
TINOVIS™ GTC

A New Associative Thickener for Clear Gel Systems



TINOVIS™ GTC - A New Associative Thickener

Product Summary

- TINOVIS™ GTC is a new associative thickener from Ciba, specifically designed to be used in clear gel systems
- It has been developed to meet the following needs:
 - Thickening at pH 6
 - Increased overall thickening efficiency
 - Excellent Clarity
 - Excellent Suspension Characteristics
- In addition the product shows increased thickening efficiency, better clarity and suspension properties over Ciba® SALCARE® SC80



TINOVIS™ GTC - A New Associative Thickener

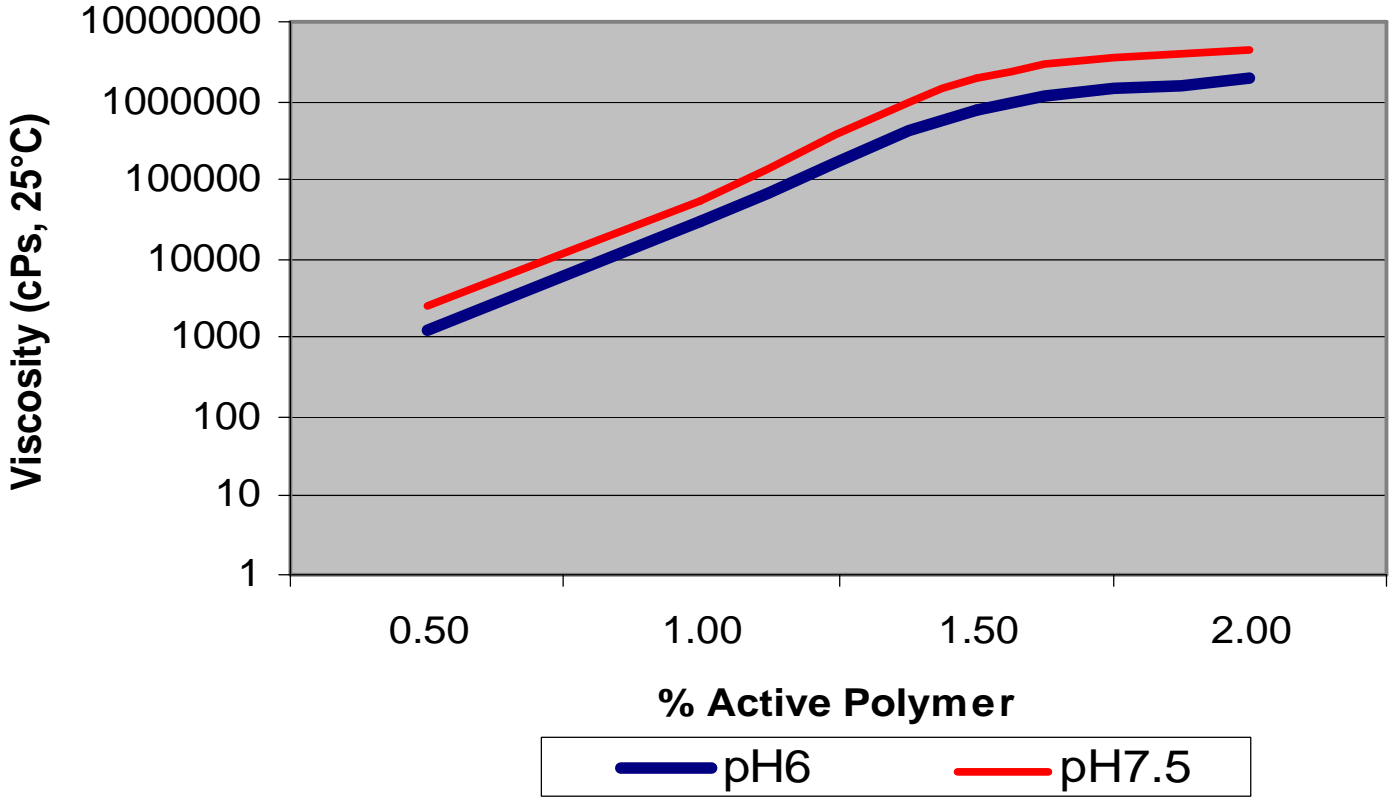
Properties

- INCI Name: Acrylates / Beheneth-25 Methacrylate Copolymer
- Appearance: White flowable emulsion
- Viscosity as Supplied: 50 cPs
- Viscosity 3.33% w/w aq Solution, pH 6: 25 000 cPs (RVT/6/20, 25°C)
- Viscosity 3.33% w/w aq Solution, pH 7.5: 35 000 cPs (RVT/6/20, 25°C)
- Solids Content: 30%



TINOVIS™ GTC - A New Associative Thickener

Thickening Efficiency of TINOVIS GTC in Deionized Water @ pH 6 and 7.5



Ciba

TINOVIS™ GTC - A New Associative Thickener

Competitive Products Studied

Polymer Code

INCI Name

SALCARE SC80

Steareth-10 Allyl Ether / Acrylates
Copolymer

Polymer A

Acrylates / Steareth-20 Methacrylate
Copolymer

Polymer B

Acrylates / Beheneth-25 Methacrylate
Copolymer

Polymer C

Acrylates / C10-30 Alkyl Acrylates
Crosspolymer

Polymer D

Carbomer



TINOVIS™ GTC - A New Associative Thickener

- Primary positioning of *TINOVIS™ GTC* is as a rheology modifier for clear gel products
 - Styling gels
 - Sculpting lotions
 - Exfoliating gels (suspended particles)
- Improved performance over SALCARE SC 80
- Main competitive products are:
 - Carbopol 940, Carbopol 980
 - Carbopol ETD 2020
- Main competitive attributes that differentiate *TINOVIS™ GTC* from competitive products:
 - Easier to handle (liquid Vs. solid form)
 - Better gel clarity
 - Cost (depending on use levels)
 - Better thickening efficiency at use levels above 1.25% active polymer



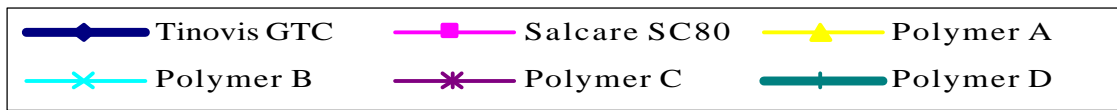
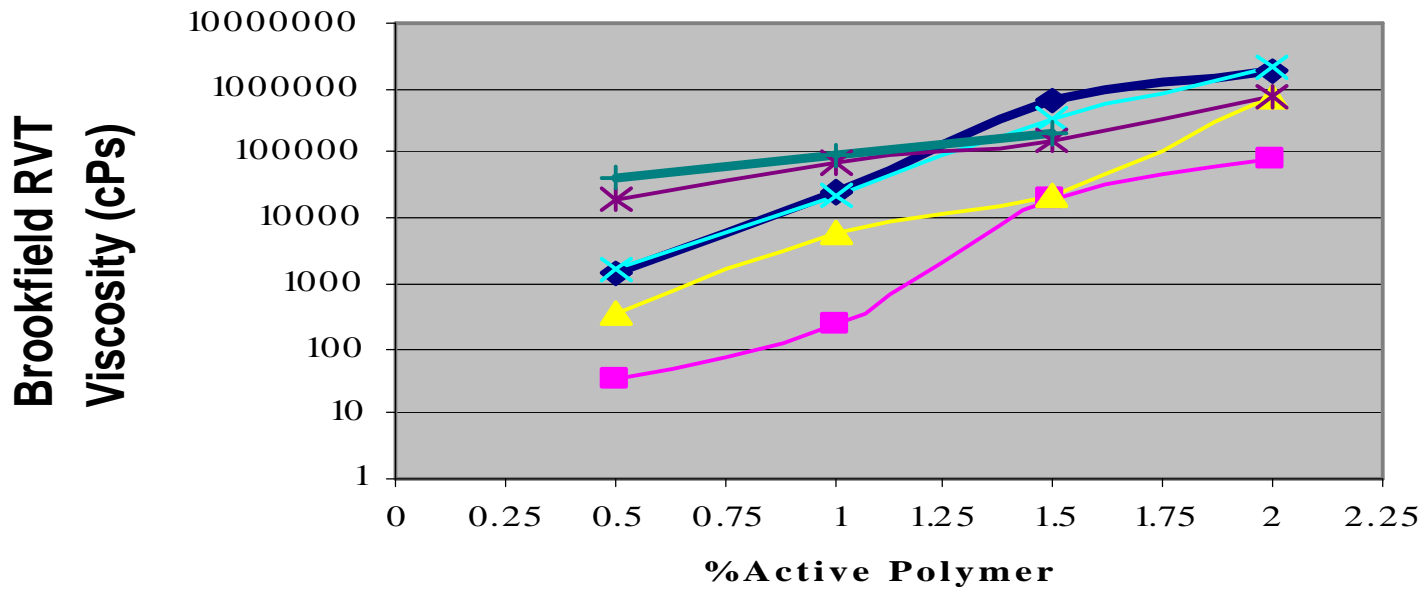
TINOVIS™ GTC - A New Associative Thickener

