ 314 are xylene-free, high performance solutions, recommended for demanding applications, e. g. automotive OEM and refinish coatings. They offer versatility in use for both solvent and waterborne systems.

PRODUCT INFORMATION

	CHEMICAL CLASS	MOLECULAR WEIGHT [g/mol]	MELTING RANGE [°C]	SUPPLY FORM	CAS NUMBER*
Solutions					
ADDWORKS® LXR™ 308 AP	2:1 Mixture oxalanilide + non-substituted HALS	N/A	N/A	85% Solution in xylene	N/A
ADDWORKS® LXR™ 313	1:1 Mixture triazine + non-substituted HALS	N/A	N/A	82% Solution in methoxy-propyl acetate (MPA)	N/A
ADDWORKS® LXR™ 314	2:3 Mixture triazine + acylated HALS	N/A	N/A	82% Solution in methoxy-propyl acetate (MPA)	N/A
HOSTAVIN® 3212 LIQ	2:1 Mixture oxalanilide + non-substituted HALS	N/A	N/A	86% Solution in xylene	N/A
HOSTAVIN® 3225-2 DISP	2:1 Mixture halogenated benzotriazole + non-substituted HALS	N/A	N/A	52% Aqueous dispersion	3896-11-5 and 64338-16-5
Antioxidants					
HOSTANOX® O 3 P	Phenolic	794	161–171	Powder	32509-66-3
HOSTANOX® P-EPQ® P	Di-phosphonite	1035	85–95	Powder	119345-01-6

* = CAS number of active ingredient only

THE PRINCIPLE OF ANTIOXIDANTS

is to prevent thermolytic polymer decomposition during production or processing of stoving systems, and provides long term heat stability.

Hostanox® O 3 P is a phenolic stabilizer, also referred as a primary antioxidant, behaving as a radical scavenger and providing high extraction resistance.

Hostanox® P-EPQ® Powder is a highly effective processing stabilizer also referred as a secondary antioxidant of the phosphonite class. It is excellent at stabilizing resins against thermo-oxidative degradation and ensures excellent color stability.

Each application requires its specific recommendation

The following recommendations should be observed for a suitable stabilization of coatings:

CLEARCOATS
UV Absorber and HALS combination

ORGANIC-PIGMENTED COATINGS
HALS with less UV Absorber

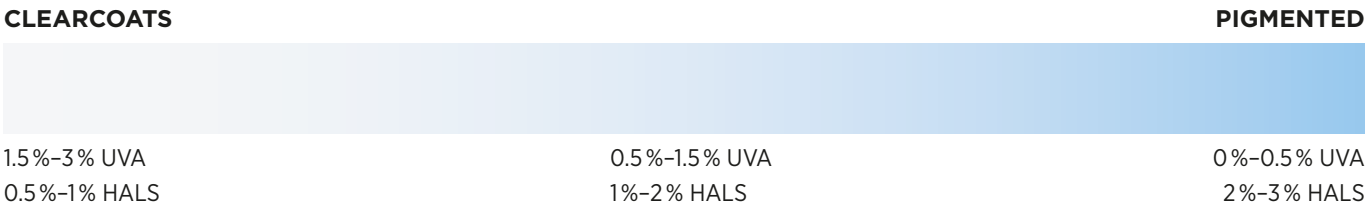
INORGANIC-PIGMENTED COATINGS
Only HALS

PROTECTION OF SENSITIVE SUBSTRATES
Only UV Absorber

Depending on the required degree of stabilization, the additive combinations listed below should be considered to achieve the optimal performances.

These recommendations are understood as the effective additive concentration calculated on the solid resin. It is important to select carefully the right light stabilizer, in order to avoid any negative influence during the curing process or afterwards in the properties of the dried film.

It is also essential to determine the best stabilization performance by carrying out trials which are covering a concentration range, based on the coating specifications, in particular the film thickness and the pigmentation level.



From single additives to a portfolio of powerful solutions

Clariant is continuously developing its portfolio of additive solutions for the plastics and coatings industry according to your needs. We started with single components for a multitude of technical challenges such as e.g. thermal stabilization, sun and oxidation protection as well as flame retardancy and process stabilization, which form the foundation of our portfolio.

Listening closely to our customers and understanding their needs, we are using our long-term expertise and profound technical knowledge to develop new state-of-the-art special additive combinations which are designed and optimized for the needs of particular market segments and application fields. We focus on both chemistry and the physical form to address easy and safe material handling.

Like in a kaleidoscope, where colored pieces of glass are reflected by mirrors and create ever-changing patterns, our performance additives are combined into an endless variety of solutions to help you optimize the performance of your products and production processes.

Simply by adding them you profit from a multitude of benefits. That is why we call them »AddWorks®«: You ADD them and they WORK for you. Reliable, proven and ready-to-use solutions: Our AddWorks® product family lowers total cost of ownership, reduces process complexity and allows you to fully focus your workforce and assets on your business. Discover the multitude of opportunities they offer for your line of work and make a tangible difference in your market!

AGRICULTURE

AddWorks® AGC solutions provide agricultural films and other agroplastics with exactly the properties to make customers happy: improved agrochemical resistance – e. g. against sulfur used to increase crop yield – and better durability, effective light stability and longer service life.

AUTOMOTIVE AND TRANSPORTATION

The AddWorks® ATR series comprises a full range of high performance light, heat and processing stabilization solutions. AddWorks® ATR contribute to enhancing the features of plastics wherever it is needed: be it under-the-hood or for interior as well as exterior applications.

BUILDING AND CONSTRUCTION

In the area of building and construction, very few things are as important as the protection from climatic conditions. With the AddWorks® IBC solutions Clariant provides powerful protection, e. g. in the form of light stabilizer solutions or additives to strengthen the heat resistance against even extremely high temperatures.

PACKAGING

Whether acid scavengers, antistatics, slip agents, antioxidants, light or thermal stabilizers, UV absorbers, and processing aids, Clariant combines excellent services with strict quality and regulatory standards. The AddWorks® PKG series offers the features well suited to the specific requirements of the packaging industry.

TEXTILE AND FIBERS

Our AddWorks® TFB range for textile and fibers contributes to improve processing conditions and processability. They also provide a broad variety of advantages to final articles such as enhanced durability, light protection, improved thermal stability, flame retardancy, dyeability and tenacity retention among others.

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