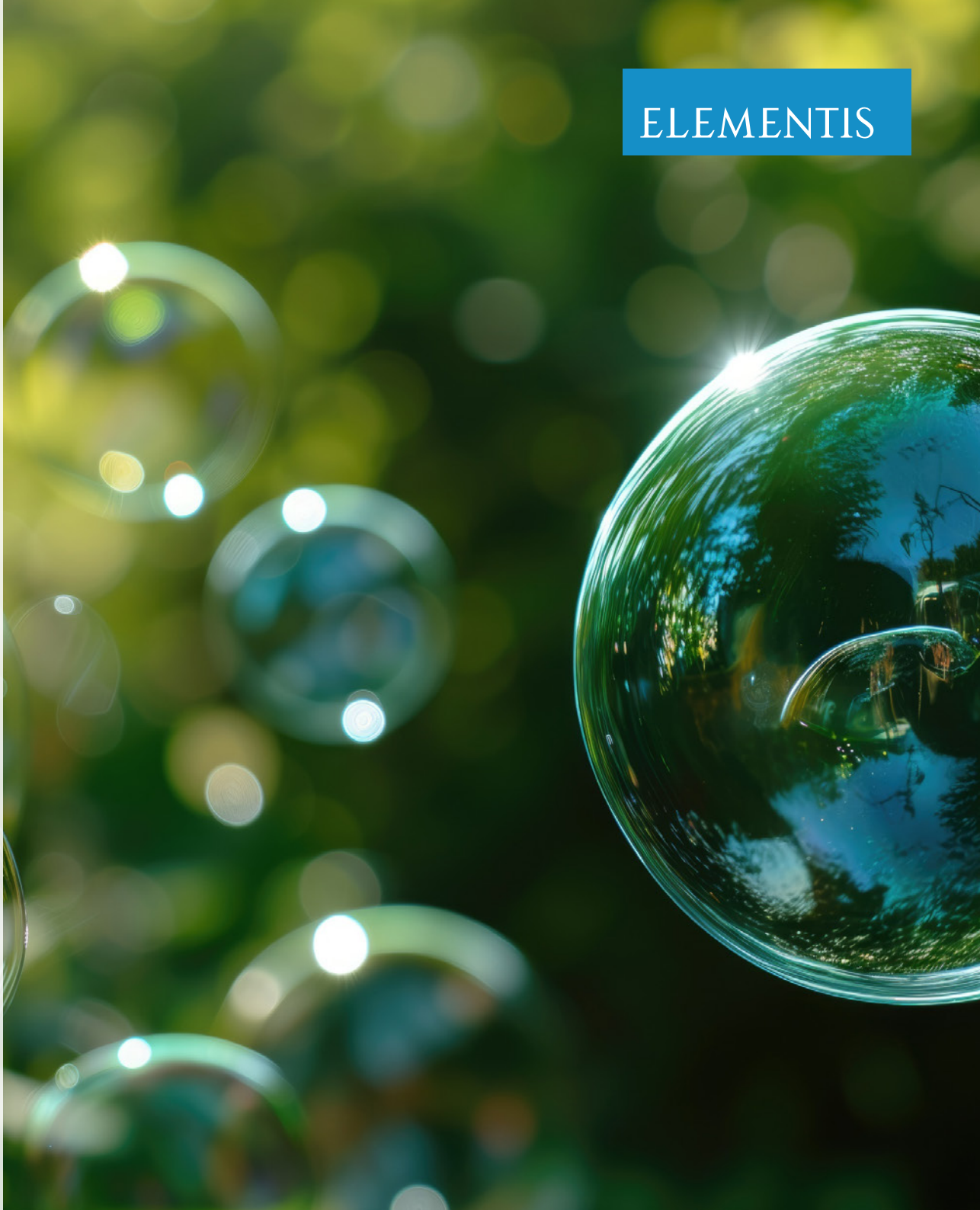
Application Leaflet

NUOSPERSE® FN 270

Labelling free non-ionic
wetting and dispersing agent



Unique chemistry, sustainable solutions

Key Benefits

- Excellent colour development
- Labelling free
- Very low foaming

Introduction

Negative impacts on health and the environment have steered product developers to seek alternatives for alkyphenolethoxylates (APEO) in all possible applications.

Traditional APEO-containing wetting and dispersing agents work very well in paints and colorants and it is a challenge to obtain the same properties with environmentally friendlier chemistries. Elementis has risen to this challenge and has developed a universal, non-ionic, APEO-free dispersing and wetting agent that meets the stringent demands of safety, health and the environment while also providing the same pigment dispersing power and equal application properties (sag, levelling, brush drag).

