



## ARAQUA-10 SERIES

# Formaldehyde-free Daylight Fluorescent pigments without compromises for Waterborne formulations

### 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 be carried out on the final application.
- Heavy metals free (with exception of the natural values in the ppm range).

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Older technologies of formaldehyde-free fluorescent pigments for waterborne formulations have been limited in their stabilities.

Lack of storage stability in waterborne formulations, especially in the summer time defined a crucial need to develop stable pigments without loss of fluorescence or color strength.

Compared to older technologies of formaldehyde-free fluorescent pigments for waterborne formulations, the ARAQUA-10 pigments show outstanding stability in waterborne formulations.

Compared to formaldehyde-containing pigments, the ARAQUA-10 pigments have 70% higher light stability in acrylic formulations. Compared to benzoguanamine pigments, the light stability is even 400 - 500% higher.

**ARAQUA-10 in short:**

- \* Formaldehyde-free
- \* Very high stability in waterborne formulations.
- \* Improved light stability compared to formaldehyde containing pigments.
- \* Decomposition  
T > 280 °C.
- \* Melting point > 80 °C

**TEXTILE, GRAVURE & SCREEN  
WATERBORNE INKS  
WATERBORNE COATING & FOAMED LATEX  
NON-STAINING APPLICATIONS & PAINTS  
CRAYON PENS, MARKING, NDT  
CONTRAST FLUORESCENT POWDER  
MODELING COMPOUND**

## Physical & Chemical properties

- Resin / Carrier:  
Cured hybrid resin
- Volatile organic compounds: 0%
- Mineral oils: 0%
- Oil absorption: 54
- Particle size: D50 = 5 µm
- Grind: > 4,5 Hegman gauge
- Spec. Gravity: 1.4
- Bulking value: 0.35 g/ml

## Technology & Applications

ARALON® ARAQUA-10 is developed as an optimal choice for 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® ARAQUA-10 as excellent **STIR-IN** pigments.

The chemical nature of the ARALON® ARAQUA-10 carrier as modified hybrid cured resin and its pigment engineering deliver beside the **high water 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 ARAQUA-10 series are easily washed out from hands and fibers. The pigment engineering ensures too high performance in **heat resistance** demanding applications like blow molding and injection molding. Low plate out, improved **light stability** and best Hegman grind cut OFF ensure best performance in olefins, waterborne paints and spray cans. ARAQUA-10 is also optimally applied in textile, screen and gravure inks and in crayon pens, Non destructive testing and marking. Applications in Olefins are possible till 220 °C and optimal at lower processing temperatures.

## Storage & Shelf life

ARAQUA-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

ARAQUA-10 series can partially resist the multiple factors, generally known to influence light fastness. Depending on the shade, values up to maximally 6 on the BWS can be achieved (30% pigment, UV-Top Coat, 150 µm layer thickness, ARAQUA-100 LEMON, acrylic paint). Light stability is 70% - 100% higher compared to known formaldehyde containing fluorescent melamine pigments and about 400 - 500% higher compared to benzoguanamine pigments.










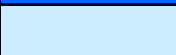
### Heat Stability

ARAQUA-10 series can withstand temperatures of 70 °C for up to 3 minutes without affecting the perceived shades. They might be used also for coloring olefins as melting pigments, where heat stability of 260 °C and above (depending on the color and dwell time) are given.

## Waterborne formulations

The unique formaldehyde-free ARAQUA-10 fluorescent pigment technology offer the best available performance in waterborne formulations and reveal highest compatibility and long time stability in pH neutral formulations. For high pH formulations we recommend the use of the ARAGEN-10 pigments (see dedicated TDS for special remarks regarding waterborne formulations).

## Available colors

ARAQUA-100	LEMON	
ARAQUA-101	GREEN	
ARAQUA-103	ORANGE	
ARAQUA-104	ORANGE-RED	
ARAQUA-105	RED	
ARAQUA-106	PINK	
ARAQUA-107	MAGENTA	
ARAQUA-118	PURPLE	
ARAQUA-109	BLUE	
ARAQUA-199 UV	BLUE	

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

## Packaging

**Package = Minimal order**

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 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).

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 pigment is forming a gummy or sticky mass or the complete pigment is dissolved	1: Very poor	1: Heavy bleeding

		ARAQUA-10	
		S	B
<b>ALIPHATIC HYDRO CARBONS</b>	Mixed hexanes	5	5
	Destillates 35-260°C	5	5
<b>HYDRO CARBONS</b>	Toluene		
	Xylene		
	Destillates 150-250°C	5	4-5
<b>Water</b>	Methyl alcohol		
	Ethyl alcohol		
	Isopropyl alcohol		
	Water / water + soap	5	3
<b>KETONES</b>	Acetone		
	Methyl ethyl ketone (= MEK)		
	Cyclohexanone		
<b>ESTERS</b>	Ethyl acetate		
	Iso/n-Propyl acetate		
	n-Buthyl acetate		
<b>GLYCOLS &amp; ETHERS</b>	Glycerine		
	Ethylene glycol		
	Diethylene glycol		
<b>CHLORINATED SOLVENTS</b>	Carbon tetrachloride		
	Trichloroethylene		
<b>&amp; PLASTICIZERS</b>	Perchloroethylene		
	Di-isononyl-cyclohexan-1,2-dicarboxylate	5	4-5
	Diisodecyl phthalate	5	4-5
	Diocetyl adipate	5	4-5
	Diocetyl sebacate	5	4-5
	Castor oil	5	4-5
	Epoxidezed soya oil	5	4-5

## Mixing recommendations

ARAQUA-109 BLUE	Fluorescent BLUE	PANTONE 801
ARAQUA-101 GREEN	Fluorescent GREEN	PANTONE 802 / RAL6038
96-98% ARAQUA-100 + 4-2% ARAQUA-103	Fluorescent YELLOW	PANTONE 803 / RAL1026
ARAQUA-103 (depending on the application 5 to 20 % ARAQUA-100)	Fluorescent ORANGE-YELLOW	RAL 2007
ARAQUA-103 / ARAQUA-104, ratio depends on the application	Fluorescent ORANGE	RAL 2005
ARAQUA-104 / ARAQUA-105, ratio depends on the application	Fluorescent ORANGE-RED	RAL 3026
ARAQUA-104 / ARAQUA-105, ratio depends on the application	Fluorescent RED	RAL 3024
ARAQUA-106 / ARAQUA-107, ratio depends on the application	Fluorescent PINK	PANTONE 806
ARAQUA-106 / ARAQUA-107, ratio depends on the application	Fluorescent MAGENTA	PANTONE 807
ARAGEN-199 UV BLUE with all other ARAQUA-10 shades	Less color strength without brightness loss	Conserved brightness
Neighboring ARAQUA-10 shades	Optimal fluorescent intermediate colors	Inter-mediate shades
For more hiding power use ZnS pigment dispersions instead of TiO <sub>2</sub> pigment dispersions to preserve optimal brightness, especially under UV light.		
ARAQUA-10 at 10-30% of the pigment part in conventional formulations of similar shade	Increase freshness of conventional colors	Fresh shades
2 - 5 % of the pigment part of conventional formulations of similar shades to ARAQUA-10 colors	Higher color strength without noticeable loss of brightness	Stronger shades



**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 coloration of thin olefin based films in single and multilayer packaging.
- Next generation ARAQUA & ARAGEN-chemistry enabling unprecedented light stability of formaldehyde-free 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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