- **TINOVIS™ GTC** has additional application areas besides clear gel systems
 - Hair Color Developers
 - Lotions
 - Creams
 - Foundations and Makeup Removers
 - Low Viscosity Gels
 - Facial Gels
 - Body Gels
 - Sunscreens
- Major competitive products in these applications areas are Aculyn and Carbomer Type Polymers



TINOVIS™ GTC - A New Associative Thickener

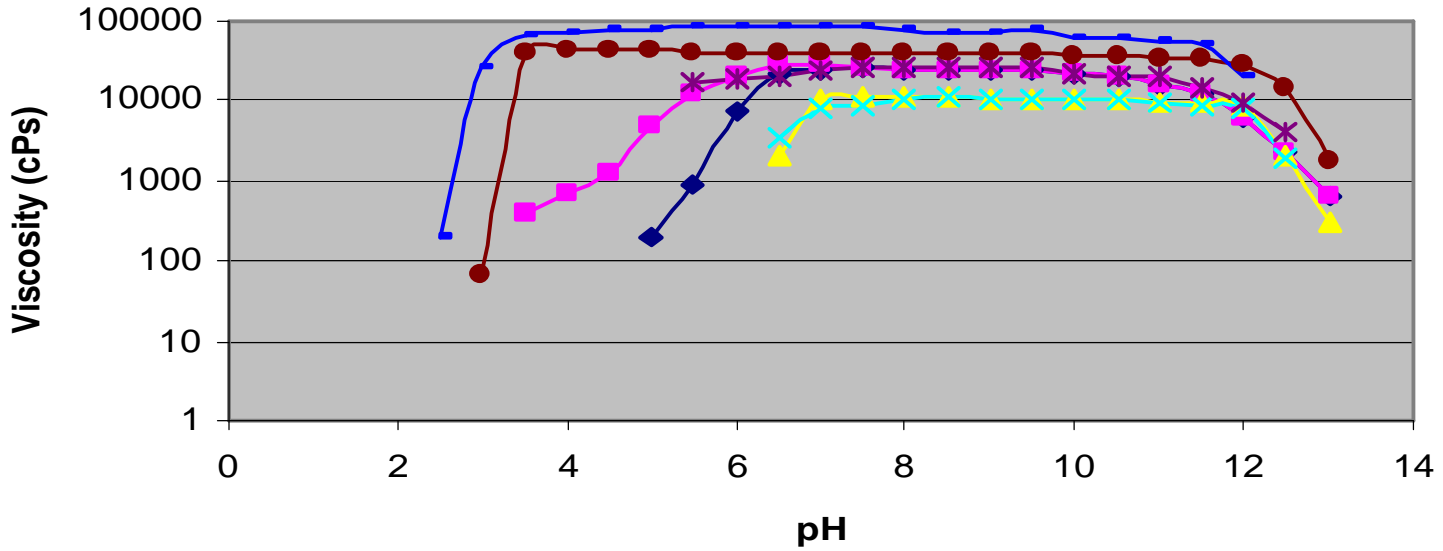
Thickening Efficiency of TINOVIS GTC in Deionized Water @ pH 6.5 Versus Competitive Products



Ciba

TINOVIS™ GTC - A New Associative Thickener

Effective pH Range of TINOVIS GTC in Deionized Water Versus Competitive Polymers

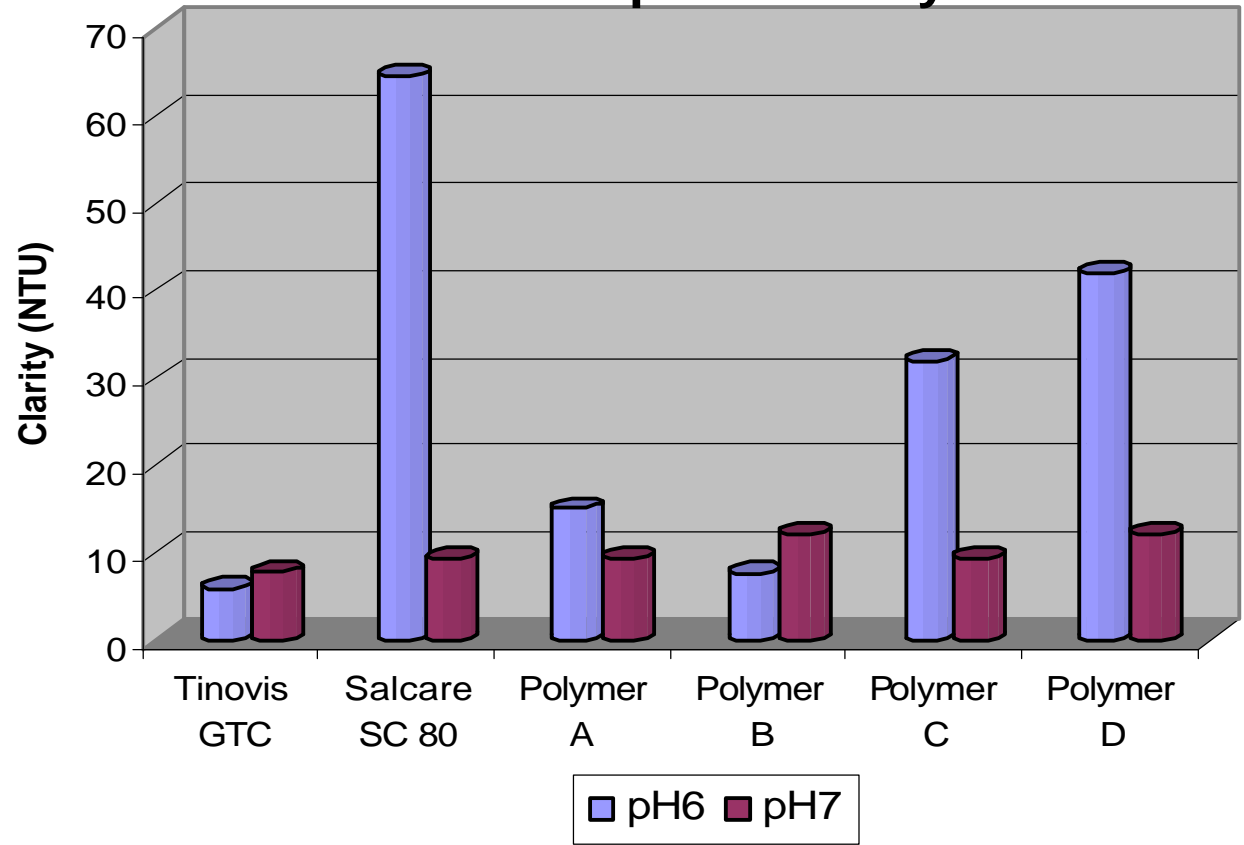


- ◆ Tinovis GTC (Forward titrated)
- ▲ Salcare SC80
- * Polymer B
- Tinovis GTC (Back titrated)
- × Polymer A
- Polymer C
- Polymer D



