



# Formulary

Product Description

Aquamere polymer systems are a patented class of polymer blends developed by Hydromer Inc. This class of hydrophobic polymers is comprised of Polyurethane and PVP polymers or copolymers of PVP. These biocompatible materials form interpolymers with unique rheological and film forming properties, plus the ability to complex with a wide range of organic molecules such as dyes, and UV absorbers.

Aquamere technology is ideal for various cosmetic applications, providing multifunctional capabilities that can satisfy unique cosmetic function requirements such as water and rub resistance, adhesion to skin, flexibility, styling, tack reduction, gloss, durability, moisture barrier, actives and pigment binding capabilities from the water phase. Aquamere polymers possess excellent spread properties, which assist in forming coherent, continuous films.

Applications

- Skin Care and Sun Care products
- Color Cosmetics
- Hair products (Shampoos, Conditioners, Hairspray, Mousses and Dyes/Colorants)
- Mascara
- Topical Drug or Active Delivery

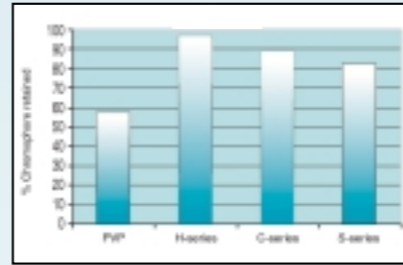
Product Benefits

- Water resistance
- Film former
- Impart luster and sheen to skin care products
- Immobilize dyes in hair colorant and UV absorbers in sunscreen or dyes
- Add body and richness to skin lotions and hold to hair care products
- Provides long-lasting moisturization
- Compatible with a wide range of cosmetic ingredients
- Wide range of product viscosities available
- Substantivity of actives, and pigments for rub and water resistance in water phase.

Performance Characteristics

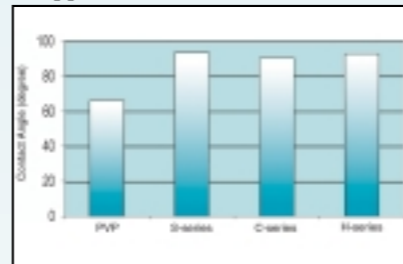
### Water Resistance:

Aquamere film forming properties and affinity to skin provides water resistance from the water phase to cosmetic formulations. This is the most important property in sun care products when claims of water resistance are desirable. Water resistance of these film forming class of polymers is shown below.



### Hydrophobicity:

Contact angles for various film forming Aquamere polymers were measured, and the data is shown below. These film forming hydrophobic characteristics from a water phase polymer are exactly what makes the Aquamere polymer family such an excellent choice for a wide variety of cosmetic film former applications.

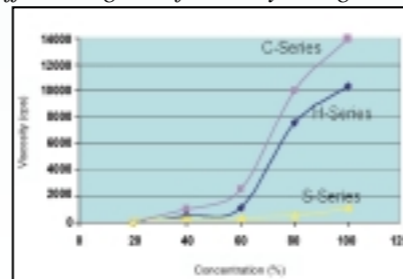


### Shine and Gloss:

A class of Aquamere polymer, Aquamere S-Series contains a unique silicone copolymer of PVP/Dimethiconylacrylate, which improves the lubricity of formulations and adds shine to hair care products. It also has good spreading properties, which assist in the formation of coherent, continuous films. When used in shampoos, conditioners, mousses and gels, the polymer evenly coats the hair. The higher the silicone content, the greater the lubricity or shine. When used in lipsticks it imparts to the consumer a perceivable and desirable increase in gloss. It is ideal for sand-proofing sun care products and reduction tack in lotions in addition to helping retain water-phase UVA absorbers and inorganic pigments, like TiO<sub>2</sub> and ZnO.

### Rheology Modifier:

Aquamere ingredients act like rheology modifiers in cosmetic formulations. In contrast to other modifiers, the viscosity in the end use formulation is not dependent on pH. The viscosity of the final formulation depends, however, on the interaction of the polymer hydrophobes with specific moieties present in the formulation. This property adds body and richness to skin lotions, hold and moisture resistance to hair care products. Depending on the specific Aquamere series, these formulations impart different degrees of viscosity changes.



