

RapiThix™ A-60 and A-100

Innovative, Easy-to-use Rheology Modifiers

RHEOLOGY MODIFIERS FOR PERSONAL CARE



INTERNATIONAL SPECIALTY PRODUCTS

Introduction

RapiThix™ A-60 and A-100 are new additions to the ISP family of personal care products. RapiThix™ A-60 and A-100 are especially designed for use in cold mix processes. These products are easy to use, shear tolerant, shear thinning and effective at low use levels.

The performance characteristics and benefits of the polymers allow formulators to develop a range of efficacious and appealing personal care products including shine lotions, anti-frizz balms, styling and conditioning creams, sunscreens, and gel creams.

Product Features

Product Features	Benefit
Cold processable	Increased manufacturing efficiency
Broad range pH stability	Ability to thicken in pH range 5.5 - 11.0
Soft and smooth skin feel	Aesthetically pleasing formulations
Neutralization not required	Easy to use
Shear thinning	Desirable tactile properties
Shear tolerant	Increased formulation flexibility
Preservative-free	Formulation flexibility
Acrylamide-free	Minimizes safety concerns

Product Applications

Hair Care Applications	Skin Care Applications
Shine lotions	Creams and lotions
Anti-frizz products	After-sun products
Crème gels	Crème gels
Styling and conditioning products	Water-resistant hand treatments
Conditioning creams	Sunscreens

RapiThix™ A-60

INCI Name: Sodium Polyacrylate (and) Hydrogenated Polydecene (and) Trideceth-6

Instantaneous Action

- Emollient-based dispersion which is easy to handle and use
- Uniform dispersion - does not separate on standing
- No pre-dispersion, preliminary swelling or warming necessary
- Extremely useful as a viscosity adjusting agent
- Can be post-added to adjust viscosity after the emulsion has been formed and cooled
- Produces instant crème gels at room temperature by simply adding water; high shear not required
- Excellent compatibility with many cosmetic ingredients

RapiThix™ A-60 Typical Chemical/Physical Properties

Property	Typical Value
Appearance	Off-white, milky dispersion
Polymer Content	57-59%
Viscosity (1% as is)	7,000-13,000 cps
Viscosity (as is)	500-2,000 cps
pH (1% solution)	5-7

RapiThix™ A-100

INCI Name: Sodium Polyacrylate

- Free flowing, fully active white powder offering greater formulation flexibility
- No pre-set oil phase
- Makes oil-free systems possible
- High solids content for higher efficiency

RapiThix™ A-100 Typical Chemical/Physical Properties

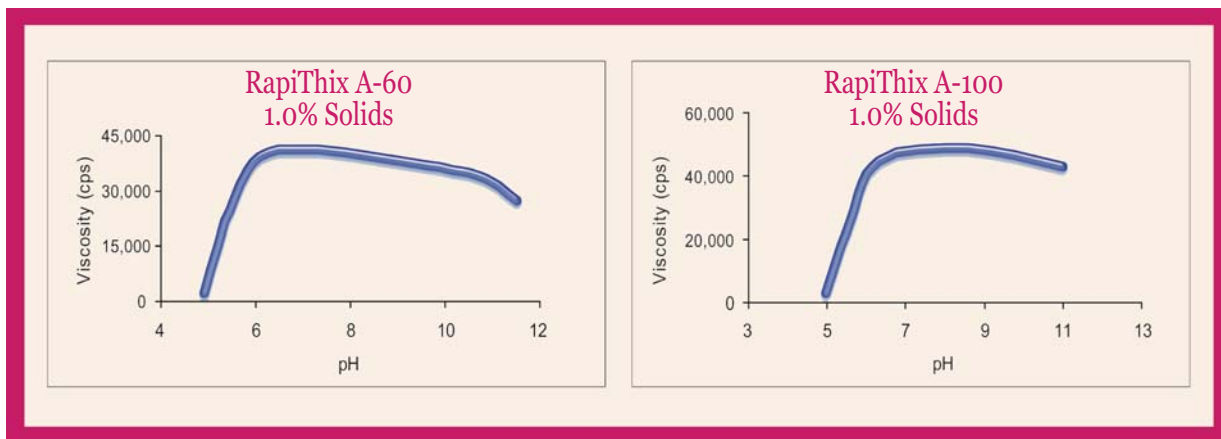
Property	Typical Value
Appearance	Fine powder
Solids Content	85-95%
Viscosity (1% solution)	28,000-38,000 cps
pH (1% solution)	5.7-6.7

