

Ashland film-formers for hair styling

Structure
Properties
Applications

Aug 2018

hair fixative evolution

advancing technology brings multiple benefits

Stiff
Difficult to remove

Stiff
Easy to remove
Poor HHCR

Not Stiff
Improved HHCR
Easy to wash
Flexible

Smooth feel
Further improved HHCR
Hydrophobic

Stiff
Good HHCR
Hydrophobic
Durable
Low flaking
Remold able
Propellant tolerance
Thermal Protection
Mechanical
Protection
Color Protection
Durable styling

Shellac

PVP

VP/VA

Derivatized
VP/VA

Co-Ter-
Tetrapolymers
VP based,
acrylate based

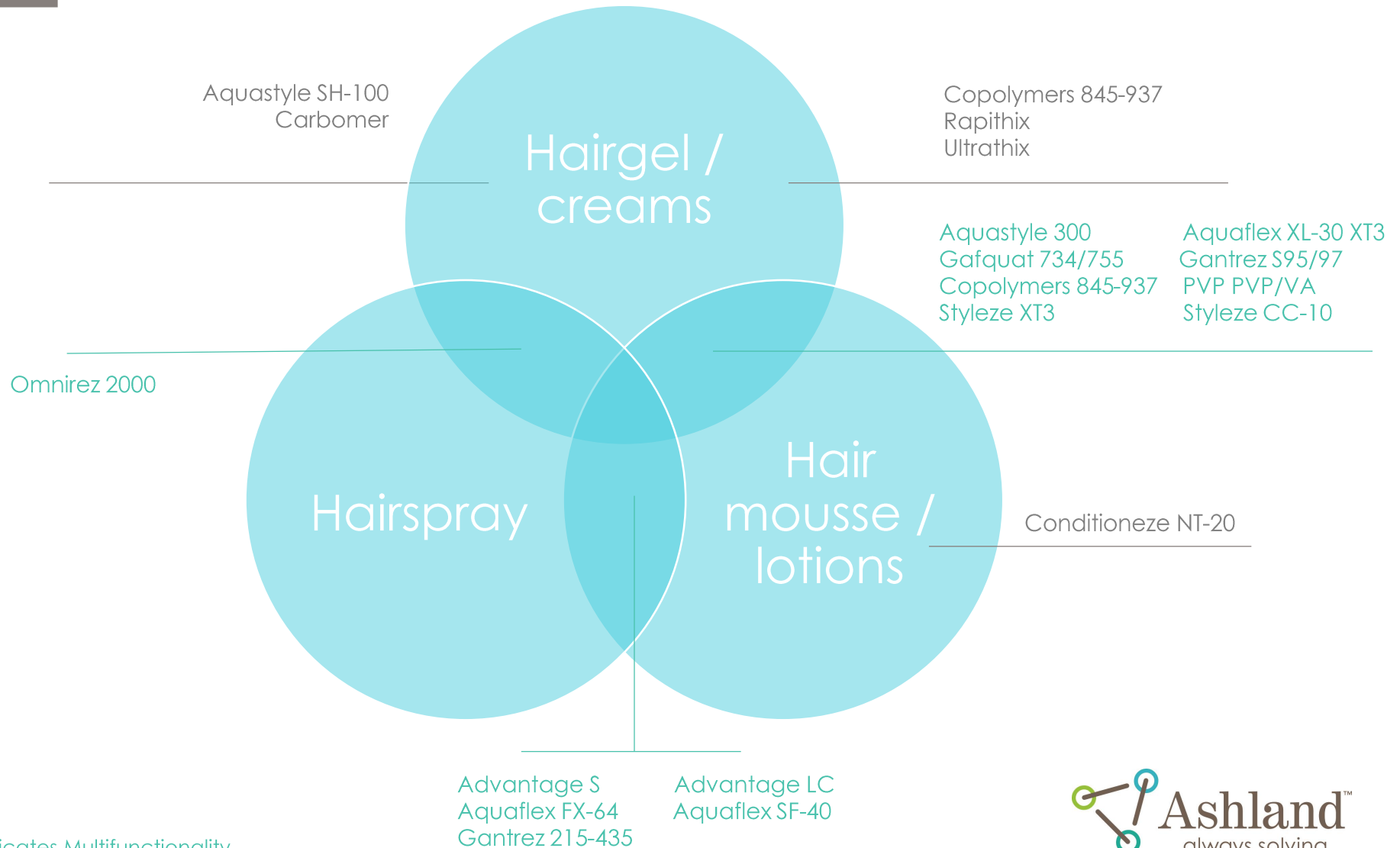
top hair fixatives - global product launches

INGREDIENTS RANKING OF HAIR FIXATIVES IN NEW PRODUCT ENTRIES

Ingredient	Ashland Solution
PVP	• PVP K-30, PVP K-60. PVP K-90
VP/VA Copolymer	• PVP/VA S-630 , PVP/VA W-635. PVP/VA W-735
Octylacrylamide/Acrylates/Butylaminoethyl Methacrylate Copolymer	
Polyquaternium -11	• Gafquat™ 755N
Acrylates copolymer	
VA/crotonates/vinyl Neodecanoate Copolymer	
Vinyl Caprolactam/VP/dimethylaminoethyl Methacrylate Copolymer	• Advantage™ polymer
Polyvinylcaprolactam Copolymer	
Polyquaternium-16	
VP/methacrylamide/vinyl Imidazole Copolymer	
Polyquaternium-4	
VP/DMAPA Acrylates Copolymer	Styleze™ CC-10 polymer

Ashland solutions align with key technology and top market trends
to help maximize opportunity

broad spectrum of hair care and styling polymers

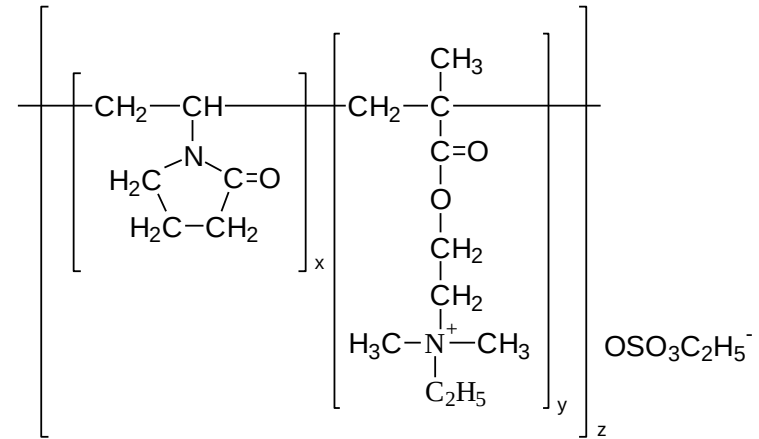


Film-formers or fixative requirements

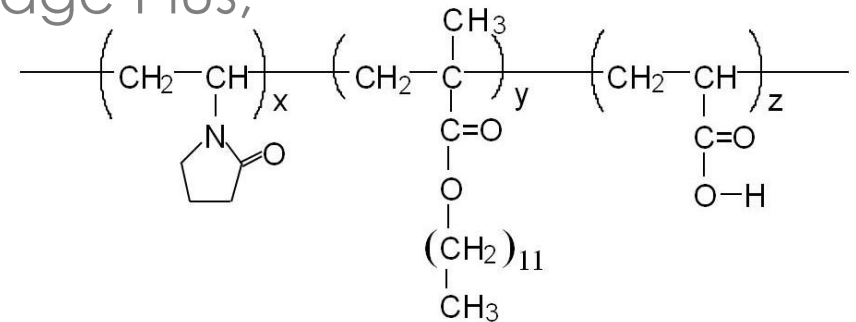
- Essentially used to 'glue' hair fibres together.
 - Must exhibit good holding properties,
 - Must be easily removed by shampooing
 - Must not be susceptible to absorption of moisture from the atmosphere
 - Must not detract from the gloss of the hair
 - Must be compatible with a wide range of cosmetic ingredients.

Polymer ionicity and application

- Nonionic (PVP, PVP/VA, Copolymer)
- Widely used in gels, mousses & sprays
- compatibility usually not a problem
- Cationic (Gafquat, Styleze CC10, W)
- Used for conditioning and styling,
- widely used in mousses good spreadability & substantivity
- Not suitable for aerosol sprays
- Anionic (Gantrez, Styleze 2000, Advantage Plus, Ultrathix)
- Need to be neutralised with an alkali
- mostly used in pump and aerosol hairsprays
- usually have the best humidity resistance

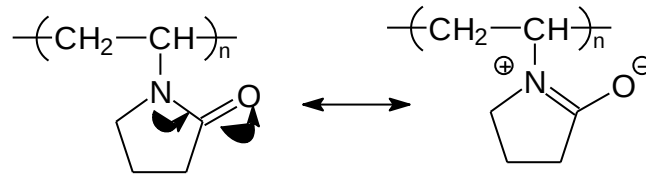


GAFQUAT® quaternary copolymers



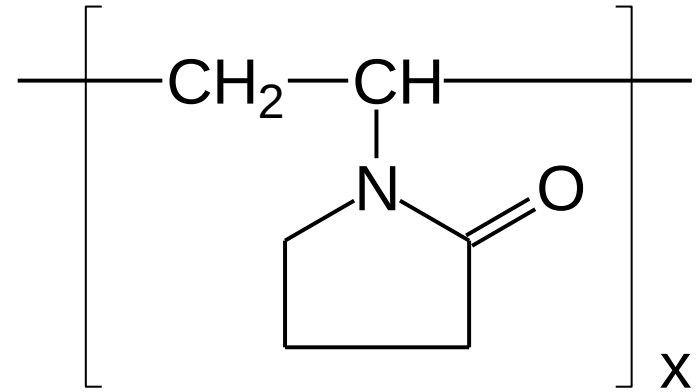
PolyVinylPyrrolidone (PVP)

- Planar linear molecule with high polarity
- Pseudo cationic, N⁺ behaviour is dominant in solution, hydrogen bonding at oxygen molecule
- Complexation via hydrogen bonding, dipolar and inductive interactions



- Off-white, free-flowing powder/clear aqueous solutions
- Highly hydrophilic polymer soluble in water and many organic solvents
- Compatible with most inorganic salts and many polymers

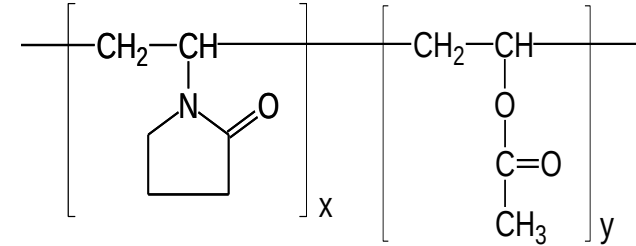
PVP K for styling



<u>Value</u>	<u>Mwt.</u>	<u>Use for</u>
K-15/Solution	8000	Add stiffness to styling products without increasing viscosity.
K-30/Solution	60000	Hair gels, mousses, skin creams Most widely used grade.
K-60 /Solution	400000	Strong, Stiff hold
K-90/Solution	1300000	Stiff feel hair gels, sprays & mousses.
K-120	3000000	Viscosity, stiffness additive

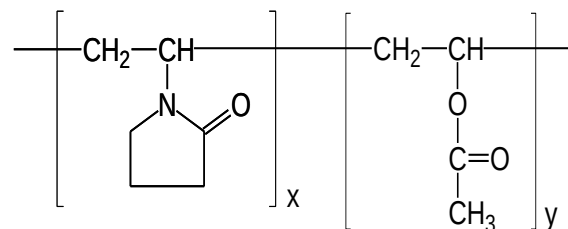
PVP/VA Series

VP/VA Copolymer
Vinyl Pyrrolidone & Vinyl Acetate



- Linear, **random** copolymers
- Available in range of VP / VA ratios
- Aqueous or alcoholic solutions (50%) or powder (S-630)
- Soluble in alcohols, ethers, aliphatic hydrocarbons esters, and ketones,
- Soluble in water when VP > 50%

PVP/VA Series

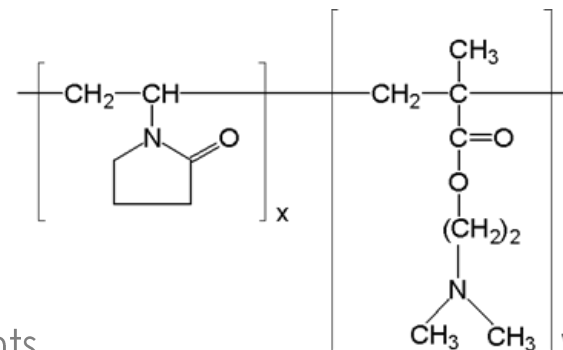


Polymer	%VP	Solvent	Products
E -735	70	(50%) Ethanol	Aerosol sprays
I – 735	70	(50%) IPA	Aerosol sprays
W-735	70	(50%) Water	Clear aqueous
S- 630	60	100% Powder	Aerosol sprays &
W-635	60	(50%) Water	Clear aqueous, alcohol free
E-635	60	(50%) Ethanol	Gels, Mousses
E or I 535	50	(50%) EtOH/IPA	Pump sprays/lotions
E or I 335	30	(50%) EtOH/IPA	Pump Sprays/lotions

