

Polymer Range Technical Bulletin



IntegriGELS, IntegriQUATS
and IntegriEXFOLIANTS

Polymer Range Technical Bulletin

RHEOLOGY MODIFIER AND THICKENERS

In our IntegriGEL series, we can offer a full range of rheological modifiers and thickeners, used in a wide variety of personal care compositions. They are crosslinked, pre-neutralized networks. Viscosity in aqueous systems is generated by repulsive forces between anionic or cationic charge.

Manufacture Stages:

Inverse Emulsion Polymerization Process and Drying Step

Our range of emulsions (IntegriGELS) are made up of three main ingredients:

- A dispersed polymer
- A continuous carrier phase
- An inverting agent

A Dispersed Polymer

Polymers are the heart of the Integrity Ingredients business. Our expertise in monomers allows an infinity of combinations to be developed. Each monomer gives to the final formulation feeling properties (non-tacky, non-stringy, non-greasy, etc.) comparable to other raw materials or resistance to formulation conditions.

Monomer Range

Non-Ionic - Acrylamide

- Efficiency due to high molecular weight, feeling properties

Anionic - Sodium Acrylate

- Non-toxic, strong thickening properties

Anionic - Sodium Acryloyldimethyl Taurate (ATBS)

- Stable with electrolytes, effective under acid pH

Cationic - Quaternized DiMethylAminoEthyl (Meth) Acrylate (DMAE(M)A Quat)

- Cationic monomer, keratin affinity

Cationic - DiAllyl DiMethyl Ammonium Chloride (DADMAC)

- Stable versus hydrolysis and temperature

A Continuous Carrier Phase

This phase is made of a hydrophobic solvent called an oily phase. Each oil brings a sensory profile in the final formation. The main oil used for IntegriGELS is mineral oil and hydrogenated polydecene. Other carriers are available on request.

An Inverting Agent

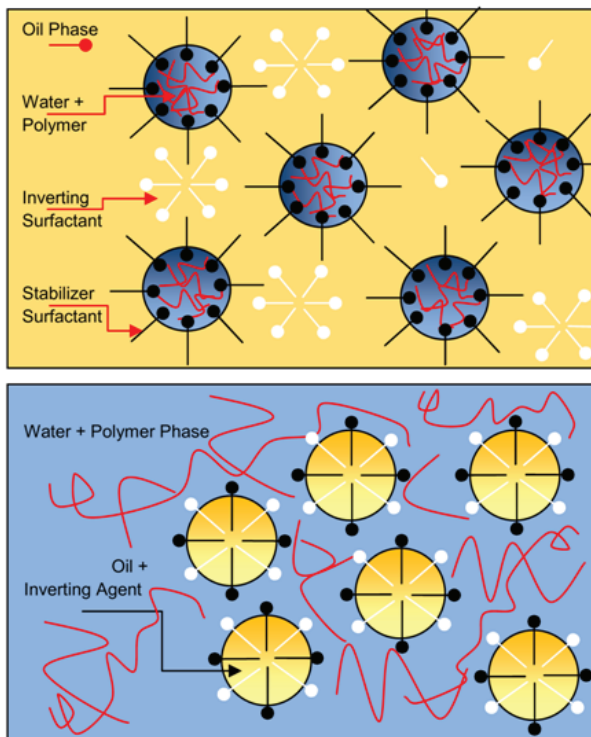
The inverting agent is an O/W emulsifier that allows liquid dispersions to invert in aqueous systems. This enables the water molecules to enter into polymer particles by osmosis, allowing polymer chains to swell in the aqueous external phase. The standard inverting agent is Trideceth-6; other inverting agents available on request.

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RHEOLOGY MODIFIER AND THICKENERS



IntegriGEL series are Liquid Dispersion Polymers manufactured via inverse emulsion polymerization. With this process it is possible to achieve a very high molecular weight crosslinked polymer with an optimized rheological profile. Integrity Ingredients strength is to offer a wide range of products from low concentration to highly concentrated thickeners.

Rheology modifiers exist also in powder form (PRM – Powdered Rheology Modifiers), such as IntegriGEL O/W SP or IntegriGEL O/W 2-11 pH PWDR. The first step to produce this kind of powder consists in making a Liquid Dispersion Polymer, after that, with a patented process, we remove the oil to obtain a powder.

Figure 2: Contact between emulsion and aqueous system under mixing: **Inversion**

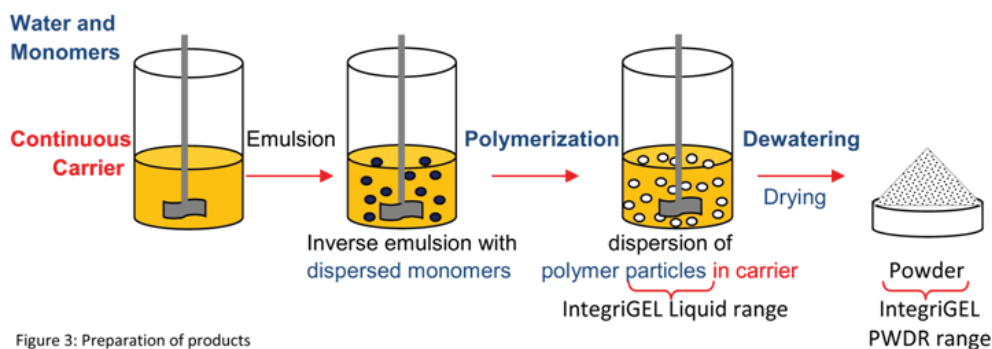


Figure 3: Preparation of products

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RHEOLOGY MODIFIER AND THICKENERS

Four major properties of IntegriGEL and PWDR:

- Thickening - Thanks to physical properties
- Suspending (η)
- Stabilizing - Thanks to chemical properties
- Emulsifying (polymer and surfactant)

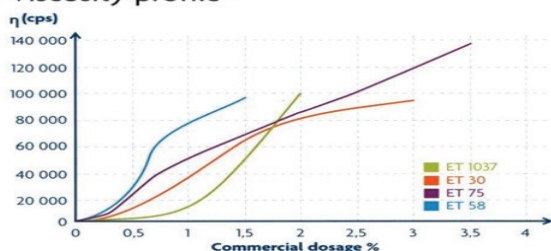
When is it best to add the IntegriGEL thickener during the formulation Process?

IntegriGEL addition can happen at different times during the process. It can be a direct addition (in aqueous phase) or indirect addition (in oil phase). IntegriGEL thickeners could also be added in the cosmetic emulsion.

