

Applications

	Rhodopol 23	Rhodopol Extra 2	Rhodopol Extra 2 Clear	Rhodopol G	Rhodopol T	Rhodopol TG	Rhodopol 500MD
HOUSEHOLD							
Air Freshener Gels			✓		✓	✓	
Laundry Detergent	✓	✓					
Cleaners		✓	✓	✓	✓	✓	
INDUSTRIAL							
Paints & Coating	✓	✓					✓

Rhodopol	23	Standard, 80 mesh particle size
	Extra 2	High performance (suspension power)
	Extra 2 Clear	Clear, High performance (suspension power)
	G	Large particle size
	T	Clear, 80 mesh
	TG	Clear, Large particle size
	50MD	Very Easy Dispersion



PMC Ouvrie is Europe's largest producer of defoamer in the biotech & food industry. PMC Ouvrie's range of industry-leading defoamers are suited for all types of industries and our defoamers are specially formulated for detergency, paper, building/construction, wastewater treatment, coating, sugar/alcohol distillation, biotechnology, agri-food and other industries. PMC Ouvrie is a leader in serving all types of industries.

PMC Ouvrie is a premier manufacturer and developer of specialty esters ideal for use in various applications, including emulsifiers, stabilizers, solubilizers, defoamers and antifoam solubilizing products. Our defoamers play a crucial role in helping industries ensure constant productivity

pmc **ouvrie**™

44, rue Albert Einstein
62220 CARVIN - France

+33 3 91 83 71 71
info.ouvrie@ouvrie.com

www.pmcouvrie.com

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Xanthan Gum

Rhodicare & Rhodopol



pmc **ouvrie**®

Applications

	Rhodicare S	Rhodicare XC	Rhodicare H	Rhodicare D	Rhodicare T	Rhodicare CFT
PERSONAL CARE						
Hair Care						
Gels and Foams	✓	✓	✓	✓	✓	✓
Shampoo	✓	✓	✓	✓	✓	✓
Sprays	✓	✓	✓	✓	✓	✓
Soaps and Body Washes						
Body Wash & Shower Gels	✓	✓	✓	✓	✓	✓
Lotions & creams						
Hand, Body and facial	✓	✓	✓	✓	✓	✓
ORAL CARE						
Toothpaste	✓	✓	✓	✓	✓	✓

Rhodicare	S	Standard, 80 mesh particle size
	XC	80 mesh, High microbiological quality (low Total Plate count, TPC)
	H	Fine, 200 mesh particle size
	D	Large particle size
	T	Clear, 80 mesh
	CFT	Cellulose free, Clear, 80 mesh

Xanthan Gum

pmc **ouvrie**®

Xanthan Gum

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Rhodicare

Xanthan gum is anionic heteropolysaccharide obtained from fermentation of carbon hydrates by Xanthomonas-type microorganisms.

This natural polysaccharide consisting of a cellulosic backbone substituted on alternate glucose residues with a trisaccharide sidechain containing 2 mannose and 1 glucuronic acid. Half of the terminal mannose units carry a pyruvic acid residue.

Xanthan Gum is derived from nature. It is approved as an ingredient of natural origin according to Ecocert & Cosmos. Xanthan Gum is also approved for vegan products

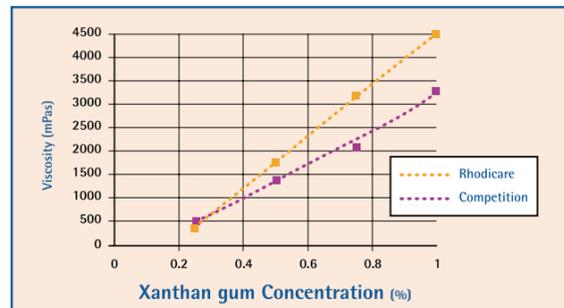
Rhodicare® as a rheology modifier in surfactant systems has the following benefits::

- High shear-thinning rheology
- High yield stress : strong ability to suspend
- Good clarity for Rhodicare T&CFT grades

Rhodicare limits the Jelly texture

Product Name	Solids	Properties
Rhodicare S	100%	100% naturally derived thickening biopolymer delivering viscosity and suspension/stabilization properties to cosmetic formulations, recommended use in creams, make-up formulas and cleansers, Rhodicare S displays a high hydration rate
Rhodicare XC	100%	Similar to standard Xanthan Gum, this grade displays improved microbial specifications.
Rhodicare H	100%	The Rhodicare H is a Xanthan Gum with a capacity of hydration extremely easy.
Rhodicare D	100%	The Rhodicare D is a Xanthan Gum with a capacity of Dispersion extremely easy-no dust.
Rhodicare T	100%	high purity grade specifically designed for thickening and suspension in clear formulations
Rhodicare CFT	100%	Cellulase-free clear grade of Xanthan Gum it is recommended when associated with cellulose-based polymers. Especially recommended in toothpastes.