Copolymer series

VP/Dimethylaminoethylmethacrylate (DMAEMA) Copolymer

- Pseudo-cationic, substantive to negatively charged surfaces
- Transparent, flexible glossy films
- Impart gloss, conditioning effect & smooth feel
- Compatible with nonionic thickeners
- Compatible with nonionic, cationic and amphoteric surfactants
- Soluble in ethanol and water; insoluble in acetone
- Gels, Mousses, Styling creams and lotions, Pomades, waxes, Blow-dry conditioners

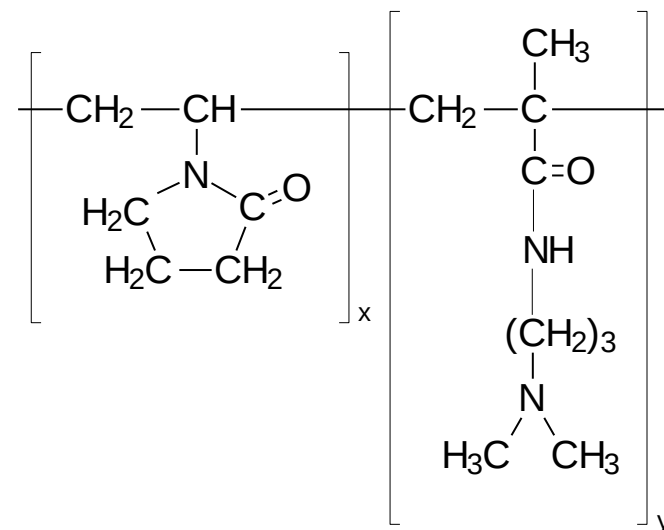


	Copolymer 845	Copolymer 937	Copolymer 958
pH (as is)	6.0 - 8.0	5.0 - 7.0	6.0 - 7.5
Viscosity (cps)	20,000 - 50,000	20,000 - 70,000	60,000 – 90,000
Mw Range	700,000 - 1,200,000	800,000 - 1,100,000	80,000 - 150,000
% Solids	20% in water	20% in water	50% in Ethanol
Tg (freeze dried)	172°C	104°C	100°C

Styleze CC-10

Vinyl Pyrrolidone/DiMethylAminoPropylMethAcrylamide Acrylates Copolymer
(DMAPMA)

pH (as is)	6.0 - 8.0
Viscosity cps	10,000 - 35,000
Mw Range	1.2 – 1.5 million
Solids level (%)	10
Tg	169°C

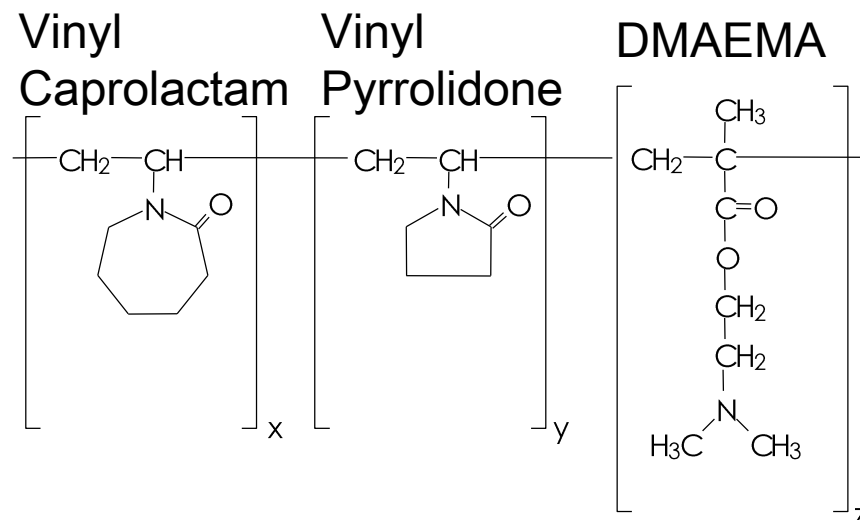


- 10% solution in water, highly viscous solution
- Pseudo-cationic, substantive to negatively charged surfaces
- Transparent, stiff & flexible glossy films
- Compatible with nonionic, cationic and amphoteric surfactants
- Thermal protectant – proven to >200°C
- Conditioning, styling, volumising polymer demonstrable volume at 1% in shampoos and conditioners
- Gels, Mousses, Styling creams and lotions, Pomades/Waxes/Pastes, Styling sprays non-aerosol

Advantage™ S, LC-A

Vinyl Caprolactam/VP/DiMethylAminoEthylMethAcrylate copolymer

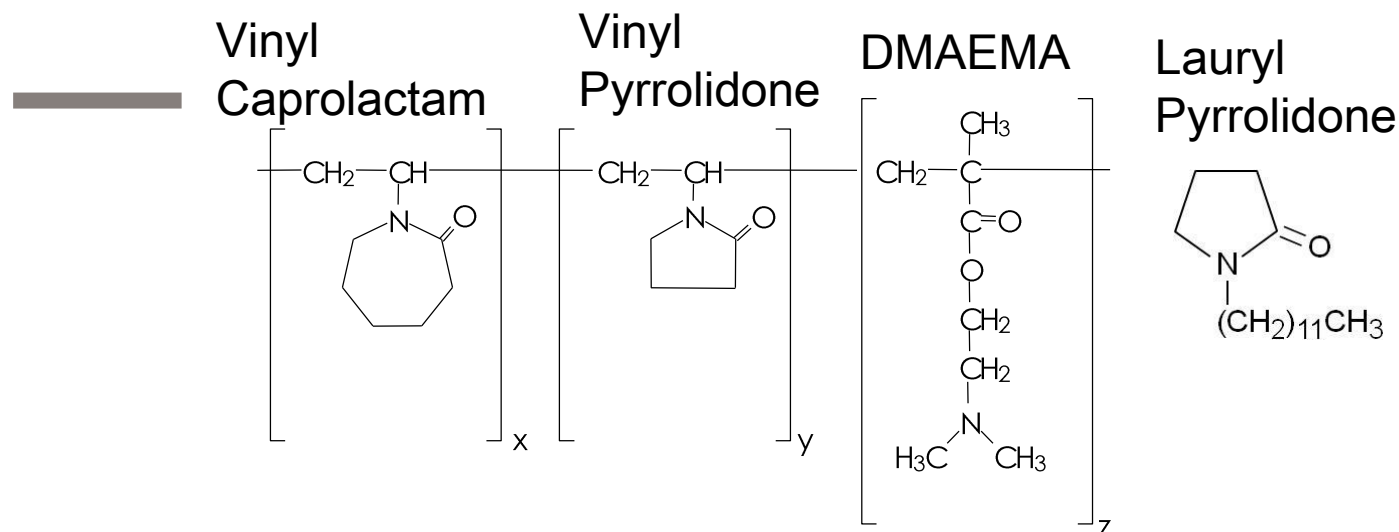
Appearance @ 25°C	White Powder
% Moisture	5.0 Maximum
Relative Viscosity @ 25°C	1.45 – 1.80
Appearance @ 25°C	Pale yellow liquid
% Solids	30%
% Ethanol	less than 1.2%
Relative Viscosity @ 25°C	1.45 – 1.80



- Supplied as 100% powder 30% Aqueous solution or 37% in ethanol
- Soluble in cold water, alcohols, glycols etc.
- Compatible with anionic, nonionic and cationic surfactants, silicones and thickeners.
- Tg - 152°C
- Cloud point ~ 40°C
- Increased hydrophobicity
- Give soft, glossy, transparent films (flexible – DMAEMA)
- Adhesive due to pseudo cationicity
- High interfacial activity
- Decreased tackiness due to VCap
- Advantage LC-A Aerosol and non-aerosol sprays
- Advantage S- Gels, Mousses, hair sprays, Pomades, waxes and pastes

Advantage™ LC-E

Vinyl Caprolactam/VP/Dimethylaminoethylmethacrylate copolymer (and) Lauryl Pyrrolidone



- Supplied 37% in ethanol
- Soluble in cold water, alcohols, glycols etc.
- Lauryl Pyrrolidone alters spreading characteristics and hence feel on hair.
- Tg - 152°C
- Cloud point ~ 40°C
- Increased hydrophobicity
- Give hard, glossy, transparent films
- Adhesive due to pseudo cationicity
- High activity at the interface
- Decreased water-solubility and tackiness due to Lauryl Pyrrolidone

Advantage® LC-E Vs LC-A and S

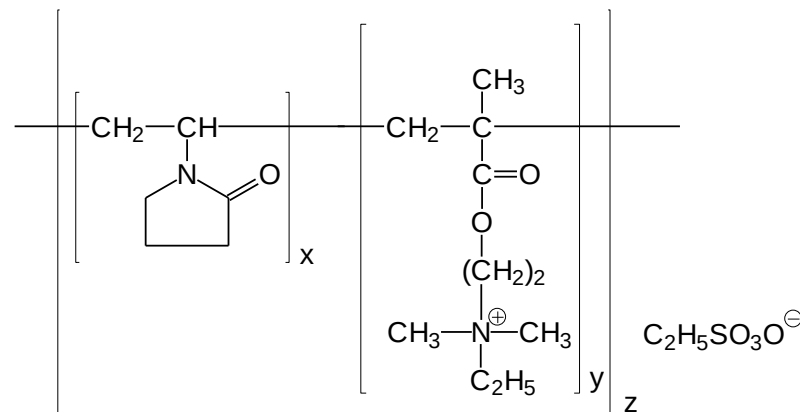
Advantage	S	LC-A	LC-E
Where to use	Alcohol-free styling, Low VOC sprays & gels	Pump & Aerosol sprays, soft feel mousses, gels, creams, lotions	Pump & Aerosol sprays with stiff feel.

Gafquat® 755N/440

Polyquaternium 11 (Quaternised VP/DMAEMA)

Gafquat	440	755N
Solvent	Ethanol	Water
pH	7.5-9.0	5.5 -7.0
Viscosity	30,000-	20,000-
cps	70,000	60,000
Counter ion	Sulfate	Sulfate
Link	Ester	Ester
% Solids	50	20
Approx Mw	100,000	1,000,000

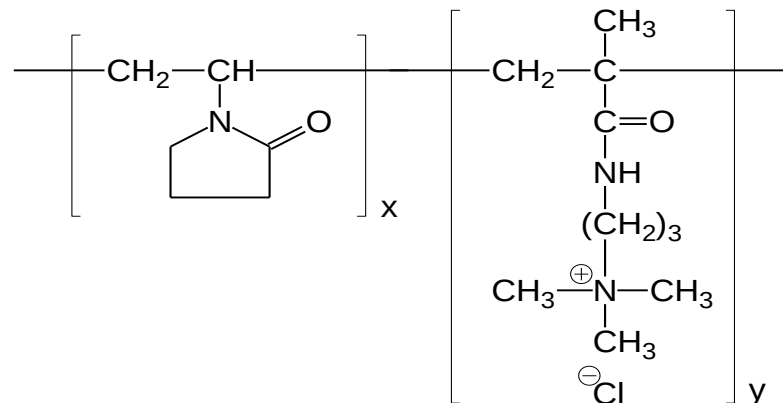
- Quaternised versions of Copolymer 958 and 937
- 755N stiff, 440 soft, transparent, glossy, tack- free, flexible films
- Cationic activity gives enhanced substantivity on skin & hair
- Widely used in aerosol mousse to provide styling & conditioning benefits.
- 755N provides thermo-mechanical protection benefit



Conditioneze NT-20, Polyquaternium 28

(VP/ MethAcrylamidopropylTrimethylAmmoniumChloride)

Solvent	Water
pH	5.0 - 8.0
Viscosity(cps)	50,000 - 125,000
Counter ion	Chloride
% Solids	20
Approx Mw	1,000,000



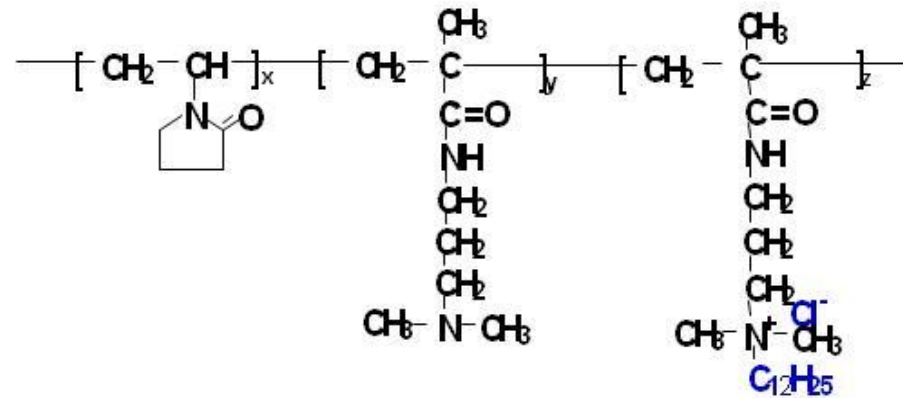
- Available as Gafquat® HS-100 or Conditioneze® NT-20
- Quaternised version of VP/DMAPMA chemistry
- Stiff, glossy, tack- free, flexible films
- More highly quaternised than Gafquats 734 & 755N
- Improved pH stability compared to PQ 11
- Appropriate for cost-conscious formulations