TINOVIS™ GTC - A New Associative Thickener

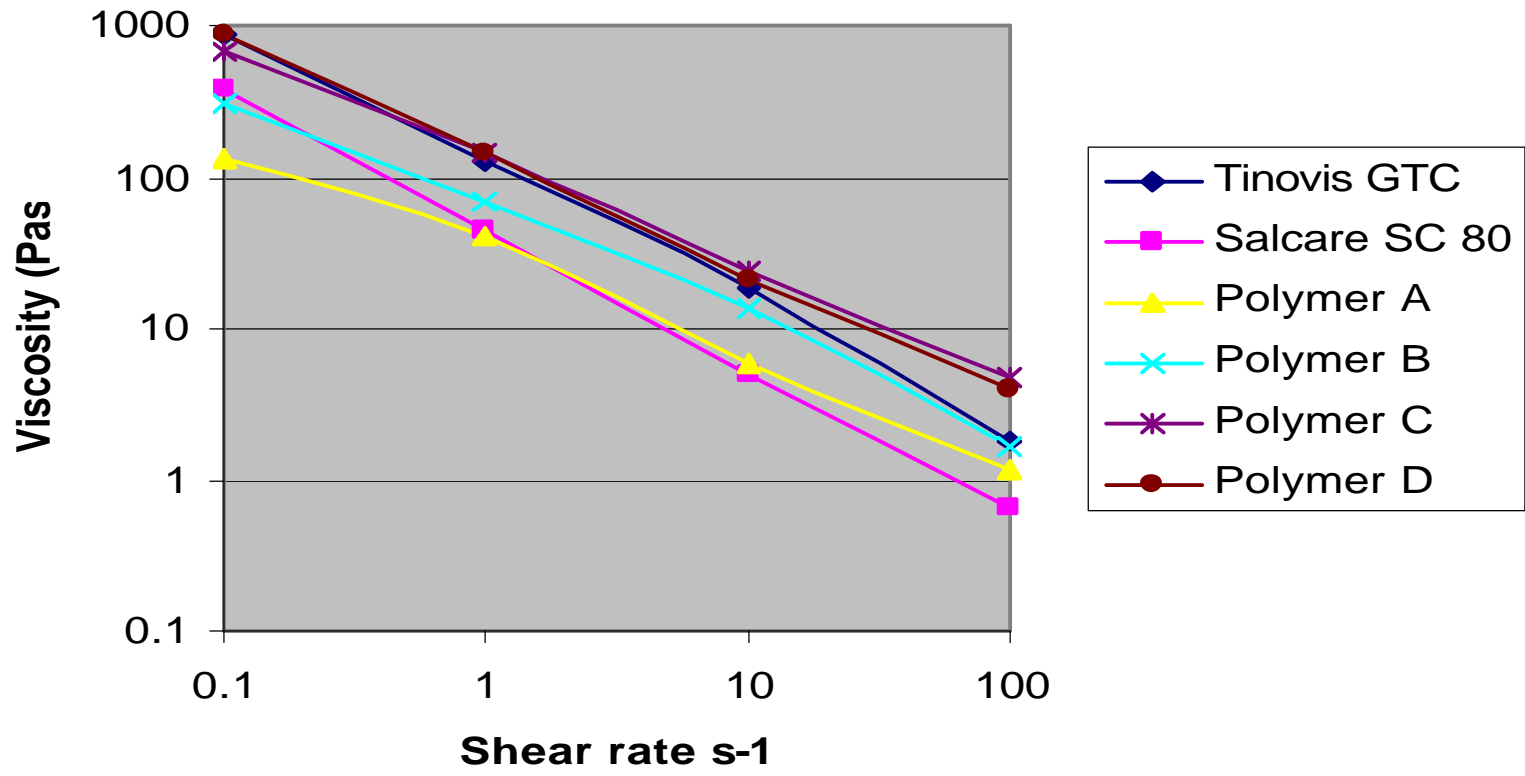
Clarity of TINOVIS GTC in Deionized Water @ 0.5% Active Polymer Versus Competitive Polymers



Ciba

TINOVIS™ GTC - A New Associative Thickener

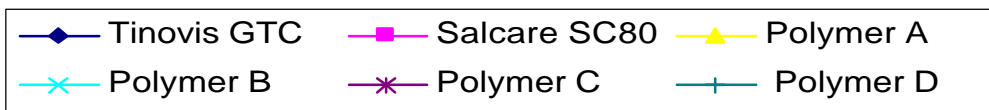
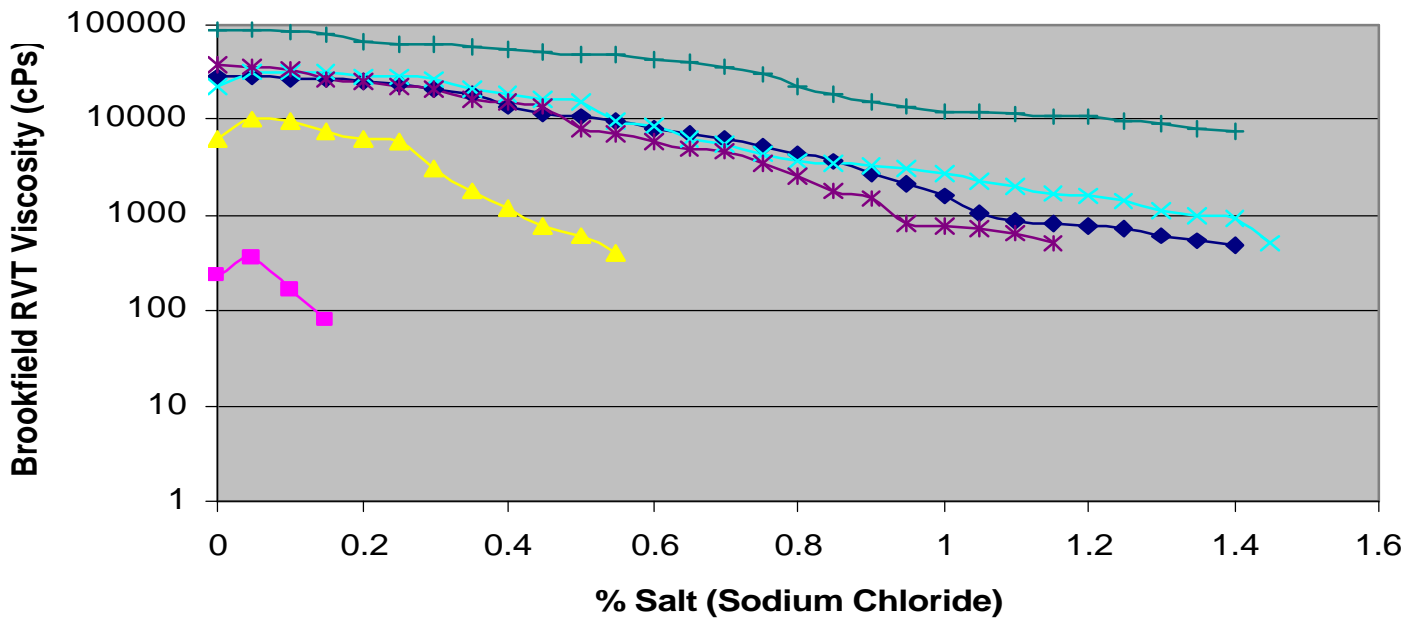
Flow Profiles of TINOVIS GTC Versus Competitive Polymers



