



**PHARMACEUTICALS FORMULARY, No. 932**
**VEEGUM® Magnesium Aluminum Silicate**
**VANZAN® Xanthan Gum**

**VEEGUM** water-washed natural smectite clays have a long history of use as excipients in pharmaceutical formulations. In liquids, they are used as suspension and emulsion stabilizers. In ointments and suppositories they are used to control drug release. In solid dosage forms they are traditionally used as binders and disintegrants for wet granulations and, in micronized form, for direct compression tablets. These clays are also used as components of drug delivery systems, an application of increasing interest because these entirely natural excipients provide a unique combination of physicochemical properties for drug-clay interaction.

**VANZAN** xanthan gum is a natural, high molecular weight polysaccharide that is commonly used in oral and topical pharmaceuticals. Because of its protective function in nature, xanthan gum is more resistant than most gums to shear, heat, enzyme, and UV degradation. **VANZAN** products are efficient thickeners as well as emulsion and suspension stabilizers. They also provide useful synergism with **VEEGUM** clays.

**VEEGUM CLAYS FOR PHARMACEUTICALS**

<b>VEEGUM® R</b> Magnesium Aluminum Silicate	A general purpose compendial grade for a wide range of pharmaceutical applications. Magnesium Aluminum Silicate NF Type IA INCI Name: Magnesium Aluminum Silicate Typical use levels: Between 0.5% and 3.0%.
<b>VEEGUM HV</b>	Excellent emulsion and suspension stabilization is obtained at low use levels. It is used primarily in neutral to alkaline pH pharmaceutical suspensions and in antiperspirants. Magnesium Aluminum Silicate NF Type IC INCI Name: Magnesium Aluminum Silicate Typical use levels: Between 0.5% and 3.0%.
<b>VEEGUM K</b>	Widely used in pharmaceutical oral suspensions at acid pH. It has low acid demand and high acid and electrolyte compatibility. Magnesium Aluminum Silicate NF Type IIA INCI Name: Magnesium Aluminum Silicate Typical use levels: Between 0.5% and 3.0%.
<b>VEEGUM HS</b>	For optimum pH stability in acidic pharmaceutical suspensions; maximum electrolyte stability and minimum acid demand. Purified Bentonite NF INCI Name: Magnesium Aluminum Silicate Typical use levels: Between 1.0% and 3.0%.
<b>VEEGUM Ultra</b>	A unique fast hydrating non-compendial acidic smectite clay for topicals. It is particularly useful in sunscreens and exfoliant acid emulsions. INCI Name: Magnesium Aluminum Silicate Typical use levels: Between 0.5% and 2.0%
<b>VEEGUM D</b>	A product designed for rapid hydration, even at high concentrations. It is used in dentifrice pastes and gels. INCI Name: Magnesium Aluminum Silicate Typical use levels: Between 0.5% and 3.0%.

APPLICATION GUIDE						
Pharmaceuticals	VEEGUM <sup>®</sup> Magnesium Aluminum Silicate					
	R	HV	K	HS	Ultra	D
API Creams and Lotions at pH > 6	X	X				
API Creams and Lotions at pH < 6			X	X	X	
API Suspensions at pH > 6	X	X				
API Suspensions at pH < 6			X	X		
Anti-dandruff, Treatment Shampoos	X	X				
Tablet Binder/Disintegrant Wet Granulation	X	X				
Tablet Release Regulator Rapid Release / Extended Release	X	X				
Taste Masking	X	X				
Dentifrices	X	X				X

### VANZAN<sup>®</sup> XANTHAN GUM FOR PHARMACEUTICALS

<b>VANZAN<sup>®</sup> NF</b> Xanthan Gum	The standard grade for most personal care and pharmaceutical applications. Xanthan Gum NF
<b>VANZAN NF-C</b>	Produces clear solutions; used when product clarity is essential. Xanthan Gum NF
<b>VANZAN NF-F</b>	A finely ground powder for dry mixes and solid dosage forms. Xanthan Gum NF

APPLICATION GUIDE			
Pharmaceuticals	VANZAN <sup>®</sup> Xanthan Gum		
	NF	NF-C	NF-F
API Creams and Lotions at pH > 6	X		
API Creams and Lotions at pH < 6	X		
API Suspensions at pH > 6	X		
API Suspensions at pH < 6	X		
API Syrups		X	
Stir-In API Powders			X
Tablet Binder/Disintegrant Direct Compression			X
Tablet Release Regulator Rapid Release / Extended Release			X
Dentifrices	X	X	

## USING VEEGUM® CLAYS

For aqueous applications, **VEEGUM** clays must be properly dispersed in water to provide their best performance. No other materials should be present in the water, because they can interfere with proper clay hydration and colloidal structure formation. The degree of clay hydration is directly proportional to the amount of energy used to disperse the product. The degree of hydration therefore increases as mixing time, mixing intensity or water temperature increase. **VEEGUM Ultra**, is relatively unaffected by changes in these mixing factors; adequate hydration can be achieved quickly, using room temperature water and a simple, slow-speed propeller mixer.

The following table provides guidelines for the minimum amounts of time suggested for the hydration of **VEEGUM** clays. Actual hydration times, in the laboratory or in production, will depend on the particular combination of batch size, mixer shear, and water temperature used. Whichever mixing conditions are used, it is very important that they be carefully controlled to achieve reproducible results in the final formulation.