Product Packaging

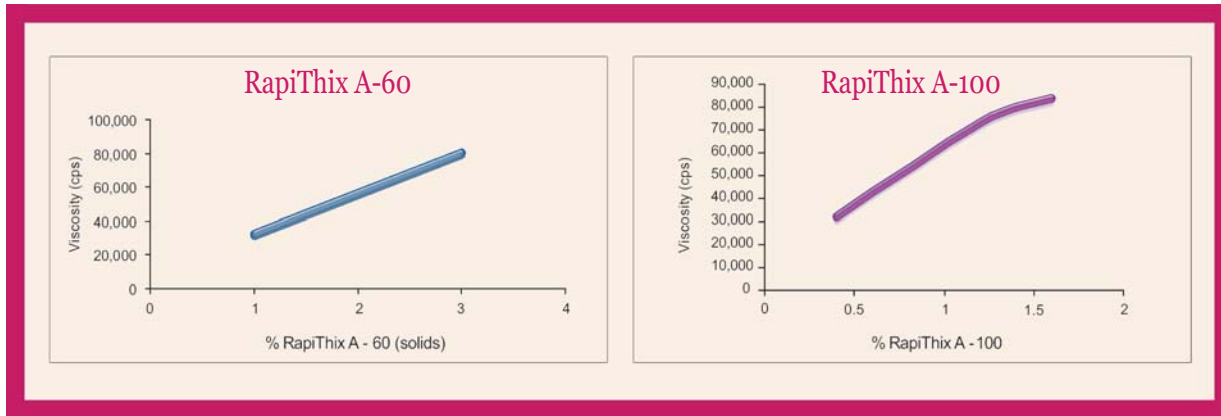
- RapiThix™ A-60 is available in:
 - 280lb net weight HDPE open-head drum
 - 55lb net weight HDPE jerrican
- RapiThix™ A-100 is available in:
 - 55lb net weight lined Kraft paper valve bag

RapiThix™ A-60 and A-100 are efficient rheology modifiers producing appreciable formulation viscosity at cost-effective use levels. The thickening power and performance of RapiThix™ A-60 and A-100 vary according to pH. The optimal performance range is between pH 5.5 and 11.0. In both acidic and alkaline media, low use levels of RapiThix™ A-60 and A-100 develop substantial gel viscosities which do not change over time. RapiThix™ A-60 and A-100 are compatible with polar solvents and produce viscous gels that are stable over time even in the presence of significant solvent levels.

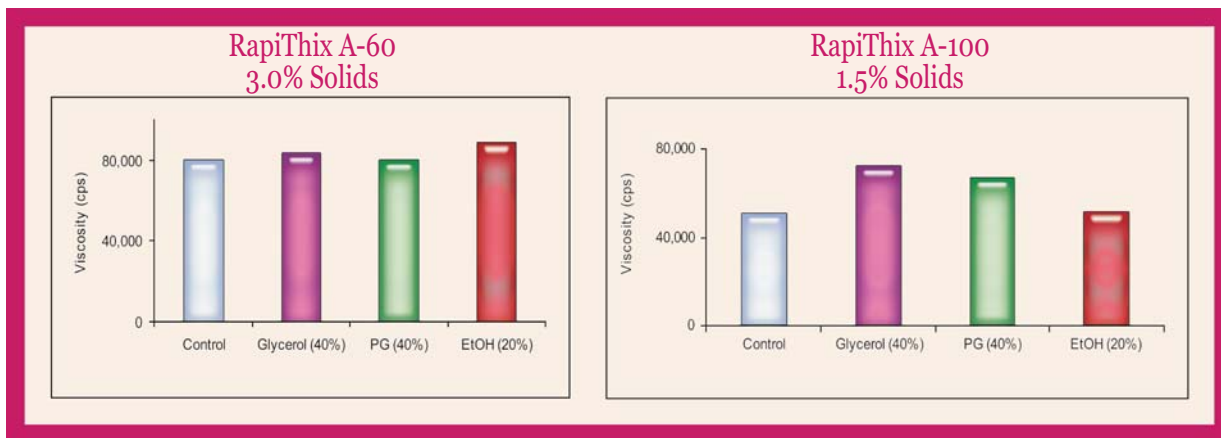
RapiThix™ Viscosity vs. pH Relationships