### Sunscreen Lotion-SPF 15

Phase	Ingredient	% Wt.	Supplier	INCI Name
A.	Water	60.2		
	Acrylate/C10-30 Alkyl Acrylate Crosspolymer	0.1	BF-Goodrich	Acrylates/C10-30 Alkyl Acrylate Crosspolymer
	Glycerin	3.0	Dial Corp.	Glycerin
	Methyl Paraben	0.2	Bayer AG	Methyl Paraben
	<b>Aquamere S-2011</b>	<b>10.0</b>	<b>Hydromer Inc.</b>	<b>PVP/Dimethiconylacrylate/Polycarbonyl/Polyglycol Ester</b>
	Triethanolamine 99%	0.1	BASF	Triethanolamine
B.	PerformV 1608 Polymer	0.8	New Phase	Decene/Isopropyl Maleate/MA Copolymer
	Octyl Methoxycinnamate	7.5	ISP	Octyl Methoxycinnamate
	Benzophenone-3	6.0	BASF	Benzophenone-3
	Octyl Salicylate	5.0	ISP	Octyl Salicylate
	Caprylic/Capric Triglyceride	4.0	Henkel	Caprylic/Capric Triglyceride
	Emulsifying Wax NF	0.1	Croda Inc.	Polawax
	Propyl Paraben	0.1	Bayer AG	Propyl Paraben
	Cetyl Alcohol	1.0	Croda Inc.	Cetyl Alcohol

**Procedure:** Heat **Phase A** in batch tank to 82°C. In a separate container, heat **Phase B** to 85-90°C. Then add **Phase B** to **A**. Begin cooling to room temperature and qs with cold water at 45°C.

### Moisturizing Cream

Benefits: This day cream is made for dry skin

Phase	Ingredient	% Wt.	Supplier	INCI Name
A.	Water	62.55		
	Glycerin	4.00	Dial Corp.	Glycerin
	<b>Aquamere H-1212</b>	<b>5.00</b>	<b>Hydromer Inc.</b>	<b>PVP/Polycarbonyl/Polyglycol Ester</b>
	Uniphen	0.20	Induchem	Phenoxyethanol/Methylparaben/Ethylparaben/Propylparaben/Butylparaben
B.	Sistema SP 30 C	3.00	Mitsubishi Corp.	Sucrose Distearate
	Sistema SP 70 C	1.00	"	Sucrose Stearate
	Cetiol SN	3.00	Henkel	Cetearyl Isononanoate
	Cegesoft C 24	5.00	Henkel	Octyl Palmitate
	Cetiol OE	6.00	Henkel	Dicaprylyl Ether
	Naturechem CR	2.50	Cas Chem	Cetyl Ricinoleate
	Lanette O	3.00	Henkel	Cetearyl Alcohol
	Uniphen	0.50	Induchem	Phenoxyethanol/Methylparaben/Ethylparaben/Propylparaben/Butylparaben
	Parsol MCX	4.00	Givaudan-Roure	Octyl Methoxycinnamate
	C.	Perfume	0.25	TBD

**Procedure:** Mix **Phase A** and heat to 75°C. Mix **Phase B** and heat to 75°C. Mix intensively with homogenizer. Cool down to 45°C while stirring. Add **Phase C** mix with homogenizer. Cool down to 30°C while stirring.

### Water Proof Gel Mascara

Properties: Excellent application, waterproof washes off with just soap and water, lengthens and thickens lashes

Phase	Ingredient	% Wt.	Supplier	INCI Name
A.	Water	QS		
	Carbopol 980	0.3	BF Goodrich	Carbomer
	Hydro Wrap Black IO	10.0	Enhance Technologies	Black Iron Oxide/Dimethicone Copolyol
	Hydrophilic Kaolin	3.0	Enhance Technologies	Kaolin
	Propylene Glycol	3.0	BASF	Propylene Glycol
B.	PEG-20 Beeswax	2.0		
	Carnauba Wax	6.0	Koster Keunen	Carnauba Wax
	Beeswax	3.0	Koster Keunen	Beeswax
	Candelilla	6.0	Koster Keunen	Candelilla
	Stearic Acid	2.0	Spectrum	Stearic Acid
C.	Water	2.0		
	Triethanolamine	1.3	BASF	Triethanolamine
D.	Syntran 520	7.0	Interpolymer Corp.	Acrylates Copolymer/Propylene Glycol/Sodium Laureth-12 Sulfate
	<b>Aquamere S-2011</b>	<b>3.0</b>	<b>Hydromer Inc.</b>	<b>PVP/Dimethiconylacrylate/Polycarbonyl/Polyglycol Ester</b>
E.	Germaben II-E	1.0	Sutton	Propylene Glycol/Diazolidinyl Urea/Methylparaben/Propylparaben

**Procedure:** In the final mixing kettle, charge with water and disperse in the Carbopol; mix for 15 minutes. Add remaining **Phase A** ingredients in order listed; begin heating to 80°C. In a separate container, weigh out **Phase B** ingredients, and begin heating to 82°C. When both **Phases** are at the proper temperature, combine **Phase B** into **Phase A**, and mix for 5 minutes. Now add pre-mixed **Phase C** to combined **Phase A** and **B** with side-sweep and homogenizer mixing, and mix for 5 minutes. Begin cooling **Phase A** and **B** with side-sweep and homogenizer mixing, and mix for 5 minutes. Begin cooling batch with side-sweep agitation down to 40°C. At 40°C add **Phase D** ingredients in order listed, and resume cooling. At 30°C add **Phase E** and mix for 5 minutes. Batch is complete.