Ciba

TINOVIS™ GTC - A New Associative Thickener

Electrolyte Tolerance of TINOVIS GTC in Deionized Water Versus Competitive Polymers



Ciba

TINOVIS™ GTC - A New Associative Thickener

- **Summary TINOVIS™ GTC in Clear Gel Systems:**
 - TINOVIS™ GTC is an effective alternative to carbomer-type rheology modifiers in clear gel systems
 - TINOVIS™ GTC delivers better gel clarity than carbomer-type rheology modifiers
 - TINOVIS™ GTC offers the advantage of being supplied in a easy-to-use liquid form that can alleviate the formulation problems commonly encountered with carbomer-type rheology modifiers
 - TINOVIS™ GTC provides much improved performance over SALCARE SC 80 and should be promoted to customers who have previously evaluated SC 80 without success



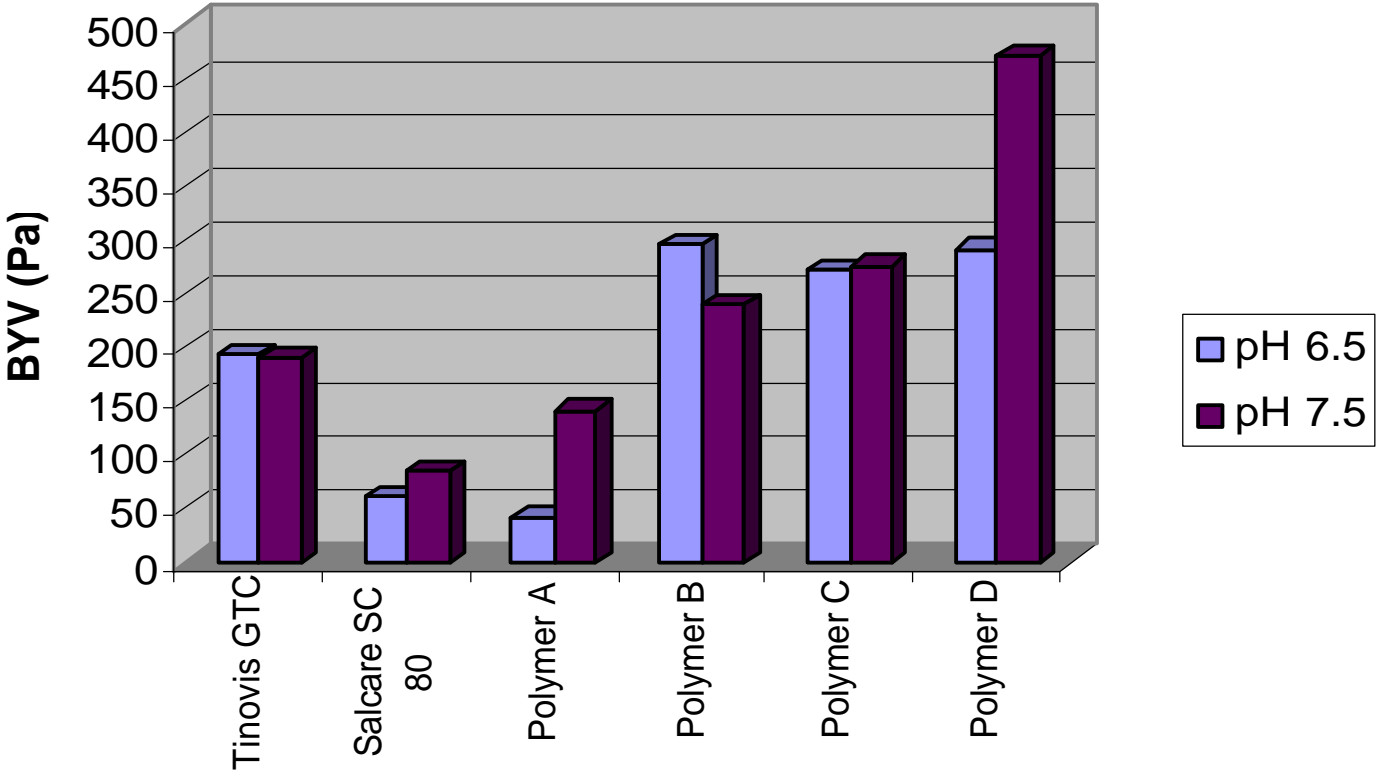
TINOVIS™ GTC - A New Associative Thickener

- ***Summary TINOVIS™ GTC in Other Applications***
 - TINOVIS™ GTC is an effective alternative to Polymers B and C for lotions, hair colors and low viscosity gels
 - TINOVIS™ GTC gives better gel clarity than Polymers B and C
 - TINOVIS™ GTC offers the advantage of having better flow and suspension characteristics than Polymers B and C
 - TINOVIS™ GTC has comparable or better electrolyte tolerance than Polymers B and C
 - TINOVIS™ GTC is stable in peroxide systems



TINOVIS™ GTC - A New Associative Thickener

Brookfield Yield Values after 24 hours 1% active Aqueous Solutions



Ciba

TINOVIS™ GTC - A New Associative Thickener

Ingredient Type

- anionic surfactants
- amphoteric surfactants
- non-ionic surfactants
- cationic surfactants
- cationic polymers
- film forming polymers
- preservatives (water soluble)
- preservatives (water insoluble)
- UV absorbers (water soluble)
- UV absorbers (water insoluble)
- alcohols / glycols / solvents
- oils, silicones, emollients
- active ingredients

Compatibility

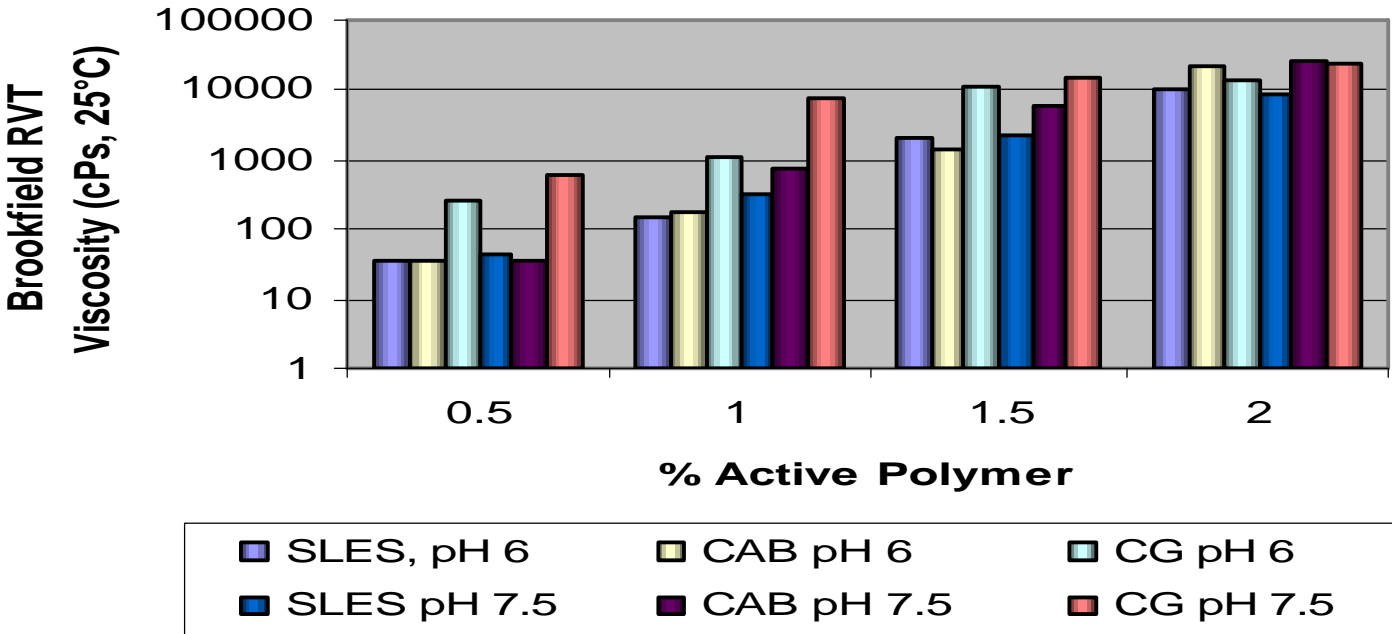
+
+
+
-
+ / -
+ +
+ +
+ + (*)
+ +
+ + (*)
+ + (up to 30%)
+ + (*)
+ +