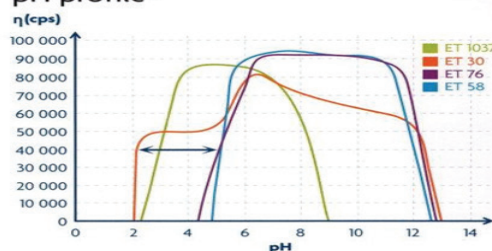
1. IntegriGEL Range (Liquid Dispersion Polymers)

Integrity Trade Name	INCI Name	%	Remarks
IntegriGEL O/W MO 2-11 pH	Sodium Acrylate/Sodium Acryloyldimethyl Taurate Copolymer, Paraffinum Liquidum, Trideceth-6	57.5	Acid, pH, Electrolyte Stable
IntegriGEL O/W MO Cationic	Polyquaternium-37 (and) Paraffinum Liquidum (and) Trideceth-6	52	Cationic, Keratin Affinity
IntegriGEL P37 - PG	Polyquaternium 37 (and) Propylene Glycol Dicaprylate Dicaprate (and) PPG-1 Trideceth-6	52	Cationic, Keratin Affinity
IntegriGEL O/W MO	Acrylamide / Sodium Acrylate Copolymer (and) Paraffinum Liquidum (and) Trideceth-6	57.5	Texture
IntegriGEL O/W MO Plus	Sodium Polyacrylate (and) Paraffinum Liquidum (and) Trideceth-6	57.5	Concentrated
IntegriGEL O/W HP	Sodium Polyacrylate (and) Hydrogenated Polydecene (and) Trideceth-6	57.5	Thickening, Concentrated
IntegriGEL O/W EHS	Sodium Polyacrylate (and) EthylHexyl Stearate (and) Trideceth 6	57.5	Thickening, Concentrated
IntegriGEL O/W 305	Polyacrylamide (and) C13-14 Isoparaffin (and) Laureth-7		Thickening, Texture, Broad pH

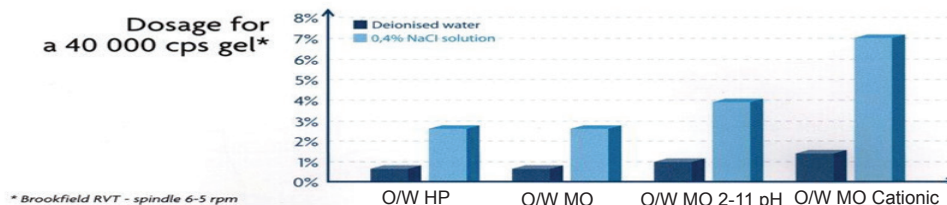
Viscosity profile*



pH profile*



Dosage for a 40 000 cps gel*



* Brookfield RVT - spindle 6-5 rpm

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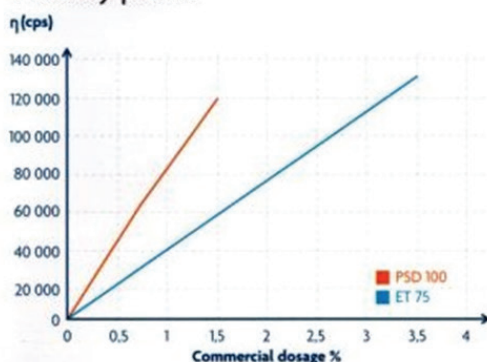
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RHEOLOGY MODIFIER AND THICKENERS

1. IntegriGEL and Integrity C940 Range (PWDR - Powdered Form)

Integrity Trade Name	INCI Name	Remarks
IntegriGEL O/W SP	Sodium Polyacrylate	Pre-neutralized free flowing powder
IntegriQUAT 37	Polyquaternium 37	Cationic, broad pH
IntegriGEL OW 2-11pH PWDR	Sodium Acrylate (and) Sodium Acryloyldimethyl Taurate (ATBS) Copolymer	Stable to electrolyte and Acid pH because of ATBS monomer
Integrity C940	Carbomer	3 grades, C940, C940 HC & C940 HV

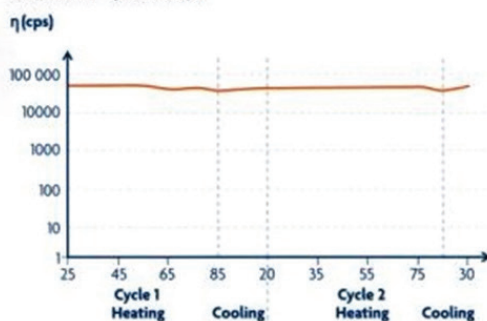
Viscosity profile*



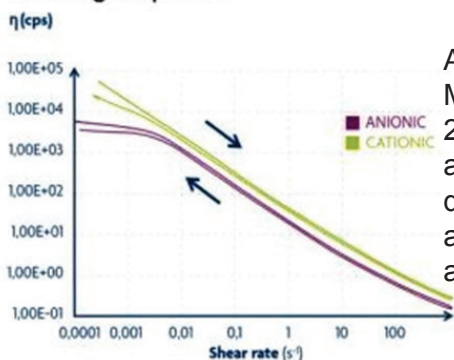
Integrity Ingredients Corporation's Liquid Dispersion Polymers and Powdered Rheology Modifiers are pre-neutralized and do not require the addition of a base to develop viscosity, all our products are ready to use. Emulsifying and stabilizing properties are the result of the adjusted combination of polymer and surfactant system described previously. No preservative systems are required for these products.

Temperature effect, 2% w/w Polymer, Balance Deionized Water

Brookfield RVT - spindle 6-20rpm



Rheological profile*



Application:

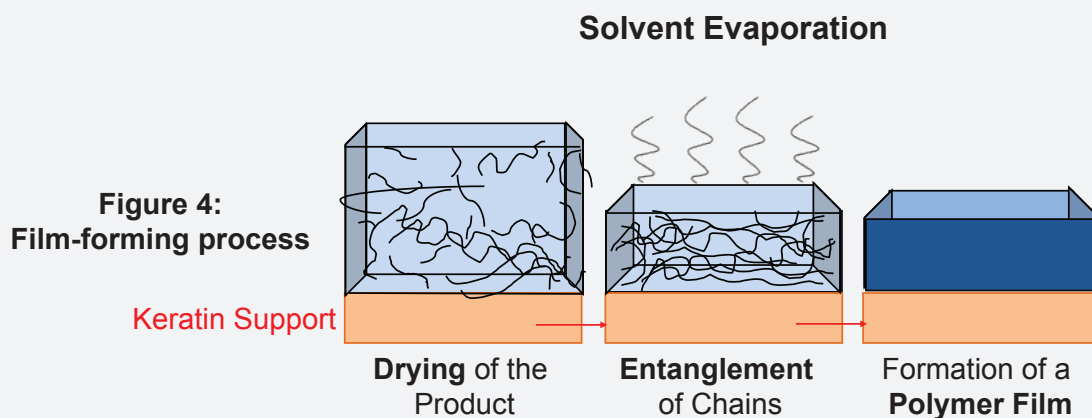
Anionic polymers (O/W HP, O/W MO, O/W MO Plus, in liquid form or IntegriGEL O/W 2-11pH PWDR and O/W SP in powder form) are ideal for skin care, toiletries and decorative cosmetics. For clear cosmetics and toiletries, Integrity C940, C940 HC, and C940 HV are best suited.