Styleze® W-17 Polyquaternium-55

(VP/DMAPMA/MAPLDMAC)

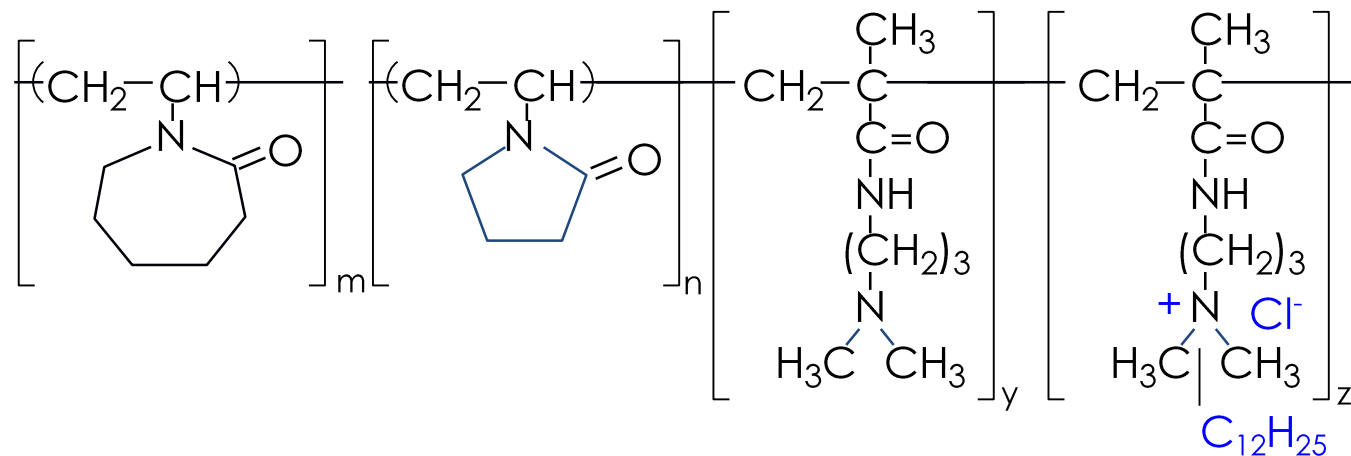
- Film forming & substantive
- Lauryl side-chains provide hydrophobic benefits
- Polymer-surfactant – reduces surface tension
- Foaming ability
- Forms elastic films
- Gives thermal protection
- High humidity resistance
- Colour Protection

- W-20, W-10 grades also available
- Random terpolymer
- 20% or 10% aqueous solution
- pH 3.5-5.0
- Viscosity 40,000-100,000 cPs
- Tg - 135°C
- Mw – 2.7×10^6



AquaStyle™ 300 and 300 AF

Polyquaternium 69



Vinyl Caprolactam
(VCL)

Vinyl Pyrrolidone
(VP)

N-(3-Dimethylaminopropyl)-
methacrylamide
(DMAPMA)

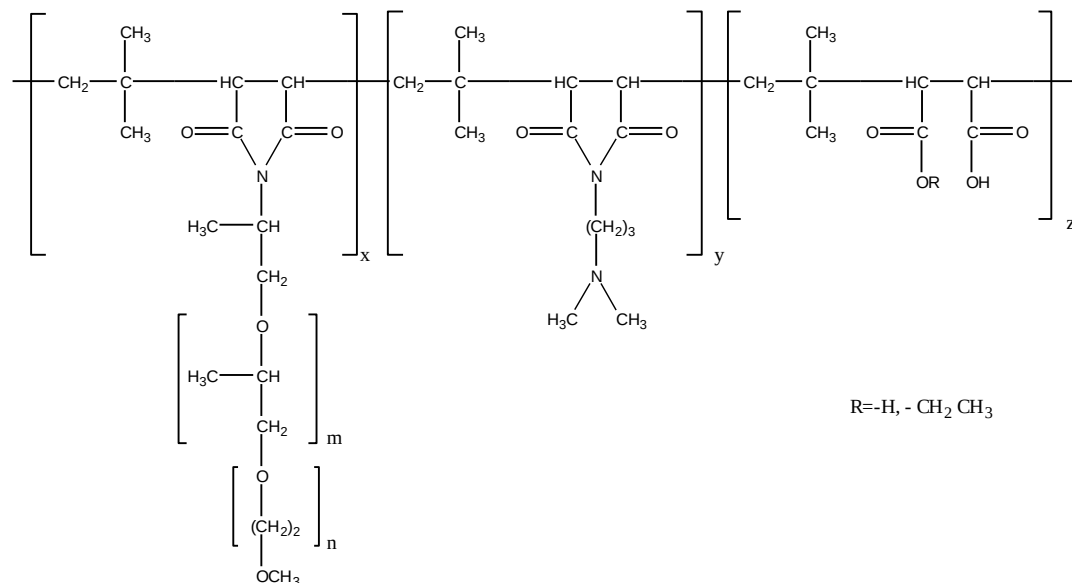
3-(Methacryloylamino)propyl-lauryl-
dimethyl-ammonium Chloride
(MAPLDAC)

- 30% Solids in 55% Water/15% Ethanol or 30% in water (AF grade)
- Mwt ~ 350,000
- Designed for clear gels
- Suitable for all styling products except aerosol hairspray
- Stiff, durable, lasting hold
- Elastic, humidity resistant films
- Enhanced shine
- Anti-frizz benefits

Aquaflex XL-30

Polyimide-1

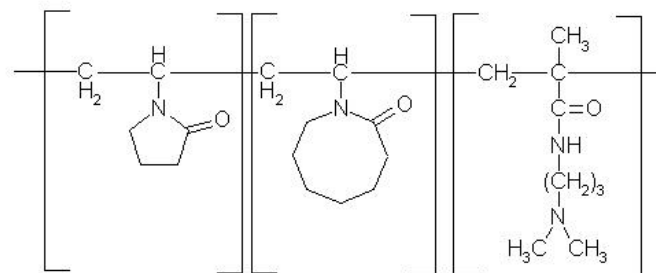
Isobutylene/ethoxy-propoxymaleate/dmaemaleate/butylmaleate



- Amphoteric polymer based on Isobutylene/Maleic Anhydride chemistry
- It was developed for Carbomer hair gels, but can be used in any type of styling application.
- Works best in combination with other polymers
- Soft flexible hold in Carbomer, stiff, flexible hold in Aculyn
- Excellent curl-boost, enhanced stiffness with Aquastyle 300
- Very low tack, smooth films
- Volumizing effect by root-lift, skin tightening effect in eye & face gels

Aquaflex[®] SF-40

VP/Vinylcaprolactam/DMAPA Acrylates

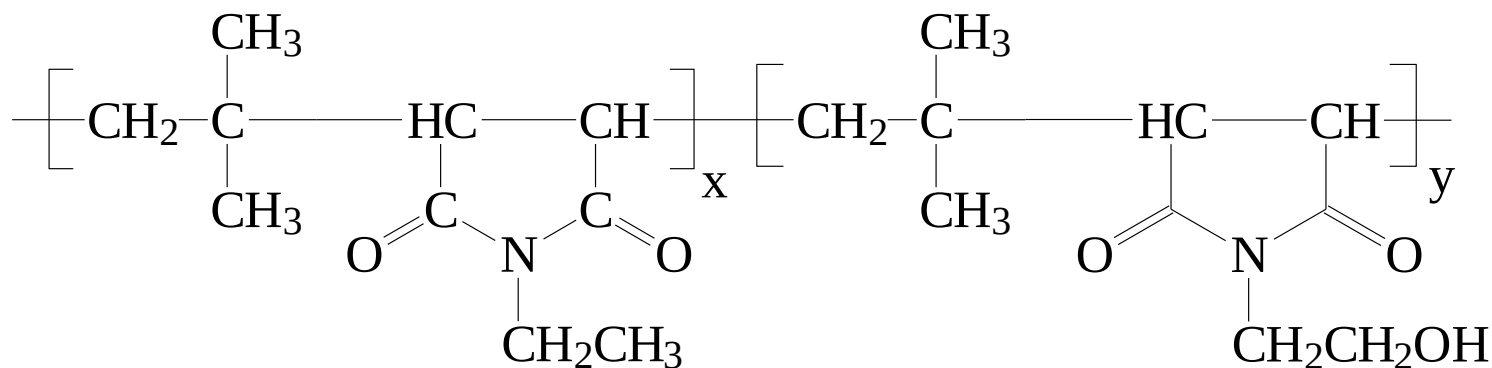


- Similar properties to Advantage polymers,
- Lower Tack,
- Lower Mwt, sprayable at higher solids.
- High Humidity Curl Retention at 85% after 4 hours at 26°C/90% RH.
- Yields flexible hold hair spray films
- T_g - 119°C
- Designed for low VOC hairsprays but can be used for all styling products.

Aquaflex FX-64

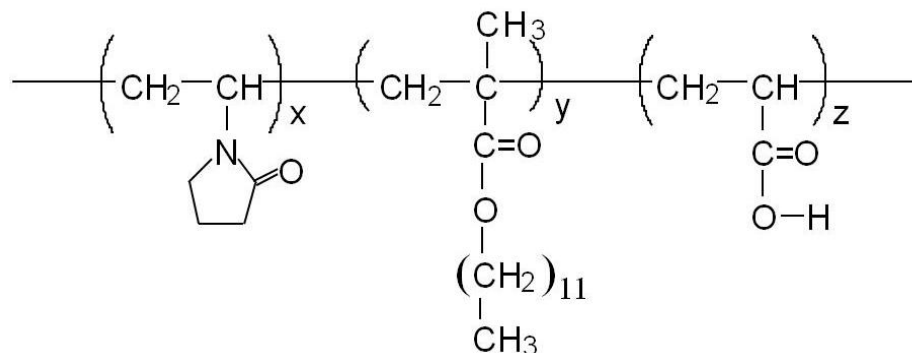
Isobutylene/Ethylmaleimide/ Hydroxyethylmaleimide Copolymer

- supplied in hydro-alcoholic solution
- low molecular weight suitable for low VOC products
- Very low P/B tolerance (~10%)
- Ideal for pump hairsprays and styling foams
- Stiff, yet flexible hold
- Low tack, shiny films.



Styleze™ 2000

VP/Acrylates/Lauryl Methacrylate Copolymer



- White powder
- Anionic terpolymer
- High molecular weight
- Insoluble in ethanol & water until neutralised for easy dispersion
- Mw – ~ 1,000,000
- PVP and Acrylate backbone with a hydrophobic pendant C₁₂ chain
- Smooth, hydrophobic films with excellent humidity resistance
- For non-aerosol styling only
- Thickens by association
- Typical use level 0.2 – 2.0%

Differentiation of ASI Polymers in Styling



	Main polymer properties					Application compatibility		
	Carbomer compatibility	Stiffness	Durability	HHCR	Substantivity/ Conditioning	Thermal Protection	Mechanical Protection	Color Protection
PVP								
VP/VA Copolymer								
Copolymer 845								
Copolymer 937								
Styleze CC 10						✓	✓	
Styleze W						✓		✓
Styleze 2000						✓	✓	
Aquaflex SF 40								
Advantage S								
Gafquat 755N						✓	✓	
Aquaflex XL 30								
Aquastyle 300/300AF								

hair care products and applications

PVP™ polymers

Application	Function
Styling and Fixative Products	Initial Styling , High Raspy feel, Stiffness, Tack & Sculpting increase with K value

PVP/VA™ polymers

Application	Function
Wide Range of Hair Styling Products	Flexible Styling, W types work in alcohol free systems

hair care products and applications

Gafquat™ polymers

Application	Function
Mousses, Spray*, Creams, Lotion	Flexible hold Styling with conditioning

Copolymer

Application	Function
Mouses, Spray, Gel, Creams, Lotion	Smooth elastic film, detangling

* Gafquat 440 only in pump sprays

hair care products and applications

Styleze™ styling polymers

Application	Function
Gels, Mousses, Styling and Fixative Products, Creams	Long-lasting Hold, Aesthetics, Thermal and Color Protection Conditioning effect

Gantrez™ polymers

Application	Function
Hair Sprays, Styling Mousses, Creams	High and Durable Hold and high shine, Fixative

hair care products and applications

Aquastyle™ Styling Polymers

Application	Function
Clear Gels, Creams, Mousses, and Spritzes	Versatile Styling, Anti-frizz, Shine, Long-lasting Hold, Styling

Acrylates

Application	Function
Conditioner, Styling and Fixative Products	Rheology Modifier, Aesthetics, Styling, Durable hold & shine Fixative

hair care products and applications

Aquaflex™ styling polymers

Application	Function
Clear Gels, Creams, Mousses, Sprays*	Volume Styling, Long-lasting flexible hold

Advantage™ polymers

Application	Function
Styling and Fixative Products	Strong Hold, Shine, Fixative

StyleFusion™ complex

Application	Function
Gel, Creams Mousses, Styling and Fixative Products	Durable hold, thermal protection, hair repair, Styling

* Aquaflex XL-30 only in pump sprays

styling product - classification



product formats



Styling polymers can support
all product formats

**Create excellent sensorial
effect and styling benefits**

Liquid Products

Technology: Liquid can be water free aqueous or aqueous/alcoholic solutions, with or without polymers

Application: Wet/damp or dry hair from bottle/spray bottle/dispenser. Applied to whole head or parts. Setting, smoothening, flat ironing, curl forming/defining.