(++) very compatible (+) compatible (+/-) compatible with some grades (-) incompatible
(*) water insoluble co-ingredients will need to be pre-dissolved to give clear gels



TINOVIS™ GTC - A New Associative Thickener

Thickening Efficiency of Tinovis GTC in Surfactant Solutions
(10% active SLES, 4% active CAB, 4% active Coco-Glucoside)



Ciba

TINOVIS™ GTC - A New Associative Thickener

Formulating with TINOVIS™ GTC

- Solutions of this polymer need to be adjusted to > pH 6 for optimum thickening efficiency, using common bases such as sodium hydroxide or TEA
- Compatible with a wide range of anionic and non-ionic co-ingredients
- Viscosity development can be affected by the presence of surfactants
- Can be used in conjunction with cationic polymers such as Ciba® SALCARE® Super 7 and Salcare® SC60
- Can be used to thicken up to 30% of commonly used solvents such as ethanol, acetone, glycerol, isopropyl alcohol and propylene glycol
- Can be used as a primary thickener / rheology modifier, or a polymeric emulsifier in traditional emulsions
- Can be used to make sprayable as well as jar gels



Ciba

TINOVIS™ GTC - A New Associative Thickener

Application Levels for TINOVIS™ GTC

End Product	Approximate Use Level (% w/w)	End Results / Performance
Creams & Lotions	3.0	Rheology modifier, suspending agent
Face & Body Gels	1.5 – 5.0	Rheology modifier, suspending agent
Hair Gels	1.5 – 5.0	Rheology modifier, suspending agent
Sunscreen Gels	4.0	Rheology modifier, suspending agent
Foundations and Make-up Remover	2.0 – 5.0	Rheology modifier, suspending agent
Hair Color	1.5 – 6.0	Rheology modifier, suspending agent
Depilatories	2.0 – 6.0	Rheology modifier, suspending agent
Emulsion Stabilizer	0.1 – 1.0	Stabilizer, suspending agent, rheological control



Ciba

TINOVIS™ GTC - A New Associative Thickener

Benefits of Using TINOVIS™ GTC

- Good thickening efficiency and suspension characteristics over the pH range 5.5 – 12.5
- Provides excellent clarity over the entire pH range
- Easy to use liquid product which can be neutralized with common bases
- Provides similar rheology to Carbomer types, with no thixotropy and a significant yield point
- Compatible with a wide range of anionic, amphoteric or non-ionic co-ingredients, can also be used in combination with cationic polymers





TINOVIS™ GTC

in Clear Gel Systems:



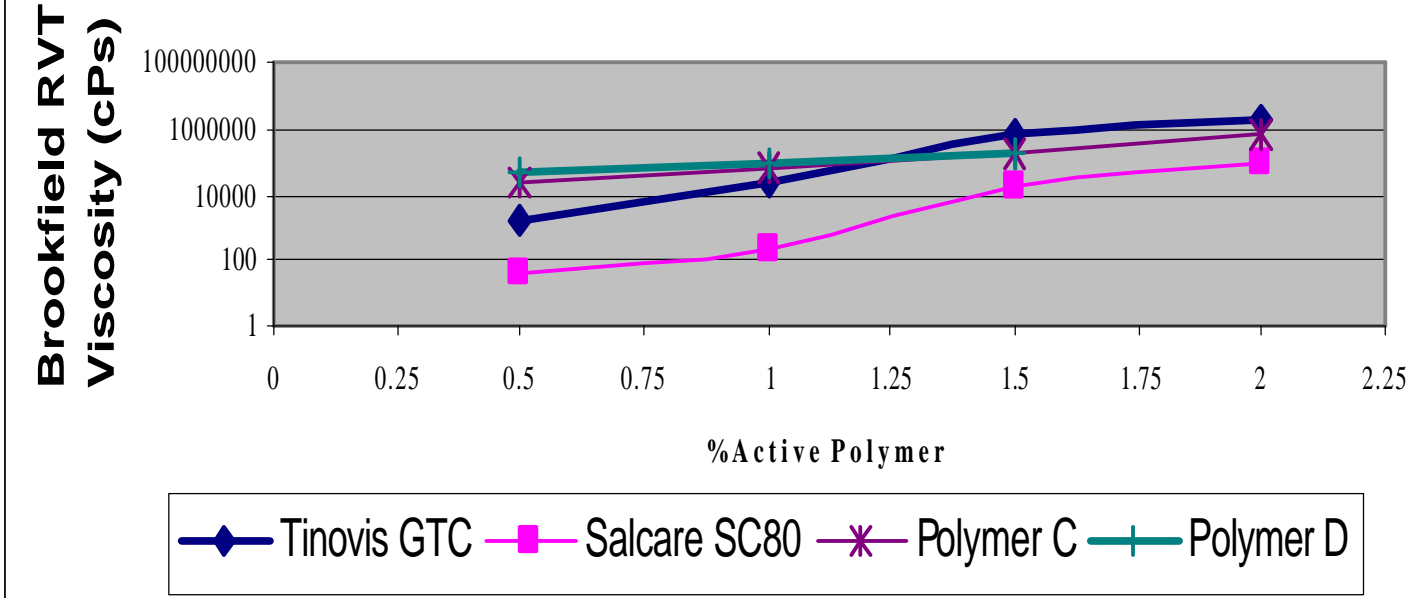
TINOVIS™ GTC - A New Associative Thickener

- Primary positioning of *TINOVIS™ GTC* is as a rheology modifier for clear gel products
 - Styling gels
 - Sculpting lotions
 - Exfoliating gels (suspended particles)
- Improved performance over SALCARE SC 80
- Main competitive products are:
 - Carbopol 940, Carbopol 980
 - Carbopol ETD 2020
- Main competitive attributes that differentiate *TINOVIS™ GTC* from competitive products:
 - Easier to handle (liquid Vs. solid form)
 - Better gel clarity
 - Cost (depending on use levels)
 - Better thickening efficiency at use levels above 1.25% active polymer