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FILM-FORMER AND CONDITIONING AGENT

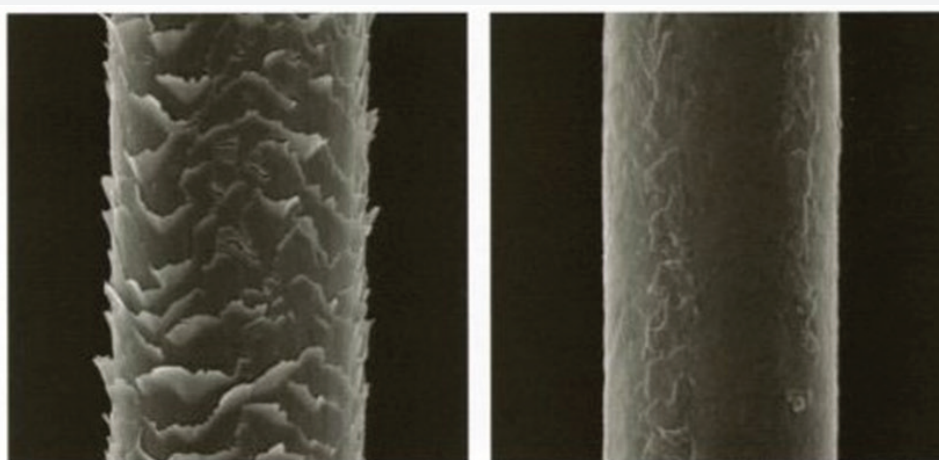
Principle

The IntegriGEL and IntegriQUAT range of products are available in liquid form (solution) or in dry form. A film former or conditioner will coat hair or skin. The product forms a film on the keratin support because of its affinity with it. This deposit gives some properties to the substrate; softness or brightness, depending on active and emollient added in the formulation. The efficiency is due to film formed on skin or hair along with its ionic affinity. See Figure 4 for details on film formation.



With Scanning Electron Microscopy (SEM) the effect of film-former on hair can be seen (Figure 5).

Figure 5: Picture non-treated and treated hair in SEM



Non-treated hair (x700)

Hair treatment with film-former

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FILM-FORMER AND CONDITIONING AGENT

Product Range

Polymer Charge	Integrity Trade Name	INCI Name	Chemistry	Form	Remarks
Cationic	IntegriQUAT 6 IntegriQUAT 6B	Polyquaternium 6	DADMAC Homopolymer	Liquid Dry	High Cationic Level Hair compatibility
Cationic	IntegriQUAT 7 IntegriQUAT 7PF	Polyquaternium 7	DADMAC/Acrylamide Copolymer	Liquid Liquid	Cationic Surfactant affinity
Cationic	IntegriQUAT 11	Polyquaternium 11	NVP/DMAEMA (Q) Diethyl Sulfate copolymer	Liquid	Cationic NVP-Based
Cationic	IntegriQUAT 37	Polyquaternium 37	Cationic	Dry	Cationic Hair Compatibility Surfactant Compatibility

IntegriQUAT 6 & 7, Polyquaternium 6 and 7, are available in liquid form and powder form. These two products are largely used in cosmetics for their conditioning properties.

The powder form (IntegriQUAT 6B) is free of any preservative systems (ie: paraben free)

IntegriQUAT 6B is highly cationic and may have compatibility issues when formulated with anionic surfactants.

IntegriQUAT 37, is a cationic product. It is recommended for thickening cationic systems. Being in powder form it is free of any preservative system.

IntegriQUAT 11, Polyquaternium 11, is a conditioner based on NVP (vinyl pyrrolidone) and DMAEMA DiMethylAminoEthyl (Meth)Acrylate diethyl sulfate. NVP provides the polymer with a very high film-forming power and DMAEMA diethyl sulfate gives substantivity for hair and skin.

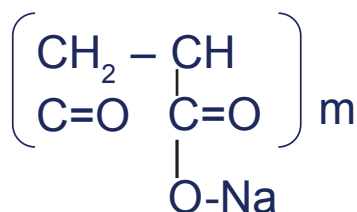
Regarding preservative systems -
IntegriQUAT range is available in “**Paraben Free**” versions

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SPECIALTY APPLICATION PRODUCTS

Principle of “Superabsorbent” Technology - IntegriEXFOLIANT SP

Superabsorbent products have the property of absorbing up to 400 times their weight in distilled water and they become gels.



The polymers consist of a set of polymer chains regularly linked to each other by cross-linking agents, thus forming a network. When water comes into contact with one of these chains, it is drawn into the molecule by osmosis. Water rapidly migrates inside of the polymer network where it is stored. Swollen polymers are 1mm spherical gel beads (Figure 6).

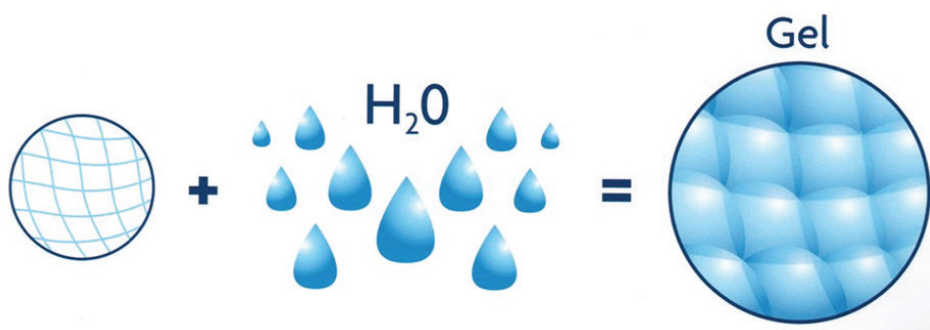


Figure 6: IntegriEXFOLIANT SP beads swelling

Product Range

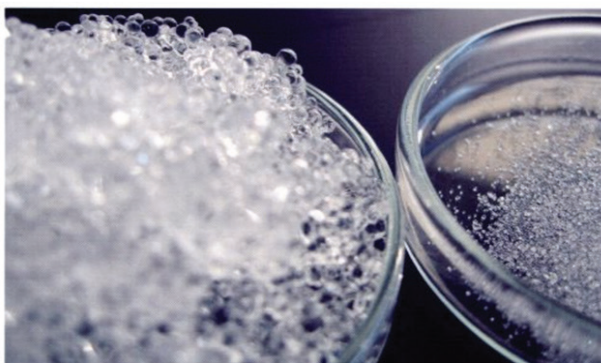
Integrity Trade Name	INCI Name	Form	Remarks
IntegriEXFOLIANT SP	Sodium Polyacrylate	Bead	Mild skin-polishing agent in bead form, providing superabsorbent properties. Ideal for soft scrubbing effects.

