

ULTRA-PC AMINO ALCOHOLS

Globally Compliant Neutralizer for Personal Care and Cosmetic Products

For the highest purity, most broadly compliant amino alcohols in commercial quantities for personal care and cosmetic products, ANGUS Chemical Company (ANGUS) has what you need. With more than 30 years experience in amino alcohol development, ANGUS has designed the ULTRA PC portfolio of amino alcohols to meet your global compliance needs: AMP-ULTRA™ PC Neutralizing Amine, AMPD™ ULTRA PC Neutralizing Amine and TRIS AMINO™ ULTRA PC Tromethamine.

With their wide range of base strengths, the ULTRA PC range of amino alcohols set a new quality benchmark as preferred neutralizing agents, providing compliance with the most recent European Union and the upcoming ASEAN Cosmetic Directive rulings on secondary amine and nitrosamine content of raw materials used in the manufacture of cosmetics and personal care products.

AMP-ULTRA™ PC

- Globally compliant for use in personal care and cosmetics products
- European Cosmetic Directive 76/768/EEC and Amendments compliant
- Ministry of Health (MOH) of the People's Republic of China "Hygienic Standards for Cosmetics" (2007 version) compliant
- 2008 ASEAN Cosmetic Directive compliant
- CTFA/INCI listed in USA and Japan (aminomethyl propanol)
- ISO 9001:2000 certified
- Three commercial grades to meet all processing needs

AMP-ULTRA PC 1000 (anhydrous)

AMP-ULTRA PC 2000 (5% water)

AMP-ULTRA PC 3000 (11% water)

- Batch size up to 24 MT
- Standard packaging 190 kg drums; AMP-ULTRA PC 2000 and 3000 also available in 950kg containers
- Global supply capability

Typical Physical/Chemical Properties

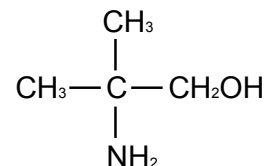
The following are typical physical/chemical properties of AMP-ULTRA PC; they are not to be considered product specifications.

Appearance (grade specific)	colorless solid or liquid
Consistent and Characteristic Odor	
Purity, anhydrous, % wt (minimum)	99.0
APHA colour, 20% aqueous solution (maximum)	20
Secondary Amines, anhydrous, % weight	< 0.5
Nitrosamine content, ppb	< 50

Application

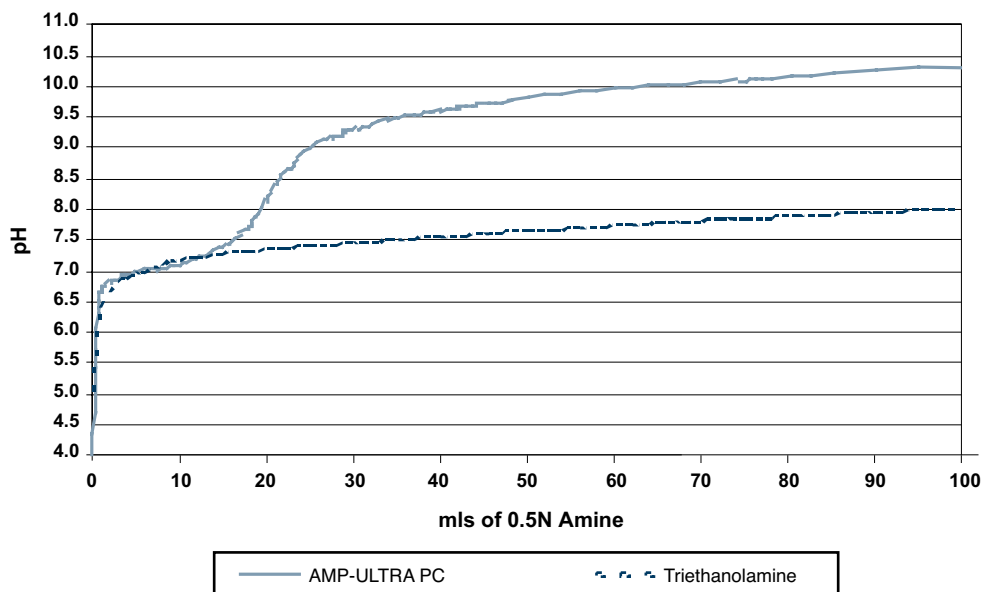
With its primary amine functionality, water- and alcohol-solubility and excellent toxicity profile, AMP-ULTRA™ PC is ideal for:

