



# Colorants – dispersants and wetting agents for pigments

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Nouryon

# The power of surfactants

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Our surfactants for colorants enable excellent dispersing, wetting and stabilization as well as good compatibility with the final paint.

The strong dispersing and wetting ability of our products is key to their excellent performance in colorant formulations.

All pigments, whether organic or inorganic, consist of primary particles that will aggregate into larger particles. These aggregates will then easily form larger entities, called agglomerates.

The color strength given from a pigment will depend on the available surface area. The more surface exposed, the more intense the color.

## Ask us how to ...

- **reduce your energy consumption**
- **optimize your formulation**
- **increase your colorant performance**

## Reducing energy consumption

To bring out the highest color strength of the pigment it is important to mill the aggregates and agglomerates to get as much surface per weight of pigment as possible. Once dispersed, it is crucial to stabilize the dispersion to hinder particle re-agglomeration or re-aggregation.

Mechanical milling is an energy consuming step but the need for this can be reduced by using effective wetting and dispersing agents. Effective wetting agents are highly attracted to the pigment surface. When added to a mix of pigment and water, they will quickly position themselves at the pigment surface and lower the surface tension between the pigment and the water.

This will break the agglomerates and help to increase the available surface area in a chemical way prior to the milling.

## Optimize your formulation

Surfactants used for colorant preparation are often referred to as wetting agents, dispersants, compatibilizers and/or stabilizers.

One surfactant often contributes to more than one of these functions. The best performance is obtained by using a combination of two or three different surfactants with different characteristics. This also helps to ensure the compatibility in a variety of base paints.

## Colorant formulation with Amadol and Phospholan products



## Colorant formulation with competitor surfactants

Drawdowns with two magenta colorant formulations.

## Product overview

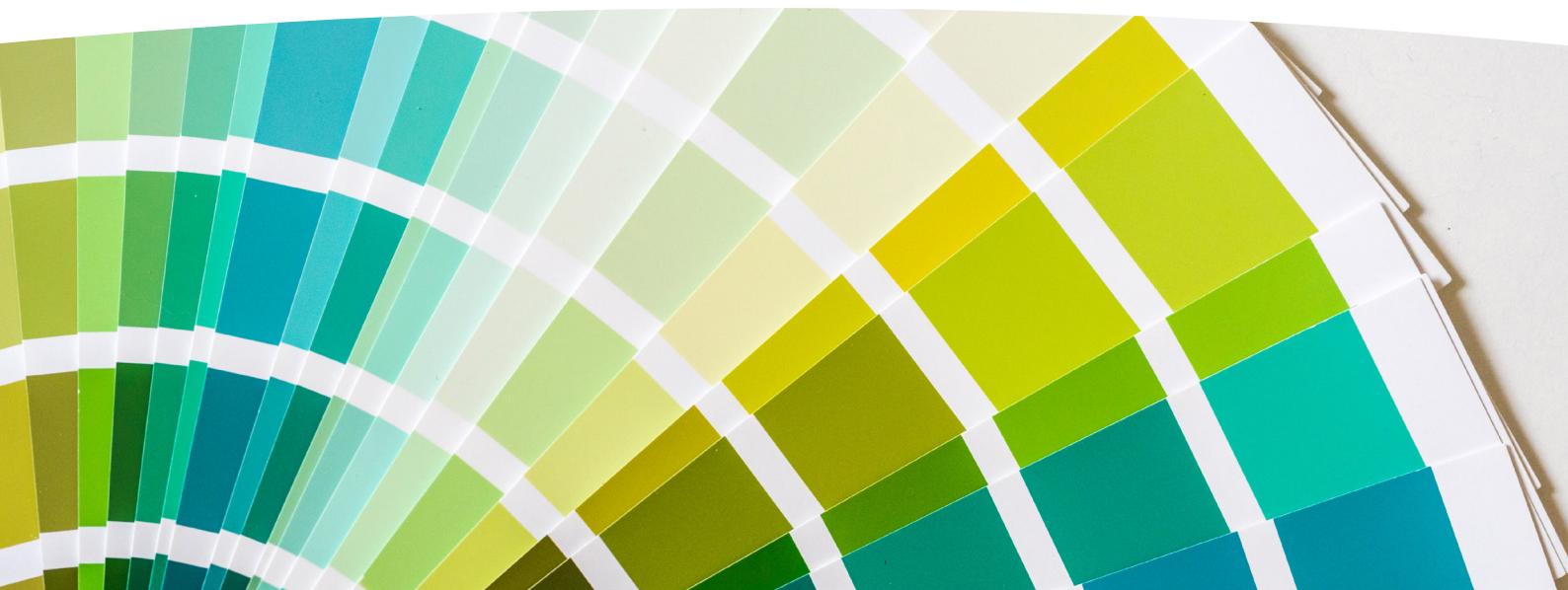
Product	Guidance	Eco-labelling				Colorant type	Pigment type				
		Risk phrase compliance	VOC (wt%)	SVOC polar (wt%)	SVOC non-polar (wt%)		U	WB	SB	Organic	Inorganic
Anionic surfactants											
Phospholan PS-131	Our top performing anionic dispersant		<1	<1	6.9	•	•	•	•	•	•
Nonionic surfactants											
Amadol CMA 5	Choose one of our Amadol products to ensure the stability of the colorant. They are all compatible with paint types over a broad spectrum.	•	<1	<1	1.6	•	•		•		•
Amadol CMA 8		•	<1	<1	<1	•	•		•		•
Amadol CMA 12		•	<1	<1	<1	•	•		•		•
Amadol OMA 4W	Specially designed to improve the compatibility with solvent based paints	•	<1	<1	<1	•			•	•	•
Berol 185	Very fast wetting agent, an efficient compatibilizer and improves the color acceptance	•	<1	1.6	2.6	•	•	•	•	•	•
GT 2624	Our lowest foaming and fastest wetting agent, suitable for large inorganic pigment to reduce milling time	•	3.2	10.9	17.2	•	•		•	•	•
Polymers											
Alcosperse 747	Good dispersion of carbon black with good storage stability	•	<1	<1	<1	•	•	•			•

