

www.araloncolor.com Glow, day and night, our passion, our profession

ARAGEN-10 SERIES

Formaldehyde-free Daylight Fluorescent pigments without compromises



ARAGEN-10 Daylight fluorescent pigments excel in all properties compared to formaldehyde containing pigments. Those pigments posses compared to their formaldehyde containing counterparts:

Better Light Fastness

Better Heat Stability

Better solvent resistance

In addition to comparable brightness, reflection and fluorescence.

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ARAGEN-10 in short:

- Formaldehyde-free
- Very high solvent resistance
- NON-Melting / Thermoset
- Decomposition
 T > 280 °C.
- Heat stability: 240 °C / 3 minutes
- Highest known light stability of fluorescent pigments

Regulatory & Ecotox

- All non-polymeric components are registered in EINECS and TSCA.
- All non-polymeric components are registered respectively preregistered in REACH
- EN71 part 3 conformity (purity requirement). Still tests have to carried on the final application.
- Heavy metals free (with exception of the natural values in the ppm range).

Packaging

1 Carton BOX= 20 kg

Any technical information is given on a purely informative basis.

ARALON cannot give any warranty for a particular use.

Solvent based PAINTS & SPRAY CANS TEXTILE, GRAVURE & SCREEN INKS PVC PLASTISOLS & ORAGANISOLS + MOLDING EVA, POM, PU, SBC & CALENDERED PVC SILICONE, RUBBER, LATEX, PET, PLASTICS POWDER COATING CRAYON PENS, MARKING, NDT CONTRAST FLUORESCENT POWDER

Technology & Applications

ARALON® ARAGEN-10 is developed as an optimal choice for solvent and water resistance demanding applications. Fluorescent dyes are dissolved & bonded, encapsulated respectively embedded in a hybrid carrier. The chemical respectively physical bond ensure highest possible resistance against migration and staining. The solid solution is milled to optimal particle size. This technology results in ARALON® ARAGEN-10 as excellent STIR-The chemical nature of the ARALON® ARAGEN-**IN** pigments. 10 carrier as modified hybrid cured resin and its pigment engineering deliver beside the high water and solvent resistance an optimum balance between color strength and fluorescence / brightness. The resination ensures best STIR-IN quality, just mixing and homogenizing are sufficient to obtain final application products, no grinding is required, although this does not harm the pigment particles. Further advantages of the chosen pigment engineering are very good staining performance, suited formulations of ARAGEN-10 series are easily washed out from hands and fibers. The pigment engineering ensures too high performance in heat resistance demanding applications like calendered PVC, blow molding and injection molding. Low migration, improved light stability and best Hegman grind cut OFF ensure best performance in PU, Paints and spray cans. ARAGEN-10 is also optimally applied in textile, screen and gravure inks and in crayon pens, Applications in Olefins are possible till 240 °C and optimal at lower processing temperatures.

Storage & Shelf life

ARAGEN-10 series products are stable. Provided they are stored in dry places at ambient temperatures (below 40 °C) the predicted shelf life is 60 months. However depending on the quality of storage conditions, products might be used beyond this shelf life period.

Light Fastness & Heat Stability

Light Fastness

ARAGEN-10 series can partially resist the multiple factors, generally known to influence light fastness and, depending on the shade, values up to maximally 6 on the BWS can be achieved (30% pigment, UV-Top Coat, 150 µm layer thickness, PVC).

Heat Stability

ARAGEN-10 series can withstand temperatures of 240 °C for up to 3 minutes without affecting the perceived shades. Resistance to even higher temperatures is possible but for shorter exposure

Available colors

ARAGEN-100	LEMON	
ARAGEN-101	GREEN	
ARAGEN-102	ORANGE-YELLOW	
ARAGEN-103	ORANGE	
ARAGEN-104	ORANGE-RED	
ARAGEN-105	RED	
ARAGEN-115	STRONG RED	
ARAGEN-106	PINK	
ARAGEN-117	MAGENTA	
ARAGEN-109	BLUE	
ARAGEN-199 UV	BLUE	

The above shades are only indicative; computer screens and conventional printers cannot reproduce true fluorescent shades.

Physical & Chemical properties Resin / Carrier: Cured hybrid resin Volatile organic compounds: 0% Mineral oils: 0% Mineral oils: 0% Particle size: D50 = 6 μm gauge Spec. Gravity: 1.4

• Bulking value: 0.4 g/ml

Solvent resistance

The results of the following method are given on the next page: Mix 1 g pigment thoroughly for 10 seconds in 10 ml of solvent to get the complete pigment wetted. Store the mixture for 37 minutes into a water bath at 37°C. The solvent resistance of the pigment is determined by inverting and shaking the glass tube and observing how quick the pigment particles start to flow in the solvent or not. Freely moving not attacked particles is the best (5). Totally attacked gel forming particles is worst (1). Bleeding is determined by diluting the filtrate 50 times and measuring the absorption. The worst bleeding is 1. Minor to non-bleeding is the best (5).

Waterborne formulations

Fluorescent pigments have about 75% of their volume as trapped air. In waterborne formulations of the hydrophobic ARAGEN-10 pigments the trapped air is very slowly replaced by water on the surface of the particles resulting in slowly outgassing of the trapped air in the first days and increasing the pressure of tightly closed containers. Special care should be taken in order to avoid problems. The stability of the pigment particles is not affected by this phenomena.

