
Technical Information

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Ultrahold[®] 8

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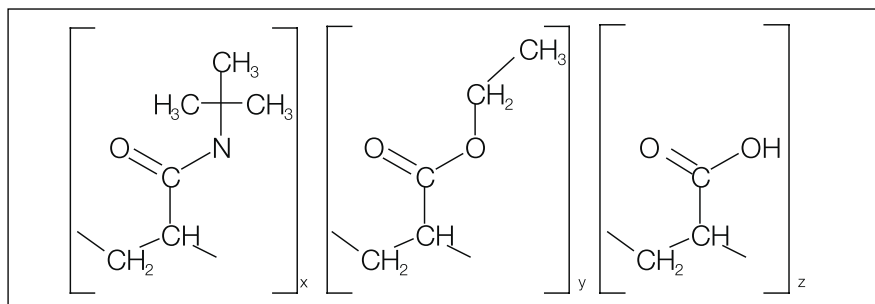
**Acrylate-based terpolymer for the production of hair setting
preparations with particularly good hydrocarbon compatibility**

Cosmetic Solutions

- Hair Care
- Skin Care
- Oral Care

Chemical nature

Terpolymer of acrylic acid, ethyl acrylate and N-tert-butylacrylamide

**INCI name**

Acrylates/t-Butylacrylamide Copolymer

Physicochemical properties

Appearance: fine, white, free-flowing granulate
 Odour: faint, characteristic

Specifications

Parameter	Specification
K value (1% in ethanol)	22.0-32.0
Loss on drying	Max. 2.0%
Acid value (mg of KOH/g)	58.0-66.0

Application properties

Ultrahold 8 is a prototropic polymer. It is used as a film-forming agent in hair-care products, particularly hair sprays and setting lotions.

Propellant gas compatibility

Solutions of Ultrahold 8 are compatible with commercially available propellants, e. g. propane/butane, isobutane, DME and their mixtures, over a wide range of temperatures.

When DME is used as a propellant, it is highly recommended to add pentane to reduce the vapour pressure. Thanks to its good compatibility with hydrocarbons, it is not necessary to add chlorinated fluorocarbons or methylene chloride.

Solutions of 3.0% Ultrahold 8 in ethanol abs. that have been neutralized with 0.22% AMP will tolerate 60-65% propane/butane and have a cloud point below -15°C.

Solubility

Ultrahold 8 dissolves in the usual organic solvents, e. g. ethanol and isopropanol, commonly used in hair-care products to give a clear to slightly opaque solution. The resin is practically insoluble in water; however, clear aqueous/ethanolic solutions can be produced with 100% neutralized resin using at least 40% ethanol. When producing hair-spray and setting-lotion solutions, it is recommended to filter the solutions of the active substances prior to filling, to remove any solid matter.

Setting

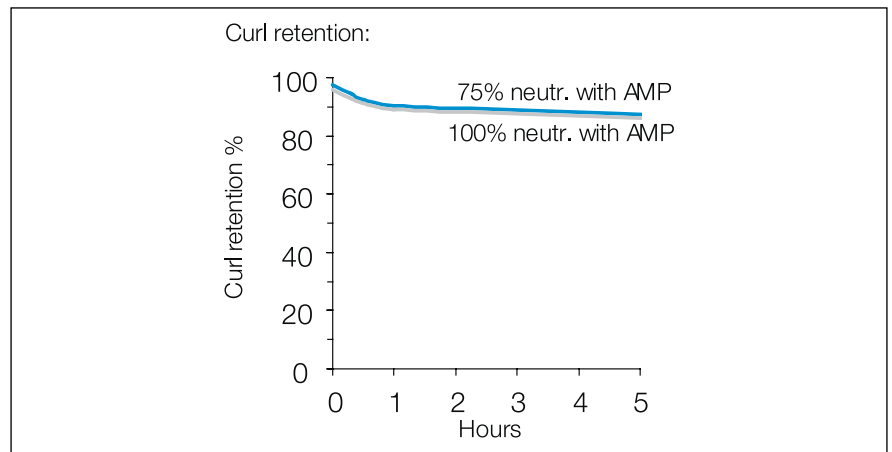
A 3% solution of the 80% neutralized product gives a hard film that is nevertheless easily washed off. The elasticity of the film can be increased by completely neutralizing the resin. Even when Ultrahold 8 is 100% neutralized, it absorbs little water, so that it can be used in both dry and humid climates.