NUOSPERSE® FN 270 is an APEO-free and labelling-free universal pigment wetting and dispersing agent for a wide variety of latex paints.

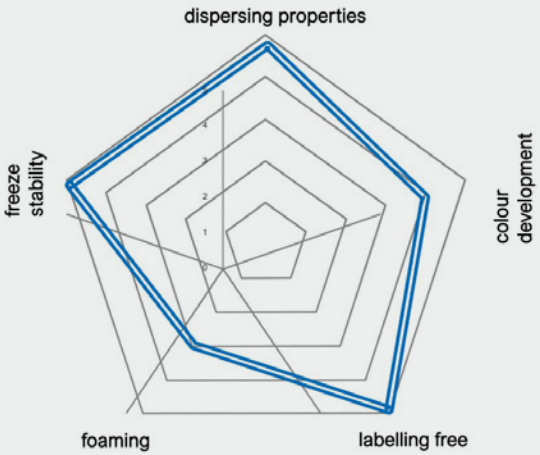
It provides the wetting and dispersing properties of traditional APEO-containing additives but with much easier handling and without the disadvantages of regulatory labelling. It is an effective replacement for Nonylphenol-10 EO. It shows superb storage stability, both as a product itself and when used in a paint.

Chemical data

Appearance at 20°C	Clear light yellow liquid
Active solids [%]	100
Odour	Nearly odourless
VOC (EPA Method 24)	0
VOC (ASTM D6886-03)	None detected
Specfic gravity, [g/ml]	1.003
Color (DIN-EN 1557);	<3
Viscosity @25 °C ASTM D2196) [mPa·s]	<100
HLB value	~12.5

Key Benefits

- Excellent dispersant for good paint storage stability
- Improved colour development
- APEO- and labelling free
- Low foaming
- Freeze-thaw stability



Incorporation

The optimum dosage, compatibility and performance of NUOSPERSE® FN 270 should be checked in each case individually. However, it is recommended to start by replacing Nonylphenol-10 EO on a one-to-one basis (as supplied).

Typically, 0.1 to 0.5% would be used in coating formulations whereas 3 to 12% would be required as a vehicle for a pigment concentrate.

Legislative background

Global legislation drives the development of APEO-free products, especially when they can end up in the open environment (water) and act as endocrine disruptors.

However, the first generation of APEO free alternatives is not free from labelling, NUOSPERSE® FN 270 has been the step in development.

NUOSPERSE® FN 270 is a labelling free alternative to the standard grades used commercially.

FIGURE 1

FIGURE 2

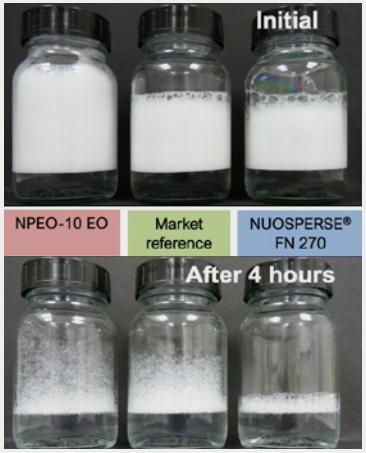
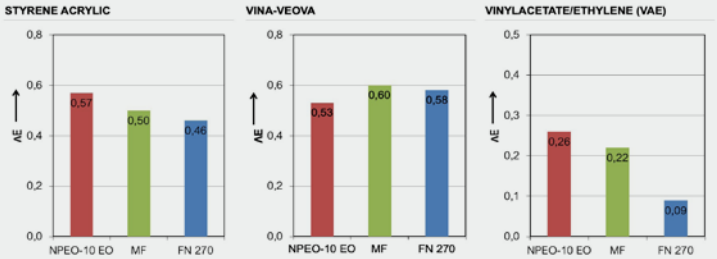


FIGURE 3: Delta E after tinting with organic blue colorant



Freeze-thaw stability

The test results (**FIGURE 1**) show that NUOSPERSE® FN 270 is still liquid at -12°C storage. After 6 hours thawing it is absolutely clear. This property is a huge advantage for storage and transport in the winter time.

Low foaming

The following the results of a foaming test are shown. The products were shaken for 2 minutes on the Scandex at 0.4% loadings in water. The pictures were taken immediately and after 4 hours at rest (**FIGURE 2**).