TINOVIS™ GTC - A New Associative Thickener

Thickening Efficiency of TINOVIS GTC in comparison to Competitive Products

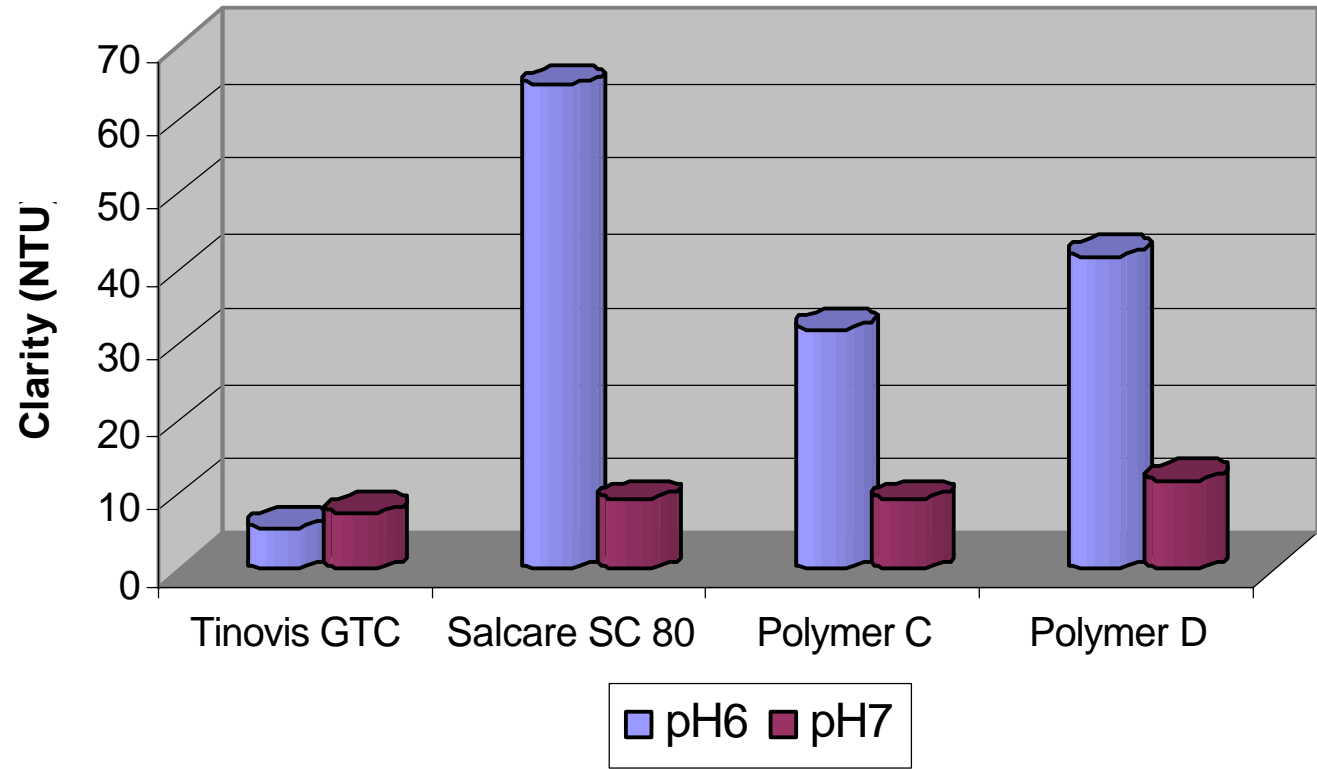


Thickening Efficiency in Deionized Water – pH 7.5 **Ciba**



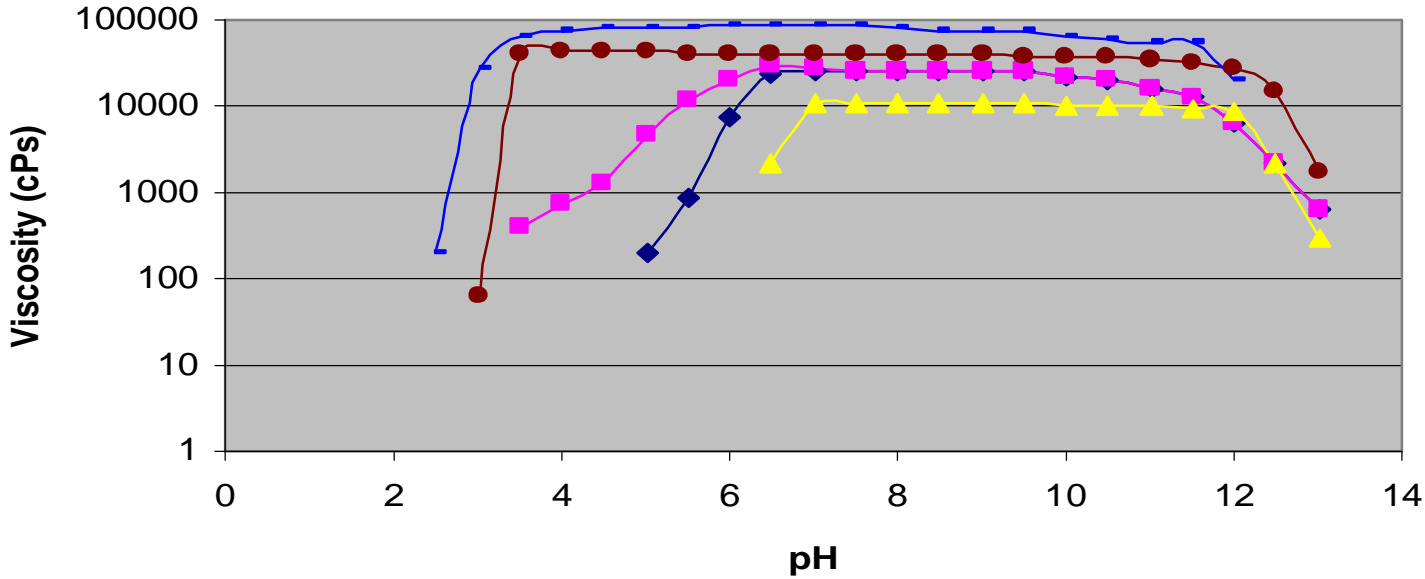
TINOVIS™ GTC - A New Associative Thickener

Clarity of TINOVIS GTC Versus Competitive Products in Deionized Water @ 0.5% Active Polymer



TINOVIS™ GTC - A New Associative Thickener

Effective pH Range for TINOVIS GTC Versus Competitive Polymers



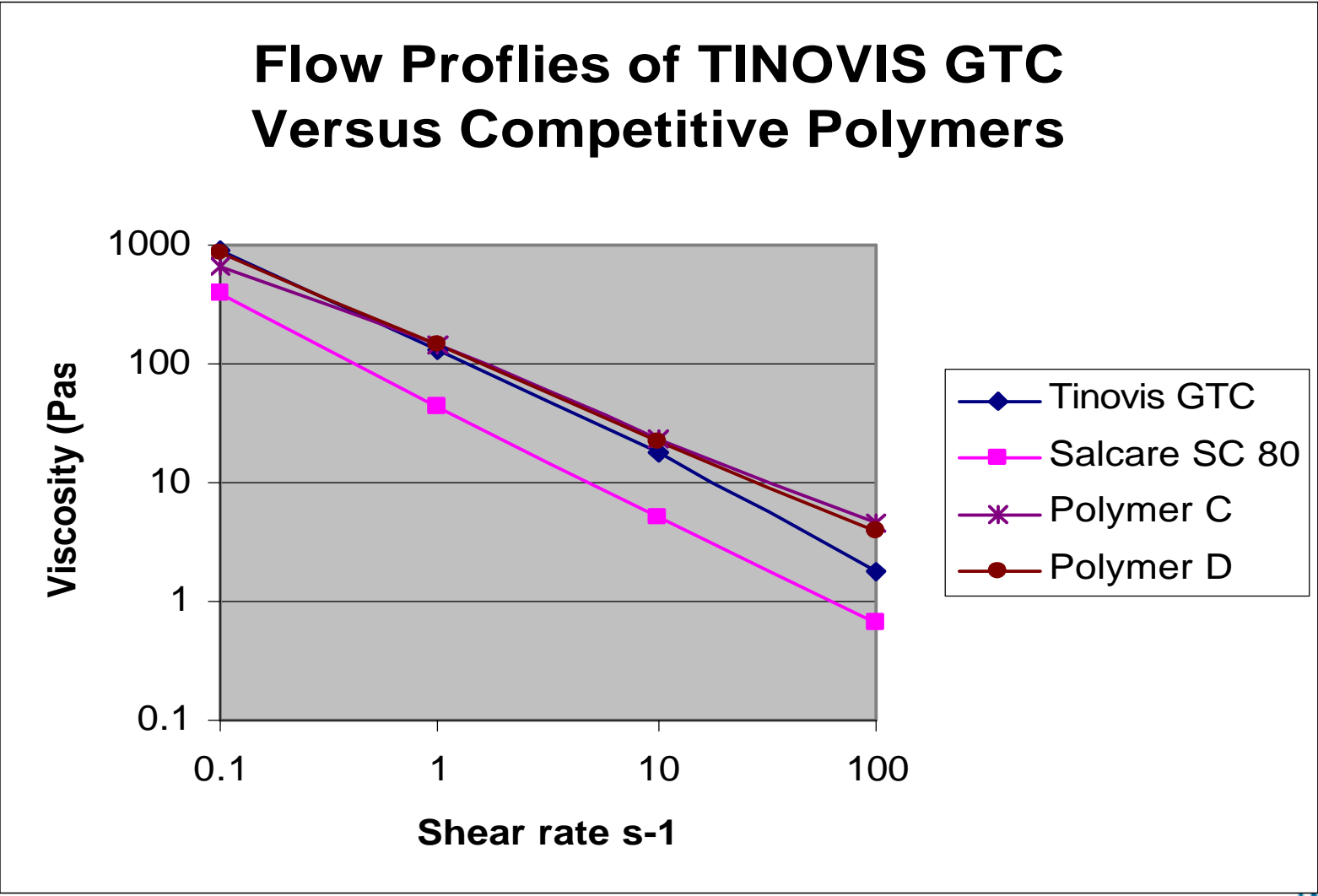
- ◆ Tinovis GTC (Forward titrated)
- ▲ Salcare SC80
- ◆ Polymer D
- Tinovis GTC (Back titrated)
- Polymer C