- Aerosol spray products
- Hair fixatives
- Pump sprays
- Styling gels and mousses
- After-sun coolers
- Hand sanitizers
- Sunscreen lotions



The high pKa value (9.72 at 20°C) and low molecular weight of AMP-ULTRA PC typically permits one third less amine to be used for neutralization than is required for most other cosmetic-grade amines. AMP-ULTRA PC provides superior color stability versus other amines and is compatible with virtually all fixative resins. AMP-ULTRA PC is available as an anhydrous solid (AMP-ULTRA PC 1000), a 95% concentration aqueous solution (AMP-ULTRA PC 2000) or an 89% concentration aqueous solution (AMP-ULTRA PC 3000). Some formulation examples are shown below.

Neutralization of 0.1N Stearic Acid with AMP-ULTRA™ PC & Triethanolamine



Suggested Sample Formulations

Hairspray (low cost)

Ingredients	% by Weight	Supplier
Amphomer HC	2.25	National Starch
AMP-ULTRA™ PC	0.57	ANGUS
Dimethicone Copolyol	0.10	Dow Corning
Alcohol	46.98	—
Perfume	0.10	—
Propane/Butane	50.00	—
	100.00	



Natural Alcohol-Free Styling Gel

Ingredients	% by Weight	Supplier
A. Amaze	2.00	National Starch
AMP-ULTRA™ PC	0.30	ANGUS
Deionised Water	71.50	—
Glycerine	1.00	—
B. Carbopol EDT 2020 (2% aqueous solution)	15.00	Noveon
DOWICIL™ 200	0.20	Dow Chemical
Deionised Water	10.00	—
	100.00	

After-Sun Cooler

Ingredients	% by Weight	Supplier
A. Water, demin.	82.35	—
B. Carbopol Ultrez	0.50	Noveon
C. AMP-ULTRA™ PC	q.s.	ANGUS
D. Propylene Glycol	3.00	—
Glycerine	3.00	—
Betavera	10.00	Brooks
Germaben II	1.00	Sutton
FD&C Blue No. 1 (0.1% Solution)	q.s.	—
FD&C Yellow No. 5 (0.1% Solution)	q.s.	—
Fragrance	0.15	—
	100.00	

Health and Safety

Typical of alkaline materials, undiluted aminomethyl propanol is severely irritating to the skin, eyes, and to the mucous membranes of the gastrointestinal tract and respiratory tract, but is not considered a skin sensitiser. 2-Amino-2-methyl-1-propanol is considered to be moderately toxic if swallowed primarily due to the potential for irritation or burns to the mouth, throat, and gastrointestinal tract. However, at the concentrations typically found in finished products (<2%), aminomethyl propanol is considered to have low potential for toxicity. Please refer to the Safety Data Sheet for further information.

Environmental and Disposal Considerations

Biodegradation of aminomethyl propanol may occur slowly under both aerobic and anaerobic conditions and is expected to occur in the soil environment. In the atmospheric environment, the material is estimated to have a tropospheric half-life of five hours and is therefore not likely to persist in the atmosphere. It is considered slightly toxic to aquatic organisms on an acute basis (LC50 or EC50 between 10 and 100 mg/L in the most sensitive species tested). Any disposal practice must be in compliance with all local and national laws and regulations. Please refer to the Safety Data Sheet for further information.



AMPD™ ULTRA PC

- Globally compliant for use in personal care and cosmetics products
- European Cosmetic Directive 76/768/EEC and Amendments compliant
- Ministry of Health (MOH) of the People's Republic of China "Hygienic Standards for Cosmetics" (2007 version) compliant
- 2008 ASEAN Cosmetic Directive compliant
- CTFA/INCI listed in USA and Japan (Aminomethyl propanediol)
- ISO 9001:2000 certified
- Batch size up to 2300 kg
- Standard packaging 20 kg drums
- Dependable, global supply capability

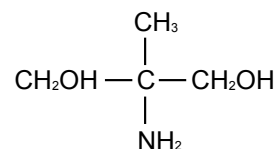
Typical Physical/Chemical Properties

The following are typical physical/chemical properties of AMPD ULTRA PC; they are not to be considered product specifications.

