

ECOPOL^{®*} 500 SERIES SURFACTANTS

Sustainable inspiration



polaquimia

Ecosustainable Chemical Innovation

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Ecopol®* 500 series surfactants

Our new line of products is a generation of biodegradable nonionic surfactants. These surfactants are products based on renewable and natural sources. They are excellent candidates for use in systems also known as “Green Products”.

Ecopol®* 500 series surfactants offer significant advantages in processing and formulating, for a broad number of applications.



Tabla 1. Physical and Chemical properties.⁽¹⁾

Property	Ecopol®* 500 series surfactants			
	Ecopol®* 505	Ecopol®* 508	Ecopol®* 509	Ecopol®* 513
HLB	8.89	12.74	13.20	15.31
Active content wt%	100.0	100.0	100.0	100.0
Appearance at 25°C	Clear liquid	Clear liquid Opalescent liquid	Opalescent liquid	Paste ⁽²⁾
Color (Gardner)	5.0 max.	2.0 max.	2.0 max.	2.0 max.
Moisture Karl Fischer (%)	1.0 max.	1.0 max.	1.0 max.	1.0 max.
pH 5% in water	6.0-8.0	6.0-8.0	6.0-8.0	6.0-8.0
Boiling point (°C)	>190.0	>200.0	>200.0	>200.0
Flash point (°C)	>200.0	>190.0	>180.0	>200.0
Viscosity at 25°C, cP	43.0-100.0	50.0-100.0	130.0-330.0	20.0-50.0*
Cloud point (°C)	A	56.0-60.0 ^B	56.0-60.0 ^B	75.0 ^C
Ross Miles foam test initial / 5 min (cm) ⁺	0.5 / 0	8.7 / 7.3	8.2 / 7.5	6.8 / 5.6
Surface tension dynes/cm ⁺⁺	26.0	32.2	30.4	33.2

⁽¹⁾ Typical properties, not to be construed as specifications. ⁽²⁾ Liquid, 70% active content. ^{*} At 40°C. ^A Cloud point not reflected water insoluble. ^B Alcoholic solution with NaCl at 0.5%. ^C At 1% in water. ⁺ Ross Miles Foam Test, 0.1 wt% at 25°C. ⁺⁺ Fisher Tensiometer, 0.1 wt% at 25°C.



Foam performance

The Ecopol®* 500 series surfactants offer low and moderate foaming characteristics. This foaming property makes this line of surfactants excellent candidates for detergents that must minimize the generation and persistence of foam.

Surface tension

Ecopol®* 500 series surfactants exhibit surface tension reduction and an increase in the contact area with the surface, which is another advantage in the application in different industries.



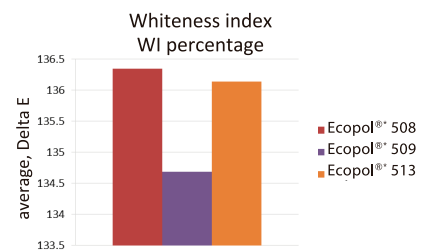
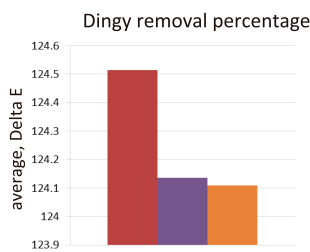
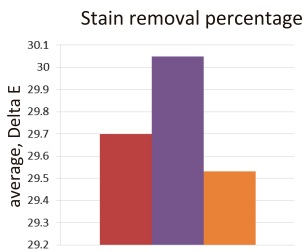
Characteristics

Stain removal and whiteness tests. ⁽³⁾

Ecopol[®]* 500 series surfactants have suitable detergent power.

Our products have a good competitive stain removal behavior against others nonionic surfactants.

These surfactants allow for a synergy with anionic and cationic surfactants, providing significant formulating flexibility.



* ASTM D 4265-98
NMX-Q002-SCFI-2007.

* Test on t-shirt standar.

* Test on white towels.
WI = white index

(3) Evaluation of nonionic product, unformulated.

Solubility

Ecopol[®]* 500 series surfactants display very good solubility in a wide range of common solvents.

Electrolytes

Our products Ecopol[®]* 509 and Ecopol[®]* 513 have good solubility in electrolyte solutions.

Table 2. Solubility of surfactants in solvents (5 wt% at 25°C).

