

ECOPOL®* 100 SERIES SURFACTANTS











Sustainable inspiration



polaquimia

Ecosustainable Chemical Innovation

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Ecopol®* 100 series surfactants



Our new line of products is a generation of biodegradable⁽⁵⁾ nonionic surfactants. They are excellent candidates for use in systems also known as “Green Products”.

Table 1. Physical and Chemical properties.⁽¹⁾

Property	Ecopol®* 100 series surfactants			
	Ecopol®* 103	Ecopol®* 105	Ecopol®* 106	Ecopol®* 114
HLB	13.48	14.84	15.36	18.20
Active Content wt%	100.0	100.0	100.0	100.0
Appearance at 25°C	Opalescent liquid	Opalescent liquid	Gel ⁽²⁾	Waxy solid ⁽³⁾
Color (Pt-Co)	50.0 max.	50.0 max.	50.0 max.	50.0 max.
Moisture Karl Fischer (%)	1.0 max.	1.0 max.	1.0 max.	1.0 max.
pH 1% in water	5.0-7.5	6.0-8.0	6.0-8.0	6.0-8.0
Boiling point (°C)	160.0	192.0	210.0	210.0
Flash Point (°C)	116.0	134.0	164.0	272.0
Viscosity at 25°C (cps)	82.0	197.0	1054.0	**
Cloud point (°C)	69.0 ^B	85.0 ^E	88.5 ^E	75.0 ^C
Ross-Miles foam test initial / 5 min. (cm) ⁺	21.0 / 17.0	14.0 / 10.5	10.0 / 7.0	12.0 / 0.1
Surface tension (dynes/cm) ^{**}	30.7	27.0	27.5	55.4

⁽¹⁾ Typical properties, not to be construed as specifications. ⁽²⁾ Liquid, 80% active content. ⁽³⁾ Liquid, 70% active content. ** Waxy solid. ^B Alcoholic solution with NaCl at 0.5%. ^C At 1% in NaCl solution at 10% in water w/v. ^E At 1% in water. ⁺ Ross-Miles foam test, 0.1 wt% at 25°C. ^{**} Fisher Tensiometer, 0.1% wt% at 25°C.

Wetting Time

There are several industrial sectors (Textile, Cleaning Products and Agrochemicals), where the use of wetting agents is important. Ecopol®* 100 series surfactants are ideal for use in various applications to present a good performance in wetting.





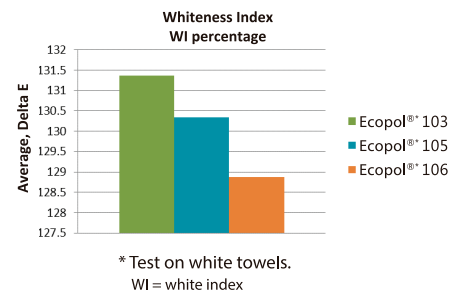
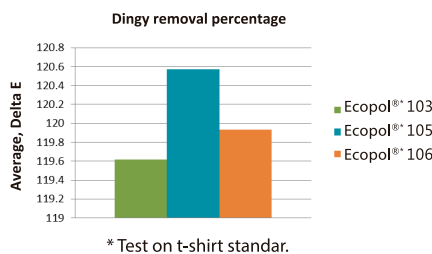
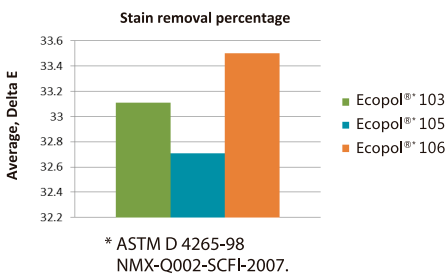
Characteristics



Stain removal and whiteness tests. ⁽⁴⁾

- Ecopol[®]* 100 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.



(4) Evaluation of nonionic product, unformulated.

Solubility

Ecopol[®]* 100 series surfactants display very good solubility in a wide range of common solvents.

Electrolytes

Our products Ecopol[®]* 103, Ecopol[®]* 105 and Ecopol[®]* 106 have good solubility in electrolyte solutions.

Table 3. Solubility of surfactants in solvents (5 wt% at 25°C).