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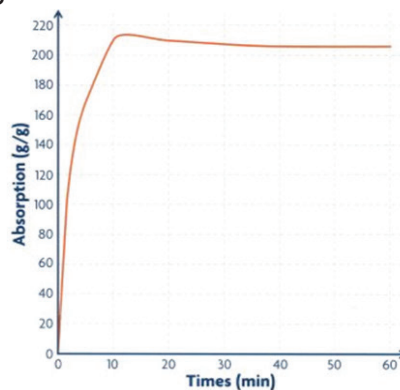
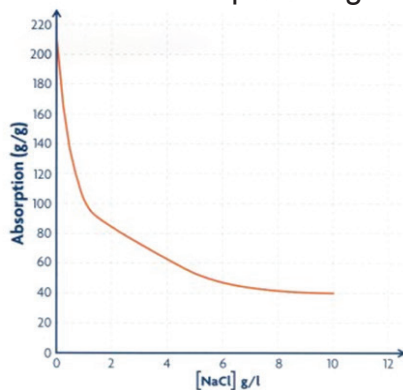
SPECIALTY APPLICATION PRODUCTS



Picture of
IntegriEXFOLIANT SP
before (**right**) and after
(**left**) water absorption



IntegriEXFOLIANT SP absorption: 1 g IntegriEXFOLIANT SP + 200mL water = 500mL swelled beads



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IntegriGEL O/W - HP

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

Product Description:

IntegriGEL O/W-HP is a polymer developed specifically for cosmetic and personal care products. It is an anionic acrylic polymer dispersed in Hydrogenated Polydecene. It is typically used to thicken aqueous solutions and to formulate stable O/W emulsions.

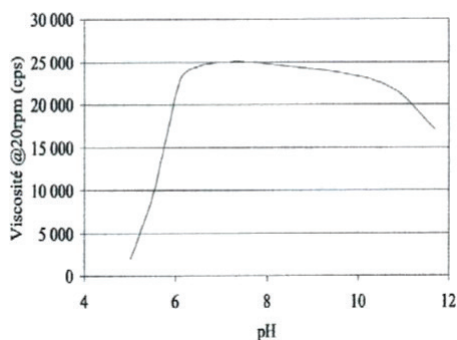
Product Characteristics:

IntegriGEL O/W-HP is a ready to use liquid form polymer which swells immediately in water, at room temperature, without any neutralization.

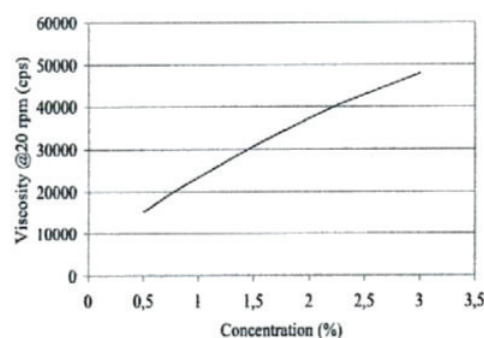
IntegriGEL O/W-HP gives light and melting textures with non sticky and non greasy after-feel.

Product Advantages

- **Higher Active Content** = More efficient at lower levels
- **Lower Product Viscosity** = Much easier to use
- **Lower Price** = More cost savings for you



Effect of pH 1% IntegriGEL O/W - HP



Effect of Concentration

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IntegriGEL O/W - HP

Product Characteristics

Odor	Slightly acrylic
Active Content	57.5%*
Viscosity (as supplied)	400 – 2,000 cps (Brookfield LVT, spindle #3, 30 rpm)
Viscosity (1% solution, pH 6)	7,000 – 13,000 cps (Brookfield RVT spindle #6, 50 rpm)
pH (1% solution)	5.0 – 7.0
Shelf Life	12 months

Properties

Rheological profile:

IntegriGEL O/W-HP is a thickening agent for aqueous base formulations. Products are Pseudoplastic and non thixotropic. Viscosity decreases with shear stress (shear-thinning flow) and comes back instantly to its initial value (not time dependant).

Effect of Temperature:

Solutions of IntegriGEL O/W HP do not show significant changes in viscosity and stability at high temperature.

Emulsifying and stabilizing agent:

IntegriGEL O/W-HP allows the formulation of highly stable O/W emulsions regardless of the oil phase. The addition of other emulsifiers depends on the final requested texture.

IntegriGEL O/W HP helps to stabilize suspensions (sunscreens).

Cosmetic Applications:

IntegriGEL O/W-HP is a thickening and stabilizing agent for O/W emulsions. This polymer gives light and melting textures, with non sticky and non greasy after-feel. It's particular rheology profile helps spreading high viscous products. It is used in both hair care and skin care (body and face) products.

IntegriGEL O/W HP is recommended in formulations of O/W emulsions and cream-like gels. Concentration use depends on required final viscosity (0.2 to 4%).

IntegriGEL O/W-HP is characterized by a high versatility in use: it is supplied as a ready to use liquid form (no neutralization, addition at any stage of manufacturing process).

Toxicological Data

Eye irritation potential (5% solution): non irritant

Skin irritation potential (5% solution): very slightly irritant

Packaging: 60 kg drums

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IntegriGEL O/W - SP

INCI Name: Sodium Polyacrylate

Product Description:

IntegriGEL O/W-SP is an acrylic based polymer in powder form developed for cosmetic and personal care products. It is typically used to thicken aqueous solutions and to stabilize emulsions.

Product Characteristics:

IntegriGEL O/W-SP is a ready to use powder with short dissolution time. The polymer swells immediately without neutralization. Gels and emulsions can be produced at room temperature.

Appearance	White Free Flowing Powder
Odor	None
Mesh Size	About 150 microns
Active Content	>85%
Viscosity	25,000 – 35,000 cps
(1% solution)	(Brookfield RVT spindle #6, 20 rpm)*
pH (1% solution)	6.5. ± 0.5
Shelf Life	24 months

Properties:

Modifier of Rheology

IntegriGEL O/W-SP is a thickening agent for aqueous solutions. These solutions are pseudoplastic and non-thixotropic. The gel structure is easily broken-down by shear and comes back to it's initial value.

Effect of Temperature

Solutions of IntegriGEL O/W-SP do not show significant changes in viscosity and stability at high temperature.

Emulsifying Agent

IntegriGEL O/W-SP allows the formulation of highly stable O/W emulsions regardless of the oil phase and the HLB value.

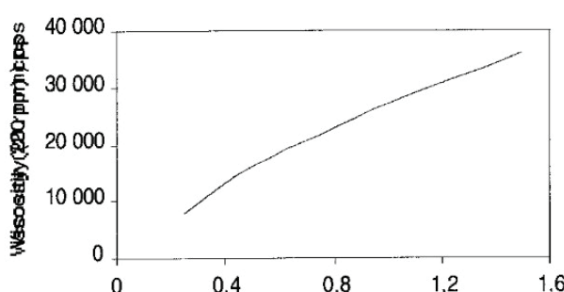
Stabilizing agent

IntegriGEL O/W-SP is an effective agent for emulsion stabilization and stable suspension of solid particles.