Appearance	White, crystalline powder
Purity, anhydrous, % by weight (minimum)	99.0
Water content, % by weight (maximum)	0.5
APHA color, 20% aqueous solution (maximum)	50
Secondary Amines, anhydrous, % weight	< 0.5
Nitrosamine content, ppb	< 50

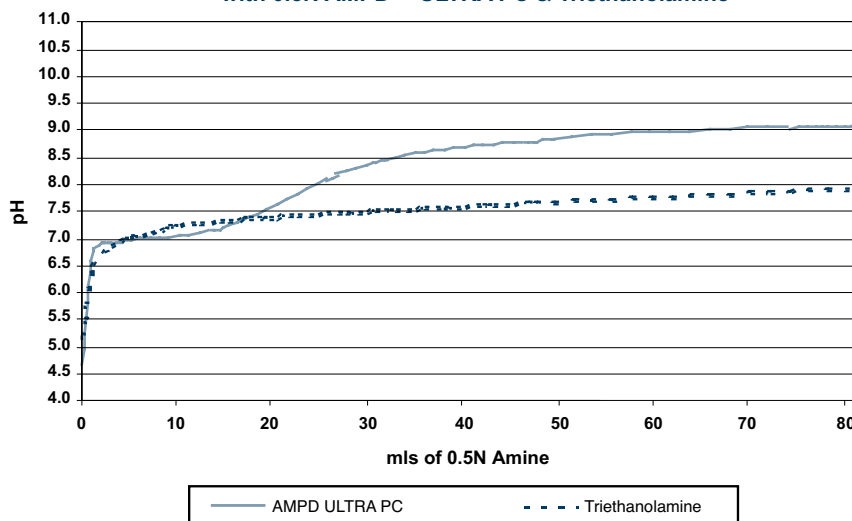
A primary amine with excellent water- and alcohol-solubility and low toxicity profile, AMPD™ ULTRA PC is ideally suited for use in:

- Cosmetic creams and lotions
- Hair fixatives
- Hair dyes
- Hypoallergenic cosmetic products
- Eye-area cosmetics



With a pKa value of 8.76 (at 20°C), AMPD ULTRA PC has a base strength intermediate between AMP-ULTRA™ PC and TRIS AMINO™ Ultra PC and is an efficient primary amine neutralizing agent for acid-functional raw materials used in cosmetic and personal care products. Fatty-acid soaps of AMPD ULTRA PC are ideally suitable as emulsifiers for high quality cosmetic creams and lotions, imparting desirable consistency and stability to emulsions without phase separation or yellowing/color development upon heat-aging

Neutralization of 0.1N Stearic Acid
with 0.5N AMPD™ ULTRA PC & Triethanolamine



Suggested Sample Formulations

Cleansing Cream

Ingredients	% by Weight
A. Stearic Acid	8.0
Mineral Oil	35.0
Petrolatum	10.0
B. AMPD™ ULTRA PC	3.0
Glycerine	5.0
Water	39.0
	100.0

Skin Repair Lotion

Ingredients	% by Weight
A. Glycerin	1.0
1,3-Butylene glycol	4.0
Ethanol	7.0
AMPD™ ULTRA PC	1.0
POE (20 mol) oleyl alcohol	0.5
Purified Water	86.5
	100.0

Exfoliate Scrub

Ingredients	% by Weight
A. Glycerine	53.0
Polyglyceryl-10-behenate/eicosadioate	5.0
PEG-10 sunflower glycerides	2.0
Polyglyceryl-3 beeswax	2.0
Glyceryl monostearate	1.0
AMPD™ ULTRA PC	0.5
B. Olive oil	23.5
Glyceryl behenate/eicosadioate	3.0
C. Orange oil	10.0
	100.0

Health and Safety

Similar to aminomethyl propanol, undiluted AMPD ULTRA PC is severely irritating to the skin, eyes and mucous membranes. AMPD ULTRA PC also is not considered a skin sensitizer. Aminomethyl propanediol is considered to be slightly toxic if swallowed primarily due to the potential for irritation or burns to the mouth, throat, and gastrointestinal tract. However, at the concentrations typically found in finished products (<2%), aminomethyl propanediol is considered to have low potential for toxicity. Please refer to the Safety Data Sheet for further information.