Lotions

Low viscous
lotions



Oils

Higher viscous but still
fluid clear materials



Serum



Balm

Fluid creams



ingredient building blocks for liquids

Function	Ingredient
Performance ingredients	VP/VA S-630, PVP, Copolymer 845, Styleze W, Aquastyle 300, Advantage LCE, Aquastyle SH-100, other Acrylates fixatives
Benefit agents	Ceraphyl esters
Biofunctionals	Dynagen, Protectagen, Procataline, Chromafend, Capauxein
Thickener / gellant	Ashland 980, Ultrathix 20 and 21, Natrosol cellulose /N-Hance guar, all on low level 0.3%
Optical improvers	Microcapsules, Antara, Cerasynt
Others	All Ashland preservatives (e.g. Phenoxyethanol, Optiphen)
Emulsifiers	Ceteareth -25, -30, PEG-40 Hydrogenated castor oil, Laureth-23, Polysorbate 40-80
Solvents	Water, Ethanol, Glycerine, Propylene Glycol, Silicones, Oils

Gels

Technology: Gel base with or without fixative Polymers. Depending on Gelformer with or without yield point

Application: Wet/damp or dry hair from Jar, Tube dispenser. Applied to whole head or parts. For setting, forming, shaping, defining and restyling, shine enhancement, temporary straightening, antifrizz, Gel, Styling gel, Wet gel, Gel styler.



ingredient building blocks for gels

Function	Ingredient
Thickener/Gellant	Ashland 980, Ultrathix20 and 21, Natrosol (cellulosics) /N-Hance (guars) ★
Performance ingredients	PVP, VP/VA S 630, PVP, Copolymer 845, Styleze W, Aquastyle 300, Advantage LCE, Glucose, Aquastyle SH-100, other Acrylates fixatives ★
Optical improvers	Microcapsules ★
Others	Preservatives: Optiphen, (i.e. Phenoxyethanol & Caprylyl glycol) ★
Emulsifiers	Ceteareth -25, -30, PEG-40 Hydrogenated castor oil, Laureth-23, Polysorbate 40-80
Humectants	Glycerine, Propylen Glycol, Sorbitol, Butylene glycol

Creams

Technology: Emulsion with or without polymer forming, shaping, defining and restyling

Application: Wet/damp or dry hair from Jar, Tube dispenser. Applied to whole head or parts. For forming, shaping, defining and restyling, shine enhancement. Pomade, hair cream, styling cream



ingredient building blocks for creams

Function	Ingredient
Oils / waxes	Ceraphyl esters ★
Stabilizers	Ashland 980, Ultrathix20 and 21, Natrosol (cellulosics) /N-Hance (guars) ★
Performance ingredients	VP/VA S- 630, PVP, Copolymer 845, Styleze W and CC-10, Aquastyle 300 ★
Optical improvers	Microcapsules ★
Others	Preservatives: Optiphen (i.e. Phenoxyethanol & Caprylyl glycol) ★
Emulsifiers	Ceteareth -20, -25, -30, PEG 20-60 Hydrogenated Castor Oil, Triceteareth-4 Phosphate, Oleth-5 – 30, CTAC, BTAC
Humectants	Glycerine, Propylen Glycol, Sorbitol, Butylene glycol

leave-on technologies – wax

Technology Classic waxes: Water free melt of synthetic or natural wax and oil components. Can be reinforced with clay type materials like Kaolin, Hectorite, Bentonite.

Application: Dry hair from Jar, Tube dispenser or stick. Applied to whole head or parts Define hairstyle ,piece hair , give form and lift, can be restyled/reshaped. Hair wax, Wax, Waxstick



ingredient building blocks for classic waxes

Function	Ingredient
Oils / waxes	Ceraphyl esters, Antaron series ★
Performance ingredients	VP/VA S-630, PVP, Copolymer 845, Styleze W and CC-10, AquaStyle 300, Antaron™ V-220 polymer ★
Optical improvers	Colorants, (Pearlesence) Pigments
Reinforcement ingredients	Kaolin, Hectorites, Bentonites, (fumed) Silica
Emulsifiers* (to improve washout ability)	Ceteareth -20, -25, -30, PEG20-60 Hydrogenated Castor Oil, Triceteareth-4 Phosphate, Oleth-5 – 30,

leave-on technologies – gel wax

Technology: Microemulsion with or without polymer. Requires high amount of emulsifier compared to oilphase(3:1), emulsion temp. Above 80°C ,better 90°C. With polymer clarity may get lost.

Application: : Wet/damp or dry hair from Jar. Applied to whole head or parts. For forming, shaping , defining and restyling, shine enhancement, special shine effects. Gelwax , Pomade, Gel Styler, Shine wax



ingredient building blocks for gel waxes

Function	Ingredient
Oil / waxes	Ceraphyl esters ★
Performance ingredients	Advantage 4910, VP/VA S- 630, PVP, Copolymer 845, Styleze W and CC-10, AquaStyle 300 ★
Optical improvers	Microcapsules ★
Others	Preservatives: Phenoxyethanol, Benzyl alcohol ★
Emulsifiers	Ceteareth -20, -25, -30, PEG20-60 Hydrogenated Castor Oil, Triceteareth-4 Phosphate, Oleth-5 – 30
Humectants	Glycerine, Propylen Glycol, Sorbitol, Butylene Glycol.

leave-on technologies – cream gels

Technology: Gel base with dispersed or emulsified hydrophobic components as oils waxes or silicones

Application: Wet/damp or dry hair from Jar, Tube dispenser. Applied to whole head or parts. For forming, shaping , defining and restyling, shine enhancement, temporary straightening, antifrizz, creme gel, styling cream, anti frizz cream, curl cream, temporary straightener



VN DISCOUNTS



ingredient building blocks for cream gels

Function	Ingredient	
Thickener / gellant	Ashland 980, Ultrathix20 and 21, Natrosol (cellulosics) /N-Hance (guars)	★
Performance ingredients	VP/VA S-630, PVP, Copolymer 845, Styleze W and CC-10, AquaStyle 300, Advantage LCE, Aquastyle SH-100, other Acrylates fixatives	★
Oils / waxes	Silicones, Parafin oil, Octyldodecanol, IPM Capryl/Capric Glyceride, natural oils as Argan oil, Olive oil, Bee's wax, Carnauba wax, Lanolin, Microcrystalline wax, Ceraphyl Esters	★
Others	Preservatives: Phenoxyethanol, DMDM Hydantoin, Benzyl Alcohol	★
Optical improvers	Microcapsules,	★
Emulsifiers	Ceteareth – 20, -25, -30, PEG-40 Hydrogenated Castor Oil, Laureth-23, Polysorbate 40-80	
Humectants	Glycerine, Propylen Glycol, Sorbitol, Butylene Glycol	

leave-on technologies – cream waxes

Technology: Emulsion with or without polymer, texture can vary from very soft thin cream to high viscous pasty consistency.

Application: Mostly dry hair from Jar, Tube dispenser. Applied to whole head or parts. For forming, shaping, defining, shine enhancement, matte effects, restyleability, reshaping, wax, cream, creme wax, putty, moulding creme/putty/mud, gum.



ingredient building blocks for cream waxes

Function	Ingredient	
Oils / waxes	Ceraphyl esters	★
Performance ingredients	VP/VA S-630, PVP, Copolymer 845, Styleze W and CC-10, AquaStyle 300	★
Thickener / gellant	Ashland 980, Ultrathix20 and 21, Natrosol (cellulosics) /N-Hance (guars)	★
Optical improvers	Microcapsules	★
Others	Preservatives: Phenoxyethanol	★
Emulsifiers	Ceteareth -20, -25, -30, PEG20-60 Hydrogenated Castor Oil, Triceteareth-4 Phosphate, Oleth-5 – 30, CTAC, BTAC	

multiphase or phase transformation systems

Powder/ Powder to cream/Powder to liquid

Technology: Mix of solid powder components or mix of solubilized material which form with powder components as special silicas a powder like material which breaks under shear forming a liquid or a cream

Application: Usually apply to dry hair out of a sachet or sort of salt and pepper dispenser. Can be used to volumize , shape the hair. Can provide care effect when rinsing or shampooing



Pumpmousse (liquid to mousse)

Technology: Solution of Setting and conditioning ingredients forming a mousse when applied

Application: Apply to damp or wet hair to deliver basic set of hair or bring in volume and/or care benefits



Two or three phase sprays/gels

Technology: Mix of two phases aqueous and hydrophobe phases containing i.e. styling and care ingredients

Application: Apply to damp or wet hair to deliver basic set of hair or bring in volume and/or care benefits



ingredient building blocks for powder



Function	Ingredient
Performance ingredients	VP/VA S-630, PVP, Copolymer 845, Styleze W, AquaStyle 300, Aquaflex XL-30, Gafquat 755
Conditioning ingredients	N-Durhance A-1000, Conditioneze NT 20,
Preservatives	Optiphen
Powder components	Rice starch, Fumed silica , Clays
Solvents	Water, Glycerine, Butylene Glycol,

ingredient building blocks for pump mousse

Function	Ingredient
Performance ingredients	VP/VA S-630, PVP, Copolymer 845, Styleze W, AquaStyle 300, Aquaflex XL-30, Gafquat 755
Conditioning ingredients	N-Durhance A-1000, Conditioneze NT 20
Preservatives	Optiphen
Surfactants	Cetyltrimethylamonium Chloride, Cocoamidopropylbetaine
Solvents	Water, Glycerine, Proylen Glycol, Butylene Glycol

ingredient building blocks for two / multiphase products

Function	Ingredient
Performance ingredients	VP/VA S-630, PVP, Copolymer 845, Styleze W, AquaStyle 300, Aquaflex XL-30, Gafquat 755
Conditioning ingredients	N-Durhance A-1000, Conditioneze NT 20,
Preservatives	Optiphen
Hydrophobic solvents	Silicones, Isododecane (and other HC), Ceraphyl esters,
Hydrophilic solvents	Water, Glycerine, Butylene Glycol, Propylene Glycol



prototype selection



Styling hero technologies



Samples marked as Ashland styling hero technologies deliver new to the world benefits in product form , performance or appearance or bringing existing product categories to a new level resp. reinventing old/styling/hair care product categories



gel selection



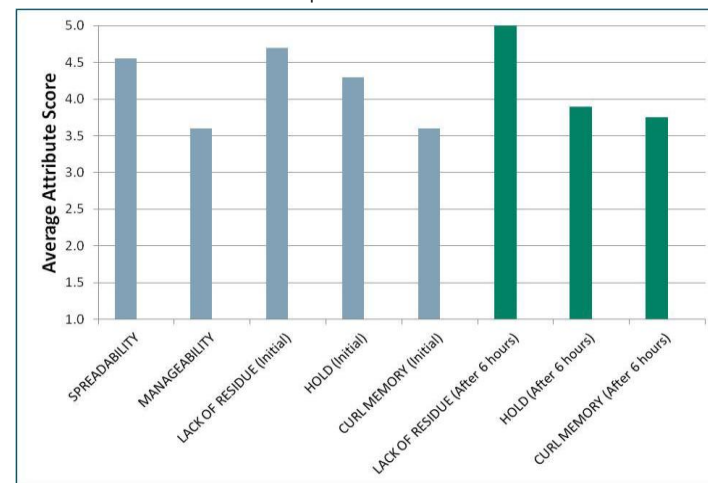
curl defining clear gel

Get beautiful definition and long-lasting elastic hold with this clear gel product. No crunchy feel and not sticky to touch. AquaStyle™ SH-100 polymer provides the desired all-day hold even in high humidity conditions. Ceraphyl™ 60 & Natrosol™ 250 HHR provides anti-static, detangling, and slip to hair. Non-flaking and tack-free, the gel is ideal for women with wavy or curly hair.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	55.83	Local
Versene™ NA	Disodium EDTA	0.10	Dow
Natrosol™ 250 HHR CS hydroxyethylcellulose	Hydroxyethylcellulose	0.25	Ashland
Phase B			
Deionized Water	Aqua	26.26	Local
Ashland™ 980 Carbomer	Carbomer	0.40	Ashland
Phase C			
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	3.34	Ashland
Phase D			
Optiphen™ MIT Ultra preservative	Methylisothiazolinone (and) Phenylpropanol (and) Propylene Glycol (and) Water	0.30	Ashland
Phase E			
Deionized Water	Aqua	10.00	Local
AMP-Ultra™ PC 2000	Aminomethyl Propanol	0.77	Dow
Ceraphyl™ 60 cationic solution	Quaternium-22	0.25	Ashland
Butylene Glycol	Butylene Glycol	2.00	Local
Glycerin	Glycerin	0.50	Local
Total		100.00	

Consumer Evaluation:

Formula tested on women panelists, n = 10



Alternative preservatives: 0.5% Optiphen™ + 0.1% Methylparaben

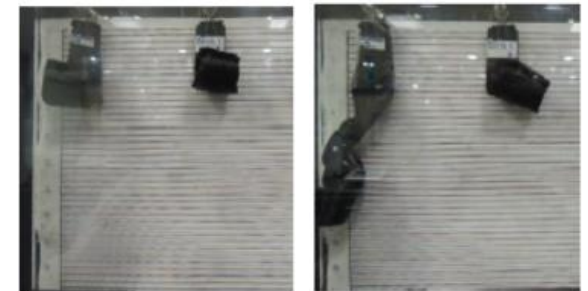
liquid texturizing gel

Formula enriched with essential minerals for healthy hair and natural looking style. AquaStyle™ SH-100 polymer in combination with Copolymer™ 845 delivers superior hold without residue, stiffness or stickiness. Fluid texture allows one to easily blend in the hair, for a natural look without residues.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	76.13	Local
Versene™ NA	Disodium EDTA	0.05	Dow
Ashland™ 980 Carbomer	Carbomer	0.10	Ashland
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	1.67	Ashland
TEA (99%)	Triethanolamine (99%)	0.35	DOW
Phase B			
Deionized Water	Aqua	5.00	Local
Copolymer 845 (20% Solution)	VP/Dimethylaminoethyl Methacrylate Copolymer	10.00	Ashland
Phase C			
Butylene Glycol	Butylene Glycol	3.00	Jeen
Sorbitol	Sorbitol	2.00	Jeen
Phase D			
Deionized Water	Aqua	1.00	Local
Magnesium Gluconate	Magnesium Gluconate	0.20	Merck
Liquid Germall™ Plus preservative	Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate	0.50	Ashland
Total		100.00	

Appearance:	Translucent Flowable Gel
pH: 7.0 +/- 0.5	7.10
Viscosity (spindle RV 4 & 10 RPM)	9540 cps

Left: Commercial Product
Right: Liquid Texturizing Gel



Initial

After 6 hrs

volumizing styling gel with long lasting hold

Formula# 11088-25A
Material# 879288

Volumizing Styling Gel with Long Lasting Hold maintains style for 24 hours due to the [Aquaflex™ XL-30 polymer](#), yet allows for easy finger or brush through. Hair feels smooth and natural when dry for a soft, touchable look.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	49.26	Local
Ashland™ 940 Carbomer (2% Premix)	Carbomer	25.00	Ashland
Liquid Germall™ Plus preservative	Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate	0.50	Ashland
Versene™ NA	Disodium EDTA	0.05	Dow
TEA 99%	Triethanolamine 99%	0.26	DOW
Phase B			
Deionized Water	Aqua	18.00	Local
Aquaflex™ XL-30 polymer	Polyimide-1	6.67	Ashland
TEA 99%	Triethanolamine 99%	0.26	DOW
Total		100.00	

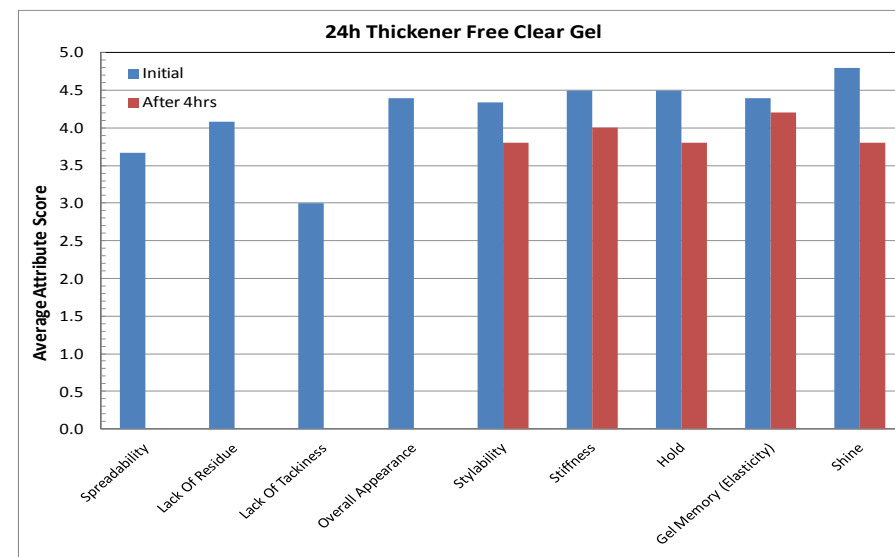
24hr thickener free crystal clear gel

styling
hero

Formula# 12464-1306
Material# 858483

AquaStyle™ SH-100 polymer provides both hold and thickening benefit to the formulation, excellent spread ability, with no residue on hair, and easy to apply. Addition of PVP K-90 solution to the formulation results in a tacky feel and increased stiffness and good shine on hair. Style that lasts all day long even under high humidity! The unique polymer combination does not need any thickening agent.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	68.38	Local
Versene™ NA	Disodium EDTA	0.10	Dow
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	6.67	Ashland
Belsil® DMC 6031	PEG/PPG-25/25 Dimethicone	0.35	Wacker
Phase B			
Optiphen™ 200 preservative	Phenoxyethanol (and) Caprylyl Glycol	0.85	Ashland
Phase C			
Deionized Water	Aqua	10.00	Local
AMP-Ultra™ PC 2000	Aminomethyl Propanol	0.65	DOW
Glycerin	Glycerin	3.00	Local
Phase D			
PVP K-90 solution	PVP	10.00	Ashland
Total		100.00	

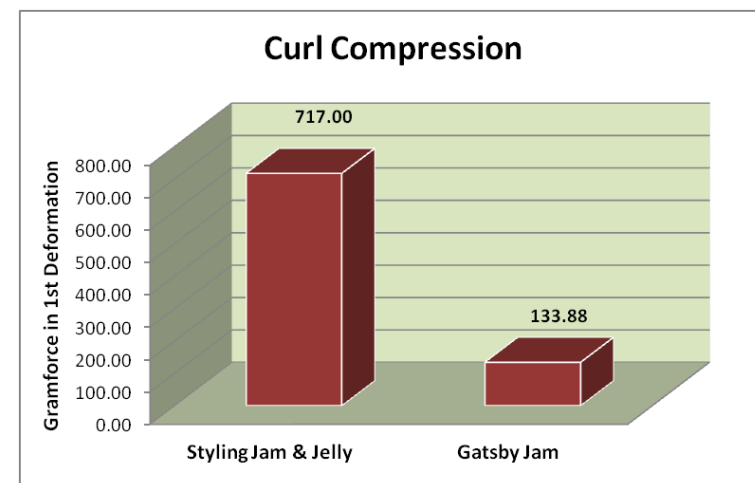


Formula# 12464-103.6
Material# 858483

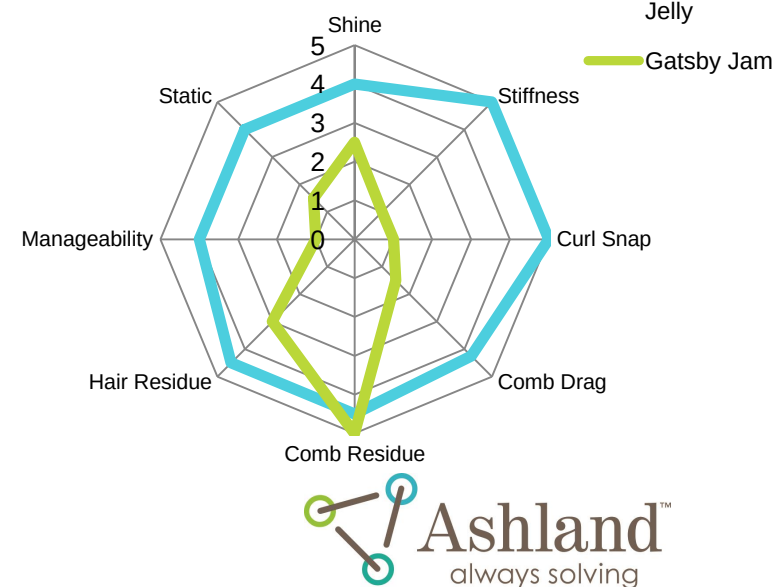
natural hold jam and jelly

It emulsifies easily with water hence gives better spread ability and easy to apply on hair, Very stiff even after 6 hrs of application, Restyle ability is very good. Can style very easily after applying little water, No flaking or residue on hair, Shiny hair after application. The unique structure is achieved by mixing cellulose materials with Ashland carbomer. The polymer **Blanose CMC7HF**, **PVP K 90 powder** and **Advantage™ PG 30** deliver the mentioned excellent styling properties.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	34.06	Local
Disodium EDTA	Disodium EDTA	0.05	Local
Ashland™ 980 Carbomer	Carbomer	0.50	Ashland
Phase B			
Deionized Water	Aqua	35.00	Local
Propylene Glycol	Propylene Glycol	3.00	Merck
Blanose™ CMC7HF	Carboxymethyl Cellulose	0.25	Ashland
Benecel™ K100 HPMC	Hydroxypropyl Methylcellulose	0.25	Ashland
Phase C			
TEA	Triethanolamine	0.60	Merck
Phase D			
Deionized Water	Aqua	5.00	Local
PVP K-90 powder	PVP	1.00	Ashland
Phase E			
Alcohol	Ethanol	10.00	Local
Advantage™ PG30	Methacryloyl Ethyl Betaine/Acrylates Copolymer	6.67	Ashland
Optiphen™ 200 preservative	Phenoxyethanol (and) Caprylyl Glycol	1.00	Ashland
Phase F			
Xiameter® OFX-0193 Fluid	PEG-12 Dimethicone	0.50	Dow Corning
Ponceau SX (0.1% sol)	CI 14700	1.12	Koel Colours
Dynagen™ biofunctional	Water (aqua) (and) Glycerin (and) Hydrolyzed Yeast Protein	1.00	Ashland
Total		100.00	



Hair Characteristics by Sensory Evaluation



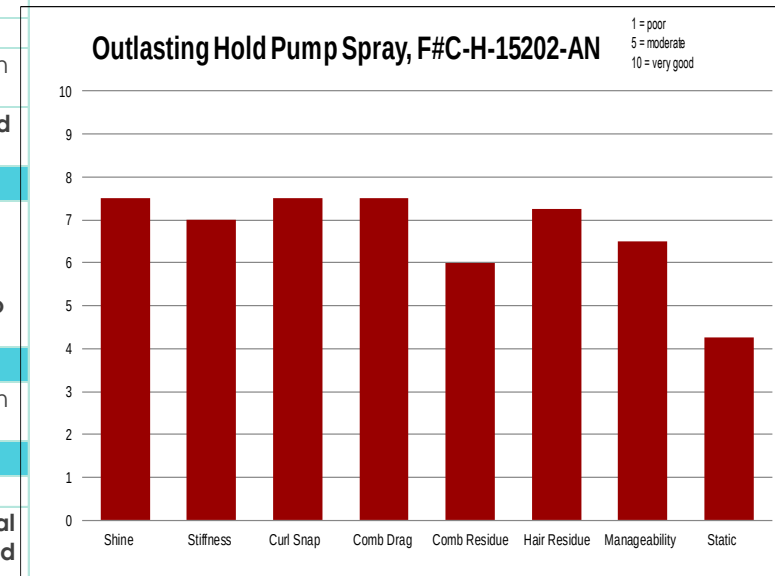
outlasting hold pump spray gel

Crystal clear pump spray gel that provide long-lasting hold thanks to the mix of AquaStyle™ SH-100 and Advantage™ S polymer. Spray product on damp hair. Spread from root to tip.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier	
Phase A				
Deionized Water	Aqua	84.43	Local	Solvent
Versene™ NA	Disodium EDTA	0.10	Dow	Chelant
Glycerin	Glycerin	1.00	Local	Moisturizer
AMP-Ultra™ PC 2000, 20% Aq sol'n	Aminomethyl Propanol	0.20	Dow	Neutralization agent
UltraThix™ P-100 polymer	Acrylic Acid/VP Crosspolymer	0.20	Ashland	Thickener and Fixative
Phase B				
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	1.67	Ashland	Adds lasting hold and additional thickening to formula
Phase C				
AMP-Ultra™ PC 2000, 20% Aq sol'n	Aminomethyl Propanol	1.40	Dow	Neutralization agent
Phase D				
Deionized Water	Aqua	10.00	Local	Solvent
Advantage™ S polymer	Vinyl Caprolactam/VP/Dimethylaminoethyl Methacrylate Copolymer	0.50	Ashland	Add additional crispiness/hold
Liquid Germall™ Plus preservative	Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate	0.50	Ashland	Preservative
Total		100.00		

Hair Tress Evaluation

Trained panel evaluation (n=5)





cream gel selection



hair pudding

styling
hero

Formula# 12464-243.3

Material# 863216

Hair Pudding is a multifunctional prototype that delivers styling, conditioning, and repair. Its yield value and other rheological attributes are designed to deliver a rich velvety texture that is easy to pick up and worked into the hands and hair during application. **Style Fusion™ complex 1** repairs split ends, smooths the cuticle, and assists in styling attributes such as curl definition. **N-Hance™ HP-40S** improves wet detangling and ease of combing as well as imparting shine and anti-frizz. These properties are especially appropriate for processed Caucasian type hair.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	72.90	Local
N-Hance™ HP-40S	Hydroxypropyl Guar	0.70	Ashland
Methylparaben NF	Methylparaben	0.10	Ashland
Phase B			
Polyquaternium- 37	Polyquaternium 37 (and) Propylene Glycol Dicaprylate/Dicaprate (and) PPG-1 Trideceth-6	2.20	Local
Phase C			
Style Fusion™ complex 1	Polyquaternium-28 (and) PVM/MA Copolymer	20.00	Ashland
Phase D			
Jeesilc® 110	Dimethicone	1.00	Jeen Intl.
KF-995	Cyclopentasiloxane	1.00	Shin-Etsu
Optiphen™ preservative	Phenoxyethanol (and) Caprylyl Glycol	1.00	Ashland
Robertet R16-3909	Parfum	0.30	Robertet
0.1% Aq sol'n FD&C Yellow #5	Yellow 5 (C.I. 19140)	0.80	Pyram Dyes
Total		100.00	



