Application Leaflet

NUOSPERSE® 2000

Dispersing agent and humectant
for VOC free universal colorants

ELEMENTIS

Unique chemistry, sustainable solutions

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

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

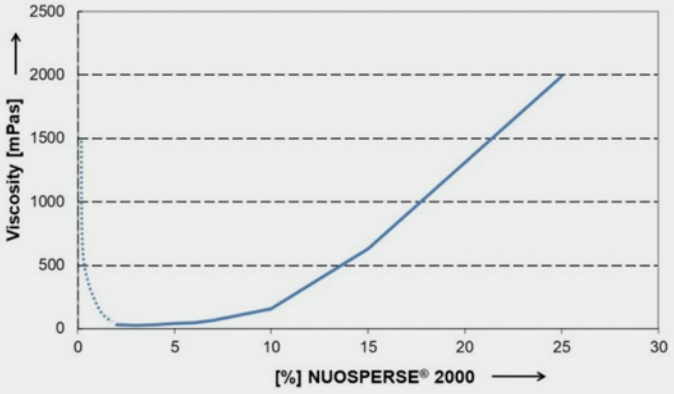
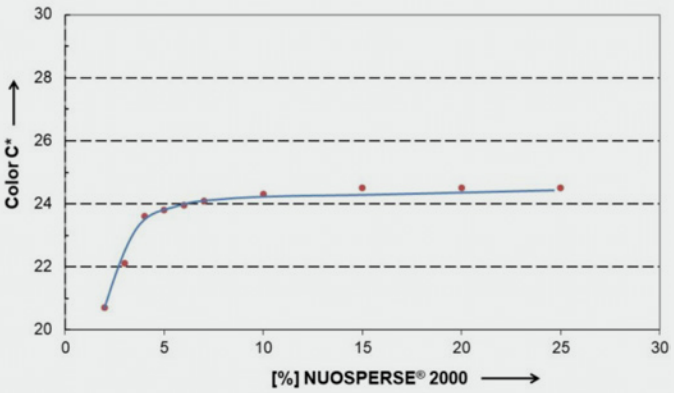


FIGURE 2: Tinting strength



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.

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

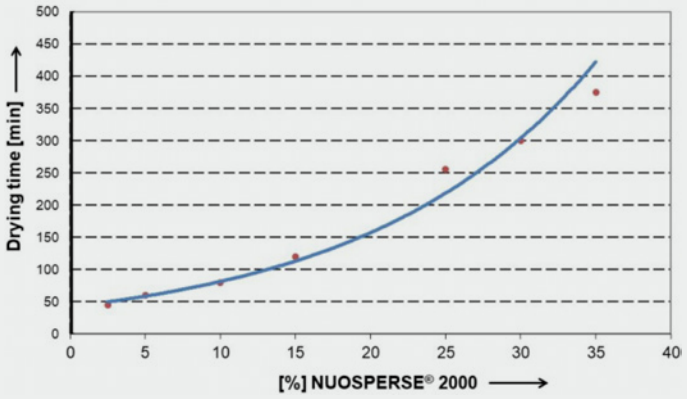
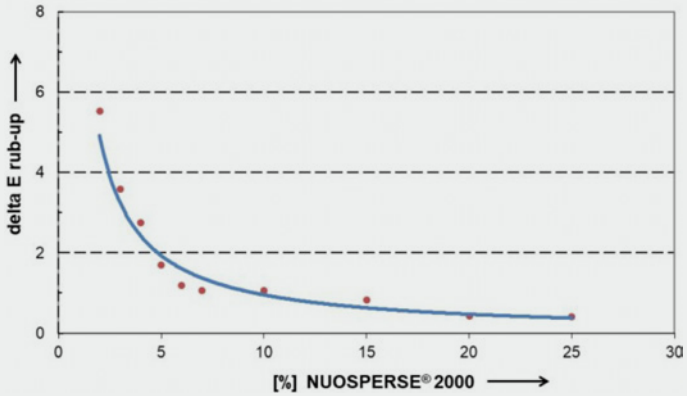


FIGURE 4: Colour acceptance



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.

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)**.

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.

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	–

NOTE:

The information herein is currently believed to be accurate. We do not guarantee its accuracy. Purchasers shall not rely on statements herein when purchasing any products. Purchasers should make their own investigations to determine if such products are suitable for a particular use. The products discussed are sold without warranty, express or implied, including a warranty of merchantability and fitness for use. Purchasers will be subject to a separate agreement which will not incorporate this document.

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