RapiThix™ Viscosity vs. Concentration Relationships



RapiThix™ Compatibility with Polar Solvents



Toxicological Status

- RapiThix™ A-60 and RapiThix™ A-100 are safe and appropriate for use in a broad range of both rinse-off and leave-on personal care applications
- RapiThix™ A-60 and RapiThix™ A-100 are registered on ELINCS
- RapiThix™ A-60 and RapiThix™ A-100 are approved for use in Australia and Japan

Formulating with RapiThix

- No pH adjustment required
- Cold-processable

RapiThix™ A-60 can be incorporated:

- Into the water phase
- After the oil is emulsified in the water - post addition
- Into the oil phase

RapiThix™ A-100 can be dispersed:

- In the water phase at any stage during the process

Recommended use levels: 0.2-2.5% (solids)

Note:

All of the following formulas have passed a 28-day double challenge test. However, the preservative system has not been optimized to its lowest effective level.

Formulations

Sheer Body Moisturizer with RapiThix™ A-60 Formula #10844-123-1

INGREDIENTS	%WW	SUPPLIER
PHASE A		
Deionized Water	82.42	
Disodium EDTA (Versene NA)	0.10	Dow Chemical
Glyceryl Polymethacrylate (and) Propylene Glycol (and) PVM/MA Copolymer (Lubrajel® Oil)	1.00	ISP
Sodium Polyacrylate (and) Hydrogenated Polydecene (and) Trideceth-6 (RapiThix™ A-60)	1.73	ISP
PHASE B		
Dimethicone (Si-Tec™ DM 350)	6.50	ISP
Phenyl Trimethicone (Si-Tec™ PTM 20)	3.00	ISP
Lauryl Dimethicone (Si-Tec™ LDM 3107)	1.50	ISP
Lauryl Lactate (Ceraphyl® 31)	2.00	ISP
Ethylhexyl Palmitate (Ceraphyl® 368)	1.00	ISP
PHASE C		
Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate (Liquid Germall® Plus)	$\frac{0.75}{100.00\%}$	ISP

PROCEDURE

1. Combine ingredients in Phase A and mix.
2. Combine ingredients in Phase B and mix until uniform.
3. Add Phase B to Phase A. Mix until uniform.
4. Add Phase C.

pH=6.89

Viscosity = 33,200 cps

(Brookfield Model RVT, TB @ 5 RPM)

**Cold Mix Aloe Cream
with RapiThix™ A-60**
Formula #10844-124-1

INGREDIENTS	%WW	SUPPLIER
PHASE A		
Deionized Water	83.17	
Disodium EDTA (Versene NA)	0.05	Dow Chemical
Glycerin	2.00	
Aloe Barbadensis Leaf (Aloe Powder 200x)	0.20	Active Organics
Sodium Polyacrylate (and) Hydrogenated Polydecene (and) Trideceth-6 (RapiThix™ A-60)	1.73	ISP
PHASE B		
Ethylhexyl Palmitate (Ceraphyl® 368)	6.00	ISP
Isocetyl Stearate (Ceraphyl® 494)	4.00	ISP
Isocetyl Stearoyl Stearate (Ceraphyl® 791)	2.00	ISP
PHASE C		
Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate (Liquid Germall® Plus)	0.75	ISP
Tocopheryl Acetate (Vitamin E)	<u>0.10</u>	Roche
	100.00%	