Solvent	Ecopol [®] * 500 series surfactants			
	Ecopol [®] * 505	Ecopol [®] * 508	Ecopol [®] * 509	Ecopol [®] * 513
Ethanol	Soluble	Soluble	Soluble	Soluble
Isopropyl Alcohol	Soluble	Soluble	Soluble	Soluble
Mineral oil	Soluble	Dispersible	Dispersible	Dispersible
DGM	Soluble	Soluble	Soluble	Soluble
DPM	Soluble	Soluble	Soluble	Soluble

DGM = Diethylene glycol monobutyl ether DPM = Dipropylene glycol monomethyl ether

Insoluble

Soluble

Dispersible

Table 3. Solubility in electrolyte solution (10 wt% surfactant, 5% electrolyte at 25°C).

Electrolyte	Ecopol [®] * 500 series surfactants	
	Ecopol [®] * 509	Ecopol [®] * 513
HCl, 5%	Soluble	Soluble
NaCl, 5%	Dispersible	Dispersible
Potassium Tripolyphosphate, 5%	Soluble	Soluble
NaOH, 5%	Soluble	Soluble



Water solubility

The surfactants Ecopol®* 508, Ecopol®* 509 and Ecopol®* 513, on a wide range of concentrations, exhibit excellent solubility in water, being an ideal feature for their handling and formulation.

Table 4. Solubility in water (wt% surfactant in aqueous solution at 25°C).

Ecopol®* 500 series surfactants	Concentration of surfactant, wt%								
	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %
Ecopol®* 508					OS	OS	OS		
Ecopol®* 509					OS	OS	OS		
Ecopol®* 513									

Soluble ■ Paste ■ Dispersible ■ OS Opalescent Soluble

Figure 1. Acid resistance (1 wt% surfactant at 25°C).

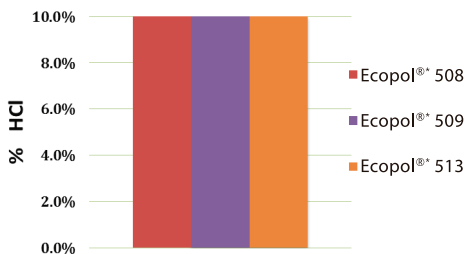
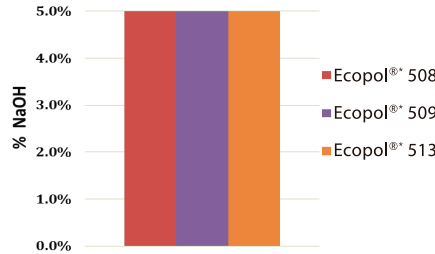


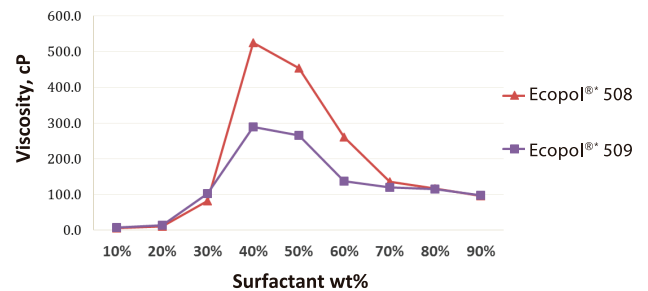
Figure 2. Alkali resistance (1 wt% surfactant at 25°C).



Acid and Alkaline Stability

Ecopol®* 508, Ecopol®* 509 and Ecopol®* 513 products have shown special characteristics of good strength and stability in both acid and alkaline media at 25°C, allowing for excellent application in a wide range of manufacturing processes.

Figure 3. Viscosity in aqueous solution at 25°C.



Viscosity

Ecopol®* 500 series surfactants have relatively low viscosities at room temperature and therefore have excellent handling characteristics in aqueous solutions.

Biodegradability

Ecopol®* 500 series surfactants are biodegradable > 60 percent biodegradation within 28 days. ⁽⁴⁾



Ecopol®* 500 series surfactants are products designed to be environmentally friendly, capable to be biodegradable surfactants in a specific media. ⁽⁴⁾

(4) Method based on:
 USEPA 40 CFR 796 3200-1995
 ASTM D2667. Standard Test Method for Biodegradability of Alkylbenzene Sulfonates.
 ASTM E1625. Standard Test Method for Determining Biodegradability of Organic Chemicals.



Suggested use

Ecopol®* 500 series surfactants	Industry				
	Agrochemicals	Detergents & cleaning products	Emulsion polymerization	Paints	Leather - Tannery
Ecopol®* 505					
Ecopol®* 508					
Ecopol®* 509					
Ecopol®* 513					




Please contact us for more information about Ecopol®* 500 series surfactants.



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