Results show that the Hair Pudding formulation mends split end fibers



cream selection



shape and define curl cream

Formula# # Z342-76D

Nice to touch curls which last. The combination of AquaStyle™ SH-100 polymer, Advantage™ 2VC polymer and Ultrathix™ 21 polymer helps to form the curls and keep it in shape. Caring components deliver the smooth feel of the curls

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	a.d.100%	Local
Disodium EDTA	Ethylenediaminetetraacetic acid disodium salt dihydrate	0.05	Fluka
UltraThix™ 21 polymer	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.60	Ashland
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	3.33	Ashland
Phase B			
Deionized Water	Aqua	40.00	Local
AMP-ULTRA® PC (99%)	2-Amino-2-methyl-1-propanol	0.30	Angus
Advantage™ 2VC-P polymer	VA/Crotonates/Vinyl Neodecanoate Copolymer	1.00	Ashland
XIAMETER® PMX-200 Silicone Fluid, 500 cSt	Polydimethylsiloxane polymer, 500 cSt	2.00	XIAMETER
XIAMETER® PMX-1503 Fluid	Dimethicone (and) Dimethiconol	2.00	XIAMETER
Kolliphor® RH 40	PEG-40 Hydrogenated Castor Oil	0.80	Sigma
Optiphen™ 200 preservative	2-Phenoxyethanol (and) Caprylyl Glycol	1.20	Ashland
AMP-ULTRA PC (99%)	2-Amino-2-methyl-1-propanol	0.70	Angus
Total		100.00	

leave-in combing cream

Formula# 12464-217.6E
Material# 883156

This leave-in combing cream formulated with **Style Fusion™ complex 3** delivers long lasting styling and conditioning to curly, frizzy, and difficult to manage hair. Promotes detangling and ease of combing in wet state. Curls stay defined, shiny, and smooth with an all day natural look.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	58.23	Local
Glycerin	Glycerin	2.00	Local
Methylparaben NF	Methylparaben	0.10	Ashland
Conditioneaze™ 37(E)-PC cationic solution	Polyquaternium-37 (and) Propylene Glycol Dicaprylate/Dicaprate (and) PPG-1 Trideceth-6	2.00	Ashland
Phase B			
Style Fusion™ complex 3	Guar Hydroxypropyltrimonium Chloride (and) Acrylates Copolymer	30.00	Ashland
Jeequat® CT-29*	Cetyl Trimethyl Ammonium Chloride	0.67	Jeen Intl.
Phase C			
ProLipid™ 151 lamellar gel	Glyceryl Stearate (and) Cetyl Alcohol (and) Stearyl Alcohol (and) Behenyl Alcohol (and) Palmitic Acid (and) Stearic Acid (and) Hydroxyethyl Cetearamidopropylidimonium Chloride	2.00	Ashland
Cutissential™ Behenyl 18-MEA*	Behentrimonium Methosulfate (and) C10-40 Isoalkylamidopropylethyldimonium Ethosulfate (and) Cetyl Alcohol	1.00	Croda
Chevron Petrolatum Snow White*	Petrolatum	1.00	Chevron Products
Drakeol® 35 MIN Oil USP*	Mineral Oil	2.00	Penreco
Phase D			
Optiphen™ preservative	Phenoxyethanol (and) Caprylyl Glycol	1.00	Ashland
Total		100.00	

*Trademark owned by a third party.



temporary straightening & anti-fizz cream

Formula# # Z342-76D

Turn your curls into straight hair for a big night out. Thanks to combination of AquaStyle™ SH-100 polymer, Advantage™ 2VC-P polymer and Ultrathix™ 21 polymer your hair is straightened for a day or night while blow dried. The silicone mix provides the necessary lubrication and smooth feel during and after the process.

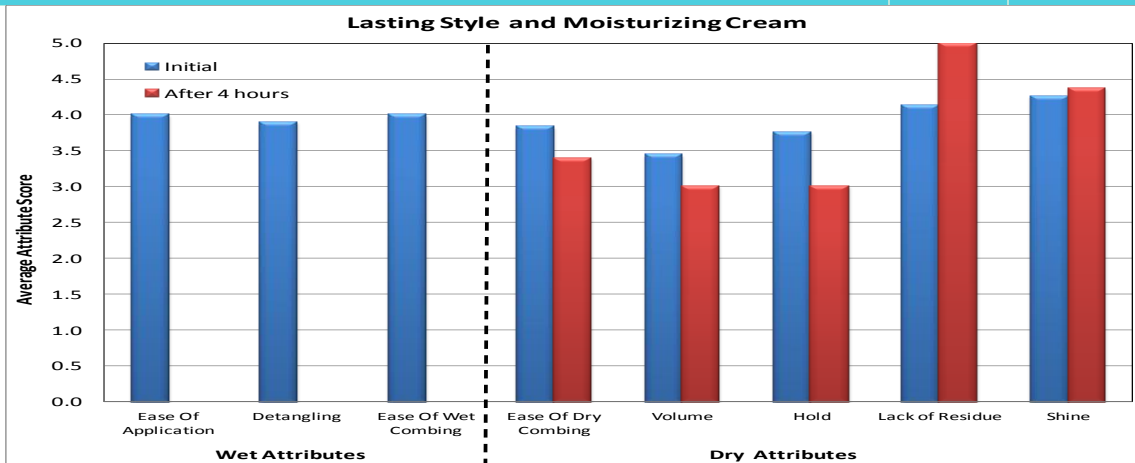
Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	a.d.100%	Local
Disodium EDTA	Ethylenediaminetetraacetic acid disodium salt dihydrate	0.05	Fluka
UltraThix™ 21 polymer	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.60	Ashland
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	3.33	Ashland
Phase B			
Deionized Water	Aqua	40.00	Local
AMP-ULTRA® PC (99%)	2-Amino-2-methyl-1-propanol	0.30	Angus
Advantage™ 2VC-P polymer	VA/Crotonates/Vinyl Neodecanoate Copolymer	1.00	Ashland
XIAMETER® PMX-200 Silicone Fluid, 500 cSt	Polydimethylsiloxane polymer, 500 cSt	6.00	XIAMETER
XIAMETER® PMX-1503 Fluid	Dimethicone (and) Dimethiconol	8.00	XIAMETER
Kolliphor® RH 40	PEG-40 Hydrogenated Castor Oil	0.80	Sigma
Optiphen™ 200 preservative	2-Phenoxyethanol (and) Caprylyl Glycol	1.20	Ashland
AMP-ULTRA® PC (99%)	2-Amino-2-methyl-1-propanol	0.70	Angus
Total		100.00	

lasting style and moisturizing cream

Formula# 12460-131.6

Material# 860230

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	78.63	Local
Butylene Glycol	Butylene Glycol	2.00	Local
Optiphen™ HD	1,2-Hexanediol	1.00	Ashland
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	6.67	Ashland
AMP-Ultra™ PC 2000	Aminomethyl Propanol	0.40	Dow
Phase B			
Arlacel™ 165	Glyceryl Stearate (and) PEG-100 Stearate	0.25	Croda
Cutissential™ Behenyl 18-MEA	Behentrimonium methosulfate (and) C10-40 isoalkylamidopropylethyldimonium ethosulfate (and) cetyl alcohol	0.80	Croda
Crodazosoft™ DBQ	Quaternium-91 (and) Cetrimonium Methosulfate (and) Cetearyl Alcohol	0.40	Croda
Ceraphyl™ SLK ester	Isodecyl Neopentanoate	0.70	Ashland
Ceraphyl™ 847 ester	Octyldodecyl Stearoyl Stearate	1.00	Ashland
Phase C			
Jeesilc CPS-312	Cyclomethicone	3.00	Jeen
Jeesilc 110	Dimethicone	1.00	Jeen
Escalol™ 557 UV filter	Ethylhexyl Methoxycinnamate	0.25	Ashland
Optiphen™ preservative	Phenoxyethanol (and) Caprylyl Glycol	1.25	Ashland
D&C Violet #2	Violet #2	0.00015	Pylam
Phase D			
Gafquat™ 755N-O polymer	Polyquaternium-11	2.50	Ashland
AMP-Ultra™ PC 2000	Aminomethyl Propanol	0.15	Dow
Total		100.00	



Transform dry, damaged hair to a moisturized, shiny look. Hair feels great within minutes! Ideal for daily use. **Gafquat™ 755N-O polymer** provides protection against brush and blow-dry while **Ceraphyl™ esters** infuses the required moisturization. **AquaStyle™ SH-100 polymer** provides all-day hold and emulsion stability. Reducing the concentration of neutralizer, one can transform a cream into a lotion. Resulting hair is manageable, soft, and styled.



wax selection



texturizing liquid wax

Formula# # 12594-10.5
Material# 875300

Unique liquid form emulsifies and allows the user to spread product easily through the hair delivering powerful hold, texture, and re-stylability. AquaStyle™ SH-100 polymer stabilizes the formulation and delivers in combination with Advantage™ 4910 fixative polymer the hold properties. The mix of Ceraphyl™ esters combined with the wax components deliver the right texture and ensure re-styleability.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	53.41	Local
Butylene Glycol	Butylene Glycol	5.00	Local
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	3.42	Ashland
AMP-Ultra™ PC 2000	Aminomethyl Propanol	0.36	Angus
Phase B			
Deionized Water	Aqua	20.00	Local
AMP-Ultra™ PC 2000	Aminomethyl Propanol	0.20	Angus
Advantage™ 4910 fixative polymer	Octylacrylamide/Acrylates/Butylaminoethyl Methacrylate Copolymer	1.00	Ashland
Phase C			
Refined Candelilla Wax	Candelilla Wax	6.00	Frank B. Ross
Refined #1 Yellow Carnauba Wax	Carnauba Wax	2.00	Frank B. Ross
Arlacel™ 165	Glyceryl Stearate (and) PEG-100 Stearate	2.00	Croda
Ceraphyl™ SLK ester	Isodecyl Neopentanoate	2.00	Ashland
Ceraphyl™ 847 ester	Octyldodecyl Stearoyl Stearate	3.50	Ashland
Methylparaben NF	Methylparaben	0.10	Ashland
Phase D			
Optiphen PO™ preservative	Phenoxyethanol	1.00	Ashland
Tea Tree Oil	Melaleuca Alternifolia (Tea Tree) Leaf Oil	0.10	Jeen Intl.
Total		100.00	

Appearance: Beige flowable (liquid) wax

pH: 7.1 ± 0.2

Viscosity: 10,000 – 20,000 cps (Brookfield RVT, Spindle T-F @ 10 RPM, 1 min @ 25°C, helipath)



matte wax

Formula# # 12594-10.8
Material# 884617

This unique hair wax is formulated with a combination of AquaStyle™ SH-100 polymer and Advantage™ 4910 fixative polymer to provide all day strong hold with restylability. The Ceraphyl's impart a smooth skin feel while Natrosol™ 250 HHR PC helps build body. Kaolin is used to provide a matte finish.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	34.32	Local
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	3.33	Ashland
AMP-Ultra™ PC 2000*	Aminomethyl Propanol	0.15	Dow
Butylene Glycol	Butylene Glycol	6.00	Local
Natrosol™ 250 HHR CS hydroxyethylcellulose	Hydroxyethylcellulose	0.50	Ashland
2457 Colloidal Kaolin, USP*	Kaolin	1.00	Brenntag
Phase B			
Deionized Water	Aqua	20.00	Local
AMP-Ultra™ PC 2000*	Aminomethyl Propanol	0.20	Dow
Advantage™ 4910 fixative polymer	Octylacrylamide/Acrylates/Butylaminoethyl Methacrylate Copolymer	1.00	Ashland
Phase C			
Refined Candelilla Wax*	Candelilla Wax	7.00	Frank B. Ross
Refined #1 Yellow Carnauba Wax*	Carnauba Wax	5.00	Frank B. Ross
ProLipid™ 141 lamellar gel	Glyceryl Stearate (and) Behenyl Alcohol (and) Palmitic Acid (and) Stearic Acid (and) Lecithin (and) Lauryl Alcohol (and) Myristyl Alcohol (and) Cetyl Alcohol	2.00	Ashland
Cerasynt™ 945 stearate ester	Glyceryl Stearate (and) Laureth-23	2.00	Ashland
Ceraphyl™ 847 ester	Octyldodecyl Stearoyl Stearate	6.00	Ashland
Drakeol® 35 MIN OIL USP *	Mineral Oil	10.00	Penreco
Methylparaben NF	Methylparaben	0.20	Ashland
Phase D			
Robertet R16-3915*	Parfum	0.20	Robertet
Optiphen™ 200 preservative	Phenoxyethanol (and) Caprylyl Glycol	1.00	Ashland
AMP-Ultra™ PC 2000*	Aminomethyl Propanol	0.10	Dow
Total		100.00	

*Trademark owned by a third party.

tough styling wax

Formula# # 12462-58.1
Material# 842644

AquaStyle™ 300 AF polymer * provides all-day hold resulting in extreme stiff to a smooth flexible hold. The polymer also effectively reduces frizz while delivering shine to hair. **PVP K-90 solution** contributes to the hold and shine of the formulation. **UltraThix™ P-100** rheology modifier helps in building rheology while contributing to the hold. The mix of **Ceraphyl** esters with Ashland emulsifiers help to tailor wax consistency and support the re-stylability properties of the wax.