Colour acceptance

For the colour acceptance test 1% of a commercially available organic blue base tinter was post added into the test paint (pvc 77.5) white base. Standard rub out tests were performed.

The lower the value, the better the colour acceptance.

NUOSPERSE® FN 270 outperforms both, the Market reference and NP-10 EO (**FIGURE 3**).

FIGURE 4: Delta E after tinting with carbon black based colorant

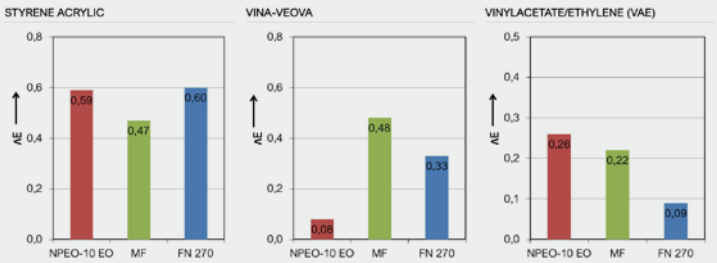


FIGURE 5: Comparison of colour develelopment with organic blue colorant

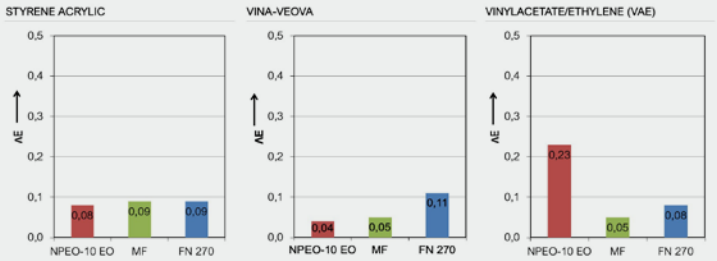
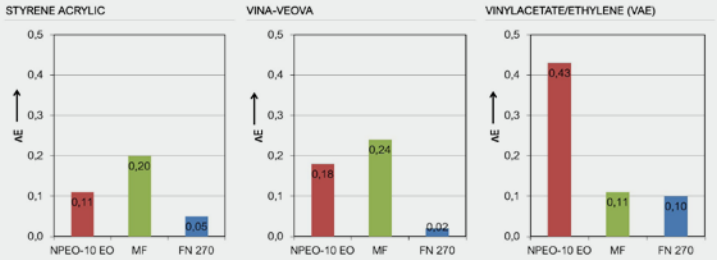


FIGURE 6: Comparison of colour develelopment with carbon black based colorant



Further, the colour acceptance was tested with 1% of another commercially available, however, on carbon black based colorant (**FIGURE 4**.). The tests were also performed in the same pvc 77.5 white base paint equipped with variating binder systems as above.

Also with this colorant, NUOSPERSE® FN 270 displays its excellent performance in comparison to the Market reference and the NP-10 EO dispersant.

Colour development

Δ E values were measured of drawdowns made after 2 minutes and 10 minutes Scandex mixing of the same sample after tinter addition. The lower the difference in Δ E value, the faster the colour equilibration.

In the first case, the example with the addition of 1% of an organic blue colorant has been taken (**FIGURE 5**).

In the present example, it becomes visible that NUOSPERSE® FN 270 provides very similar colour development data. Only in case of the system equipped with the VAE based binder emulsion remarkable differences have been noticed. In this case, both, the market reference and NUOSPERSE® FN 270 demonstrates improved values in comparison to the NPEO based surfactant.

In case of the paint equipped with the carbon black based colorant, a similar picture as with the previously tested blue colorant can be created (**FIGURE 6**).

Also in the colour development test, NUOSPERSE® FN 270 outperforms the Market reference and NP-10 EO especially in the PVC 30% system.

Conclusion

The new pigment dispersing and wetting agent for low VOC waterborne coatings, NUOSPERSE® FN 270, matches or surpasses the performance of leading Market references in a range of typical latex systems. NUOSPERSE® FN 270 is suitable for decorative and industrial latex paints and for a wide variety of binder chemistries.

The use of NUOSPERSE® FN 270 wetting and dispersing agent provides excellent paint application properties:

- Universal and efficient pigment wetting and dispersing properties
- Very low foam generation
- Freeze-thaw stable: remains liquid at 0°C and below
- Improves paint storage stability
- Improves colorant acceptance and increases tinting strength
- APEO-free, labelling-free and zero VOC

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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