Ciba

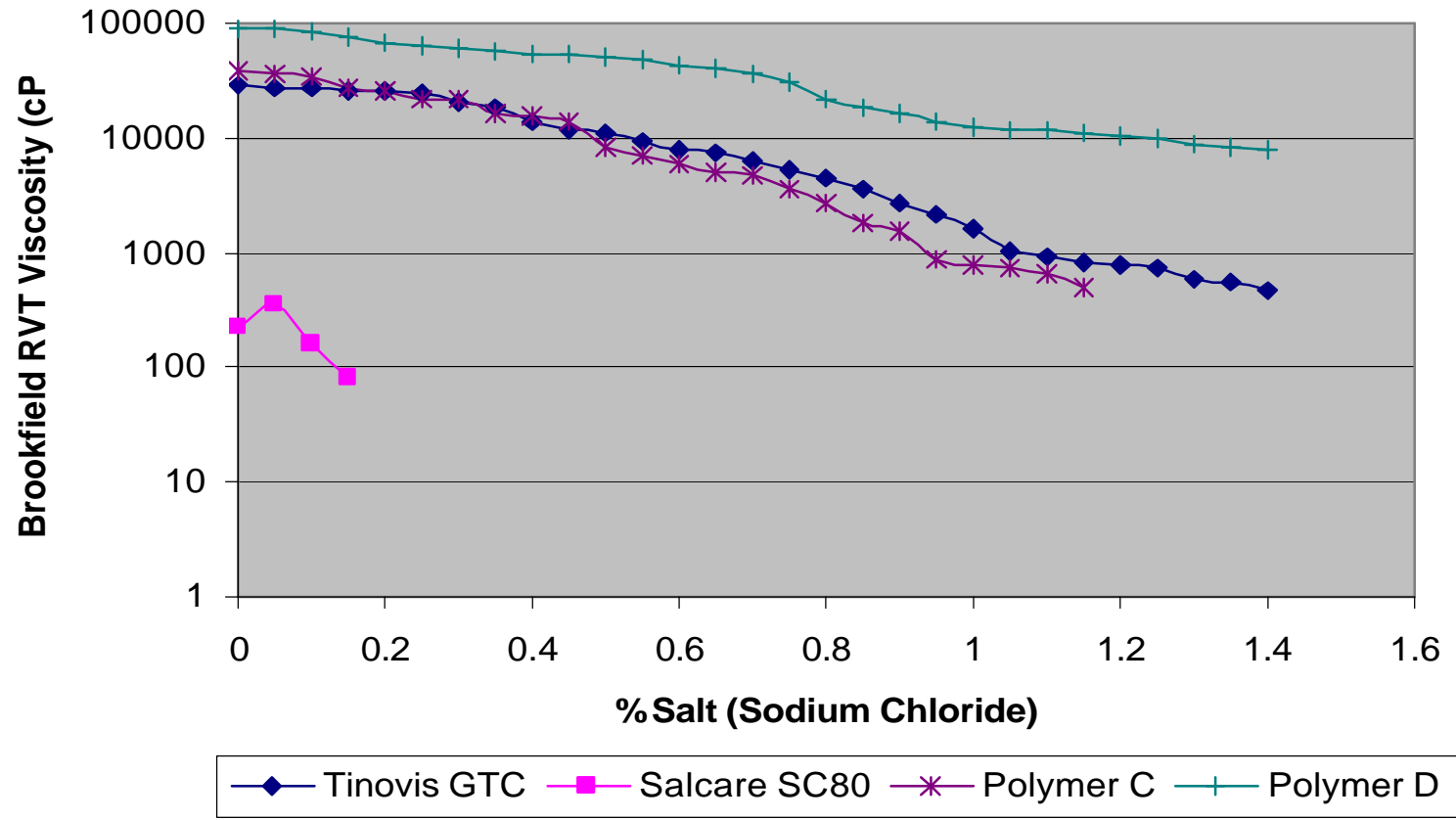
TINOVIS™ GTC - A New Associative Thickener

Flow Profiles of TINOVIS GTC Versus Competitive Polymers



TINOVIS™ GTC - A New Associative Thickener

Electrolyte Tolerance of TINOVIS GTC Versus Competitive Polymers



Ciba

TINOVIS™ GTC - A New Associative Thickener

- **Summary TINOVIS™ GTC in Clear Gel Systems:**
 - **TINOVIS™ GTC** is an effective alternative to carbomer-type rheology modifiers in clear gel systems
 - **TINOVIS™ GTC** delivers better gel clarity than carbomer-type rheology modifiers
 - **TINOVIS™ GTC** offers the advantage of being supplied in a easy-to-use liquid form that can alleviate the formulation problems commonly encountered with carbomer-type rheology modifiers
 - **TINOVIS™ GTC** provides much improved performance over SALCARE SC 80 and should be promoted to customers who have previously evaluated SC 80 without success



TINOVIS™ GTC - A New Associative Thickener

Benefits of Using TINOVIS™ GTC

- Good thickening efficiency and suspension characteristics over the pH range 5.5 – 12.5
- Provides excellent clarity over the entire pH range
- Easy to use liquid product which can be neutralized with common bases
- Provides similar rheology to Carbomer types, with no thixotropy and a significant yield point
- Compatible with a wide range of anionic, amphoteric or non-ionic co-ingredients, can also be used in combination with cationic polymers



TINOVIS™ GTC

Formulations

TINOVIS™ GTC - A New Associative Thickener

Spike Hair Gel

Crystal clear gel for sculpting & designing hair styles

<u>Ingredient</u>	<u>INCI Name</u>	<u>Supplier</u>	<u>% w/w</u>
Part A			
Water	Aqua		to 100
Dissolvine NA-X	Tetrasodium EDTA	Akzo	0.10
Fancor HCO-40	PEG-40 Hydrogenated Castor Oil	Fancor	0.50
dL-Panthenol	dL-Panthenol	Protameen	0.30
PVP K-30	PVP	ISP	3.00
DC 193	PEG-12 Dimethicone	Dow Corning	0.50
Mackastat DM	DMDM Hydantoin	McIntyre	0.50
Part B			
Water	Aqua		45.50
TINOVIS™ GTC	Acrylates/Beheneth-25 Methacrylate Copolymer	Ciba Specialty Chemicals	3.33
10% w/w NaOH	Sodium Hydroxide Solution	Fisher	to pH 6.2-6.5.