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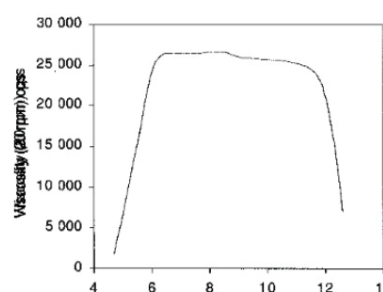
IntegriGEL O/W - SP

Effect of Concentration



% IntegriGEL O/W - SP

**Effect of pH
1% IntegriGEL O/W - SP**



Cosmetic Applications

IntegriGEL O/W-SP enables the formulation of unctuous, non greasy and non sticky products.

This polymer is pseudoplastic, therefore it makes for easier spreading of thick and compact creams.

IntegriGEL O/W-SP is used in hair care products (conditioners, creams....) and skin care products (creams, lotions, make-up remover, sunscreen products...).

IntegriGEL O/W-SP is easy to use:

- The powder is quickly dissolved in water or the aqueous phase.
- Emulsions can be made at any temperature.
- No neutralization is required.

Toxicological Data

Eye irritation potential (10% solution): non irritant

Skin irritation potential (pure product): non irritant

Storage

IntegriGEL O/W-SP should be stored at a temperature between 0°C and 35°C in original packaging.

Packaging: 25 kg bags

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IntegriGEL P37 - PG

INCI Name: Polyquaternium-37 (and) Propylene Glycol Dicaprylate/Dicaprate (and) PPG-1 Trideceth-6

Product Description:

IntegriGEL P37 - PG is a polymer developed specifically for cosmetic and personal care products. It is a cationic polymer (Polyquaternium 37) dispersed in Propylene Glycol Dicaprylate/ Dicaprate.

Product Characteristics:

- Cationic Charge
- Easy-to-Use Liquid; No Neutralization
- Multifunctional Design for Oil-in-Water Emulsions
- Thicken, Emulsify and Stabilize Cold Process Emulsions
- No HLB Calculation
- Functions over a Broad pH Range (best suited pH 3 – 7)

Appearance	White Mobile Liquid
Ionic Character	Cationic
Dry Weight (%)	48 - 52
pH 25° C (2% Aqueous)	3.2 – 4.8
(Brookfield) Viscosity cps (as supplied)	400 – 3,000 cps
Viscosity in Aqueous Solution (cps)	
2.0% Brookfield RVT Spindle 6, Speed 20 @ 25°C	20,000 – 50,000
1.5% Brookfield RVT Spindle 6, Sped 20 @ 25° C	10,000 – 40,000
Shelf Life	12 months

- Stabilizing/Suspending Agent
- Emulsions with cationic and non-ionic ingredients
- Suspension of solid particles
- Functions over a Broad pH Range but best suited pH 3 - 7

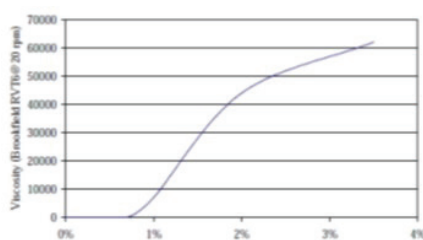
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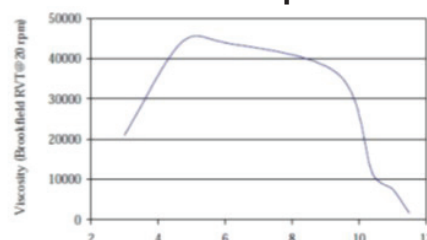
IntegriGEL P37 - PG

Effect of Concentration



% of IntegriGEL P37 - PG

Effect of pH



pH

Cosmetic Applications:

IntegriGEL P37-PG allows to easily formulate skin care and hair care products. Formulations are smooth with a non greasy and non sticky after feel. Rub in and spreadability of highly thick and compact creams are easier to produce and more uniform. The cationic nature of the polymer provides affinity to the skin and enhances water proofing ability of cosmetic formulations.

Hair Care:

- After Shampoos
- Masks
- Conditioning Creams

Skin Care:

- AHA and BHA based formulations
- Sunless tanning systems
- Sunscreens
- Solvent based formulations.....
- IntegriGEL P37-PG provides a moisturizing effect.

IntegriGEL P37-PG provides a conditioning effect (a film that coats the hair fiber) due to its cationic nature. Can also be formulated with other conditioning agents (Quats).

Storage:

IntegriGEL P37-PG should be stored at a temperature between 10°C and 40°C. If by accident the product freezes, thaw out by placing the drum in warm water while mixing thoroughly. Store in original packaging or in any other glass, stainless steel, plastic or epoxy lined container. Do not store in mild steel, copper or aluminum containers.

IntegriGEL P37-PG is characterized by its high versatility in use.

- It is supplied as a ready to use liquid form
- no neutralization (addition at any stage of the manufacturing process)
- no need to heat to dissolve it.

Concentration use depends on the required final viscosity (between 0.2 and 4.0%) The viscosity and stability of formulations made with IntegriGEL P37-PG are not influenced by high temperatures.

Toxicological Data:

See MSDS

Packaging: 60 kg drums

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IntegriGEL O/W “2-11pH” PWDR

INCI Name: Sodium Acrylate/Sodium Acryloyldimethyl Taurate Copolymer

Product Description:

IntegriGEL O/W “2-11pH” PWDR is a polymer developed specifically for cosmetic and personal care products. It is an anionic acrylic polymer in powder form. It is typically used to thicken and to stabilize O/W emulsions, even at low pH.

Product Characteristics:

IntegriGEL O/W “2-11pH” PWDR is a ready to use in powder form. The polymer swells immediately in water, at room temperature, without any neutralization. Gels and emulsions can be produced at room temperature.

Appearance	White free flowing powder
Odor	None
Active Content	> 85%*
Viscosity (1% solution)	15,000 – 30,000 cps (Brookfield RVT spindle #6, 20 rpm)*
pH (2% solution)	6 - 11*
Shelf Life	24 months

Properties:

Rheological profile

IntegriGEL O/W “2-11pH” PWDR is a thickening agent for aqueous formulations. Products are pseudoplastic and non-thixotropic. Viscosity decreases with shear stress (shear thinning flow) and comes back instantly to its initial value (not time dependant).

Effect of temperature

Solutions of IntegriGEL O/W “2-11pH” PWDR do not show significant changes in viscosity and stability at high temperature.