Superior viscosity compared to alternative products



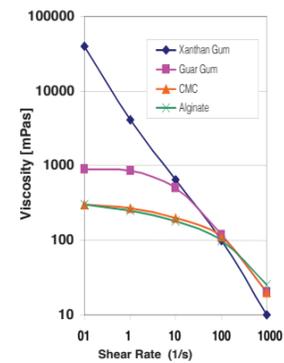
A unique agent for viscosity control and an excellent stabilizer

Rhodicare® has the ability to develop an extremely high viscosity even at low concentration. Its ability to stabilize multiphase systems in formulations is extremely advantageous. These systems may require stabilisation of a solid (suspension), a liquid (emulsion), or a gas (foam), or a mixture of all three.

The yield value of a solution is the most important characteristic of this stabilising function. The yield value is the shear stress below which flow does not occur. Thus, in a static system, or at a very low shear rate, dispersion (suspensions, emulsions or foams) remain stationary because of the yield value of the Rhodicare solution even at low concentration. This table compares the yield value of several thickeners at different concentrations.

	Yield value %		
	0.3	0.5	1
Rhodicare®	700	2 500	7 000
Guar gum	-	210	4 000
Hydroxyethyl cellulose	-	60	830
Carboxymethyl cellulose	-	< 50	410

Effect of shear rate on different thickeners, gum concentration 0.5%

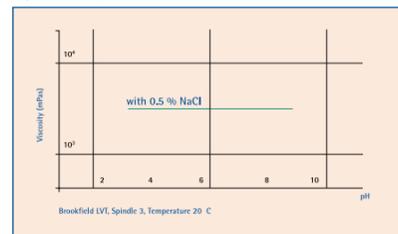


In contrast, Rhodicare® solutions are highly shear thinning. At low shear rates, Rhodicare® demonstrates high resistance to flow, but the apparent viscosity drops instantaneously with increasing shear rate. Rhodicare® imparts exceptional pseudoplasticity and its degree of pseudoplasticity increases with the concentration,

Total viscosity recovery occurs virtually instantaneously upon the release of shear. Under high shear conditions such as pumping, Rhodicare® imparts very little apparent viscosity. Furthermore, Rhodicare® solutions are unusually resistant to prolonged shearing. Consequently, they exhibit no loss in viscosity during operations such as homogenization or high speed mixing and demonstrate a rheological behavior superior to other commonly used thickeners.

pH Stability

pH-Stability of 1 % Rhodicare® solution



The viscosity of Rhodicare® solutions is independent of pH over a wide range. Only extreme pH conditions (11-12 or 1-2) slightly affect viscosity. This is a unique property, which is not found with conventional thickeners. This makes Rhodicare® a suitable stabilizer/viscosifier for a wide range of applications.

Salt Compatibility

Rhodicare® is fully compatible with monovalent salts. At concentrations above approx. 0.1%, the viscosity of Rhodicare® solutions increases slightly in the presence of these salts. At a level of 0.1% of salt, the maximum viscosity is obtained and further addition of salts has no effect.

The pseudoplasticity of Rhodicare® solutions is slightly increased by the addition of sodium chloride as shown below.

Rhodopol

The Rhodopol has compatibility in the presence of solvents and surfactants ;

- **alcohols** : up to 40% - 60% (ethanol, isopropanol)
 - **glycols** : up to 50% (glycerol, propylene glycol, hexylene glycol)
 - **non-ionic / anionic thickener** : compatible with most of them
 - **anionic surfactants** : up to 10-12% (1% de Rhodicare® solution)
 - **amphoteric surfactants** : compatible > 15-20% (1% de Rhodicare® solution)
 - **nonionic surfactants** : compatible with most of them > 5% (1% Rhodicare® solution)
- But Rhodopol are not stable in hypochlorite bleach.

The use of Rhodopol allows the thickening of alkaline formulations, Rhodopol offers the best cost in use in alkaline medium.