Degree of neutralization*	Water absorption**
75%	9.5%
100%	11.0%

* Neutralized with AMP

** 7 days, 75% r. h., 20°C

Curl retention



The curl retention of Ultrahold 8 in a humid climate was determined by spraying a 2% solution of the product neutralized with AMP onto swatches of hair of 2 g weight and 15.5 cm length at 25°C and 90% relative humidity. A description of the method is available on request.

Processing

Depending on the type of hair and the effect desired, the following concentration ranges are recommended for formulating setting lotions.

Aerosol hair sprays:	1.0-6.0% Ultrahold 8
Pump sprays:	2.0-8.0% Ultrahold 8
Blow-wave preparations:	05.-2.0% Ultrahold 8
Setting lotions:	2.0-7.0% Ultrahold 8

The usual amine derivatives such as AMP (2-amino-2-methylpropan-1-ol), DEPA (diethylaminopropylamine) or TIPA (triisopropanolamine) can be used as neutralizing agents. The quantity of neutralizing agent, N, can be calculated as follows:

$$N = xyz A/100$$

where

x = weight of Ultrahold 8 in kg
 y = acid value
 z = degree of neutralization in %
 A = 1.59 for AMP,
 2.32 for DEPA,
 3.41 for TIPA

Example:

1 kg of Ultrahold 8 with an acid value of 58 requires the following quantity of AMP to achieve a degree of neutralization of 100%:

$$N = 1 \cdot 58 \cdot 100 \cdot 1.59/100 = 92.2 \text{ g AMP}$$

Note: It is well known that amines react with keto compounds to form Schiff bases. Acetone should, therefore, not be used as a solvent.

Suggested formulations

Aerosol spray

No. 01/00008

	%	Ingredients	Supplier	INCI name
A	0.11	AMP		Aminomethyl Propanol
	0,10	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
	6.00	Water, dem.		Water
	32.29	Ethanol 96%		Alcohol
	q.s.	Perfume		
B	1.50	Ultrahold® 8	(1)	Acrylates/ t-Butylacrylamide Copolymer
C	60.00	Dimethyl ether		Dimethyl Ether

Production:

Weigh the components of phase A and mix them. Add phase B and stir until a homogeneous solution is obtained. Fill into appropriate containers and charge with phase C.

Properties:

Normal stiffness, for all climatic zones, easy to comb and wash out.

Cloud point: still clear at -35°C
 Density: 0.7552 g/cm³
 Pressure: 3.2 bar

Pump spray

No. 01/00447

	%	Ingredients	Supplier	INCI name
	7.00	Ultrahold® 8	(1)	Acrylates/ t-Butylacrylamide Copolymer
	0.50	AMP		Aminomethyl Propanol
	10.00	Water, dem.		Water
	82.50	Ethanol abs.		Alcohol
	q.s.	Perfume		Butane

Production:

Add Ultrahold 8 to a mixture of ethanol, AMP, water and fragrance, stir until dissolved, then fill into containers

Properties:

Strong stiffness, for all climatic zones, easy to comb and wash out.

Hairspray VOC 55 with Ultrahold® 8, strong hold

No. 01/00561

	%	Ingredients	Supplier	INCI name
A	0.60	AMP	(56)	Aminomethyl Propanol
	10.00	Water dem.		Aqua
	33.40	Ethanol		Alcohol
	q.s.	Perfume		
B	6.00	Ultrahold 8	(1)	Acrylates/t-Butylacrylamide Copolymer
C	30.00	Propellant 152 A		Hydrofluorocarbon 152 a
D	20.00	Dimethyl Ether		Dimethyl Ether

Production:

Weigh out the components of phase A and mix them. Add phase B and stir until a homogeneous solution is obtained. Fill into appropriate containers and charge with phases C and D, one after another.

Properties:

Pressure: 4.1 bar (20°C)
 Density: 0.8560 g/ml
 Cloud point: -28°C clear

Hairspray with Ultrahold® 8, normal hold**No. 01/00738**

	%	Ingredients	Supplier	INCI name
A	46.70	Ethanol 96%		Alcohol
	q.s.	Perfume		
	0.30	AMP	(56)	Aminomethyl Propanol
B	3.00	Ultrahold 8	(1)	Acrylates/t-Butylacrylamide Copolymer
C	50.00	Propane/Butane		Propane/Butane

Production: Weigh out the components of phase A and mix them. Add phase B and stir until a homogeneous solution is obtained. Fill into appropriate containers and charge with phase C.