Water Temp.	Mixer Type	Mixer Speed rpm	Minimum Suggested Mixing Time		
			VEEGUM® R VEEGUM K VEEGUM HV	VEEGUM HS VEEGUM D	VEEGUM <i>Ultra</i>
25°C	Propeller	800	120 min.	30 min.	15 min.
75°C	Propeller	800	45 min.	20 min.	10 min.
25°C	Homogenizer	3000	30 min.	20 min.	10 min.
75°C	Homogenizer	3000	15 min.	10 min.	10 min.

## USING VANZAN® XANTHAN GUM

**VANZAN** products are soluble in both cold and warm water. To dissolve quickly and completely, they must first be properly dispersed so that individual gum particles are surrounded by the aqueous medium. The individual particles then hydrate and dissolve. Good dispersion is promoted by high shear mixing, blending the gum particles into a water-miscible non-solvent such as a glycol or alcohol before addition to the aqueous phase, dry blending with other formula ingredients, such as co-thickeners, salts, acids, abrasives or pigments before addition to the aqueous phase.

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**Bismuth Subsalicylate Suspension No. 596**

		<b>Wt.%</b>
<b>A</b>	<b>VEEGUM® HS</b> Magnesium Aluminum Silicate	1.6
	<b>VANZAN® NF</b> Xanthan Gum	0.4
	Water	94.2
<b>B</b>	Sodium Salicylate	0.1
	Sorbic Acid	0.1
	Sodium Saccharin	0.2
	Bismuth Subsalicylate SG <sup>1</sup>	3.4

**Procedure:** Slowly add the **VEEGUM® HS** and **VANZAN® NF** sequentially or as a dry blend to the water agitated at maximum available shear. Mix until fully hydrated. Add Part B ingredients in order, mixing after each addition until uniform. Mix suspension slowly as necessary to de-aerate before packaging.

**RAW MATERIAL SUPPLIERS**

<sup>1</sup>MCP Metalspecialties, Fairfield, CT/MCP HEK GmbH, Lubeck, Germany

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Rev01/30/2013

**Antacid Formulation No. 445**

		<b>Wt.%</b>
<b>A</b>	<b>VEEGUM® HS</b> Magnesium Aluminum Silicate	0.25
	<b>VANZAN® NF</b> Xanthan Gum	0.28
	Water	61.69
<b>B</b>	Methylparaben	0.10
	Propylparaben	0.05
<b>C</b>	Sorbitol, 70%	14.30
<b>D</b>	Barcroft™ Aluminum Hydroxide GEL LV 13 USP <sup>1</sup> , 20% Al(OH) <sub>3</sub>	11.33
	Barcroft™ Magnesium Hydroxide Paste USP <sup>1</sup> , 30% Mg(OH) <sub>2</sub>	12.00

**Procedure:** Slowly add the **VEEGUM® HS** and **VANZAN® NF** sequentially or as a dry blend to the water agitated at maximum available shear. Mix until fully hydrated. Add Parts B, C and D in order, mixing after each addition until uniform.

**RAW MATERIAL SUPPLIERS**<sup>1</sup>SPI Pharma Group, New Castle, DE**TRADEMARKS**

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Barcroft is a trademark of SPI Pharma Group

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**Antacid Formulation No. 570**

		<b>Wt. %</b>
<b>A</b>	<b>VEEGUM® HV</b> Magnesium Aluminum Silicate	1.25
	Water	60.97
<b>B</b>	Methylparaben	0.10
	Propylparaben	0.05
<b>C</b>	Sorbitol, 70%	14.30
<b>D</b>	Barcroft™ Aluminum Hydroxide GEL LV 13 USP <sup>1</sup> , 20% Al(OH) <sub>3</sub>	11.33
	Barcroft™ Magnesium Hydroxide Paste USP <sup>1</sup> , 30% Mg(OH) <sub>2</sub>	12.00

**Procedure:** Slowly add the **VEEGUM® HV** to the water agitated at maximum available shear. Mix until fully hydrated. Add Parts B, C and D in order, mixing after each addition until uniform.

**RAW MATERIAL SUPPLIERS**<sup>1</sup>SPI Pharma Group, New Castle, DE**TRADEMARKS****VEEGUM** is a registered trademark of Vanderbilt Minerals, LLC.  
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**Hydrocortisone Acetate Cream No. 366**

	<b>Wt.%</b>
<b>A</b>   <b>VEEGUM® K</b> Magnesium Aluminum Silicate	1.50
Water	66.49
Citric Acid	0.01
Polysorbate 80 (Tween® 80 <sup>1</sup> )	0.50
Hydrocortisone Acetate	0.50
<b>B</b>   C12-15 Alkyl Benzoate (Finsolv® TN <sup>2</sup> )	10.00
Hydrogenated Polyisobutylene (Parleam® <sup>3</sup> )	5.00
C18-C36 Acid (Syncrowax™ AW1-C <sup>4</sup> )	4.00
Glyceryl Stearate (and) PEG-100 Stearate (Arlacel® 165 <sup>1</sup> )	12.00
<b>C</b>   Preservative	q.s.