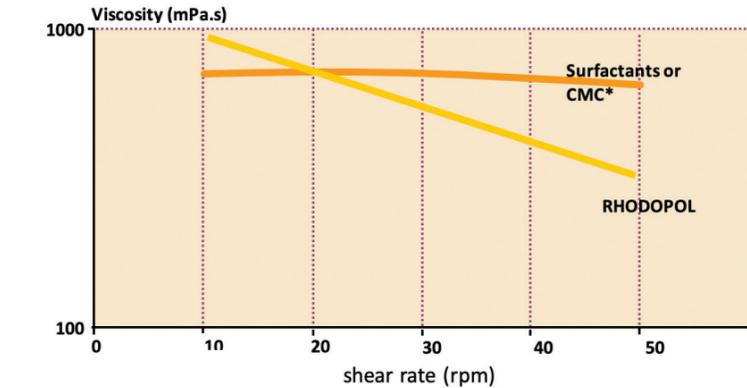
Product Name	Solids	Properties
Rhodopol 23	100%	Standard grade of Xanthan Gum. Shear thinning and yield properties with a rapid hydration rate. Thickening agent for liquid gel formulations. Aids vertical cling
Rhodopol Extra 2	100%	Cost-efficient in mild acidic media. Highly pseudo plastic. It is particularly useful for thickening and stabilizing. Fast solubilization and processing in acidilic media - Non GMO.
Rhodopol Extra 2 Clear	100%	Same performance as Rhodopol Extra2 but suitable for clear formulations
Rhodopol G	100%	The Rhodopol G is a Xantham Gum with a capacity of Dispersion extremely easy - no dust.
Rhodopol T	100%	Clear grade for transparent formulations
Rhodopol TG	100%	The Rhodopol TG is a Xantham Gum with a capacity of Dispersion extremely easy - no dust for transparent formulations.
Rhodopol 50MD	100%	The Rhodopol 50MD is a Xantham Gum with a capacity of hydration extremely easy.

6 distinctive advantages

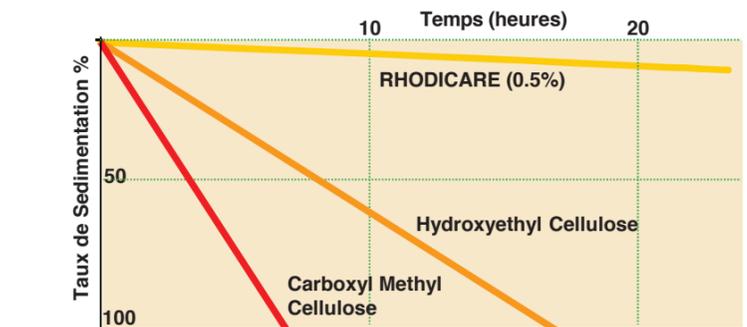
1. Greater ease in use thanks to pseudoplastic thickening properties
2. Cold water soluble
3. Very stable: low pH, high T°C, salty medium
4. Considerable stabilizing power permitting the suspension of solid particles or foam
5. A product range adapted to your formulation needs giving maximum efficacy irrespective of the medium: from highly acidic to highly alkaline
6. Clear formulations are feasible

A double action thanks to pseudoplastic thickening properties: High viscosity at rest and fluidity under pressure

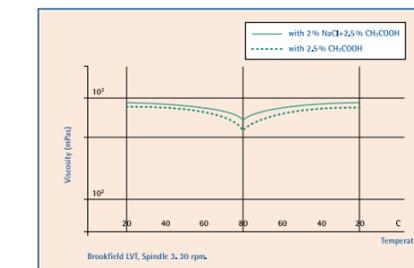
- Viscosity decreases proportionally to the increase in agitation or shear rate
- Viscosity returns immediately to its initial level when agitation stops



Xanthan gum provides the best stabilizing power among commonly employed thickening agents



Enhanced ease of consumer use: no need to shake the product before use since solid particles are maintained in suspension during storage. Stabilization of foam; when foam products are used, there is a longer adhesion time on surfaces to be cleaned.



Temperature stability

Temperature stability of Rhodicare® compares favorably with other thickeners. Rhodicare® solutions exhibit exceptional stability under heating, even in the presence of salts and/or acids. Temperature has very little effect on viscosity up to 60°C and the initial viscosity is totally recovered after cooling down to 20°C.