Environmental and Disposal Considerations

Biodegradation of aminomethyl propanediol may occur under both aerobic and anaerobic conditions and is expected to occur in the soil environment. In the atmospheric environment, the material is estimated to have a tropospheric half-life of four hours and is therefore not likely to persist in the atmosphere. AMPD™ ULTRA PC is considered to have low potential for bioaccumulation with a log octanol/water partition coefficient (log Pow) estimated to be -1.10. It is considered practically non-toxic to aquatic organisms on an acute basis (LC50 >100 mg/L in the most sensitive species tested). Any disposal practice must be in compliance with all local and national laws and regulations. Please refer to the Safety Data Sheet for further information.

TRIS AMINO™ ULTRA PC

- Globally compliant for use in personal care and cosmetics product
- European Cosmetic Directive 76/768/EEC compliant
- Ministry of Health (MOH) of the People's Republic of China "Hygienic Standards for Cosmetics" (2007 version) compliant
- 2008 ASEAN Cosmetic Directive compliant
- CTFA/INCI listed in USA and Japan (Tromethamine)
- Reliable, consistent, cGMP batch production process
- ISO 9000-2000 certified
- Batch size up to 1800 kg
- Standard packaging 25 kg drums
- Dependable, global supply capability

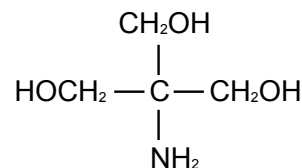
Typical Physical/Chemical Properties

The following are typical physical/chemical properties of TRIS AMINO ULTRA PC; **they are not to be considered product specifications.**

Appearance	White, crystalline powder
Purity, anhydrous, % by weight (minimum)	99.0
Water content, % by weight (maximum)	0.2
APHA color, 20% aqueous solution (maximum)	20
Secondary Amines, anhydrous, % weight	< 0.5
Nitrosamine content, ppb	< 50

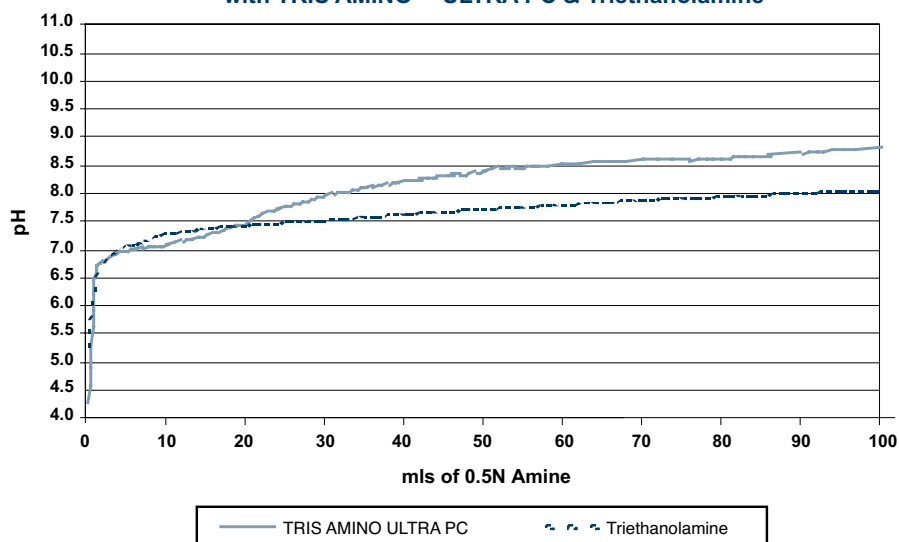
With its primary amine functionality, water- and alcohol-solubility and low toxicity, TRIS AMINO ULTRA PC is ideal as a buffer, solubilizer or neutralizer in:

