ANGUS CHEMICAL COMPANY

Key Product Features

- Improves stability in formulations
- Provides exceptional clarity and wettability
- Will not cause undesirable color development

Paints and Coatings

Metalworking Fluids

Life Sciences

Personal Care

DMAMP-80™

80% 2-Dimethylamino-2-Methyl-1-Propanol Solution CAS Reg. No. 7005-47-2 AMINE SOLUBILIZER FOR WATERBORNE POLYMERS

DMAMP-80™ (80% aqueous solution of 2-dimethylamino-2-methyl-1-propanol) is one of the strongest tertiary amines commercially available. Because it is a strong base, DMAMP-80 can be used in water systems to provide formulations of exceptional clarity, wettability and stability.

Tests with a variety of carboxy-functional polymers in air-drying or baking systems using DMAMP-80 as the solubilizing amine indicate that DMAMP-80 can contribute an excellent combination of properties to both the solution and the film. DMAMP-80 provides the following advantages when used to solubilize polymers:

- As a strong base, DMAMP-80 is efficient, i.e., less amine is required to achieve a stable system.
- DMAMP-80 has excellent release from the film due to its ability to form an azeotrope with water (containing 25% by weight DMAMP-80; b.p. 209°F).
- Resin dispersions made with DMAMP-80 have a low viscosity and small particle size. This also means better solution clarity.
- DMAMP-80 will not cause undesirable color development.
- As a strong tertiary-amine base, DMAMP-80 can lower the co-solvent demand of the system potentially resulting in a more favorable VOC profile, and it allows the formulator flexibility to accommodate wider variations in resin molecular weight, acid value and aliphatic character.

Typical Properties

The following are typical properties of DMAMP-80. They are not to be considered product specifications.

Characteristic	Details
Amine Value (mg KOH/g)	383
Specific Gravity @ 25°C	0.95
Weight per Gallon @ 25°C	7.9 lb
Flash Point, Tag Open Cup	150°F/66°C
Flash Point, Tag Closed Cup	153°F/67°C
Freezing Point	–4°F/–20°C
Boiling Point @ 760mm Hg	208°F/98°C
Viscosity @ 25°C, Gardner	A-A_2
pH of 0.1*N* Aqueous Solution	11.6

Formulating with DMAMP-80

Improved Package Stability

Many pigments react with the neutralizing amine to cause pH drift and destabilization of the system. Even water-compatible pigments can cause instability if the system pH drops too low. DMAMP-80 acts to minimize pH drift. With DMAMP-80 as the neutralizing amine, it is easier to maintain a sufficiently high pH and viscosity stability.

Effective pH Control

A resin solution which has been solubilized with DMAMP-80 will have a higher pH than will a similar resin solution neutralized, for example, with dimethylaminoethanol to the same degree of neutralization. Conversely, it will require fewer equivalents of DMAMP-80 than diethylaminoethanol to maintain a resin solution at the higher pH. As resin hydrolysis occurs in storage, DMAMP-80 will minimize the danger of the resin solution attaining an undesirably low pH.

Increasing Base Strength

Amine	pKa	pH of 0.01 *N* aqueous solution
Triethylamine (TEA)	10.78	10.80
DMAMP-80	10.20	10.60
AMP-95®	9.82	10.35
Dimethylaminoethanol (DMAE)	9.31	10.15
Ammonia	9.24	10.10

Improved Film Release Properties

Highly volatile amines, such as triethylamine or ammonia, should not be used in open dip-tanks. Not only are there dangers from vapors above the tank, but the amine lost by evaporation causes a drop in pH and must be replaced by the addition of more amine—an added cost. The favorable boiling point and flash point of DMAMP-80 are advantageous in this end use.

The low volatility of DMAMP lends stability to a system, and the ability to form an azeotrope with water aids in removal of excess amine during the drying process. The table below shows typical physical properties for several amines useful in solubilizing resins. DMAMP possesses a high boiling point for good resin-system stability and also contains enough amine in its water azeotrope to ensure good release from the film.

Amine (anhydrous)	Mol. Wt.	Wt./Gal	Flash Point (TCC)	Boiling Point	Vapor Press, @20°C	Boiling Point of Water Azeotrope	Amine Content of Water Azeotrope
DMAMP	117	7.5lb	148°F	160°C	~1 mm Hg	98°C	25% w
TEA	101	6.06	<20°F	89°C	54 mm Hg	76°C	90% w
AMP	89	7.78	172°F	165°C	0.34 mm Hg	None forms	
DMAE	89	7.39	103°F	135°C	~4 mm Hg	99°C	7% w

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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Published April 2016 Form No. DMA-1855-0415-TCG