Solvent	Ecopol [®] * 100 series surfactants			
	Ecopol [®] * 103	Ecopol [®] * 105	Ecopol [®] * 106	Ecopol [®] * 114
Ethanol	Soluble	Soluble	Soluble	Soluble
Isopropyl alcohol	Soluble	Soluble	OS	OS
Acetone	Soluble	Soluble	Soluble	Soluble
DGM	Soluble	Soluble	Soluble	Soluble
Xylene	Soluble	Soluble	Soluble	Soluble

DGM = Diethylene glycol monobutyl ether

Soluble ■
OS = Opalescent Soluble

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

Electrolyte	Ecopol [®] * 100 series surfactants		
	Ecopol [®] * 103	Ecopol [®] * 105	Ecopol [®] * 106
HCl, 5%	Soluble	Soluble	Soluble
NaCl, 5%	Soluble	Soluble	Soluble
Potassium Tripolyphosphate, 5%	Soluble	Soluble	Soluble
NaOH, 5%	Soluble	Soluble	Soluble



Water solubility

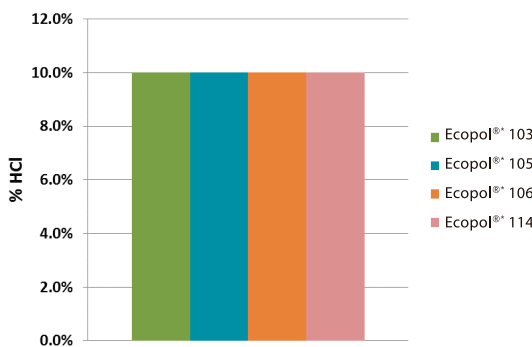
Ecopol® 100 series surfactants on a wide range of concentrations, exhibit excellent solubility in water, being an ideal feature for their handling and formulation.

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

Ecopol® 100 series surfactants	Concentration of surfactant, wt%								
	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %
Ecopol® 103	■	■	■	■	■	■	■	■	■
Ecopol® 105	■	■	■	■	■	■	■	■	■
Ecopol® 106	■	■	■	■	■	■	■	■	■

Soluble ■
Insoluble ■

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



Acid and Alkaline Stability

Ecopol® 100 series surfactants, have shown special characteristics of good strength and stability in both acid and alkaline media, allowing for excellent application in a wide range of manufacturing processes.

Viscosity

Ecopol® 100 series surfactants have relatively low viscosities at different temperatures and therefore have excellent handling characteristics in aqueous solutions.

Figure 2. Viscosity in aqueous solution at 25°C.

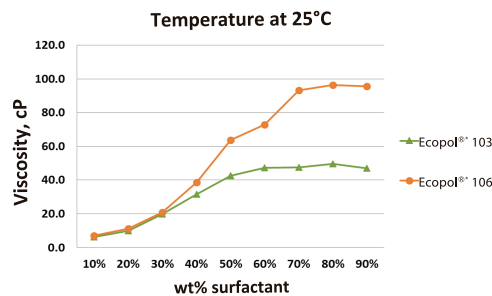
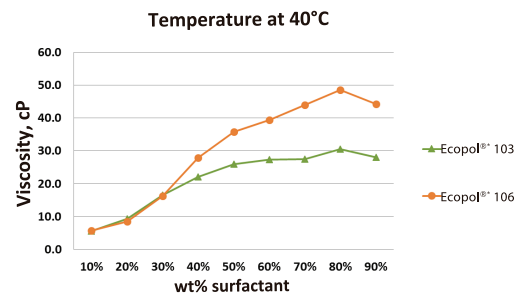


Figure 3. Viscosity in aqueous solution at 40°C.



Biodegradability

Ecopol® 100 series surfactants are biodegradable > 60 percent biodegradation within 28 days. ⁽⁵⁾



Ecopol® 100 series surfactants are products designed to be environmentally friendly, capable to be biodegradable surfactants in a specific media. ⁽⁵⁾

(5) 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®* 100 series surfactants	Industry				
	Agrochemicals	Detergents & cleaning products	Emulsion polymerization	Paints	Textile
Ecopol®* 103					
Ecopol®* 105					
Ecopol®* 106					
Ecopol®* 114					



– Please contact us for more information about Ecopol®* 100 series surfactants.



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