TINOVIS™ GTC - A New Associative Thickener

Spike Hair Gel

Crystal clear gel for sculpting & designing hair styles

Method:

Add ingredients in A one at a time, thoroughly mixing before next addition. In separate vessel add Tinovis™ GTC to water with moderate mixing, add NaOH Solution until pH 6.2 – 6.5. Once neutralized and uniform add A to B, mix until homogenous.

Appearance: Clear, highly viscous gel

pH: 6.2 – 6.5

Viscosity: 50,000 cPs – 55,000 cPs



TINOVIS™ GTC - A New Associative Thickener

Normal Hold Hair Gel

Crystal clear gel with excellent application properties

Ingredient	INCI Name	Supplier	% w/w
Water	Aqua		to 100
TINOVIS™ GTC	Acrylates/Beheneth-25 Methacrylate Copolymer	Ciba Specialty Chemicals	2.00
PVPK90	PVP	ISP	0.40
Crillet 1	Polysorbate-20	Croda	0.05
Fragrance	Parfum		0.10
Tetralon B	Disodium EDTA		0.03
Phenonip	Phenoxyethanol(+) Methylparaben (+) Ethylparaben (+) Butylparaben (+) Propylparaben	Clariant	0.10
1% Puricolor Blue	CI 42090	Ciba Specialty Chemicals	2.00
10% w/w Sodium Hydroxide	Sodium Hydroxide		to pH 6.5

Method: Premix fragrance and Polysorbate-20, then mix all ingredients in a clean dry vessel in order, with slow stirring to avoid unnecessary entrapment of air

Appearance: Clear viscous gel
pH: 6.3 – 6.7
Viscosity : 28000 – 32000 cPs

TINOVIS™ GTC - A New Associative Thickener

Gel Scrub

Clear scrub formulation containing suspended particles

Ingredient	INCI Name	Supplier	% w/w
Water	Aqua		to 100
TINOVIS™ GTC	Acrylates/Beheneth-25 Methacrylate Copolymer	Ciba Specialty Chemicals	3.33
Strawberry Seed	Fragaria Vesca	Paoxite	0.10
Fragrance	Parfum		0.10
Phenonip	Phenoxyethanol(+) Methylparaben (+) Ethylparaben (+) Butylparaben (+) Propylparaben	Clariant	0.10
10% w/w	Sodium Hydroxide		to pH 6.5
Sodium Hydroxide			

Method: Mix all ingredients in a clean dry vessel in order, with slow stirring to avoid unnecessary entrapment of air

Appearance: Clear viscous gel with suspended particles

pH: 6.3 – 6.7

Viscosity : 28000 – 32000 cPs



TINOVIS™ GTC - A New Associative Thickener

Shower Gel

Smooth flowable gel formulation at pH6

Ingredient	INCI Name	Supplier	% w/w
Water	Aqua		to 100
TINOVIS™GTC	Acrylates/Beheneth-25 Methacrylate Copolymer	Ciba Specialty Chemicals	5.00
Surfac LC	Sodium Laureth Sulfate	Surfachem	10.00
Plantacare 818	Coco-glucoside	Cognis	5.00
Fragrance	Parfum		0.30
Phenonip	Phenoxyethanol(+) Methylparaben (+) Ethylparaben (+) Butylparaben (+) Propylparaben	Clariant	0.40
10% w/w Sodium Hydroxide	Sodium Hydroxide		to pH 6

Method: Mix all ingredients in a clean dry vessel in order, with slow stirring to avoid unnecessary entrapment of air

Appearance: Clear flowable Gel

pH: 6.0 – 6.5

Viscosity : 5000 – 7000 cPs



TINOVIS™ GTC - A New Associative Thickener

Color Developer

Liquid Developer designed to thicken color based products

Ingredient	INCI Name	Supplier	% w/w
A) Deionised water	Aqua		to 100
B) TINOVIS™ GTC	Acrylates/Beheneth-25 Methacrylate Copolymer	Ciba Specialty Chemicals	2.00
Discoll 1440	(Stabilizer for peroxide)	Vulcan Performance Chemicals	0.30
C) Hydrogen Peroxide(35%)	Hydrogen Peroxide FMC		17.10
D) Phosphoric Acid	Phosphoric Acid	Fisher Scientific	0.06

Method: In a clean vessel, mix B into A with good agitation, followed by C, and D and continue mixing until uniform

Appearance: Thin opaque Liquid

pH: 3.4

Viscosity: 90 – 100 mPas



TINOVIS™ GTC - A New Associative Thickener

Scalp Therapy Lotion

A therapeutic lotion designed to comfort an itchy scalp

Ingredient	INCI Name	Supplier	% w/w
A) Water	Aqua		to 100
TINOVIS™ GTC	Acrylates/Beheneth-25 Methacrylate Copolymer	Ciba Specialty Chemicals	1.50
Propylene Glycol	Propylene Glycol	RITA Corp.	2.00
TINODERM P	DL-Panthenol	Ciba Specialty Chemicals	0.50
Germall Plus Liquid	Propylene Glucol (+) Diazolidinyl Urea (+) Iodopropynyl Carbomate	ISP	0.50
B) SALCARE™ SC91	Sodium Acrylates Copolymer (+) Paraffinum Liquidum (+) PPG-1 Trideceth-6	Ciba Specialty Chemicals	1.00
Lubragel Oil	Glyceryl Polymethacrylate	ISP	0.50
Zinc Omadine	Zinc Pyrithione	Arch Chemicals	0.50
C) SDA-40	Denatured Ethanol	Aaper Alcohol	1.00
Menthol Crystal	Menthol	Jeen International Corp	0.15
Peppermint 18789P	Parfum	Bell Aire	0.15
D) TEA	Triethanolamine		0.31

Ciba



TINOVIS™ GTC - A New Associative Thickener

Scalp Therapy Lotion

Method: In a clean vessel, mix ingredients in part A in turn, stirring between additions. Add Part B in turn, stirring well. Premix part C and add to the vessel, and neutralize with part D, stirring gently to avoid unnecessary entrapment of air.

Appearance: Viscous Lotion
pH: 6.5 – 7.0
Viscosity: 15000 - 20000 mPas



TINOVIS™ GTC - A New Associative Thickener

Medium Hold Sculpting Lotion

Light easy to use lotion with medium hold

Ingredient	INCI Name	Supplier	% w/w
A) Water	Aqua		to 100
Sodium Ascorbyl Phosphate	Sodium Ascorbyl Phosphate	BASF	0.05
Versene 220	Tratrasodium EDTA	Dow Chemical	0.10
Germall Plus Liquid	Propylene Glucol (+) Diazolidinyl Urea (+) Iodopropynyl Carbomate	ISP	0.50
PVP K-90	PVP	ISP	3.50
B) TINOVIS™ GTC	Acrylates/Beheneth-25 Methacrylate Copolymer	Ciba Specialty Chemicals	1.50
C) SALCARE® SC91	Sodium Acrylates Copolymer (+) Paraffinum Liquidum (+) PPG-1 Trideceth-6	Ciba Specialty Chemicals	1.00
Dow Corning 556	Phenyltrimethicone	Dow Corning	0.25
FinsolvTN	C12-15 Alkyl Benzoate	Finetex	0.25
Kalhari Desert	Parfum	Bell Aire	0.25
D) TEA	Triethanolamine		0.31



Ciba

TINOVIS™ GTC - A New Associative Thickener

Medium Hold Sculpting Lotion

Method: In a clean vessel, mix ingredients in part A in turn, stirring between additions. Add Part B in turn, stirring well. Premix part C and add to the vessel, and neutralize with part D, stirring gently to avoid unnecessary entrapment of air.

Appearance: Viscous Lotion
pH: 7.10
Viscosity: 7000 – 12000 cPs

