

# ANGUS Chemical Company

## Technical Data Sheet

### AMP-95<sup>®</sup>

95% 2-AMINO-2-METHYL-1-PROPANOL SOLUTION  
CAS Registry No. 124-68-5

AMP-95 is the product name under which ANGUS markets 2-amino-2-methyl-1-propanol containing 5% added water. This colorless, mobile liquid with a relatively low viscosity remains liquid at temperatures as low as 4°C (39°F) to permit easy, convenient handling.

AMP-95 use benefits include, but are not limited to, the following:

- **Efficient Amine for Resin Neutralization**
  - High base strength
  - Relatively low molecular weight
- **Multiple FDA Approvals for Direct Food Contact Applications**
- **Acts as a Co-Dispersant for Particulate Systems**
- **Corrosion Inhibitor for Steam-Condensate Lines**
- **Key Component of Low Cobalt-Leaching Metalworking Fluids**
- **Acts as a Formaldehyde Scavenger**
- **Useful Raw Material for Synthesis Applications**
- **Component of Powerful Anionic Emulsifier Systems**

### Typical Properties

The following are typical properties of AMP-95. They are not to be considered product specifications.

|  |                |
|--|----------------|
| Specific gravity @ 25/25°C                 | 0.942          |
| Weight per Gallon @ 25°C                   | 7.85 lb        |
| Viscosity @ 25°C (77°F)                    | 147 cp         |
| @ 10°C (50°F)                              | 561 cp         |
| Coefficient of Expansion,                  |                |
| 20 to 90°C                                 | 0.00096/°C     |
| Flash Point, Tag Closed Cup                | 83°C/182°F     |
| Pensky-Martens Closed Cup                  | 87°C/188°F     |
| Vapor Pressure @ 20°C mm Hg/Pascal         | 0.08/10.4      |
| Freezing Point                             | -2°C (28°F)    |
| Surface Tension, neat                      | 36-38 dynes/cm |
| in 10% Aqueous Solution                    | ~58 dynes/cm   |
| pH of 0.1 M Aqueous Solution @ 20°C (68°F) | 11.3           |
| pKa @ 25°C                                 | 9.72           |
| Refractive Index, $n_D$ , @ 20°C           | 1.4568         |

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## Uses

In latex emulsion paints, AMP-95 is a very efficient co-dispersant for pigments. In addition, AMP-95 contributes pH stability, low odor, and anticorrosive properties; furthermore, it promotes acceptance of colorants.

AMP-95 is an effective emulsifier for polyethylene and wax by either the normal emulsification techniques or those requiring pressure.

AMP-95 is a very efficient amine for neutralizing the carboxylic acid moieties in acid-functional resins to make them suitable for use in water-borne coatings and other aqueous applications. Such coatings formulations exhibit higher gloss and greater water resistance than do formulations based on other neutralizing amines.

Corrosion in boiler-water systems can be controlled successfully by use of AMP-95 as the amine additive to remove CO<sub>2</sub>.

AMP-95 is a high performance alkanolamine, proven as a multifunctional additive for metalworking fluids. It is a highly efficient alkalinity enhancer which also provides corrosion inhibition properties. It is resistant to microbial degradation and does not leach cobalt from carbide tooling. As an added feature, AMP-95 enhances the performance of triazine biocides, while reducing levels of airborne formaldehyde. AMP-95 does not contribute to ammonia release as do other amines.

AMP-95 is an important additive for the personal care industry. It is compatible with virtually all fixative resins. Its high base strength and low molecular weight allow formulators to use significantly less AMP-95 for resin neutralization. It can also be used to neutralize Carbomer resins, in emulsification together with stearic acid, and to make amides and other derivatives used as cosmetic ingredients (CTFA/INCI designation: Aminomethyl propanol).

AMP-95 also functions in dilute aqueous solutions containing small amounts of formaldehyde to scavenge that which otherwise might be released to the atmosphere.

Technical bulletins giving detailed suggestions on the uses of AMP-95 are available.

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## FDA Clearances

AMP-95 possesses the following FDA clearances:

**Section 175.105** lists AMP among substances cleared for use as components of food packaging adhesives (AMP is designated as aminomethylpropanol in the regulations).

**Sections 176.170 and 176.180** — AMP is cleared for use as an indirect food additive for use as a pigment dispersant at levels up to 0.25% by weight of pigment. The resulting dispersion may be used to coat paper which will contact fatty, dry, or aqueous foods in room temperature, refrigerated, or frozen storage.

**Section 175.300** lists substances cleared for use as components in resinous and polymeric coatings intended for use in contact with food.

AMP is listed as a permissible catalyst for modification of triazine-formaldehyde resins in paragraph (b)(3)(xiii)(a) of this section. The FDA has identified AMP by the ambiguous name "methylpropanolamine".