**Procedure:** While heating the water to 75-80°C, slowly add the **VEEGUM® K** to the water agitated at maximum available shear. Mix until fully hydrated. Add the remaining Part A ingredients and mix until uniform. Maintain the water phase at 75-80°C. Blend the Part B oil phase ingredients and heat to 75-80°C. Add Part B to Part A with good agitation. Cool with mixing; add the preservative when the emulsion is <40°C.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Uniqema, New Castle, DE

<sup>2</sup>Innospec Active Chemicals, Edison, NJ

<sup>3</sup>Rossow USA, Highlands, NJ

<sup>4</sup>Croda, Inc., Edison, NJ

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Parleam is a registered trademark of Etablissements B. Rossow et Cie.

Syncrowax is a trademark of Croda, Inc.

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**Benzocaine Cream No. 360**

	<b>Wt.%</b>
<b>A</b>	<b>VEEGUM® R</b> Magnesium Aluminum Silicate 1.5
	Water 56.8
	Propylene Glycl 3.0
	10% Silicone Emulsion (FG-10 Antifoam Emulsion <sup>1</sup> ) 0.2
<b>B</b>	Mineral Oil, Light 10.0
	Acetylated Lanolin Alcohol (Acetulan <sup>2</sup> ) 7.0
	Menthol, USP 1.0
	Benzocaine, USP 5.0
	Polysorbate 60 (Tween® 60 <sup>3</sup> ) 0.5
<b>C</b>	C18-C36 Acid (Syncrowax™ AW1-C <sup>4</sup> ) 3.0
	Glyceryl Stearate (and) PEG-100 Stearate (Arlacel® 165 <sup>3</sup> ) 12.0
	Preservative q.s.

**Procedure:** While heating the water to 75-80°C, Slowly add the **VEEGUM® R** to the water agitated at maximum available shear. Mix until fully hydrated. Add the remaining Part A ingredients and mix until uniform. Maintain the water phase at 75-80°C. Blend the Part B oil phase ingredients and heat to 75-80°C, keeping the benzocaine suspended. Add Part B to Part A with good agitation. Cool with mixing; add the preservative when the emulsion is <40°C.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Dow Corning Corporation, Midland, MI

<sup>2</sup>Lubrizol Advanced Materials, Inc., Cleveland, OH

<sup>3</sup>Uniqema, New Castle, DE

<sup>4</sup>Croda, Inc., Edison, NJ

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**External Analgesic Cream No. 369**

	<b>Wt.%</b>
<b>A</b>   <b>VEEGUM® R</b> Magnesium Aluminum Silicate	1.5
Water	54.7
FG-10 Antifoam <sup>1</sup>	0.2
Propylene Glycol	3.0
Methyl Salicylate	15.0
Menthol	5.0
<b>B</b>   Polysorbate 80 (Tween® 80 <sup>2</sup> )	0.6
C18-C36 Acid (Syncrowax™ AW1-C <sup>3</sup> )	5.0
Glyceryl Stearate (and) PEG-100 Stearate (Arlacel® 165 <sup>2</sup> )	15.0
<b>C</b>   Preservative	q.s.

**Procedure:** While heating the water to 75-80°C, slowly add the **VEEGUM R** to the water agitated at maximum available shear. Mix until fully hydrated. Add the remaining Part A ingredients and mix until uniform. Maintain the water phase at 75-80°C. Blend the Part B oil phase ingredients and heat to 75-80°C. Add Part B to Part A with good agitation. Cool with mixing; add the preservative when the emulsion is <40°C.

**RAW MATERIAL SUPPLIERS**<sup>1</sup>Dow Corning Corporation, Midland, MI<sup>2</sup>Uniqema, New Castle, DE<sup>3</sup>Croda, Inc., Edison, NJ**TRADEMARKS****VEEGUM** is a registered trademark of Vanderbilt Minerals, LLC.

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**Antifungal Cream No. 355**

	<b>Wt.%</b>
<b>A</b>   <b>VEEGUM® R</b> Magnesium Aluminum Silicate	0.75
Water	48.75
Water	75.40
Sorbitol, 70% Solution	10.00
Polysorbate 80 (Tween® 80 <sup>1</sup> )	1.00
Zinc Undecylenate	20.00
<b>B</b>   Caprylic Acid	5.00
C12-15 Alkyl Benzoate (Finsolv® TN <sup>2</sup> )	3.00
Polysorbate 80 (Tween® 80 <sup>1</sup> )	1.50
C18-C36 Acid (Syncrowax™ AW1-C <sup>3</sup> )	2.00
Glyceryl Stearate (and) PEG-100 Stearate (Arlacel® 165 <sup>1</sup> )	8.00
<b>C</b>   Preservative	q.s.

**Procedure:** While heating the water to 70-75°C, slowly add the **VEEGUM® R** to the water agitated at maximum available shear. Mix until fully hydrated. Add the remaining Part A ingredients and mix until uniform. Maintain the water phase at 70-75°C. Blend the Part B oil phase ingredients and heat to 70-75°C. Add Part B to Part A with good agitation. Cool with mixing; add the preservative when the emulsion is <40°C.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Uniqema, New Castle, DE

<sup>2</sup>Innospec Active Chemicals, Edison, NJ

<sup>3</sup>Croda, Inc., Edison, NJ

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Syncrowax is a trademark of Croda, Inc.

