

NUOSPERSE[®] 2000

Dispersing agent and humectant for VOC free universal colorants



Key Benefits

- ❖ Low viscosity colorants at high pigment loading
- ❖ Universal colorants - for aqueous– and non-aqueous systems
- ❖ Excellent colour development and acceptance

Overview

NUOSPERSE® 2000 is a solvent-free polymeric surface active dispersing agent/carrier/humectant used to formulate VOC-free universal colorant systems. Colorant systems based on NUOSPERSE® 2000 are stable and show an excellent compatibility with solvent-borne and waterborne base formulations.

NUOSPERSE® 2000 reduces the tendency of the colorant to dry-out on storage through its humectant function and will therefore efficiently replace standard ingredients such as ethylene glycol and propylene glycol.

NUOSPERSE® 2000 can either be used alone or in combination with co-dispersing agents to optimize colour development and colour acceptance.

Features

- ◆ Low viscosity at high pigment loadings
- ◆ Universal colorants for solvent- and water based systems
- ◆ Excellent storage stability
- ◆ Excellent colour acceptance and development
- ◆ Superb dry-out resistance
- No adverse effect on secondary coating parameters e.g. Scrub resistance

Incorporation

NUOSPERSE® 2000 is best added to the formulation prior to the pigment/extender.

The required loading level for NUOSPERSE® 2000 depends on the nature of the pigments used and can range between 5-25 % on total. A loading ladder study is recommended to evaluate the optimum level of the additive.

To achieve the required dry-out resistance, a loading level of 15-20% NUOSPERSE® 2000, regardless of the nature of the pigments, is typically used.



Chemical data

Appearance	Clear liquid
Active content [%]	73
Solvent	Water
Composition	Blend of anionic and non-ionic surfactants combined with humectants

Practical examples

NUOSPERSE® 2000 additive shows excellent wetting properties and significantly reduces the viscosity of a colorant. The data below in *Figure 1* shows the viscosity of a colorant based on 60% by weight Bayferrox 130 M in water as a function of the NUOSPERSE® 2000 loading. Even at 2 % addition the viscosity has already reached a minimum. At a loading of 15 %, NUOSPERSE® 2000 will produce a stable colorant without additional use of a rheological additive.

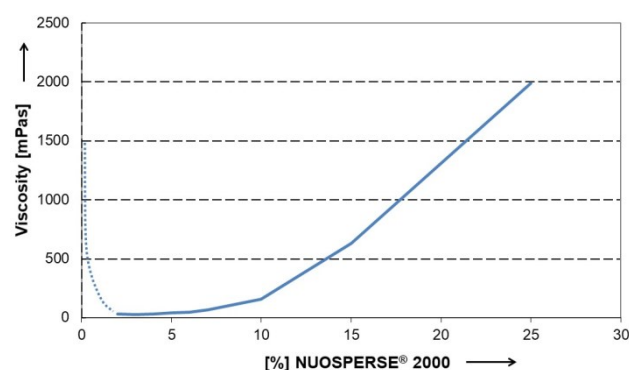


Figure 1: Colorant viscosity (60% Bayferrox 130M)

As visualized in *Figure 2*, the maximum tinting strength of the Bayferrox 130 M based colorant is already achieved at a loading level of only 7.5% NUOSPERSE® 2000 .

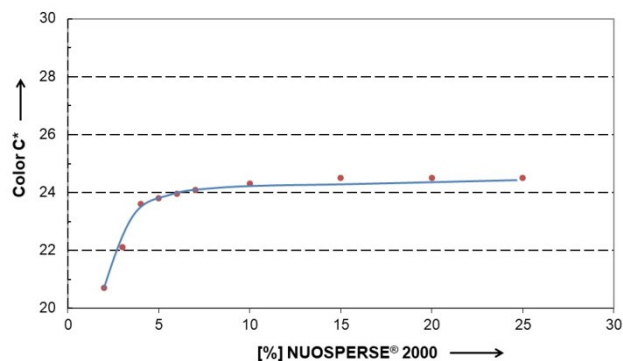


Figure 2: Tinting strength

The tendency of a colorant to dry-out on storage will be significantly reduced by using NUOSPERSE® 2000 . The humectant properties of the product allow formulation of VOC-free colorants. Typically 15 - 20 wt.% of NUOSPERSE® 2000 , regardless of the nature of the pigment, is used to achieve the required “open-time” for a colorant.

The example shown in *Figure 3* displays the improved resistance to dry-out of a colorant based on Bayferrox 130 M when using NUOSPERSE® 2000 as a single wetting- and dispersing agent.

The NUOSPERSE® 2000 increases the open time similarly to a standard glycol. If required, it can be used as a partial or total replacement of the glycol. This does not affect secondary properties like water or scrub resistance.

