

Key Performance Advantages

- Saves formulation cost
- Lowers VOC as calculated in some regions
- Improves color development and adhesion
- Requires no process or equipment changes



Paints and Coatings

AMP[®]

2-AMINO-2-METHYL-1-PROPANOL SOLUTION

CAS Registry No. 124-68-5

AMP[®] Multifunctional Amine for Low-Cost Solvent-Based Alkyd Paint

Lower paint costs and volatile organic compounds (VOC) with AMP (2-amino-2-methyl-1-propanol) as the distinct structure and property profile of AMP allows paint formulators to emulsify up to 15% water into solvent-based alkyd paints with no process or equipment changes, and no additional raw materials. When following ANGUS product use guidelines, adding water to your solvent-based paint formulations can save money.

AMP is compatible with most conventional long- and medium-alkyd resins, as well as the other ingredients in the paint.

Suggested Starting Formulation

	Kilograms/ Pounds	Liters/ Gallons
Long or medium oil resin	521.3/ 434.79	547.6/ 54.76
White Spirits (Exxsol D40 Equivalent)	158.94/ 132.57	202.4/ 20.24
Rheological Additive (Bentone 1000 Equivalent)	6.05/ 5.04	4.1/ 0.41
Wetting agent (Anti-Terra U equivalent)	3.57/ 2.98	3.8/ 0.38
10% Calcium octoate	7.35/ 6.13	7.3/ 0.73
Titanium Dioxide	269.36/ 224.64	67.3/ 6.73
12% Cobalt octoate	2.11/ 1.80	2.1/ 0.21
18% Zirconium octoate	8.82/ 7.36	8.0/ 0.80
Anti-Skinning Agent (MEKO)	3.32/ 2.77	3.6/ 0.36
AMP-95	1.13/ 0.94	1.2/ 0.12
Water	152.6/ 127.27	152.6/ 15.26
Total	1134.55/ 946.29	1000/ 100
PVC %	~16	
Viscosity, Brookfield (100 rpm)	1004 cP	
Viscosity, Stormer	83 KU	
Gloss, 60°	91	

Resin Types

Most conventional low-viscosity, long- and medium-oil and some short-oil resins will be suitable in this application. Care should be taken to evaluate each resin for compatibility with AMP and water. If in doubt, please consult your resin supplier or local ANGUS representative. Excellent results have been achieved with resins with the following properties:

Oil type:	Soya (minimal yellowing) Linoleic
Oil content:	65%
Acid number:	6-20 mg KOH
NVM:	70 – 75%

Material Compatibility

AMP is compatible with most paint raw materials. It should not cause yellowing or interfere with the oxidative drying process. Materials should always be checked for potential hydrolysis issues.

Paint Stability

Solvent-based systems should be stable for at least 24 months. It is important for paint formulators to carry out stability tests with their own materials and formulations. Paint containing AMP Multifunctional Amine and 12.5% water has been proven stable down to temperatures of -20°C/-4°F.

Stability after 12 months:



Control

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Stability after 50 days @ 50°C/122°F:

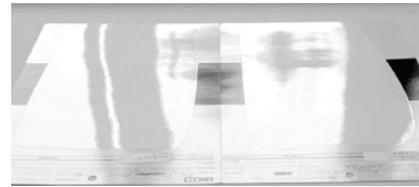


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Dry Film Properties

With a little formulation volume optimization, the inclusion of AMP and water has a minimal impact on gloss. The AMP formulation on the right of the photo below contains 15% water and has a 12% raw material cost saving over the control on the left.



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Opacity:

It is easy to optimize paint formulations to achieve the same opacity or covering power.



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Improvements to Color Development:

The distinct structure of AMP usually enhances the color development. AMP Multifunctional Amine is compatible with numerous types of tinting systems. Additional potential savings are possible through the more efficient use of tinter.



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Wood Adhesion:

The distinct structure of AMP allows for the incorporation of water into the formulation while affording excellent drying characteristics and beneficial adhesion performance.



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DOUBLE COATED

SINGLE COATED

Process

- Make grind with high speed disperser.
- Add grind to the let-down and mix well.
- Add AMP Multifunctional Amine. Stir for five minutes.
- Add water in a controlled manner, preferably into the vortex of the paint.
- ***Do not stir at high speed.*** Stirring with low- to medium-hundreds rpm is sufficient. Avoid air entrainment in the paint.
- Stir for 20–30 minutes after all water has been added.
- No off-line process is necessary.
- Process and material considerations:
 - Use long- and medium-oil resins. Check for resin stability such as yellowing hydrolysis.
 - ***AMP must be added before the addition of water.***
 - Add driers in recommended order. Add calcium drier to the grind.
 - Extender fillers: calcium carbonate, clays, talc, barium sulfate can all be used. For matte grades, use either talc or a treated silica. Untreated silica will destabilize the emulsion.
 - If a defoamer is required, avoid those containing silicone as they will destabilize the water emulsion. An example of a typical non-silicone defoamer is BYK 052.
 - No in-can preservative (biocide) is required.
 - Final viscosity adjustment can be made with water (increases viscosity) or white spirit (decreases viscosity).
- Alkyd paint containing AMP and water can be stored in unlined cans typically used for solvent-based paints; however, it is important to test the quality of the can before use. In laboratory tests, no corrosion has been seen in cans after 50 days at 50°C/122°F.

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 local 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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