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**Calamine Lotion No. 361**

		<b>Wt. %</b>
<b>A</b>	<b>VEEGUM® R</b> Magnesium Aluminum Silicate	0.8
	<b>VANZAN® NF</b> Xanthan Gum	0.2
	Water	79.6
<b>B</b>	Propylene Glycol	3.0
	Polysorbate 80	0.4
<b>C</b>	Calamine (Prepared), USP	8.0
	Zinc Oxide, USP	8.0
<b>D</b>	Preservative	q.s.

**Procedure:** Slowly add the **VEEGUM® R** and **VANZAN® NF** sequentially or as a dry blend to the water agitated at maximum available shear. Mix until fully hydrated. Add Part B and mix slowly until uniform. Add Part C slowly and mix until uniform. Add Part D slowly and mix until uniform.

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Rev01/30/2013

**Zinc Pyrithione Lotion Shampoo No. 364**

		<b>Wt.%</b>
<b>A</b>	VEEGUM® R Magnesium Aluminum Silicate	0.5
	Water	51.1
	Hydroxypropyl Guar (Jaguar HP-60 <sup>1</sup> )	0.5
<b>B</b>	Ammonium Lauryl Sulfate (Rhodapon™ L-22 <sup>1</sup> )	40.0
	PPG-5-Ceteth-10 Phosphate (Crodafos™ SG <sup>2</sup> )	1.8
	Lauramide DEA (Monamid® 716 <sup>2</sup> )	4.0
<b>C</b>	Zinc Pyrithione, 48% (Zinc Omadine® <sup>3</sup> )	2.1
	Preservative	q.s.

**Procedure:** Slowly add the **VEEGUM® R** to the water agitated at maximum available shear. Mix until fully hydrated. Add the hydroxypropyl guar and mix until uniformly dispersed. With slow stirring add the Part B ingredients in order. Add the phosphate slowly, mixing until the guar gum is totally dissolved. Add the Part C ingredients in order listed, agitating slowly. Mix until smooth and uniform. Avoid incorporation of air. Adjust as necessary to pH 7.2.

**RAW MATERIAL SUPPLIERS**<sup>1</sup>Solvay Novecare, Bruxelles, Belgium<sup>2</sup>Croda Inc., Edison, NJ<sup>3</sup>Arch Personal Care Products L.P.,  
South Plainfield, NJ**TRADEMARKS****VEEGUM** is a registered trademark of Vanderbilt Minerals, LLC.

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Omadine is a registered trademark of Arch Chemicals, Inc.

Rhodapon is a trademark of Rhodia, Inc.

Rev07/01/2013

**Sun Protection Cream No. 566**

	<b>Wt. %</b>
<b>A</b>	<b>VEEGUM® Ultra</b> Magnesium Aluminum Silicate 1.0
	Water 57.8
	Glycerin, 96% 2.7
	Zinc Oxide (Zinc Oxide Neutral <sup>1</sup> ) 10.0
<b>B</b>	Glyceryl Stearate (and) PEG-100 Stearate (Arlacel® 165 <sup>2</sup> ) 4.0
	Ceteareth-20 (Eumulgin® B-2 <sup>3</sup> ) 1.0
	Cetearyl Alcohol 3.0
	Caprylic/Capric Triglyceride (Neobee® M-5 <sup>4</sup> ) 4.0
	Dicaprylyl Ether (Cetiol® OE <sup>3</sup> ) 3.0
	Dimethicone (Xiameter® PMX-200 Silicone Fluid 350cs <sup>5</sup> ) 1.0
	Octyl Salicylate (Neo Heliopan® OS <sup>1</sup> ) 5.0
Octyl Methoxycinnamate (Neo Helipan® AV <sup>1</sup> ) 7.5	
<b>C</b>	Preservative, Fragrance q.s.

**Procedure:** Begin heating the water to 75-80°C. Slowly add the **VEEGUM® Ultra** to the water agitated at maximum available shear. Mix until fully hydrated. Add the remaining water phase ingredients; mix until the zinc oxide is uniformly dispersed. Maintain the water phase at 75-80°C. Heat Part B to 75-80°C. Add Part B to Part A; homogenize for 5 minutes at 75-80°C. Cool while mixing slowly to 40°C. Add Part C and mix until homogeneous.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Symrise, Teterboro, NJ

<sup>2</sup>Croda, Inc., Edison, NJ

<sup>3</sup>BASF Care Creations, Florham Park, NJ

<sup>4</sup>Stepan Company, Northfield, IL

<sup>5</sup>Dow Corning Corporation, Midland, MI

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Neobee is a registered trademark of Stepan Company.

Neo Heliopan is a registered trademark of Haarmann &amp; Reimer GmbH.

Xiameter is a registered trademark of Dow Corning Corporation.

