

# TIXOGEL<sup>®</sup> AND RHEOCIN<sup>®</sup>

RHEOLOGICAL ADDITIVES  
FOR ORGANIC PHASES



**ROCKWOOD**<sup>®</sup>  
ADDITIVES



## TIXOGEL® and RHEOCIN® – Rheological Additives for Organic Phases in Cosmetics and Personal Care

For oil and solvent based cosmetic formulations different types of rheological additives are in the market:

- ◆ Organoclays: **TIXOGEL®**
- ◆ Hydrogenated castor oil derivatives: **RHEOCIN®** (INCI: Trihydroxystearin)
- ◆ Synthetic polymers: Polyethylene and others
- ◆ Silica

### Vegetable based TIXOGEL®

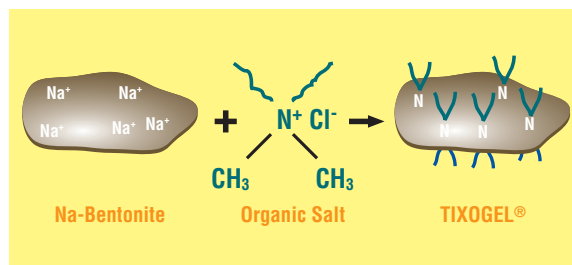
TIXOGEL® organophilic bentonites of Rockwood are used for rheology adjustment of solvent and oil based personal care and cosmetic products.

**Depending on application TIXOGEL® products provide multifunctional benefits:**

- ◆ Thixotropic thickening
- ◆ Anti-settling effect, pigment suspension
- ◆ Prevention of phase separation and syneresis
- ◆ Stabilization of W/O emulsions
- ◆ Temperature stability
- ◆ Reduction of running and dripping
- ◆ Uniform, colour consistent film
- ◆ Soft, elegant feel of cosmetic products

### Technology and grades:

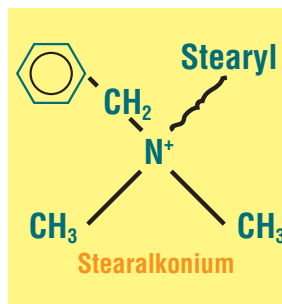
For the production of TIXOGEL®, the inorganic cations of natural bentonites are substituted by quaternary ammonium cations, thus converting a water-swellable mineral into an organophilic gellant for non-aqueous phases.



By selection of the organic cations used for the ion exchange, the gelling effect of each TIXOGEL® grade is optimised for different polarities of the organic medium.

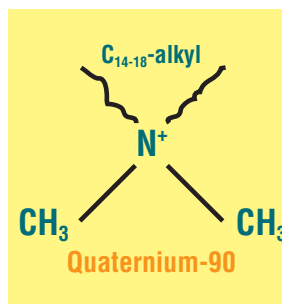
Traditionally the quaternary ammonium cations used for production of organophilic bentonites contain alkyl groups derived from hydrogenated tallow.

Following the demand for »animal-free« raw materials, especially in cosmetics, Rockwood has developed new TIXOGEL® grades with vegetable derived alkyl groups.



### TIXOGEL® VZ-V

(INCI: Stearalkonium Bentonite) is designed as gellant for polar to medium polar systems, which contain e. g. esters or vegetable oils.



### TIXOGEL® VP-V

(INCI: Quaternium-90 Bentonite) is optimised for use in unpolar systems, based on mineral oils, silicon oils etc.

### **Incorporation:**

For maximum efficiency TIXOGEL® must be subjected to both shear and polar activation. For optimum incorporation the following procedure is recommended:

1. Charge organic fluid to the dispersion vessel.
2. Slowly add TIXOGEL® under agitation.
3. Mix at high speed for 10 - 15 minutes.
4. Add polar activator (see below).
5. Homogenize at high speed for 10 - 15 minutes.
6. Add additional ingredients.

Suggested polar activators are propylene carbonate/water (95:5) or ethanol/water (95:5). It is recommended to start at 30% activator based on weight of TIXOGEL® and to conduct an activation ladder up to 60% in order to find out the optimum viscosity development.

### **RHEOCIN®**

The hydrogenated castor oil derivative RHEOCIN® (INCI: Trihydroxystearin) is a very efficient thickener for low to medium polar systems. It requires temperature-controlled activation between 35°C and 55°C. RHEOCIN® then will form white or translucent gels in the oil. Besides its rheological effects it also acts as skin conditioning agent and as water repellent.



### **Mastergels**

Mastergels are ready to use gels of rheological additives in commonly used cosmetic vehicles. Compared to the use of powder form TIXOGEL® and RHEOCIN®, Mastergels provide a time saving in production and eliminate possible dust formation during dispersion. Furthermore polyethylene gels are available which impart waterproofing and long wear properties.

#### **Some Mastergel examples are:**

- ◆ **TIXOGEL® VSP-1438**  
Organoclay Mastergel, composed of Quaternium-90 Bentonite in cyclomethicone, activated with propylene carbonate.
- ◆ **TIXOGEL® RCM-1357**  
RHEOCIN® Mastergel, composed of Trihydroxystearin in cyclomethicone.
- ◆ **TIXOGEL® PEC-1414**  
Polyethylene Mastergel, composed of polyethylene in hydrogenated polyisobutene and cyclomethicone.

Please contact Rockwood for the up-to-date list of all available Mastergels or for customized gels.

### **Applications**

Due to their unique benefits, TIXOGEL® and RHEOCIN® rheological additives are used in cosmetic and personal care products as follows:

- ◆ Creams, lotions
- ◆ Sunscreens
- ◆ Antiperspirants
- ◆ Lipsticks
- ◆ Anhydrous and liquid make-up
- ◆ Nail lacquers
- ◆ I & I hand cleaning pastes with solvents



**ROCKWOOD**<sup>®</sup>  
ADDITIVES

**Rockwood Additives Limited, Rockwood Clay Additives GmbH, Rockwood Specialties (Singapore) Pte. Limited and Southern Clay Products, Inc. are wholly owned subsidiaries of Rockwood Specialties Group, Inc.**

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