Emulsifying and stabilizing agent

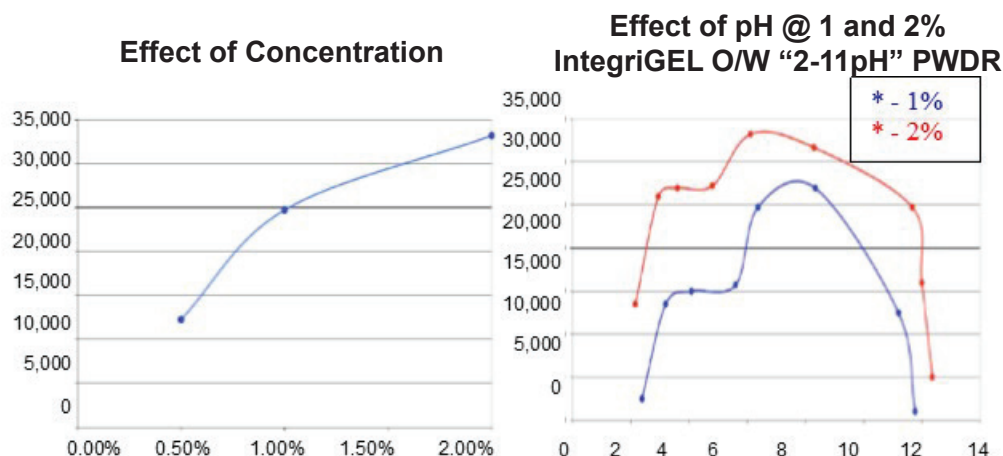
IntegriGEL O/W “2-11pH” PWDR allows for formulation of highly stable suspensions and O/W emulsions in a wide range of pH (2 – 11)

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IntegriGEL O/W “2-11pH” PWDR



Cosmetic Applications:

IntegriGEL O/W “2-11pH” PWDR is a thickening and stabilizing agent for O/W emulsions. This polymer gives a light and melting texture with non stick and non greasy after-feel. It's particular rheology profile helps spreading of high viscous products. It is used in both hair care and skin care (body and face) products.

IntegriGEL O/W “2-11pH” PWDR is recommended for low pH products. Referring to it's chemical composition, pH formulation adjustment is very easy. This specificity gives a large flexibility in use at industrial scale.

Concentration use depends on required final viscosity (0.3 to 6%).

IntegriGEL O/W “2-11pH” PWDR is characterized by a high versatility in use, it is supplied in ready to use powder form (no neutralization addition at any stage of the manufacturing process).

Toxicological Data:

- Eye irritation potential (5% solution): non irritant
- Skin irritation potential (5% solution): non irritant

Storage:

IntegriGEL O/W “2-11pH” PWDR should be stored at a temperature between 10°C and 40°C.

Packaging: 25 kg bags

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Integrity C940 and C940 HC

INCI Name: Carbomer

Product Description:

Integrity C940 & C940 HC is an acrylic-based polymer in powder form typically used to formulate transparent gels.

Appearance	White free flowing powder
Odor	Slightly acetic
Moisture Content	2% max
Heavy Metals	10 ppm Max
Viscosity	40,000 – 60,000 cps
(0.5% solution)	(Brookfield RVT spindle #6, 20 rpm)
pH (0.5% solution)	3 ± 0.5
Residual Solvent	< 0.1%
Clarity % Transmission	C940 Minimum 85% C940 HC Minimum 96
Shelf Life	24 months

Properties:

Rheological Profile

Integrity C940 & C940 HC is a thickening agent for aqueous solutions. These solutions are pseudoplastic and non-thixotropic. The gel structure is easily broken-down by shear and comes back to it's initial value.

Effects of Temperature

Solutions of Integrity C940 & C940 HC do not show significant changes in viscosity and stability at high temperature.

Suspending and Stabilizing Agent

Integrity C940 & C940 HC has a high yield value so it is an effective agent for emulsion stabilization and stable suspension of solid particles.

Uses and Applications

It is used for hair care and skin care products for gels, lotions and cream formulations.

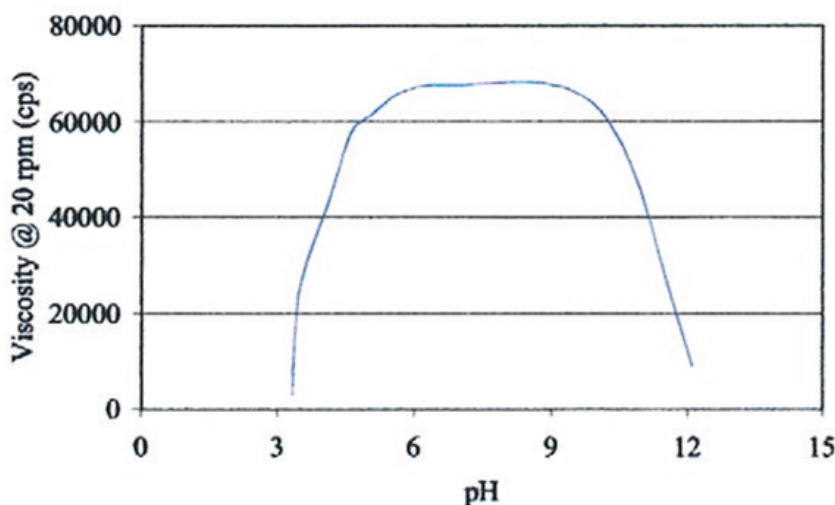
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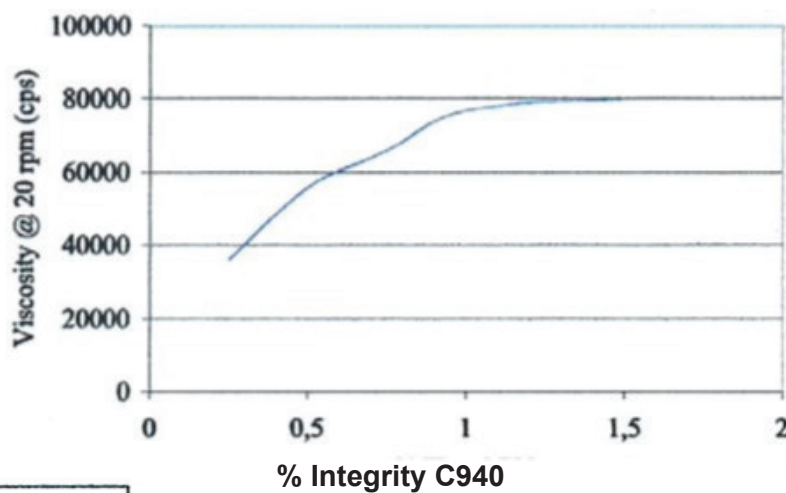
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Integrity C940 and C940 HC

Effect of pH on Viscosity
0.5% Integrity C940



Effect of Concentration



Instructions:

Integrity C940 & C940 HC dispersions in water should be made by slow addition of the polymer with moderate agitation. The most suitable neutralizing agents are monovalent inorganic bases such as NaOH or KOH, ammonium hydroxide or water soluble amines.

Toxicological Data:

- Eye irritation potential (10% solution): non-irritant
- Skin irritation potential (5% solution): non-irritant

Storage:

Integrity C940 & C940 HC should be stored in a dry place at a temperature between 0° C and 35° C in original packaging.