Rev04/25/2013

**Wash-Off Resistant Sunscreen Cream No. 515**

	<b>Wt.%</b>
<b>A</b>	<b>VEEGUM® Ultra</b> Magnesium Aluminum Silicate 2.0
	Carbomer (Ultrez™ 10 <sup>1</sup> ) 0.2
	Water 47.8
<b>B</b>	Polysorbate 20 (Tween® 20 <sup>2</sup> ) 1.0
	Aqua (and) Titanium Dioxide (and) Alumina (and) Silica (and) Sodium 12.5
	Polyacrylate (and) Propylene Glycol (and) Diazolidinyl Urea (and) Methyl Paraben (and) Propyl Paraben (Tioveil® AQ-G <sup>2</sup> )
	Butylene Glycol 3.0
<b>C</b>	Cetyl Alcohol 0.5
	Isosorbide Laurate 1.0
	Caprylic/Capric Triglyceride (Neobee® M-5 <sup>3</sup> ) 5.0
	Glyceryl Monostearate SE (Cutina® GMS SE <sup>4</sup> ) 3.0
	C12-15 Octanoate (Finester™ EH-25 <sup>5</sup> ) 3.0
	Octylmethoxycinnamate (Parsol® MCX <sup>6</sup> ) 7.0
	Avobenzene (Parsol® 1789 <sup>6</sup> ) 2.0
	Octyl Salicylate (Dermoblock™ OS <sup>7</sup> ) 3.0
	Castor Oil/IPDI Copolymer (Polyderm™ PPI-CO <sup>7</sup> ) 1.0
	Phenyl Dimethicone (DC 556 Fluid <sup>8</sup> ) 3.0
	Dimethicone (XIAMETER® PMX-200 Silicone Fluid 350cs <sup>8</sup> ) 1.0
	Laureth-23 (Brij® L23 <sup>2</sup> ) 0.5
	Steareth-2 (Brij® S2 <sup>2</sup> ) 2.2
Steareth-21 (Brij® S721 <sup>2</sup> ) 2.2	
<b>D</b>	Etidronic Acid 0.1
<b>E</b>	Triethanolamine (to pH 6.0±0.5) q.s.
	Preservative q.s.

**Procedure:** Begin heating the water to 80°C. Slowly add the **VEEGUM® Ultra** and carbomer sequentially or as a dry blend to the water agitated at maximum available shear. Mix until fully hydrated. Add the remaining water phase ingredients from Part B, mixing until uniform. Maintain the water phase at 80°C. Blend the Part C oil phase ingredients and heat to 85°C. Add the oil phase to the water phase with good agitation; mix until uniform. Cool with mixing; add the Part D and Part E ingredients when the emulsion is <45°C. Adjust as necessary to pH 6.0±0.5.

**Note:** The combination of TiO<sub>2</sub> and Avobenzene is not approved for use in the USA.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Lubrizon Advanced Materials, Inc., Cleveland, OH

<sup>2</sup>Croda, Inc., Edison, NJ

<sup>3</sup>Stepan Company, Northfield, IL

<sup>4</sup>BASF Care Creations, Florham Park, NJ

<sup>5</sup>Innospec Active Chemicals, Edison, NJ

<sup>6</sup>Givaudan Corporation, Teaneck, NJ

<sup>7</sup>Alzo International, Inc., Sayreville, NJ

<sup>8</sup>Dow Corning Corporation, Midland, MI

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Finester is a trademark of Innospec Performance Chemicals Company.

Neobee is a registered trademark of Stepan Company.

Parsol is a registered trademark of Givaudan Corporation.

Polyderm is a trademark of Alzo Investments.

Tioveil is a registered trademark of Acma Limited Corporation.

Ultrez is a trademark of Noveon IP Holdings.

Xiameter is a registered trademark of Dow Corning Corporation.

**Physical, Chemical UV Protection Cream No. 514**

	<b>Wt.%</b>
<b>A</b>	<b>VEEGUM® Ultra</b> Magnesium Aluminum Silicate 2.0
	Carbomer (Ultrez™ 10 <sup>1</sup> ) 0.2
	Water 51.4
<b>B</b>	Polysorbate 20 (Tween® 20 <sup>2</sup> ) 1.0
	Aqua (and) Titanium Dioxide (and) Alumina (and) Silica (and) Sodium 12.5
	Polyacrylate (and) Propylene Glycol (and) Diazolidinyl Urea (and) Methyl 3.0
	Paraben (and) Propyl Paraben (Tioveil® AQ-G <sup>2</sup> )
	Butylene Glycol
<b>C</b>	Cetyl Alcohol 0.5
	Isosorbide Laurate 1.0
	Caprylic/Capric Triglyceride (Neobee® M-5 <sup>3</sup> ) 5.0
	Glyceryl Monostearate SE 3.0
	C12-15 Octanoate (Finester™ EH-25 <sup>4</sup> ) 3.0
	Octylmethoxycinnamate (Parsol® MCX <sup>5</sup> ) 7.0
	Avobenzene (Parsol® 1789 <sup>5</sup> ) 2.0
	Octyl Salicylate (Dermoblock™ OS <sup>6</sup> ) 3.0
	Dimethicone (Xiameter® PMX-200 Silicone Fluid 350cs <sup>7</sup> ) 1.0
	Laureth-23 (Brij® L23 <sup>2</sup> ) 0.5
Steareth-2 (Brij® S2 <sup>2</sup> ) 1.9	
Steareth-21 (Brij® S721 <sup>2</sup> ) 1.9	
<b>D</b>	Etidronic Acid 0.1
<b>E</b>	Triethanolamine (to pH 6.0±0.5) q.s.
	Preservative, Fragrance q.s.