Ingredients (Trade Name)	INCI Name	%w/w	Supplier
Phase A			
Deionized Water	Aqua	42.78	Local
Butylene Glycol	Butylene Glycol	7.00	Local
Propylene Glycol	Propylene Glycol	3.00	Local
UltraThix™ P-100 polymer	Acrylic Acid/VP Crosspolymer	0.25	Ashland
Tealan 99%	Triethanolamine	0.25	Rita
Phase B			
White Beeswax	Beeswax	6.00	Frank B. Ross
Ozokerite Wax SP-1025	Ozokerite Wax	6.00	Strahl & Pitsch
Carnauba Wax#1	Copernicia Cerifera (Carnauba) Wax	1.00	Frank B. Ross
Cerasynt™ SD stearate ester	Glyceryl Stearate	2.00	Ashland
Ritabate 60	Polysobate 60	1.50	Rita
Emulsynt™ GDL ester	Glyceryl Dilaurate	4.00	Ashland
Ceraphyl™ 368 ester	Ethylhexyl Palmitate	10.00	Ashland
Ceraphyl™ SLK ester	Isodecyl Neopentanoate	4.00	Ashland
Phase C			
AquaStyle™ 300 AF polymer	Polyquaternium-69	6.67	Ashland
PVP K-90 solution	PVP	4.55	Ashland
LiquaPar™ Optima preservative	Phenoxyethanol (and) Methylparaben (and) Isopropylparaben (and) Isobutylparaben (and) Butylparaben	1.00	Ashland
Total		100.00	

IMPORTANT NOTE

* AquaStyle™ 300 AF polymer not to promote in EU - MIT preservative not allowed to sell



extreme styling wax

Formula# # 12462-58.2
Material# 842643

AquaStyle™ 300 AF polymer * provides all-day hold resulting in extreme stiff to a smooth flexible hold. The polymer also effectively reduces frizz while delivering shine to hair. PVP K-90 solution contributes to the hold and shine of the formulation. UltraThix™ P-100 rheology modifier helps in building rheology while contributing to the hold. The mix of Ceraphyl esters with Ashland emulsifiers help to tailor wax consistency and support the re-stylability properties of the wax.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	36.78	Local
Butylene Glycol	Butylene Glycol	7.00	Local
Propylene Glycol	Propylene Glycol	3.00	Local
UltraThix™ P-100 polymer	Acrylic Acid/VP Crosspolymer	0.25	Ashland
Tealan 99%	Triethanolamine	0.25	Rita
Phase B			
White Beeswax	Beeswax	6.00	Frank B. Ross
Ozokerite Wax SP-1025	Ozokerite Wax	10.00	Strahl & Pitsch
Carnauba Wax# 1	Copernicia Cerifera (Carnauba Wax)	3.00	Frank B. Ross
Cerasynt™ SD stearate ester	Glyceryl Stearate	2.00	Ashland
Ritabate 60	Polysobate 60	1.50	Rita
Emulsynt™ GDL ester	Glyceryl Dilaurate	4.00	Ashland
Ceraphyl™ 368 ester	Ethylhexyl Palmitate	10.00	Ashland
Ceraphyl™ SLK ester	Isodecyl Neopentanoate	4.00	Ashland
Phase C			
AquaStyle™ 300 AF polymer	Polyquaternium-69	6.67	Ashland
PVP K-90 solution	PVP	4.55	Ashland
LiquaPar™ Optima preservative	Phenoxyethanol (and) Methylparaben (and) Isopropylparaben (and) Isobutylparaben (and) Butylparaben	1.00	Ashland
Total		100.00	

IMPORTANT NOTE

* AquaStyle™ 300 AF polymer not to promote in EU - MIT preservative not allowed to sell



rework it

Formula# # 12267-125A

Material# 848423

A novel wax stick containing PVP/VA S-630 and Ganex™ V-220 polymer imparts a strong durable hold throughout the day. In addition this formulation's unique format enables ease of use and ability to texturize and manipulate hair to create different styles. Use it to eliminate fly-away and frizzy hair. The Ashland styling polymer mix deliver improved styling properties and improve wash out ability.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Snow PET USP	Petrolatum	50.00	Rita
Microcrystalline Wax (W1275)	Microcrystalline Wax	18.00	Frank B. Ross
Beeswax Yellow Refined	Beeswax	20.00	Frank B. Ross
Ganex™ V-220 polymer	VP/Eicosene Copolymer	4.00	Ashland
Phase B			
Propylene Glycol	Propylene Glycol	3.00	Local
PVP/VA S-630	VP/VA Copolymer	2.00	Ashland
Phase C			
Ceraphyl™ 41 ester	C12-15 Alkyl Lactate	2.00	Ashland
Optiphen™ preservative	Phenoxyethanol (and) Capryly Glycol	1.00	Ashland
Total		100.00	

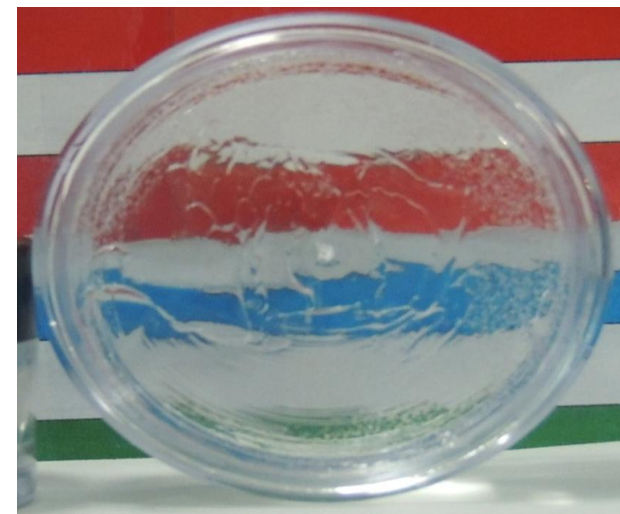


shine and hard hold gel wax

Formula# # M100-1020

The “clear” Hard Hold Gel wax emulsifies easily in hands with improved spread ability. It delivers good stiffness and re-styleability compared to benchmarks. Use it to create classic, slicked back looks or spikes with shine and control for any hair type.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Polyethylene Glycol 400	PEG-8	7.00	Merck
Ceteth 25	Ceteareth-25	30.00	TINCI
PEG 150 Distearate	PEG-150 Distearate	1.00	Croda
Phase B			
Emulsogen® HCO 040	PEG-40 Hydrogenated Castor Oil	3.00	Clariant
Ceraphyl™ 230 ester	Diisopropyl Adipate	3.00	Ashland
Phase C			
Deionized Water	Aqua	52.90	Local
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	2.00	Ashland
TEA	Triethanolamine	0.60	Merck
Liquid Germall™ Plus preservative	Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate	0.50	Ashland
Total		100.00	





cream wax selection

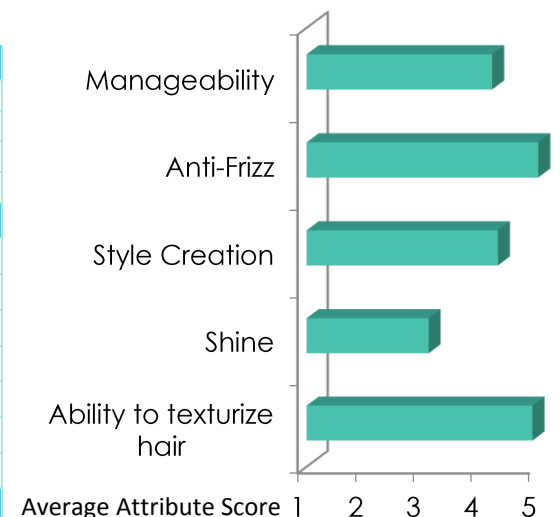


sculpting power wax

Formula# # 12460-41
Material# 842598

Cream wax that can create short, extreme styles resulting in fullness and control to hair or one that gives style, body and volume to longer hair. **AquaStyle™ 300 AF polymer*** provides all-day hold resulting in extreme stiff to a smooth flexible hold. The polymer also effectively reduces frizz while delivering shine to hair. **PVP K-90 solution** contributes to the hold and shine of the formulation. **UltraThix™ P-100 polymer** rheology modifier helps in building rheology while contributing to the hold.

Ingredients (Trade Name)	INCI Name	%w/w	Supplier
Phase A			
Deionized Water	Aqua	49.43	Local
UltraThix™ P-100 polymer	Acrylic Acid/VP Crosspolymer	0.50	Ashland
Tealan 99%	Triethanolamine	0.35	Rita
Butylene Glycol	Butylene Glycol	4.00	Local
Phase B			
White Beeswax	Beeswax	4.00	Frank B. Ross
Ozokerite Wax SP-1025	Ozokerite Wax	4.00	Strahl & Pitsch
Carnauba Wax#1	Copernicia Cerifera (Carnauba) Wax	1.00	Frank B. Ross
Cerasynt™ SD stearate ester	Glyceryl Stearate	2.00	Ashland
Emulsynt™ GDL ester	Glyceryl Dilaurate	8.00	Ashland
Ceraphyl™ 368 ester	Ethylhexyl Palmitate	10.00	Ashland
Ceraphyl™ SLK ester	Isodecyl Neopentanoate	4.00	Ashland
Phase C			
AquaStyle™ 300 AF polymer	Polyquaternium-69	6.67	Ashland
PVP K-90 solution	PVP	4.55	Ashland
Optiphen™ Plus preservative	Phenoxyethanol (and) Caprylyl Glycol (and) Sorbic Acid	1.50	Ashland
Total		100.00	



1 = poor
3 = moderate
5 = very good

Formulations tested on 12 panelists. Panelists had thick, shoulder length hair (women) to thinning hair (men).

IMPORTANT NOTE

* AquaStyle™ 300 AF polymer not to promote in EU - MIT preservative not allowed to sell



Lotion, serum selection



iridescent serum

Formula# # 12464-180.2

Material# 875301

A luxurious non-greasy formula that provides hair with nourishment from the roots to the tips. This lightweight clear emulsion is created by refractive index matching and delivers great styling, conditioning, and thermal protection with **Styleze™ W-10 polymer** and **AquaCat™ PF618 clear cationic solution**.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	15.13	Local
Glycerin	Glycerin	24.20	Local
Styleze™ W-10 polymer	Polyquaternium-55	10.00	Ashland
AquaCat™ PF618 clear cationic solution	Guar Hydroxypropyltrimonium Chloride	2.50	Ashland
Jeequat® CT-29	Cetyl Trimethyl Ammonium Chloride	0.17	Jeen Intl.
Phase B			
KF-995	Cyclopentasiloxane	40.00	Shin-Etsu
Jeesilc® 110	Dimethicone	2.00	Jeen Intl.
Ceraphyl™ SLK ester	Isodecyl Neopentanoate	5.00	Ashland
Optiphen™ 200 preservative	Phenoxyethanol (and) Caprylyl Glycol	1.00	Ashland
Total		100.00	



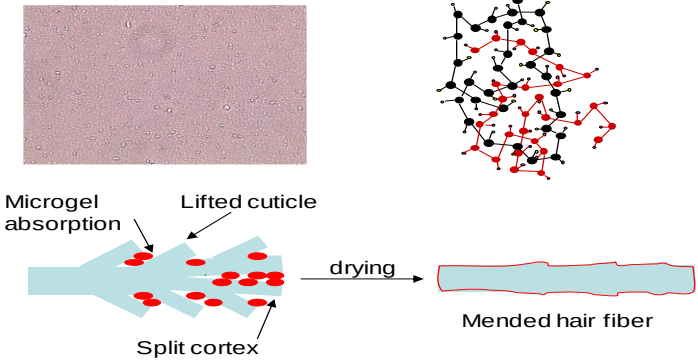
split end mending serum

Formula# # 11110-61-B
Material# 879286

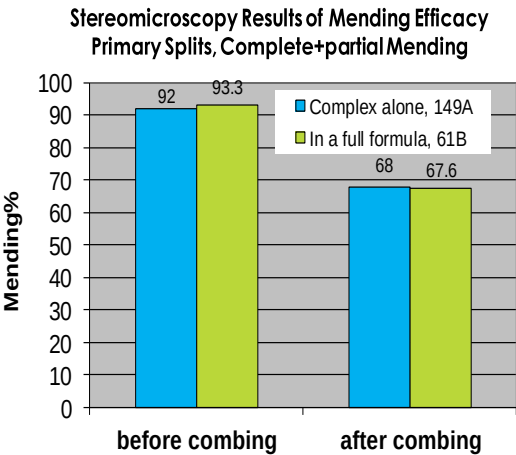
The **Style Fusion™ complex 1** delivers excellent split end repair and provide superior mechanical resistance of the mended split ends.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	79.00	Local
Rhodicare® T	Xanthan Gum	0.50	Solvay
Style Fusion™ complex 1	Polyquaternium-28 (and) PVM/MA Copolymer	20.00	Ashland
Liquid Germall™ Plus preservative	Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate	0.50	Ashland
Total		100.00	