Packaging: 20 kg plastic lined cardboard box

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Polymer Range Technical Bulletin

IntegriQUAT 7 and IntegriQUAT 7 PF

INCI Name: Polyquaternium 7

Product Description:

IntegriQUAT 7 and IntegriQUAT 7 PF is an ingredient developed specifically for cosmetic and personal care products.

Product Characteristics:

IntegriQUAT 7 and IntegriQUAT 7 PF is completely transparent ensuring the required clarity for all cosmetic products. High solubility in water and compatibility with all types of surfactants make IntegriQUAT 7 and IntegriQUAT 7 PF an excellent ingredient which can be incorporated into hair care and skin care formulations.

Compatibility:

IntegriQUAT 7 and IntegriQUAT 7 PF is compatible with all types of surfactants. Its compatibility depends on the chemistry of the anionic material. The maximum quantity of active cationic polymer which can be incorporated into an anionic solution without causing any haziness is calculated.

$$r = \frac{\text{Active Anionic Material}}{\text{Active Cationic Material}}$$

Sodium Laureth Sulfate $r < 12$
Triethanolamine Lauryl Sulfate $r < 8$

Appearance	Clear colorless liquid
Color APHA	≤50
Odor	Very slight
Polymer charge	Cationic
Active Content	8 – 10%
pH (as supplied)	6.5 – 7.5
Viscosity – IntegriQUAT 7	7,500 – 15,000 cps
Viscosity – IntegriQUAT 7 PF	3,500 – 15,000 cps Brookfield LVT, spindle #4, 12 rpm
Molecular weight	≈ 7 x 10 ⁵
Shelf Life	12 months



Polymer Range Technical Bulletin

IntegriQUAT 7 and IntegriQUAT 7 PF

Cosmetic Applications:

- Clear and colorless cosmetic products
- Ease of incorporation in formulations due to complete water solubility
- Improved foam stability
- Total compatibility with non-ionic and amphoteric materials

IntegriQUAT 7 and IntegriQUAT 7 PF is a cationic polymer which forms an electrostatic combination with the negatively charged keratin.

In hair care products, IntegriQUAT 7 and IntegriQUAT 7 PF can:

- Reduce static and flyaway
- Improve wet and dry combability
- Increase shine, softness and body

In skin care products, IntegriQUAT 7 and IntegriQUAT 7 PF can:

- Improve the spreadability and the application of the product
- Give the skin a soft, velvety, non-greasy afterfeel.

Toxicological Data:

- Eye irritation potential (pure product) - non irritant
- Skin irritation potential (pure product) - not irritating

Storage:

IntegriQUAT 7 & IntegriQUAT 7 PF should be stored at a temperature between 5 and 35°C. If by accident the product freezes, thaw out by placing the container in warm water while mixing thoroughly.

Packaging:

IntegriQUAT 7 & IntegriQUAT 7 PF is available in 450 lb drums

Polymer Range Technical Bulletin

IntegriQUAT 11

INCI Name: Polyquaternium 11

Product Description:

IntegriQUAT 11 is an ingredient developed specifically for cosmetic and personal care products.

Product Characteristics:

IntegriQUAT 11 is supplied in easy-to-handle aqueous solution. It can be easily incorporated in formulations due to complete water solubility. IntegriQUAT 11 is widely compatible with any anionic and amphoteric ones. This makes possible transparent and crystal clear shampoos and toiletries products.

IntegriQUAT 11 is compatible with ethanol for the formulation of hair care mousse and spray.

Product Specifications

Appearance	Clear to pale yellow liquid
Odor	Very slight
Polymer charge	Cationic
Active Content	19 - 22%
pH (as supplied)	5 – 7 %
Viscosity	10,000 – 50,000 cps Brookfield LVT 4 - 6 rpm
Shelf Life	12 months



Polymer Range Technical Bulletin

IntegriQUAT 11

Cosmetic Applications:

IntegriQUAT 11 is a cationic polymer which forms an electrostatic combination with the negatively charged keratin.

In hair care products, IntegriQUAT 11 can:

- Improve wet and dry compatability
- Increase shine, softness and body
- Form a non-tacky and continuous film
- Good curl retention performance
- Enhance setting properties

IntegriQUAT 11 is an effective conditioning agent and it can be formulated into hair styling mousse, lotions and gels, conditioners, treatment products and shampoos.

Concentration Use:

IntegriQUAT 11 should be used at concentrations from 2% to 5% in shampoos and conditioners, and from 5% to 10% in mousse and gels formulations.

Toxicological Data:

See MSDS

Storage:

IntegriQUAT 11 should be stored at a temperature between 5 and 35°C. If by accident the product freezes, thaw out by placing the container in warm water while mixing thoroughly.

Packaging:

IntegriQUAT 11 is available in 60 kg pails.

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CONFIDENTIAL FINISHED PRODUCT FORMULATION

Body Care Formulary

Cold Process, Low-Cost Lotion - Formula# 140308.2

Ingredient	%	Supplier
Part A		
Deionized Water	85.25	
IntegriGUARD CFS LIQ	0.70	Integrity Ingredients Corp
Part B		
IntegriLIPID Safflower Oil Hi Oleic	12.00	Integrity Ingredients Corp
IntegriGEL O/W HP	1.00	Integrity Ingredients Corp
Fragrance	0.25	
Polysorbate 20	0.50	
IntegriGUARD CFS LIQ	0.30	Integrity Ingredients Corp
Procedure:		
Add the PART A ingredients into mixing tank and mix completely. Add the PART B ingredients into a separate mixing tank and mix completely insuring that each one is completely dispersed/dissolved before the addition of the next. Add PART B to PART A while mixing. The batch will thicken. Mix until the batch is completely smooth and homogenous.		
Specifications:		
pH	6.0 - 6.5	
Viscosity	100,000+ cps (Brookfield LVT Spindle 4/Speed 3).	
Attributes:		
This cost effective and easy to produce body lotion is luxurious and moisturizing. It combines the emolliency of Safflower Oil, High Oleic with the extremely efficient and cost effective emulsifying/thickening attributes of IntegriGEL O/W HP.		
This formula allows you to streamline your production facility for the ultimate in cost effectiveness.		