- Skin treatment gels
- Sun blocks and sun screen lotions
- Detergent cleansing gels
- Spray-on lotions
- Cosmetic preparations



The lower equivalent weight and higher pKa value (8.03 at 20°C) of TRIS AMINO Ultra PC makes it more efficient than the tertiary amine triethanolamine (TEA) in developing alkaline pH and neutralising acid-functional ingredients. TRIS AMINO ULTRA PC also provides superior colour stability versus other amines and will not cause yellowing or darkening in skin-care preparations upon storage.

**Neutralization of 0.1N Stearic Acid
with TRIS AMINO™ ULTRA PC & Triethanolamine**



Suggested Sample Formulations

Vitamin-Liposome Gel

Ingredients	% by Weight	Supplier
A. Water, demin.	54.60	
Ethanol DAB 9	13.30	
B. Carbopol 940	0.80	Noveon
C. Carotte Oil	1.25	CLR
Macadamia Oil	3.75	Lamotte
D. TRIS AMINO™ ULTRA PC	1.00	ANGUS
Water, demin	5.00	
E. Natipide (20% phospholipids)	20.00	Rhône-Poulenc
F. Diamela 15.544RB	0.30	Firmenich
	100.00	

Sun Blocker

Ingredients	% by Weight	Supplier
A. Hostacerin DGL	1.00	Clariant
Hostacerin DGS	4.00	Clariant
Mineral Oil, low visc.	10.00	
Isopropyl palmitate	5.00	
Eusolex 6300	5.00	Rona/Merck
D-Panthenol	0.50	Roche
B. PNC 400	1.30	3V Sigma
C. Eusolex 232	5.00	Rona
D. TRIS AMINO™ ULTRA PC	2.21	ANGUS
Water	65.69	
Preservative	q.s.	
E. Fragrance	0.30	
	100.00	

Detergent Cleansing Gel

Ingredients	% by Weight	Supplier
Carbomer 1342	2.0	Noveon
Homogeneous 30	20.0	Croda
Coconut Diethanolamide	2.0	
Crovol PK70	2.0	Croda
TRIS AMINO™ ULTRA PC	to pH 6.00	ANGUS
Deionised water	to 100.0	
Preservative	q.s.	
Perfume	q.s.	
Colour	q.s.	
	100.00	

Aculyn 33 Sun Screen Lotion

Ingredients	% by Weight	Supplier
A. Montan OV 68	5.0	Seppic
Lanol 37T	15.0	Seppic
DC200/350 (Dimethicone)	5.0	Dow Corning
Eusloex 6300	3.0	Merck
Solagum L	0.5	Seppic
B. Water	63.0	
Eusolex 232TS	3.0	Merck
Aculyn 33	3.0	Rohm and Haas
TRIS AMINO™ ULTRA PC	2.0	ANGUS
C. Preservative	q.s.	
Perfume	q.s.	
	100.00	

For further information,
visit our website
www.ANGUS.com, or call:

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1-989-832-1465 (fax)

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Health and Safety

Tromethamine is very slightly irritating to the skin upon prolonged contact but is not likely to cause skin sensitization. Undiluted tromethamine is considered to have low toxicity via ingestion. Dusts may cause eye irritation or slight irritation to the mucous membranes of the gastrointestinal tract or respiratory tract. At the concentrations typically found in finished products, it is considered to be practically non-toxic. Please refer to the Safety Data Sheet for further information.

Environmental and Disposal Considerations

Bioaccumulation potential of tromethamine is low. Biodegradation of tromethamine will occur in the environment following an acclimation period based on BOD (biochemical oxygen demand) data. In the atmospheric environment, the material is estimated to have a tropospheric half-life of four hours and therefore will not likely persist in the atmosphere. The material is practically non-toxic to fish on an acute basis (LC50 > 100 mg/L). Any disposal practice must be in compliance with Council Directive 91/689/EEC and with all local and national laws and regulations. Please refer to the Safety Data Sheet for further information.

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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