

# ChemBrief



**Southern Clay Products, Inc.** • 1212 Church Street • Gonzales, Texas 78629  
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## Southern Clay Products, Inc. and home cleaning applications



Household, Industrial, and Institutional applications represent a range of opportunity for the creative formulator. For those looking for that competitive advantage in a mature marketplace, Optigel® and Pure Thix® Rheological additives can provide unique properties to enhance a wide array of formulations.

### Optigel® and Pure Thix® in Household and Industrial Formulations – We Create Customer Success!

#### TECHNOLOGY

Optigel® products are extremely pure Bentonite clays, Synthetic Silicate, and Modified Bentonite clays. The pure Bentonite clay platelets are 500 - 1000 nanometers across, 1 nanometer thick. In contrast to pure Bentonites, Optigel® Synthetic Silicate gives clear gels because its platelets are 50 - 100 nanometers across, about 1/10th of the diameter of Bentonite, and 1 nanometer thick. Modified Bentonites are pure Bentonite clays with an organic modifier.

Pure Thix® nonionic associative thickeners are clearly the choice for thickening the water phase of Household formulations. Built on a hydrophobe modified PEG-180 (INCI name Polyether-1), they are water soluble because of the hydrophilic backbone. Associative thickeners also have surfactant like hydrophobes that “associate” with themselves, hydrophobic portions of additional formulation ingredients, and hydrophobic solids (such as pigments) dispersed in the medium.

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## FORMULATION FORMULATION PARAMETERS

For the water phase of Household and Industrial products, the following guidelines are suggested for the Optigel® line:

### Optigel® - Pure Bentonite Products, Synthetic Hectorite, and Modified Bentonite

Characteristic	Optigel SH	Optigel S482	Optigel GSH 1330	Optigel CL	Optigel CK	Optigel CG	Optigel WX	Optigel GWX 1285
INCI Name	NaMgSi	NaMgSi	NaMgSi, Water	Bentonite	Bentonite	Bentonite	Bentonite & Xanthan	Bentonite, Xanthan, H2O
pH Stability	3 - 12	3 - 12	6 - 12	2 - 13	2 - 13	6 - 12	2 - 13	2 - 13
Color	Clear	Clear	Clear	Ultra White	White	White	Off White	Off White
Thickening effect	High	High	High	Low	Medium	Medium	Very High	Very High
Yield Value	Very High	Very High	Very High	Low	Low	Medium	High	High
Use Level	0.5 - 4.0%	0.5 - 4.0%	5.0 - 50.0%	1.0 - 10.0%	0.5 - 3.0%	0.5 - 3.0%	0.1 - 2.0%	5.0 - 30.0%

- Incorporation – need shear and heat for optimization Heat (35° - 60°C) and shear (high shear mixing, milling) are necessary processing requirements for optimization of Optigel® Deionized water is recommended Pre-gels of 5 - 10% of Optigels® can be made
- Salt Tolerance – up to 2% salt can be tolerated
- Alcohol Tolerance - Optigels® can be combined with up to 20% Alcohols—Optigel® SH can be formulated with up to 60% alcohol.
- Oil Tolerance – Optigel® products can be mixed with up to 20% Glycerin, Glycols, and other oil.
- Surfactants – Optigel® products are compatible with anionic, nonionic, and amphoteric surfactants.
- Oxidants – both sodium hypochlorite and hydrogen peroxide formulas can be thixotropically thickened with Optigels®
- Mastergels – dispersed gel form of Optigel® GSH-1330 – Water (and) Sodium Magnesium Silicate (and) Benzyl Alcohol GWX-1285 – Water (and) Bentonite (Optigel® WX) BEN-1255 – Water (and) Bentonite (Optigel® CK)

### For the water phase of Household and Industrial products, the following guidelines are

Characteristics	Pure Thix 1442	Pure Thix HH	Pure Thix 1450	Pure Thix 1451
INCI Name	Polyether-1	Polyether-1, Water, Butylene Glycol	PEG-180/Laureth-50/TMMG Copolymer	PEG-180/Octoxynol-40/TMMG Copolymer
pH Stability	5 – 12	5 – 12	5 - 12	5 – 12
Salt Tolerance	High	High	Very High	Very High
Thickening effect	Very High	Moderate	Moderate	Low
Form	Solid Flake	Clear Liquid	Solid Flake	Solid Flake
Active Content	100%	20%	100%	100%

- Salt Tolerant - Pure Thix® 1442 up to 4%, Pure Thix® 1450 up to 10% Salt
- Compatible with cationics such as Ammonium Lauryl Sulfate
- No neutralization required
- Compatible with surfactants such as Stearalkonium Chloride
- Clear liquid (Pure Thix® HH) can be post added
- Solid flake versions available – Pure Thix® 1442, Pure Thix® 1450
- Viscosity is pH independent in application range of pH 5.0 to 12.0

**ROCKWOOD**  
ADDITIVES



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**MULTIFUNCTIONAL MULTIFUNCTIONAL BENEFITS**

- ◆ Suspension – Optigel® products develop a 3 dimensional “House of Cards” structure that suspends particles, including pigments and abrasives, in the most demanding household product. Optigel® SH will not only suspend a marble at 4% loading in Distilled Water, but is highly pseudoplastic and will atomize upon spraying.
- ◆ Rheology – 5% Optigels® in Distilled Water

Material	Optigel SH	Optigel CL	Optigel CK	Optigel WX	Optigel CG
pH	10.01	10.48	10.49	10.38	10.64
24 hr cps	4,700	27	1,120	37,600	501

- ◆ Syneresis Control – Scouring Cream Cleanser with 1% Optigel® CK did not show syneresis after 30 days in 50°C oven.
- ◆ Vertical Hold - Glass Cleanser with 1% Optigel® SH is still clear, and gives exceptional vertical hold due to pseudoplastic characteristics of the Optigel® SH. Toilet, tub, and tiles cleaners formulated with Optigel® CK and Optigel® WX have thixotropic flow and vertical cling that translates into perceived efficiency.
- ◆ Pure Thix® and Emulsion Stability – Emulsifying Properties  
40% Cyclomethicone / 56% Water will be stable with 4% of Pure Thix® 1442
- ◆ Associative Thickening – Perceived Elegance  
% Pure Thix® 1442 (in Water) 1% 2% 3% 4% 5%  
Brookfield viscosity, 2 rpm 2,100 15,600 191,300 317,900 699,500
- ◆ Synergistic with pigments – Pure Thix® “associates” with pigment and abrasive particles to give a synergistic effect for building viscosity.

*For more information on how Southern Clay Products can assist you, please contact us at (800) 324-2891 or visit us on the internet at [www.scprod.com](http://www.scprod.com).*



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