

Key Performance Advantages

- Ideal for complying with EU Directive 2004/42/EC for VOC
- Improves pigment dispersion
- Very low odor



Paints and Coatings

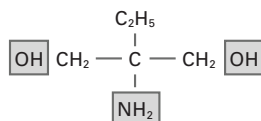
AEPD® VOX 1000

Neutralizing Amine

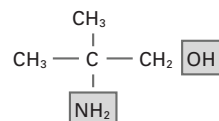
AEPD® VOX 1000 Neutralizing Amine is a multifunctional additive for low-odor, low-VOC (volatile organic compound) interior water-based paints. Its very mild odor, high boiling point and low vapor pressure make it the ideal formulating tool for those paint producers needing to comply with EU Directive 2004/42/EC.

Adding AEPD VOX 1000 Neutralizing Amine to the grind will adjust and control pH, while improving pigment dispersion, resulting in lower primary dispersant levels. It will virtually eliminate amine or ammonia type odors.

AEPD VOX 1000 Neutralizing Amine is a distinct ANGUS amino alcohol that is chemically similar to AMP® (2-amino-2-methyl-1-propanol), boasting an additional hydroxyl functional group that allows for improved freeze/thaw resistance.



AEPD (2-Amino-2-Ethyl-1,3-Propane-Diol)



AMP (2-Amino-2-Methyl-1-Propanol)

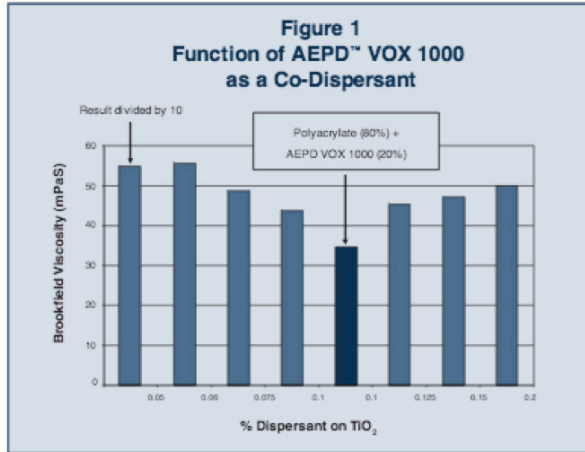
Typical Properties

The typical physical characteristics of AEPD VOX 1000 are shown below. They are not to be considered product specifications.

Very mild odor
Vapor pressure 0.002 mm Hg
Boiling Point 259°C
Viscous, pale yellow liquid
Molecular weight 119
pH 10.8 (0.1M solution @20°C)
pKa @ 20°C 8.8
Specific gravity ~1.05
Primary amine
Diol functionality

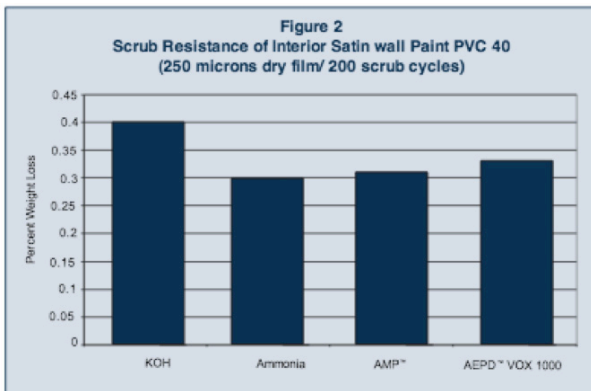
Improved Pigment Dispersion

When used as a co-dispersant, AEPD VOX 1000 can help reduce viscosity and primary dispersant level. This is shown in the following experiment where the lowest viscosity of the titanium dioxide slurry is reached with a combination of a polyacrylate anionic dispersant and AEPD VOX 1000 Neutralizing Amine.



Maintenance of Scrub Resistance

The additional hydroxyl functional group will lead to advantages in open time and wet edge effects without unduly affecting the scrub resistance. Using an inorganic base for pH adjustment will result in inferior scrub whereas AEPD VOX 1000 Neutralizing Amine can be considered to be in the same ranking as AMP.



AEPD VOX 1000 Neutralizing Amine Allows for Additional Formulation Optimization

The multifunctional nature of AEPD VOX 1000 Neutralizing Amine allows for significant reduction in primary dispersant, defoamer, glycols and coalescing agents. This not only saves on costs but also helps enhance the dry film properties such as scrub and water spotting. These additives can also contribute to odor and VOC and, therefore, AEPD VOX 1000 Neutralizing Amine allows for further VOC level reduction. Inorganic bases such as ammonia or potassium hydroxide do not allow for raw material reduction because they are only able to adjust pH.

Below are guide formulations showing how AMP and AEPD VOX 1000 Neutralizing Amine allow for reduced levels of primary dispersant, defoamer, glycol and coalescent in order to provide optimized performance.

Interior Matte Paint	Ammonia	AMP Optimized	AEPD VOX 1000 Optimized
Water	43.50	44.30	44.45
Anionic Dispersant	0.30	0.20	0.20
Defoamer	0.30	0.15	0.15
Thickener	0.45	0.45	0.45
Ammonia 25%	0.35	--	--
AMP	--	0.15	--
AEPD VOX 100	--	--	0.25
Pigment/filler	44.00	44.00	44.00
Glycol	1.00	0.75	0.75
Coalescent	0.95	0.80	0.70
Latex	9.00	9.00	9.00
In-can Preservative	0.20	0.20	0.20
Total	100.00	100.00	100.00

Performance Summary

Compared with other neutralizing amines, AEPD VOX 1000 Neutralizing Amine offers one of the best all-round performances when taking odor, VOC, wet paint and dry film properties into account.

AEPD VOX 1000 Neutralizing Amine has been developed to address the deficiencies of all other available neutralizing amines or bases. As depicted in the chart below, AEPD VOX 1000 Neutralizing Amine meets all requirements in terms of industrial hygiene, odor, multifunctionality and paint performance.

AEPD VOX 1000 Neutralizing Amine Performance Summary			
	KOH	Ammonia	AEPD VOX 1000
Low Odor	√√	XX	√√
Non-VOC	√√	√√	Varies by region
Vapor Pressure	√√	XX	√√
Multifunctionality	XX	XX	√√
Scrub Resistance	XX	√√	√
Gloss	XX	XX	√
Viscosity Stability	XX	√	√√
Industrial Hygiene	XX	XX	√√

√√ Very good
√ Good
XX Not good

Product Stewardship

ANGUS encourages its customers to review their applications of ANGUS products from the standpoint of human health and environmental quality. To help ensure that ANGUS products are not used in ways for which they are not intended, ANGUS personnel will assist customers in dealing with environmental and product safety considerations. For assistance, Safety Data Sheets, or other information, please contact your ANGUS representative at the numbers provided in this document. When considering the use of any ANGUS product in a particular application, review the latest Safety Data Sheet to ensure that the intended use is within the scope of approved uses and can be accomplished safely. Before handling any of the products, obtain available product safety information including the Safety Data Sheet(s) and take the necessary steps to ensure safety of use.

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