Properties: Pressure: 4.8 bar (20°C)
Density: 0.6912 g/ml
Cloud point: -35°C clear

Hairspray with Luviskol® Plus and Ultrahold® 8, normal hold**No. 01/00994**

	%	Ingredients	Supplier	INCI name
A	4.00	Luviskol Plus	(1)	Polyvinylcaprolactam
	0.14	AMP	(56)	Aminomethyl Propanol
	54.36	Ethanol		Alcohol
B	1.50	Ultrahold 8	(1)	Acrylates/t-Butylacrylamide Copolymer
C	40.00	Propane/Butane		Propane/Butane

Production: Weigh out the components of phase A and stir until a homogeneous solution is obtained. Add phase B and stir until a homogeneous solution is obtained. Fill into appropriate containers and charge with phase C.

Properties: Pressure: 4.1 bar (20°C)
Density: 0.7080 g/ml
Cloud point: -35°C clear

Hairspray with Ultrahold® 8, n-Pentane**No. 01/00613**

	%	Ingredients	Supplier	INCI name
A	0.50	AMP	(56)	Aminomethyl Propanol
	29.50	Ethanol		Alcohol
	q.s	Perfume		
B	5.00	Ultrahold 8	(1)	Acrylates/t-Butylacrylamide Copolymer
C	25.00	n-Pentane		Pentane
D	40.00	Dimethyl Ether		Dimethyl Ether

Production: Weigh out the components of phase A and mix them. Add phase B and stir until a homogeneous solution is obtained. Stir phase C into the solution of the combined phases A and B. Fill into appropriate containers and charge with phase D.

Properties: Pressure: 2.6 bar (20°C)
Density: 0.7160 g/ml
Cloud point: -35°C clear

Hairspray with Luviskol® VA 37 E, Ultrahold® Strong**No. 01/00699**

	%	Ingredients	Supplier	INCI name
A	42.88	Ethanol		Alcohol
	6.00	Luviskol VA 37 E	(1)	VP/VA Copolymer
	q.s	Perfume		
B	1.00	Ultrahold® 8	(1)	Acrylates/t-Butylacrylamide Copolymer
	0.12	AMP	(56)	Aminomethyl Propanol
C	20.00	n-Butane		Butane
D	30.00	Dimethyl Ether		Dimethyl Ether

Production:

Weigh out the components of phase A and stir until a homogeneous solution is obtained.
 Add phase B and stir again until a homogeneous solution is obtained.
 Fill into appropriate containers and charge with phases C and D one after another.

Properties:

Strong hold, for all climatic zones, easy combability, good brush out, good wash out properties.
 Pressure: 3.3 bar (20°C)
 Density: 0.6970 g/ml
 Cloud point: -35°C clear

Pump Setting Spray with Ultrahold® 8**No. 01/00644**

	%	Ingredients	Supplier	INCI name
A	0.30	AMP	(56)	Aminomethyl Propanol
	96.70	Ethanol 96%		Alcohol
	q.s.	Perfume		
B	3.00	Ultrahold 8	(1)	Acrylates/t-Butylacrylamide Copolymer

Production:

Weigh out the components of phase A and mix them.
 Add phase B and stir until a homogeneous solution is obtained.

Pump setting spray with Ultrahold® 8**No. 01/00472**

	%	Ingredients	Supplier	INCI name
A	0.60	AMP	(56)	Aminomethyl Propanol
	0.10	Perfume		
	93.30	Ethanol		Alcohol
B	6.00	Ultrahold 8	(1)	Acrylates/t-Butylacrylamide Copolymer

Production:

Weigh out the components of phase A and mix them.
 Add phase B and stir until a homogeneous solution is obtained

Suppliers

1. **BASF Aktiengesellschaft**
D-67056 Ludwigshafen, Germany
Telephone 0621/60-0
Telefax 0621/60 4 25 25

56. **Angus Chemical Company**
1500 E. Lake Cook Road
Buffalo Grove, Illinois 60089, USA
Tel.: 8 47-2 15-86 00
Telefax: 8 47-2 15-8626

Stability

The product can be stored for at least 2 years at 25°C in the unopened original container.

Toxicology

An examination of the raw material did not indicate any health risks for the concentrations used and the areas of application given. However, due to the large number of possible applications, also in combination with other products, the user has to carry out his own safety assessment of his products.

PRD number

30035032

Safety Data Sheet

A Safety Data Sheet is available.

Note

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