

Key Performance Advantages

- For use as an emulsifying agent, corrosion inhibitor, resin solubilizer, catalyst, additive and synthesis agent
- High base strength for neutralizing acids
- Relatively high boiling point

Paints and Coatings

Metalworking Fluids

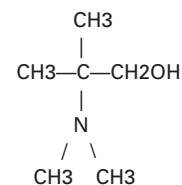
Life Sciences

Personal Care

DMAMP-80™

DMAMP-80™ Neutralizing Amine 80%
2-Dimethylamino-2-Methyl-1-Propanol Solution
CAS Reg. No. 7005-47-2

DMAMP-80™ Neutralizing Amine, a member of the family of ANGUS amino alcohols, is the tertiary-amine homolog of 2-amino-2-methyl-1-propanol (AMP). 2-Dimethylamino-2-methyl-1-propanol is commercially available as DMAMP-80 Neutralizing Amine which contains about 20% by water weight.



Typical Properties

The following are typical properties of DMAMP-80 Neutralizing Amine; they are not to be considered product specifications.

Neutral Equivalent	~148
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-A2
pH of 0.1 N Aqueous Solution	11.6

Base Strength of DMAMP

The three groups attached to the nitrogen atom (two methyls and the hydroxy-t-butyl) rank high in their ability to enhance electron density around the nitrogen, thereby increasing the base strength of DMAMP. High base strength is desirable in neutralization of acid groups by the amines, as in water solubilization of carboxylic acid functionalized resins.

Uses

Emulsifying Agent

DMAMP-80 Neutralizing Amine in combination with an unsaturated fatty acid (e.g., oleic acid or tall oil fatty acids) is effective in producing emulsions of waxes. For example, emulsifiable polyethylene may be emulsified readily with DMAMP-80 Neutralizing Amine by the wax-to-water method for use in the formulation of floor polishes or other specialty products. The films laid down from these emulsions have excellent gloss and leveling characteristics and good water resistance.

DMAMP-80 Neutralizing Amine has a relatively high boiling point, which minimizes loss while heating the emulsifier, as well as a relatively high flash point, which contributes to reduced fire hazards. DMAMP-80 Neutralizing Amine is such an efficient emulsifier that only small quantities are required for stable emulsions, many of which can be obtained with a high degree of transparency. The water in DMAMP-80 Neutralizing Amine does not cause problems during emulsion preparation.

DMAMP-80 Neutralizing Amine is not limited to use in anionic emulsion systems; it is also useful for emulsifying polyethylene in nonionic systems. Replacement of potassium or sodium hydroxide in these systems with DMAMP-80 Neutralizing Amine usually allows for a significant reduction in the level of nonionic emulsifier required. It also leads to improved water resistance in the finished film.

Corrosion Inhibition

DMAMP-80 Neutralizing Amine is suggested for evaluation as a vapor-phase corrosion inhibitor in steam-condensate systems. The azeotrope of DMAMP (anhydrous) and water boils at 98.4°C (209°F) and contains 25% by weight of DMAMP. The distribution ratio (i.e., concentration in the vapor phase over that in the liquid phase) for DMAMP-80 Neutralizing Amine using 25 ppm in the feedwater has been determined by an independent laboratory to be 0.83 at 80 psig.

Thus, the amine in the vapor phase should provide complete protection for the system and allow considerable excess capacity for absorption of acidic gases. The DMAMP-80 Neutralizing Amine carbonate formed will readily dissociate into DMAMP and CO₂ at temperatures well below those commonly employed in deaerating heaters to remove the CO₂. At the same time, the DMAMP does not decompose at operating temperatures to release ammonia.

DMAMP-80 Neutralizing Amine can also be used as a vapor-phase corrosion inhibitor in water-based hydraulic fluids and various industrial and consumer aerosol formulations.

Resin Solubilization

DMAMP-80 Neutralizing Amine is effective as a solubilizer for resin systems that contain free carboxylic acid groups and are designed to be dispersible in water. DMAMP-80 Neutralizing Amine consistently outperforms other tertiary amines, such as triethylamine or dimethylaminoethanol.

As a Catalyst

DMAMP-80 Neutralizing Amine is effective as a catalyst for production of polyurethane foams. The time to the initiation of foaming with DMAMP-80 Neutralizing Amine is similar to that with ethylenediamine. The longer duration of foaming obtained with DMAMP-80 Neutralizing Amine makes it easier to fill voids and mold cavities, and less raw material may be required because of increased foam volume. Use of blends with other catalysts provides economy without sacrificing performance. The hydroxyl group of DMAMP-80 is also available for reaction with an isocyanate group.

Salts of DMAMP have been used effectively as latent catalysts for thermosetting aminoplast resins used in surface coatings, such as baking enamels or conversion wood finishes (refer to examples in U.S. Patent 3,293,324).

DMAMP-80 Neutralizing Amine is a convenient starting point for the preparation of the hydrochloride, which is a useful catalyst in the delayed-cure durable-press process for textiles.

As an Additive

DMAMP is a very effective stabilizer for finishes containing alkyd resins modified with urea-formaldehyde, melamine-formaldehyde or styrenated alkyd resins. It is suggested for use in those resin systems where precurcuring, gelation or other evidence of instability is troublesome.

For Synthesis

There are numerous possibilities for use of DMAMP-80 Neutralizing Amine as a raw material for chemical synthesis. It undergoes the reactions typical of a tertiary amine. The primary alcohol group can be expected to undergo the usual reactions, such as esterification, oxidation, and ether formation.

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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