

Key Performance Advantages

- Industry standard neutralizer for hair care
- Maximizes performance of a variety of products



Personal Care

AMP-ULTRA™ PC

Hair this Great Should Last: The Strength Behind Your Hold

Today's consumers are constantly on the go—and so is their hair. There is a personal care neutralizer available to maximize the performance of a wide range of hair styling products so that consumers can have great, long-lasting hairstyles. AMP-ULTRA™ PC specialty neutralizer is the global industry standard neutralizer for hair styling products, bringing exceptional performance benefits on a range of hair styling attributes, including:

- High humidity curl retention (HHCR)
- Hair washability
- Product stability

As the world leader in specialty neutralizers for more than 30 years, ANGUS has now developed application testing that clearly demonstrates the exceptional performance benefits of AMP-ULTRA PC in a range of hair styling formulations.

AMP-ULTRA PC not only provides the performance strength needed to help great hair last, but also sets a quality benchmark as the preferred neutralizing amine for the global personal care and cosmetic industry. AMP-ULTRA PC is currently compliant with the most recent cosmetics directives on secondary amine and nitrosamine content of raw materials used in the manufacture of cosmetics and personal care products.

With global supply capability, ANGUS provides ISO 9001:2008 certification. Additionally, AMP-ULTRA PC specialty neutralizer is currently compliant with the most recent Cosmetics Directives and Requirements on:

- European Cosmetics Regulation 1223/2009 (replacing European Cosmetics Directive 76/768/EEC and its latest amendments)
- USA Food, Drug and Cosmetics Act
- China Food and Drug Administration "Safety and Technical Standards for Cosmetics"
- The 2008 ASEAN Cosmetics Directive (Annex updated Feb-2011)
- Japan Standards for Cosmetics and Amendments
- Mexico Prohibited and Restricted Substances in Perfumes and Cosmetics (Current)
- Brazil ANVISA Mercosur Resolution on Cosmetics and Personal Care Products

Typical Properties

The following are selected properties of AMP-ULTRA PC. They are not to be considered product specifications.

Appearance	Colorless liquid
Consistent and characteristic odor	
Purity, anhydrous % wt (minimum)	99.0
APHA color, 20% aqueous solution (maximum)	20
Secondary amines, anhydrous, % wt	<0.5
Nitrosamine content ppb	<50

High Humidity Curl Retention

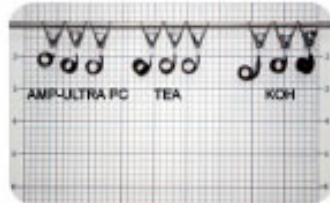
The performance of neutralizers was tested in representative formulations in gels and hairsprays. The gels were formulated with 2% PVP K-90 polymer while the hair sprays contained 6% Amphomer. Clean hair tresses were treated with the prototype formulations and were curled. The curls were exposed to 90% humidity at 35°C and the length of hair with time was noted. Percent curl retention was calculated and compared within different neutralizers.

The AMP-ULTRA PC neutralized hair gel and hairsprays exhibited significantly higher percentage curl retention over time compared to other neutralizers tested. The AMP-ULTRA PC neutralized polymer exhibited significantly higher percentage curl retention over time compared to potassium hydroxide (KOH) and triethanolamine (TEA).

Hair Gel Curl Retention



Time Zero

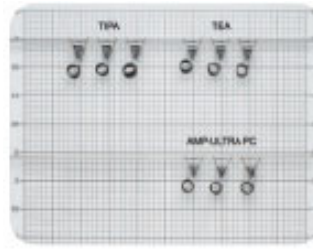


Time 1 Hour

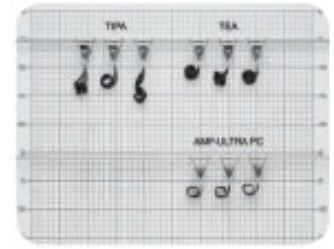


Time 3 Hours

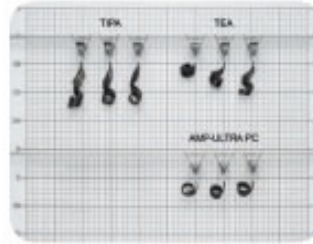
Hair Spray Curl Retentior



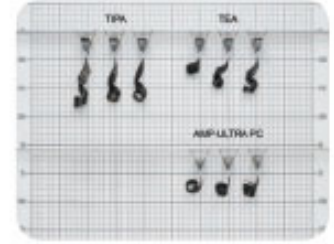
Time Zero



Time 1 Hour



Time 6 Hours



Time 24 Hours



AMP-ULTRA PC

AMP-ULTRA PC specialty neutralizer has great compatibility with a wide range of resins, allowing for the formulation of ultra-clear hair gels.

Propellant Compatibility Study for Hairsprays

Hydrocarbon and ether propellants were added to 6 wt% anhydrous polymer solutions neutralized with several different neutralizers at room temperature. The AMP-ULTRA PC neutralized polymer solution was clear with no haze or precipitate, compared to TEA and TIPA which were both hazy.



TIPA



TEA



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Washability Study for Hairsprays

Hair tresses were treated with 6% neutralized polymer solution, allowed to dry, and then washed. This cycle was repeated eight times to simulate frequent consumer use of a hairspray. The AMP-ULTRA PC neutralized hairspray sample displayed excellent washability and no polymer build-up, compared to TEA and triisopropanolamine (TIPA) which displayed white flaky residue on the hair.



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TEA

TIPA

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, product 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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