Our products are available in most countries, please check with your regional sales contact

## General recommendations

The choice of products will mainly depend on the type of pigment being used. Wetting agents and dispersants for inorganic pigments will be somewhat different than for organic pigments. We generally give the following recommendations:

Universal colorants	Pigment examples	Waterborne colorants
<b>Polycyclic and phthalocyanine pigments (organic)</b>		
Phospholan PS-131	Pigment Blue 15:1-4	Pigment Red 209
Berol CMA 12	Pigment Green 7	Pigment Violet 19
Amadol OMA 4W	Pigment Red 122	Pigment Violet 23
	Pigment Red 202	
<b>Mono azo pigments (organic)</b>		
Phospholan PS-131	Pigment Red 112	
Berol 185	Pigment Yellow 74	
GT 2624		
Amadol OMA 4W		
<b>Iron oxides (inorganic)</b>		
Phosholan PS-131	Pigment Red 101	
Berol 185	Pigment Yellow 42	
GT 2624		
Amadol OMA 4W		
<b>Carbon Black</b>		
Phospholan PS-131	Pigment Black 7	
Amadol CMA 12		
Amadol OMA 4W		
Alcosperse 747		

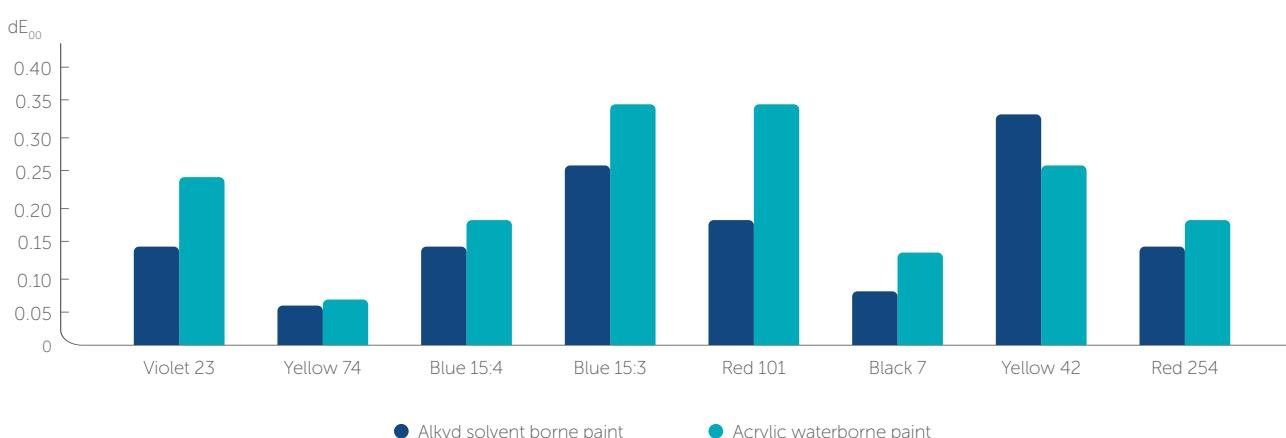




## Increase your colorant performance

An effective way of evaluating the performance of the colorant is to check the color acceptance in various base paints. Good color acceptance (low  $dE_{00}$  number) is a sign of a well dispersed system.

Below is a diagram with color acceptance data in white base paints. 4 wt% colorant was added to different types of paints. The lower the  $dE_{00}$  values, the less difference between the drawdown and rub-out areas.  $dE_{00}$  below 0.5 is considered non-visible to the naked eye. All formulations are based on our products.



# Selected to add value

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Dispersants and wetting agents are key additives to produce high quality colorants with good stability and color acceptance. Nouryon takes quality one step further, adding values like reliability and efficiency to the colorant production.

Our expertise within surface chemistry has enabled us to specialize in universal colorants where the demands on the formulation are the highest. We are proud to offer complete solutions for organic, inorganic and carbon black pigments which can help to reduce raw material complexity.

## For the colorant producer

The milling step in the colorant production process is crucial in many ways. To ensure the performance of the colorant, the pigment needs to be mechanically milled to break down the pigment agglomerates. This step requires both time and energy. With effective wetting and dispersing agents, the chemistry will do part of that work. This will reduce the need for mechanical energy, saving time and cost.

### Benefits for the colorant producer:

- Reduced production time. Lab tests show 40% reduction in milling cycles for Pigment Red 101 and 25% reduction for Carbon Black 7
- Reduced energy cost in the milling step
- Reduced pigment load. For some pigments our products enable a 10% reduction in pigment load to obtain the same color strength as industry standards on the market

## For the end customer

High quality colorants will only be obtained when the pigment is well dispersed and when the colorant is stable. Stable colorants prevent the particles from re-aggregating or flocculating. This usually requires more than just one surfactant, especially to ensure that the colorant is compatible with a broad range of base paint types.

### Benefits for the end customer:

- Excellent color acceptance
- Excellent compatibility with water and solvent borne paints of various categories
- Minimal viscosity influence of the base paint



Contact us directly for detailed product information and sample request.  
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# Nouryon

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