The resins and coatings cleared under Section 175.300 have been cleared by cross reference for use as provided in the following sections:

**Section 175.380** Xylene-formaldehyde resins condensed with 4,4'-isopropylidenediphenol-epichlorohydrin epoxy resins

**Section 175.390** Zinc-silicon dioxide matrix coatings

**Section 177.1210** Closures with sealing gaskets for food containers

**Section 177.2260** Filter, resin-bonded

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## Toxicity

AMP-95 causes eye burns. Wear protective goggles for any operation in which splashing is likely to occur. In case of eye contact, *immediately* flush eyes with plenty of water for at least 15 minutes; see a physician.

Prolonged or frequently repeated exposure of the skin to AMP-95 may result in skin irritation. When such exposure is unavoidable, use of protective clothing is advised. In case of skin contact, wash the exposed area thoroughly with water. Remove contaminated clothing and wash before reuse. Discard contaminated shoes.

The vapor pressure of AMP-95 is quite low. Hence there will be only a small concentration of vapors at ordinary temperatures of use. Avoid repeated inhalation exposure to vapors or mists from heated material as the effects of inhalation have not been fully evaluated.

The acute oral LD<sub>50</sub> for AMP is 2.9 g/kg when tested in rats. Intraperitoneal administration to mice gave an LD<sub>50</sub> of 0.32 g/kg. Thus, AMP-95 would be considered as only slightly toxic by either route of administration.

AMP-95 when neutralized with fatty acids, as in the use for emulsification, has much less potential for irritation of skin or eyes. In several decades of use, there have been no reports of dermatitis resulting from exposure to its fatty acid soaps. Oral ingestion by rats of solutions containing 3 g/kg of the stearate soap of AMP produced no acute toxic symptoms or death.

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## Precautionary Labeling

Labels for AMP-95 bear these caution statements:

**DANGER!**  
CAUSES EYE BURNS AND SKIN IRRITATION.  
COMBUSTIBLE LIQUID AND VAPOR.

Do not get in eyes, on skin, on clothing.

Wash thoroughly after handling.

Keep away from heat and flame.

**FIRST AID**—In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water. Remove contaminated clothing and wash before reuse. Discard contaminated shoes.

After this container has been emptied, it may contain explosive vapors; observe all warnings and precautions listed for this product. Do not cut, puncture, or weld on or near this container.

FOR INDUSTRY USE ONLY

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## Handling and Storage

AMP-95 is corrosive to copper, brass, and aluminum. Contact with these metals should be avoided. Ordinary iron and steel generally are unaffected by this product and are the recommended materials of construction.

AMP-95 is a combustible liquid with a relatively high flash point and a low vapor pressure at ordinary temperatures. These properties cause no problems with respect to storage and handling. Do not store near heat or flame.

AMP-95 should not be exposed unnecessarily to the atmosphere, since it can pick up moisture and carbon dioxide due to its amine functionality. Evidence of this may be detected by a weight gain, a lower alkalinity equivalency than when first received, or the formation of cloudy solutions when dissolved in alcohol.

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## Shipping and Packaging

AMP-95 is classified, according to Title 49 (the U.S. Department of Transportation or DOT regulations) as a combustible liquid, but it is only subject to these regulations when shipped in bulk in tank cars, tank trucks and intermediate bulk containers (tote tanks). It is not subject to any of the requirements of DOT regulations when shipped in “non-bulk” packaging (capacity less than 450 liters or 119 gallons). The bill of lading descriptions used by ANGUS for bulk and packaged shipments of this product are:

*Bulk shipments:*  
COMBUSTIBLE LIQUID, N.O.S. (2-AMINO-2-METHYL-1-PROPANOL) NA1993,III. IN CASE OF EMERGENCY USE DOT GUIDE 128 ATTACHED.  
TRADE NAME = AMP-95

*Shipments in non-bulk packaging:*  
CHEMICALS, NOI (2-AMINO-2-METHYL-1-PROPANOL)  
NO HAZARD CLASS LABELS OR PLACARDS  
REQUIRED.  
TRADE NAME = AMP-95

AMP-95 does not meet any of the defined criteria for “dangerous goods” contained in the international transportation regulations for air (ICAO Technical Instructions) or for ocean transport (IMDG Code).

| Shipping Containers           | Net Wt. | Gross Wt. |
|-------------------------------|---------|-----------|
| 5-gallon unlined steel drums  | 35 lb   | 40 lb     |
| 55-gallon unlined steel drums | 420 lb  | 460 lb    |

The shipping containers listed above meet UN 1A1 packaging specifications. AMP-95 is also available for shipment within the U.S. in 350-gallon stainless steel intermediate bulk containers. They have a net weight of 2740 lb and a gross shipping weight of 3215 lb.

The information and data contained herein are believed to be correct. However, we do not warrant either expressly or by implication the accuracy thereof. In presenting uses for this product, no attempt has been made to investigate or discuss any patent situations which may be involved.

**ANGUS**<sup>®</sup>

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