PROCEDURE

1. Combine ingredients in Phase A and mix.
2. Combine ingredients in Phase B and mix until uniform.
3. Add Phase B to Phase A. Mix until uniform.
4. Add Phase C.

pH = 5.50
Viscosity = 30,600 cps
(Brookfield Model RVT, TB @ 5 RPM)

**Spiking Glue
with RapiThix™ A-100**
Formula #11014-19

INGREDIENTS	%WW	SUPPLIER
PHASE A		
Water	88.30	
PVP (PVP K-90)	5.00	ISP
VP/Dimethylaminoethyl Methacrylate Copolymer (Copolymer 845)	5.00	ISP
Mica (and) Titanium Dioxide (Flamenco Ultra Sparkle 4500)	0.20	Engelhard
Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate (Liquid Germall® Plus)	0.50	ISP
PHASE B		
Sodium Polyacrylate (RapiThix™ A-100)	<u>1.00</u>	ISP
	100.00%	
Styling Polymer 6.00%		

PROCEDURE

1. Combine ingredients in Phase A, one at a time, and mix until uniform.
2. Add Phase B and mix until uniform.

Appearance = Translucent viscous gel
pH = 6.0
Viscosity = 55,700 cps
(Brookfield RVT, T-D, 20 RPM Helipath)

Shine Lotion
with RapiThix™ A-60
Formula #11014-29

INGREDIENTS	%WW	SUPPLIER
PHASE A		
Water	81.10	
Phenyl Trimethicone (Si-Tec™ PTM 1000)	4.00	ISP
Dimethicone (and) Dimethiconol (Si-Tec™ GF 3096)	5.00	ISP
Dimethicone (Si-Tec™ DM 1 Plus)	5.00	ISP
Cetyl Dimethicone Copolyol (Si-Tec™ 3071)	2.50	ISP
Mica (and) Titanium Dioxide (Timica/Silkwhite 110W)	0.20	Engelhard
Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate (Liquid Germall® Plus)	0.50	ISP
PHASE B		
Sodium Polyacrylate (and) Hydrogenated Polydecene (and) Trideceth-6 (RapiThix™ A-60)	<u>1.70</u> 100.00%	ISP

PROCEDURE

1. Mix all ingredients in Phase A until uniform.
2. Add Phase B and mix until smooth, white uniform cream is formed.

Appearance: White, glossy cream
pH = 6.0 - 7.0 actual pH
Viscosity = 9,500 cps
(Brookfield Model RVT, T-C @ 5 RPM Helipath)

Curl Enhancing Anti-Frizz Cream
with RapiThix™ A-60
Formula #11014-30

INGREDIENTS	%WW	SUPPLIER
PHASE A		
Water	79.60	
Vinyl Caprolactam/VP/ Dimethylaminoethyl Methacrylate Copolymer (Advantage® LCA)	3.00	ISP
Phenyl Trimethicone (Si-Tec™ PTM 1000)	2.00	ISP
Dimethicone (and) Dimethiconol (Si-Tec™ GF 3096)	3.00	ISP
Dimethicone (Si-Tec™ DM 1 Plus)	8.00	ISP
Cetyl Dimethicone Copolyol (Si-Tec™ 3071)	2.00	ISP
Mica (and) Titanium Dioxide (Timica/Silkwhite 110W)	0.20	Engelhard
Propylene Glycol (and) Diazolidinyl Urea (and) Iodopropynyl Butylcarbamate (Liquid Germall® Plus)	0.50	ISP
PHASE B		
Sodium Polyacrylate (and) Hydrogenated Polydecene (and) Trideceth-6 (RapiThix™ A-60)	<u>1.70</u> 100.00%	ISP
Styling Polymer	1.1%	

PROCEDURE

1. Combine ingredients in Phase A one at a time and mix until uniform.
2. Add Phase B and mix until smooth, white uniform cream is formed.

Appearance: White cream
pH = 6.5
Viscosity = 9,000 cps
(Brookfield Model RVT, T-C @ 5 RPM Helipath)



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