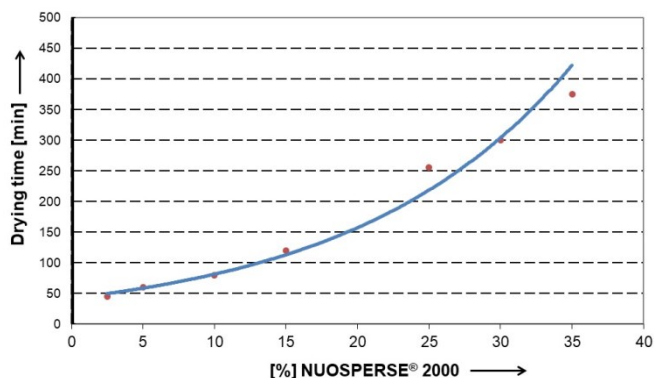


Figure 3: Resistance to dry-out (60% Bayferrox 130M)

Colour acceptance of the Bayferrox 130 M based colorant is also significantly improved using NUOSPERSE® 2000 as a wetting- and dispersing agent. At the required loading level of 15%, to achieve protection against dry-out, good colour acceptance is obtained with the colorant in a standard styrene-acrylic based latex paint formulation (*Figure 4*).

Starting point formulations with NUOSPERSE®

Pigment	C.I.	[%]	NUOSPERSE® 2000 [%]	Defoamer [%]	Water [%]	RHEOLATE® FX 1070 * [%]	ASP 170 [%]
Bayferrox® 130M	P.R. 101	60.0	15.0	0.5	24.5	—	—
Bayferrox® 3910	P.Y. 42	60.0	15.0	0.5	24.5	—	—
Hostaperm® Rosa E	P.R. 122	32.0	15.0	0.5	52.5	—	—
Heliogen® Blue L 7101F	P.B. 15:4	40.0	15.0	0.5	44.5	—	—
Hostaperm® Green 8 G	P.G. 36	55.0	15.0	0.5	23.5	—	6.0
Irgazin® DPP Red BO	P.R. 254	50.0	15.0	0.5	33.5	1.0	—
Kronos® 2310	P.W. 6	60.0	15.0	0.5	21.5	3.0	—
Novoperm® Yellow FGL	P.Y. 97	40.0	13.0	0.5	45.8	0.7	—
Special Black 250	P.Bk. 7	40.0	15.0	0.5	41.5	3.0	—

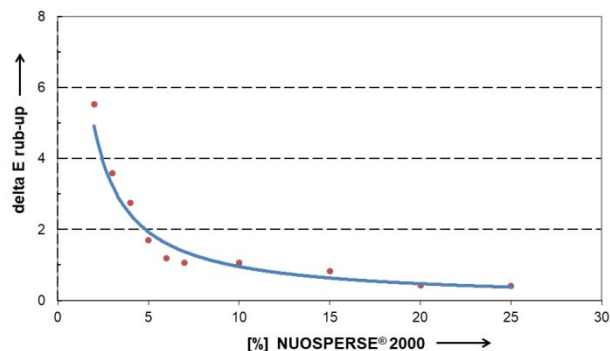
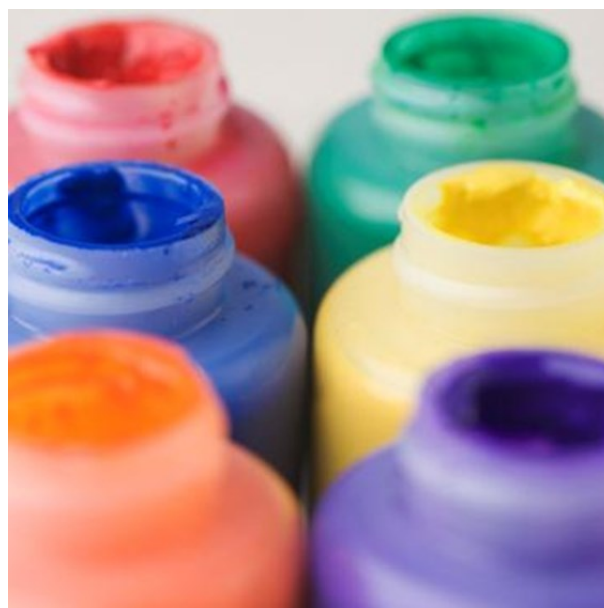


Figure 4: Colour acceptance

Further optimisation of colour development and colour acceptance of colorants formulated with NUOSPERSE® 2000 can be achieved by selecting a proper co-dispersing agent. This will depend on the nature of the pigments. NUOSPERSE® 2000 is compatible with all Elementis wetting and dispersing agents, e.g. NUOSPERSE® 2006 or NUOSPERSE® FX 600.

Examples of starting point formulations based solely on NUOSPERSE® 2000 are shown below table.



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