**Procedure:** Begin heating the water phase to 80°C. Slowly add the **VEEGUM® Ultra** and carbomer sequentially or as a dry blend to the water agitated at maximum available shear. Mix until fully hydrated. Add the water phase ingredients from Part B, mixing until uniform. Maintain the water phase at 80°C. Blend the oil phase ingredients of Part C and heat to 80°C. Add the oil phase to the water phase with high shear mixing. Mix at reduced speed while cooling to 45°C and then add Part D followed by Part E. Adjust as necessary to pH 6.0 ± 0.5.

**Note:** The combination of TiO<sub>2</sub> and Avobenzene is not approved for use in the USA.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Lubrizol Advanced Materials, Inc., Cleveland, OH

<sup>2</sup>Croda, Inc., Edison, NJ

<sup>3</sup>Stepan Company, Northfield, IL

<sup>4</sup>Innospec Active Chemicals, Edison, NJ

<sup>5</sup>Givaudan Corporation, Teaneck, NJ

<sup>6</sup>Alzo International, Inc., Sayreville, NJ

<sup>7</sup>Dow Corning Corporation, Midland, MI

**TRADEMARKS**
**VEEGUM** is a registered trademark of Vanderbilt Minerals, LLC.

Brij and Tween are registered trademarks of Uniqema Americas LLC.

Dermoblock is a trademark of Alzo International, Inc.

Finester is a trademark of Innospec Performance Chemicals Company.

Neobee is a registered trademark of Stepan Company.

Parsol is a registered trademark of Givaudan Corporation.

Tioveil is a registered trademark of Acma Limited Corporation.

Ultrez is a trademark of Noveon IP Holdings.

Xiameter is a registered trademark of Dow Corning Corporation.

Rev04/25/2013

**Water-Resistant Sunscreen Lotion No. 494**

	<b>Wt. %</b>
<b>A</b>	<b>VEEGUM® Ultra</b> Magnesium Aluminum Silicate 2.0
	Carbomer (Ultrez™ 10 <sup>1</sup> ) 0.2
	Water 64.6
<b>B</b>	Glycerin 3.0
	Butylene Glycol 3.0
<b>C</b>	Cetyl Alcohol 1.0
	Isosorbide Laurate 1.0
	Glyceryl Monostearate SE 3.0
	C12-15 Octanoate (Finester™ EH-25 <sup>2</sup> ) 5.0
	Octylmethoxycinnamate (Parsol® MCX <sup>3</sup> ) 7.5
	Avobenzone (Parsol® 1789 <sup>3</sup> ) 2.0
	Castor Oil/IPDI Copolymer (Polyderm™ PPI-CO <sup>4</sup> ) 1.0
	Phenyl Dimethicone (DC 556 Fluid <sup>5</sup> ) 3.0
Steareth-2 (Brij® S2 <sup>6</sup> ) 1.8	
Steareth-21 (Brij® S721 <sup>6</sup> ) 1.8	
<b>D</b>	Disodium EDTA 0.1
<b>E</b>	Triethanolamine (to pH 6.0±0.5) q.s.
	Preservative, Fragrance q.s.

**Procedure:** Begin heating the water phase to 75°C. Slowly add the **VEEGUM® Ultra** and carbomer sequentially or as a dry blend to the water agitated at maximum available shear. Mix until fully hydrated. Add the water phase ingredients from Part B, mixing until uniform. Maintain the water phase at 75°C. Blend the oil phase ingredients of Part C and heat to 75°C. Add the oil phase to the water phase with high shear mixing. Mix at reduced speed while cooling to 45°C; then add Part D followed by Part E. Adjust as necessary to pH 6.0 ± 0.5.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Lubrizol Advanced Materials, Inc., Cleveland, OH

<sup>2</sup>Innospec Active Chemicals, Edison, NJ

<sup>3</sup>Givaudan Corporation, Teaneck, NJ

<sup>4</sup>Alzo International, Inc., Sayreville, NJ

<sup>5</sup>Dow Corning Corporation, Midland, MI

<sup>6</sup>Croda, Inc., Edison, NJ

**TRADEMARKS**
**VEEGUM** is a registered trademark of Vanderbilt Minerals, LLC.

Brij is a registered trademark of Uniqema Americas LLC.

Finester is a trademark of Innospec Performance Chemicals Company.

Parsol is a registered trademark of Givaudan Corporation.

Polyderm is a trademark of Alzo Investments.

Ultrez is a trademark of Noveon IP Holdings.

Rev04/25/2013

**Salicylic Acid Acne Treatment Cream No. 610**

	<b>Wt. %</b>	
<b>A</b>	<b>VEEGUM® Ultra</b> Magnesium Aluminum Silicate	2.5
	<b>VANZAN® NF</b> Xanthan Gum	0.5
	Water	73.4
	Etidronic Acid	0.1
	Propanediol (Zemea® Propanediol <sup>1</sup> )	5.0
<b>B</b>	Salicylic Acid – USP	1.0
	Steareth-21 (Brij® S721 <sup>2</sup> )	1.5
	Steareth-2 (Brij® S2 <sup>2</sup> )	3.5
	Cetearyl Alcohol (Protachem™ CS-50 <sup>3</sup> )	1.5
	Stearic Acid (Pristerene® 9559 <sup>2</sup> )	2.0
	PPG-15 Stearyl Ether (Arlamol® PS15E <sup>2</sup> )	8.0
Dimethicone (Xiameter® PMX-200 Silicone Fluid 350cs <sup>4</sup> )	1.0	
<b>C</b>	Preservative	q.s.
	Triethanolamine (Adj. pH to 3.8±0.2)	q.s.