Proposed Mechanism: microgels attach to broken fibrils and act as coupling agents and retract during drying



Patented technology



style and repair cream

styling
hero

Formula# 12464-230.7A

Material# 884620

This unique leave-on cream conditions, repairs, and styles hair. **Style Fusion™ complex 1** smoothes hair cuticles and mends split ends. Orchid Complex provides reparative and protective benefits. **AquaStyle™ SH-100 polymer** and **Natrosol 250 HHR CS** delivers styling and enhances slip respectively.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	73.31	Local
Natrosol™ 250 HHR CS hydroxyethylcellulose	Hydroxyethylcellulose	0.50	Ashland
Methylparaben NF	Methylparaben	0.10	Ashland
AquaStyle™ SH-100 polymer	Acrylates Copolymer (and) Water	1.67	Ashland
AMP-Ultra™ PC 2000*	Aminomethyl Propanol	0.15	Dow
Phase B			
Style Fusion™ complex 1	Polyquaternium-28 (and) PVM/MA Copolymer	20.00	Ashland
Phase C			
Belsil® CM 3092*	Cyclopentasiloxane (and) Dimethiconol	1.00	Wacker
Ceraphyl™ 368M ester	Ethylhexyl Palmitate	1.50	Ashland
Optiphen™ 200 preservative	Phenoxyethanol (and) Caprylyl Glycol	0.90	Ashland
Orchid Complex™ OS extract	Caprylic/Capric Triglyceride (and) Cymbidium Grandiflorum (Orchid) Flower Extract	0.50	Ashland
Robertet R16-3909*	Parfum	0.30	Robertet
Phase D			
Citric Acid* (10% aq sol'n)	Citric Acid (and) Water	0.07	Sigma-Aldrich
Total		100.00	

*Trademark owned by a third party.





multiphase and phase transfer selection



durable hair oil

styling
hero

Formula# 12594-7.7F

Material# 875299

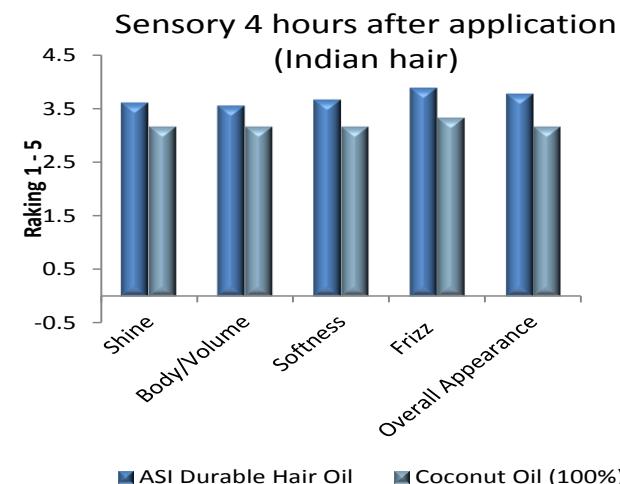
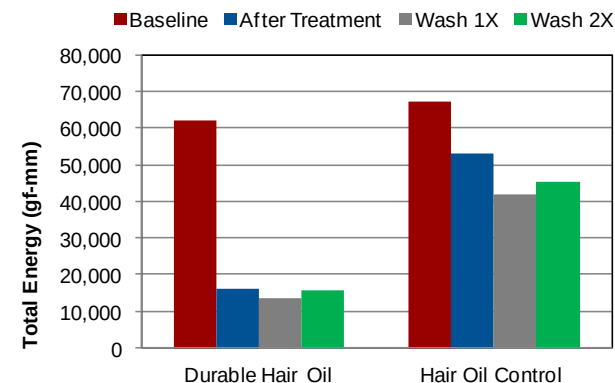
This lustrous hair oil will nourish, texturize, and condition hair. It helps smooth dry frizzy hair leaving it shiny, protected, and easy to manage. Formulated with **Aqualon™ EC N-200 ethylcellulose** provides wash resistant benefits including conditioning, softness and shine. The polymer allows to tailor the oil thickness according the need states of different hair structures and ethnicities.

Durable Hair Oil with Aqualon™ EC N-200 Ethylcellulose (#414816)

Formula# 12594-7.7F

Material# 875299

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Ceraphyl™ 31 ester	Lauryl Lactate	31.00	Ashland
Drakeol® 35 MIN OIL USP*	Mineral Oil	30.30	Penreco
Aqualon™ EC N-200 ethylcellulose	Ethylcellulose	5.00	Ashland
Ceraphyl™ SLK ester	Isodecyl Neopentanoate	5.00	Ashland
Methylparaben NP	Methylparaben	0.20	Ashland
Phase B			
KF-995*	Cyclopentasiloxane	20.00	Shin-Etsu
Phase C			
Coconut Oil*	Cocos Nucifera (Coconut) Oil	2.00	Jeen Intl.
Escalol™ 557 UV filter	Ethylhexyl Methoxycinnamate	0.50	Ashland
X-Tend™ 226 ester	Phenethyl Benzoate	2.00	Ashland
Optiphen™ preservative	Phenoxyethanol (and) Caprylyl Glycol	1.00	Ashland
Optiphen™ HD preservative booster	1,2-Hexanediol	3.00	Ashland
Total		100.00	



two-phase hair glosser

styling
hero

Formula# 12594-7.7F

Material# 875299

This serum contains a blend of silicones and shine enhancers for maximum gloss and manageability. It eliminates frizz and provides radiance for all hair types. **Advantage™ LC-A** is a great styling polymer with excellent curl retention that forms high gloss films on hair.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	15.75	Local
Propylene Glycol	Propylene Glycol	24.00	Local
Advantage™ LC-A polymer	Vinyl Caprolactam/VP/Dimethylaminoethyl Methacrylate Copolymer	8.00	Ashland
D&C Green No. 5 (0.1% aq. Sol'n)	Green No. 5 (and) Water	0.80	Pylam
Liquid Germall™ Plus preservative	Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate	0.50	Ashland
Phase B			
KF-995	Cyclopentasiloxane	35.20	Shin-Etsu
Ceraphyl™ 230 ester	Diisopropyl Adipate	2.75	Ashland
Belsil® PDM 20	Trimethylsiloxyphenyl Dimethicone	5.00	Wacker
Belsil® CM 3092	Cyclopentasiloxane (and) Dimethiconol	5.00	Wacker
D&C Violet No. 2 (0.01% sol'n in Shin Etsu KF-995)	Violet No. 2 (and) Cyclopentasiloxane	3.00	Pylam/ Shin Etsu
Phase C			
Lactic Acid	Lactic Acid	qs	Local
Total		100.00	



Before mixing After mixing

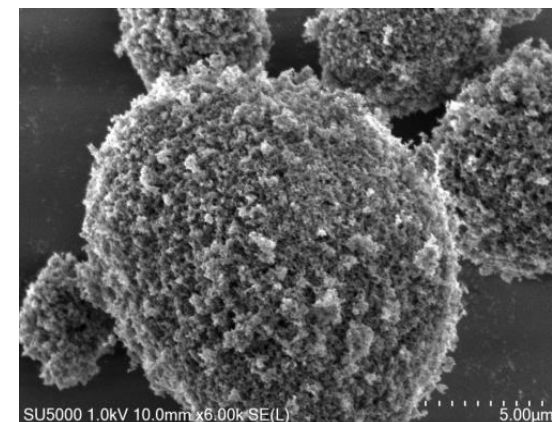
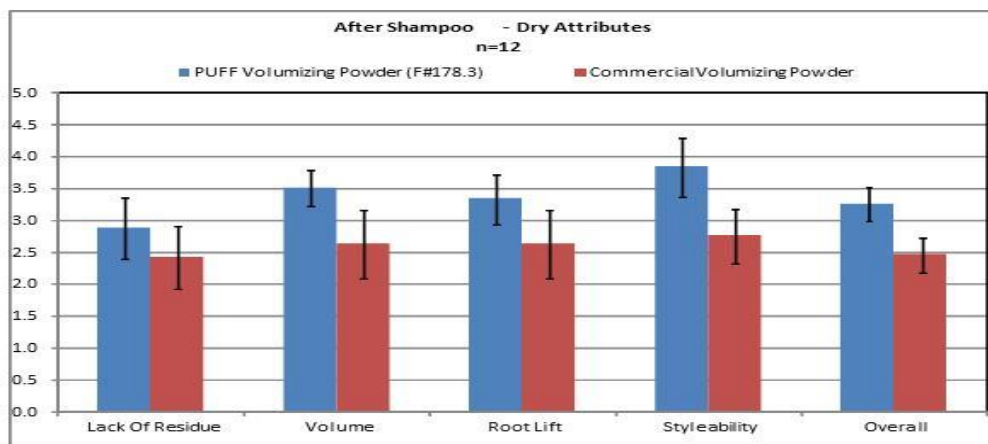
 **Ashland™**
always solving

PUFF volumizing powder styler

Formula# 12464-178.3

Material# 876090

This unique powder product provides texture to thin or limp hair that instantly builds volume. It features **N-DurHance™ A-1000 conditioning polymer** that provides anti-frizz properties and durable styling benefits.



Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Deionized Water	Aqua	53.75	Local
Sodium Chloride	Sodium Chloride	0.25	Sigma-Aldrich
Glycerin	Glycerin	20.00	Local
N-DurHance™ A-1000 conditioning polymer	Polyacrylamidopropyltrimonium Chloride	5.00	Ashland
Phase B			
Optiphen™ DP preservative	Propylene Carbonate (and) Benzoic Acid (and) Dehydroacetic Acid (and) Propanediol (and) PVP	1.00	Ashland
Phase C			
HDK® H18 Pyrogenic Silica	Silica Dimethyl Silylate	20.00	Wacker
Total		100.00	

PUFF powder wax

Formula# # 12464-129.13B
Material# 865716

This unique product transforms from powder into a creamy wax. The product provides texture and restylable hold to thin or limp hair. It features **N-DurHance™ A-1000 conditioning polymer** that provides anti-frizz properties and durable styling benefits.

Ingredients (Trade Name)	INCI Name	% w/w	Supplier
Phase A			
Glycerin	Glycerin	41.14	Local
Sorbitol (70% solution)*	Sorbitol	42.86	Essential Wholesale
N-DurHance™ A-1000 conditioning polymer	Polyacrylamidopropyltrimonium Chloride	5.00	Ashland
Phase B			
Optiphen™ DP preservative	Propylene Carbonate (and) Benzoic Acid (and) Dehydroacetic Acid (and) Propanediol (and) PVP	1.00	Ashland
Phase C			
HDK® H18 Pyrogenic Silica*	Silica Dimethyl Silylate	10.00	Wacker
Total		100.00	

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Surfactantless Non-Aerosol Mousse with Styleze®W-20

Formula# # 11683-58

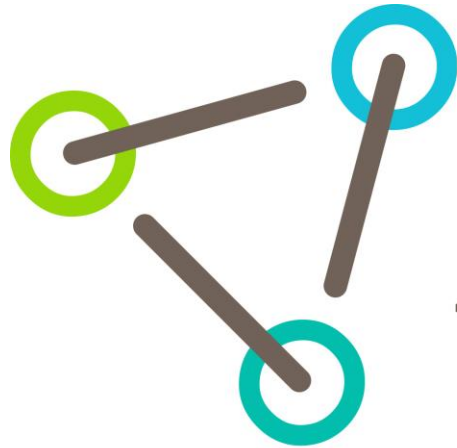
The non aerosol pump mousse provides lasting hold performance combined with extreme good thermal protection with Styleze™ W technology. Due to the structure of the polymer also foaming properties are imparted and no additional surfactant is needed.

Ingredients	% w/w	Supplier	Function
Deionized Water	89,30		Solvent
Polyquaternium-55 (Styleze®W-20)	10,00	Ashland	Delivers setting properties , thermal protection and mousse formation properties
Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate (Liquid Germall ®Plus)	0,50	Ashland	Preservative
Ammonium Hydroxide (30% aq.sol'n)	0,20	Acros	pH adjuster
TOTAL	100		

Differentiation of ASI Polymers in Styling



	Main polymer properties					Application compatibility		
	Carbomer compatibility	Stiffness	Durability	HHCR	Substantivity/ Conditioning	Thermal Protection	Mechanical Protection	Color Protection
PVP								
VP/VA Copolymer								
Copolymer 845								
Copolymer 937								
Styleze CC 10						✓	✓	
Styleze W						✓		✓
Styleze 2000						✓	✓	
Aquaflex SF 40								
Advantage S								
Gafquat 755N						✓	✓	
Aquaflex XL 30								
Aquastyle 300/300AF								



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