



Colorants –
dispersants and wetting
agents for pigments



Nouryon

The power of surfactants

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

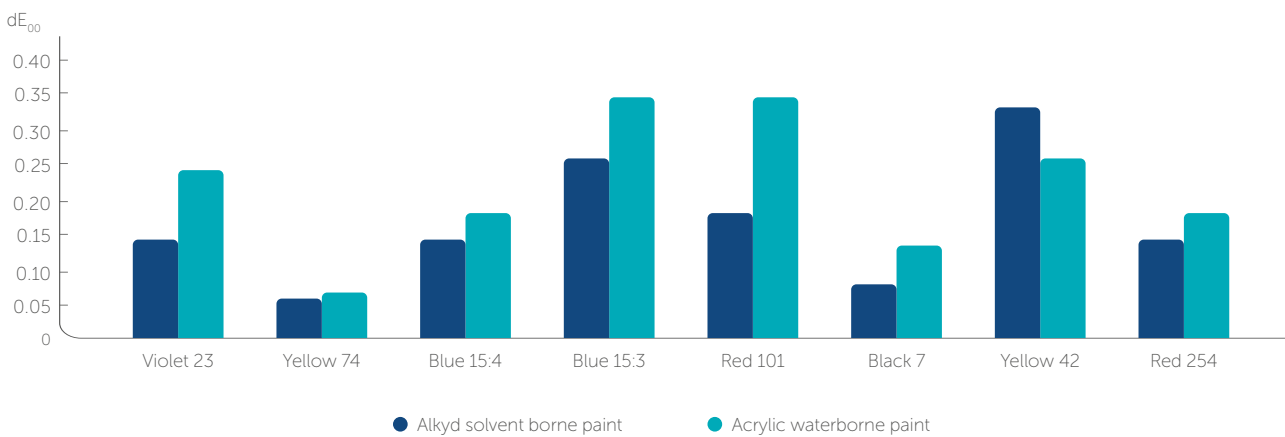




Increase your colorant performance

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

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



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Nouryon

Nouryon is a global, specialty chemicals leader. Markets and consumers worldwide rely on our essential solutions to manufacture everyday products, such as personal care, cleaning goods, paints and coatings, agriculture and food, pharmaceuticals, and building products. Furthermore, the dedication of more than 7,900 employees with a shared commitment to our customers, business growth, safety, sustainability and innovation has resulted in a consistently strong financial performance. We operate in over 80 countries around the world with a portfolio of industry-leading brands. Visit our website and follow us @Nouryon and on LinkedIn.

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