**Procedure:** While heating the water to 80-85°C, slowly add the **VEEGUM® Ultra** and **VANZAN® NF** sequentially or as a dry blend while mixing at maximum available shear. Continue mixing until fully hydrated. Add the etidronic acid and propanediol in order, mixing after each addition until uniform. Maintain the water phase at 80-85°C. Combine the Part B oil phase ingredients and heat to 80-85°C. Add Part B to Part A slowly with adequate mixing; homogenize. Cool gradually while mixing. Add the preservative when the emulsion is <30°C, then adjust the pH to 3.8 ± 0.20 with triethanolamine.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>DuPont Tate & Lyle Bio Products Company, LLC, Wilmington, DE

<sup>2</sup>Croda, Inc., Edison, NJ

<sup>3</sup>Protameen, Totowa, NJ

<sup>4</sup>Dow Corning Corporation, Midland, MI

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Arlamol and Brij are registered trademarks of Uniqema Americas LLC.

Pristerene is a registered trademark of Unichema Chemie B.V.

Protachem is a trademark Protameen Chemicals, Inc.

Xiameter is a registered trademark of Dow Corning Corporation.

Zemea is a registered trademark of DuPont Tate &amp; Lyle Bio Products Company, LLC.

Rev04/25/2013

**5% Benzoyl Peroxide Acne Treatment Lotion No. 356**

	<b>Wt.%</b>
<b>A</b>   <b>VEEGUM<sup>®</sup> R</b> Magnesium Aluminum Silicate	0.90
<b>VANZAN<sup>®</sup> NF</b> Xanthan Gum	0.40
Water	75.55
<b>B</b>   Propylene Glycol	6.00
Benzoyl Peroxide, 70% Powder	7.15
<b>C</b>   Laureth-4 (Brij <sup>®</sup> L4 <sup>1</sup> )	5.00
Acetylated Lanolin Alcohol (Acetulan <sup>®2</sup> )	5.00
<b>D</b>   Preservative	q.s.

**Procedure:** Slowly add the **VEEGUM<sup>®</sup> R** and **VANZAN<sup>®</sup> NF** sequentially or as a dry blend to the water agitated at maximum available shear. Mix until fully hydrated. Mill Part B to a smooth paste. Blend Part B with Part C. Add this blend to Part A and mix until uniform.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Uniqema, New Castle, DE

<sup>2</sup>Lubrizol Advanced Materials, Inc., Cleveland, OH

**TRADEMARKS**
**VANZAN** and **VEEGUM** are registered trademarks of Vanderbilt Minerals, LLC.

Brij is a registered trademark of Uniqema Americas LLC.

Acetulan is a registered trademark of The Lubrizol Corporation.

Rev01/30/2013

**Instant Sulfur Acne Treatment Mask No. 590**

	<b>Wt.%</b>
<b>VEEGUM® HS</b> Magnesium Aluminum Silicate	5
Kaolin USP	60
Sodium Bicarbonate	25
Avena Sativa (Oat) Kernel Flour (Tech-O® #11-070 Oat Flour <sup>1</sup> )	5
Precipitated Sulfur USP	5

**Procedure:** Dry blend all ingredients.

**Use:** By volume, mix about 1 part water or witch hazel into 4.5 parts mask powder and mix to form a smooth paste.

**RAW MATERIAL SUPPLIERS**

<sup>1</sup>Beacon CMP Corporation, Kenilworth, NJ

**TRADEMARKS**

**VEEGUM** is a registered trademarks of Vanderbilt Minerals, LLC.  
Tech-O is a registered trademark of Beacon CMP Corporation.

Rev01/21/2013

**Sulfur and Salicylic Acid Acne Treatment Wash No. 583**

		<b>Wt. %</b>
<b>A</b>	<b>VEEGUM<sup>®</sup> HS</b> Magnesium Aluminum Silicate	2.0
	<b>VANZAN<sup>®</sup> NF</b> Xanthan Gum	0.50
	Water	76.75
<b>B</b>	Sucrose Stearate (Surfhope <sup>®</sup> SE Cosme C-1811 <sup>1</sup> )	1.25
	Cetyl Alcohol	1.0
<b>C</b>	Glycerin	4.0
	Sulfur (Yellow Jacket <sup>®</sup> Wettable Sulfur II <sup>2</sup> )	2.0
	Sodium Laureth Sulfate	10.0
	Salicylic Acid, USP	2.0
<b>D</b>	Preservative	q.s.
	Sodium Hydroxide, 50%	q.s.

**Procedure:** While heating the water to 65°C, slowly add the **VEEGUM<sup>®</sup> HS** and **VANZAN<sup>®</sup> NF** sequentially or as a dry blend to the water agitated at maximum available shear. Mix until fully hydrated. Maintaining temperature at 65°C, add Part B ingredients in order, mixing after each addition until uniform. Cool with stirring to ambient temperature. Slowly add the part C and Part D ingredients in the order listed, mixing after each addition until uniform. Avoid the incorporation of air. Adjust to approximately pH 4.5 with sodium hydroxide solution.