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CONFIDENTIAL FINISHED PRODUCT FORMULATION

Body Care Formulary

Mixed Fruit Acid Complex, Skin-Renewing Lotion - Formula# 170511.1

Ingredient	%	Supplier
Part A		
Deionized Water	82.97	
Tetrasodium EDTA	0.03	
IntegriGUARD CFS-LIQ	0.50	Integrity Ingredients Corporation
IntegriVITAMIN D Panthenol	0.50	Integrity Ingredients Corporation
Integrity Dipotassium Glycyrrhizinate	0.25	Integrity Ingredients Corporation
Formulex of Chamomile	0.50	Vegetech
Part B		
IntegriGEL O/W "2-11pH" PWDR	2.75	Integrity Ingredients Corporation
Part C		
IntegriLIPID Safflower Oil High Oleic	6.25	Integrity Ingredients Corporation
Lipex Shea Tris	1.00	AAK
IntegriVITAMIN E Acetate	0.25	Integrity Ingredients Corporation
Part D		
IntegriMOIST Fruit Acid Complex LCMT	5.00	Integrity Ingredients Corporation
Procedure:		
Add water to mixing tank. Add the remaining ingredients in Part A while and Mix completely. Slowly sprinkle in Part B ingredient with good agitation. Mix batch until it is completely smooth and homogenous. Combine Part C ingredients and mix completely. Add Part C to batch and mix completely. Add Part D slowly while mixing the batch and mix until batch is smooth and homogenous. (Use caution and wear eye protection while adding Part D to batch) mix the batch is smooth and homogenous.		
Specifications:		
pH	3.25 - 3.75	
Viscosity	40,000-80,000cps (Brookfield LVT Spindle 4/Speed 3).	
Attributes:		
This elegant formula highlights the extraordinary thickening properties of IntegriGEL O/W "2-11 pH PWDR at very low pH conditions. The IntegriMOIST Fruit Acid Complex LCMT combines the exfoliating attributes of a unique combination of fruit acids. The formula also exhibits the extraordinary moisturizing and anti-inflammatory attributes of the Lipex Shea-U and Integrity Dipotassium Glycyrrhizinate.		

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FINISHED PRODUCT FORMULATION

Hair Care Formulary

Cold Process Hair Conditioner - Formulaf # 210511.1

Ingredient	%	Supplier
Part A		
Deionized Water	87.15	
Mackadet OPR-1	3.00	
Hydrolyzed Quinoa Protein	2.00	Vegetech
IntegriVITAMIN dI-Panthenol 50%	0.50	Integrity Ingredients Corporation
Super Fruit Antioxidant Complex	1.00	Vegetech
IntegriQUAT 7 PF	1.00	Integrity Ingredients Corporation
Cyclopentasiloxane #345	1.00	
Triethanolamine 99%	0.05	
IntegriGUARD CFS-LIQ	0.80	Integrity Ingredients Corporation
Bamboo Lemon Fragrance	0.50	
Part B		
IntegriGEL P37—PG	3.00	Integrity Ingredients Corporation
Procedure:		
Add water in Part A to mixing tank. Add remaining ingredients in Part A and mix completely. Add Part B slowly to batch and mix completely (batch will thicken). Mix until batch is smooth and homogeneous.		

Viscosity: 20,000—40,000 (Brookfield LVT-Spindle 2/Speed 3)

pH: 4.5—6.0

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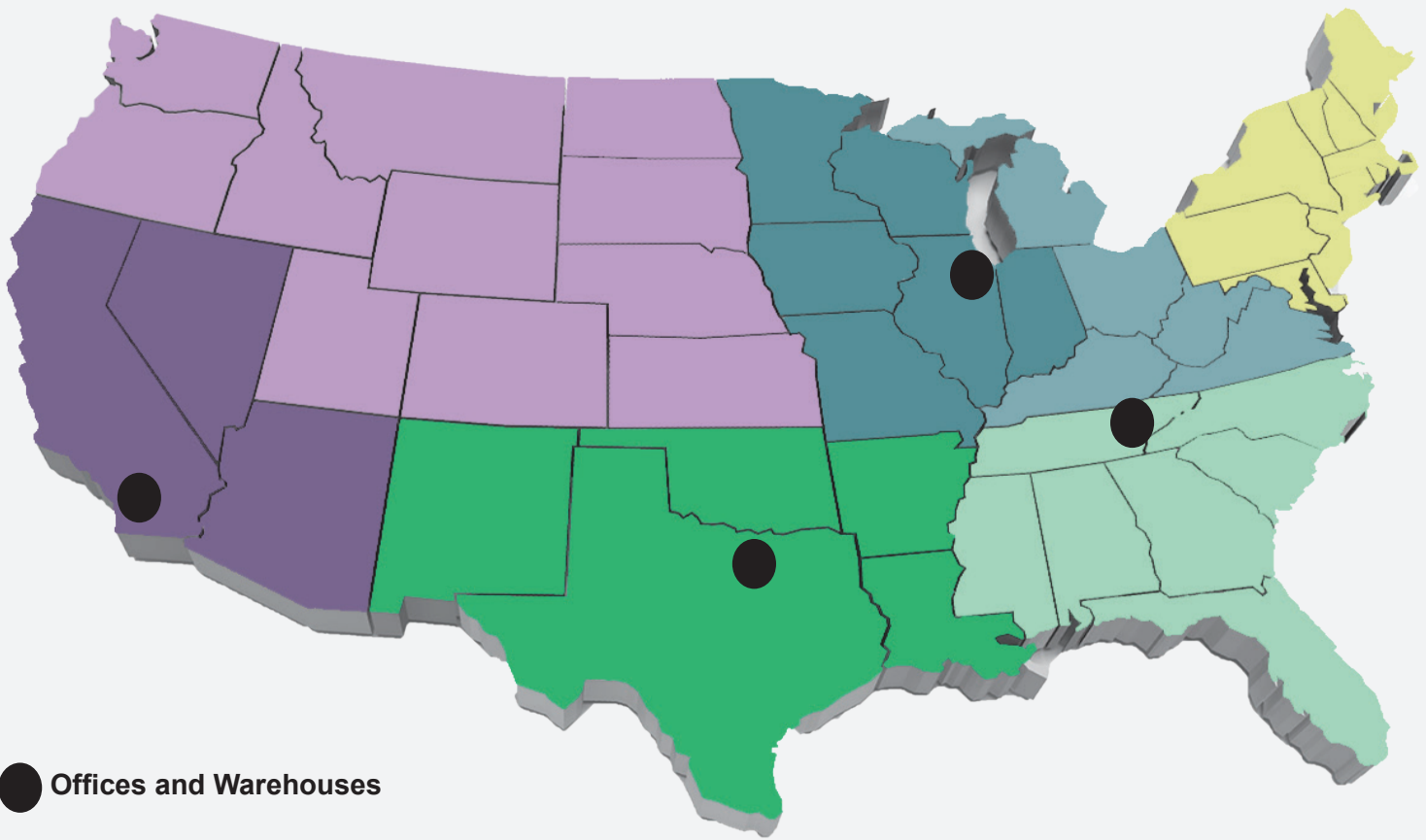


Technical Support...

Our in-house Technical and Applications Lab is always available to address the growing needs of our customers. Whether you have a raw material technical question or need formulating assistance, we are here and ready to help.

At Integrity Ingredients Corporation, we know the important role our ingredients have in your formulations. Our lab is solely dedicated to actively working with all of our ingredients in a variety of applications. By doing this, we can make accurate recommendations to our customers on how our ingredients will interact and perform with other ingredients and system types.

Our team at Integrity Ingredients Corporation recognizes that you have many choices when formulating or purchasing your raw materials, and we want to thank you for your interest in our products and services.



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