Action and observation	S: Solvent resistance scale	B: Bleeding Scale	
Pigment moves after 1 to 15 shakes. All pigment parts are not attacked	5: Very good	5: Minor to NON-bleeding	
The first action above is not sufficient, 1 to 10 extra hard shakes are needed to let all pigment particles move	4: Good	4: Slight bleeding	
After the 1 to 10 hard shakes, only a portion of the pigment moves, more than 10%	3: Moderate	3: Moderate bleeding	
After the 1 to 10 hard shakes, only a portion of the pigment moves, more than 10% leaving a cone of attacked part	2: Poor	2: High bleeding	
After the 1 to 10 hard shakes, the attacked part of the pig- ment is forming a gummy of sticky mass or the complete pig- ment is dissolved	1: Very poor	1: Heavy bleeding	

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		ARAGEN-10	
		S	В
ALIPHATIC HYDRO CARBONS	Mixed hexanes	5	5
	Destillates 35-260°C	5	5
HYDRO CARBONS	Toluene	5	4
	Xylene	5	4
	Destillates 150-250°C	5	4-5
ALCOHOLS & Water	Methyl alcohol	5	3
	Ethyl alcohol	5	3
	Isopropyl alcohol	5	3
	Water or Water / Ethanol	5	3
KETONES	Acetone	5	2
	Methyl ethyl ketone (= MEK)	5	3
	Cyclohexanone	5	3
ESTERS	Ethyl acetate	5	3
	Iso/n-Propyl acetate	5	3
	n-Buthyl acetate	5	3
GLYCOLS & ETHERS	Glycerine	5	4
	Ethylene glycol	5	3
	Diethylene glycol	5	3
CHLORINATED SOLVENTS	Carbon tetrachloride	5	4-5
	Trichloroethylene	5	3
& PLASTICIZERS	Perchloroethylene	5	3
	Di-isononyl-cyclohexan-1,2-dicarboxlate	5	4
	Diisodecyl phthalate	5	4
	Dioctyl adipate	5	4
	Dioctyl sebacate	5	5
	Castor oil	5	5
	Epoxidezed soya oil	5	5

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Mixing recommendations

ARAGEN-109 BLUE	Fluorescent BLUE	PANTONE 801		
ARAGEN-101 GREEN	Fluorescent GREEN	PANTONE 802 / RAL6038		
96-98% ARAGEN-100 + 4-2% ARAGEN-103	Fluorescent YELLOW	PANTONE 803 / RAL1026		
ARAGEN-103 (depending on the application 5 to 20 % ARAGEN-100)	Fluorescent ORANGE-YELLOW	RAL 2007		
ARAGEN-103 / ARAGEN-104, ratio depends on the application (mainly ARAGEN-103)	Fluorescent ORANGE	RAL 2005		
ARAGEN-104 / ARAGEN-105, ratio depends on the application (mainly ARAGEN-104)	Fluorescent ORANGE-RED	RAL 3026		
ARAGEN-104 / ARAGEN-105, ratio depends on the application	Fluorescent RED	RAL 3024		
ARAGEN-105 / ARAGEN-106, ratio depends on the application (mainly ARAGEN-106)	Fluorescent PINK	PANTONE 806		
ARAGEN-106 / ARAGEN-107, ratio depends on the application (mainly ARAGEN-107)	Fluorescent MAGENTA	PANTONE 807		
ARAGEN-199 UV BLUE with all other ARA- GEN-10 shades	Less color strength without brightness loss	Conserved brightness		
Neighboring ARAGEN-10 shades	Optimal fluorescent intermediate colors	Inter-mediate shades		
For more hiding power use ZnS pigment dispersions instead of TiO ₂ pigment dispersions to pre- serve optimal brightness, especially under UV light.				
ARAGEN-10 at 10-30% of the pigment part in conventional formulations of similar shade	Increase freshness of conven- tional colors	Fresh shades		
2 - 5 % of the pigment part of conventional for- mulations of similar shades to ARAGEN-10 col- ors	Higher color strength without no- ticeable loss of brightness	Stronger shades		



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The functional color company®

About ARALON:

Today, ARALON is the technology and market leader in the rapidly growing segment of formaldehyde-free daylight fluorescent & functional pigments. Development, manufacturing and marketing of pigments for the paints & coatings, plastics, aerosols, and printing inks industries only commenced in 2013 at its greenfield construction in 56412 Heiligenroth, Germany, half-way between Cologne and Frankfurt. ARALON's strengths are apparent in three key areas:

- State-of-the-art encapsulation technology coupled with modern and efficient manufacturing assets and lean operations capable of delivering best-in-class fluorescent pigments at competitive cost.

- Unique fluorescent ARAPLAST-melting pigments permitting <u>coloration of thin olefin based</u> <u>films</u> in single and multilayer packaging.

- Next generation ARAQUA & ARAGEN-chemistry enabling <u>unprecedented light stability of for-</u><u>maldehyde-free</u> fluorescent pigments without compromising other performance attributes.

ARALON wants to surprise with best-in-class products, innovations that matter and prices hard to ignore – TRY US!

ARALON, What is behind the name and the logo?

ARALON was created as a name for our company based on the ARA, which is kind of colorful parrot. The wonderful and bright colors of the parrot's feathers are the result of light refraction through nano-sized holes in the natural polymer structure of the parrot feathers. Depending on the hole size and the number of feather layers results in an unlimited number of bright and colorful shades of light, seen by our eyes as being the color of the feathers themselves.

This has, for our company, a relevance of many kinds. Initially the brightness and purity of the parrot's colors is similar, but often less when compared to the brightness and purity of our fluorescent colors. Further, the colors of the feathers were created in completely natural way, which is for our R&D development, an orientation for the future horizons of the company.

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