**RAW MATERIAL SUPPLIERS**

<sup>1</sup>Arch Personal Care Products L.P., South Plainfield, NJ

<sup>2</sup>Georgia Gulf Sulfur Corp., Valdosta, GA

**TRADEMARKS**

**VEEGUM** and **VANZAN** are registered trademarks of Vanderbilt Minerals, LLC.

Surfhope is a registered trademark of Mitsubishi Chemical Corporation.

Yellow Jacket is a registered trademark of Georgia Gulf Sulfur Corporation.

Rev01/30/2013

**Fluoride-Stable Toothpaste No. 613**

	<b>Wt. %</b>
<b>A</b>	<b>VEEGUM® D</b> Magnesium Aluminum Silicate 1.50
	Water 41.11
<b>B</b>	Tetrasodium Pyrophosphate 1.00
<b>C</b>	Titanium Dioxide 0.30
<b>D</b>	<b>VANZAN® NF</b> Xanthan Gum 0.80
	Cellulose Gum (Aqualon® CMC 7HF <sup>1</sup> ) 0.30
<b>E</b>	Methyl Paraben 0.20
	Propyl Paraben 0.05
	Sorbitol, 70% 10.00
	Glycerin 10.00
	Hydrated Silica (Zeodent® 113 <sup>2</sup> ) 30.00
	Saccharin 0.20
<b>F</b>	Water 2.80
	Sodium Fluoride 0.24
	Sodium Lauryl Sulfate, 29% 1.50

**Procedure:** Slowly add the **VEEGUM D** to the water agitated at maximum available shear. Mix until fully hydrated. Add Part B, Part C, Part D, Part E and Part F in order, mixing after each until uniform.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Ashland, Inc., Covington, KY

<sup>2</sup>J.M. Huber Corporation, Havre de Grace, MD

**TRADEMARKS**
**VEEGUM** is a registered trademark of Vanderbilt Minerals, LLC.

Aqualon is a registered trademark of Hercules Inc.

Zeodent is a registered trademark of J.M. Huber Corporation

Rev07/01/2013

**Sodium Monofluorophosphate Toothpaste No. 405 and No. 406**

		<b>No. 405</b>	<b>No. 406</b>
		<b>Wt. %</b>	<b>Wt. %</b>
<b>A</b>	<b>VEEGUM® D</b> Magnesium Aluminum Silicate	1.20	1.20
	Water	18.94	18.94
<b>B</b>	Sorbitol, 70%	12.50	12.50
<b>C</b>	Glycerin	12.50	12.50
	<b>VANZAN® NF</b> Xanthan Gum	0.70	---
	Cellulose Gum (Aqualon® CMC 7MF <sup>1</sup> )	---	0.70
<b>D</b>	Calcium Pyrophosphate	50.0	50.00
<b>E</b>	Trisodiumphosphate Dodecahydrate	0.50	0.50
<b>F</b>	Sodium Monofluorophosphate	0.76	0.76
<b>G</b>	Flavor	1.00	1.00
	Saccharin	0.20	0.20
	Sodium Benzoate	0.20	0.20
	Sodium Lauryl Sulfate	1.50	1.50

**Procedure:** Slowly add the **VEEGUM® D** to the water agitated at maximum available shear. Mix until fully hydrated. Add Part B, Part C, Part D, Part E, Part F and Part G in order, mixing after each until uniform.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>Ashland, Inc., Covington, KY

**TRADEMARKS**

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Rev07/01/2013

**Soft-Gel Toothpaste No. 562**

		<b>Wt. %</b>
<b>A</b>	<b>VEEGUM® D</b> Magnesium Aluminum Silicate	1.00
	Water	39.71
	Tetrasodium Pyrophosphate (Food Grade)	1.00
	<b>VANZAN® NF</b> Xanthan Gum	0.50
<b>B</b>	Methyl Paraben NF	0.20
	Propyl Paraben NF	0.05
	Sorbitol, 70%	10.00
	Glycerin, 99.7% USP	10.00
	Hydrated Silica (Zeodent® 113 <sup>1</sup> )	30.00
	Saccharin	0.20
<b>C</b>	Water	5.60
	Sodium Fluoride	0.24
<b>D</b>	Sodium Lauryl Sulfate, 29% (Rhodapon™ LSB <sup>2</sup> )	1.50
	FD & C Blue 1	q.s.

**Procedure:** Sift the **VEEGUM® D** into an established vortex in the water and mix until dispersed. Add the TSPP and mix until dissolved. Sift in the **VANZAN® NF** and mix at maximum available shear until the **VEEGUM® D** is fully hydrated and the **VANZAN® NF** is dissolved. Add the Part B ingredients in the order shown, mixing thoroughly after each addition. In Part C, dissolve the sodium fluoride in the water and then add to the batch. Add the sodium lauryl sulfate with very slow mixing to avoid air entrapment. Add the colorant and mix thoroughly.

**RAW MATERIAL SUPPLIERS**
<sup>1</sup>J.M Huber Corporation, Havre de Grace, MD

<sup>2</sup>Rhodia, Inc., Cranbury, NJ

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