



EO/PO Copolymers

Unlock the Power of Your Formulation

Chemistry

- Initiator/Starter types: different functionalities
- Type of oxides: ethylene oxide (EO), propylene oxide (PO) and butylene oxide (BO)
- Polyol structures: homo, hetero or copolymer (block or random)
- Finishing techniques: from crude to full
- Catalyst removal
- Flexible monomers ratio and molecular weight

Production Sites

- Global

Plant Certifications

- cGMP Compliance (current good manufacturing practices)
- Kosher for Passover
- Halal products
- Note: not all plants have the same certificate, please check in your region with your local Dow representative

Packaging, Presentation, & Logistics

- Bulk (Iso-containers, FTL), IBCs and drums
- Products can be shipped to all regions

Polyalkaline glycols (PAGs) are a versatile family of organic polymers that can be extensively explored in pesticide formulations. PAGs are a very established chemistry in other applications and a chemistry that could bring a variety of polymer architectures by exploring different initiators and monomers type, orientation and ratio; generating molecules with a wide range of properties, including cloud point, water solubility, wetting power, pour point, and viscosity.

The most common and already widely used PAG chemistry in pesticides are EO/PO copolymers, polymers that can work as unique dispersant agents (bringing steric stability), with distinct water solubility and also with low-foaming properties. These type of molecules are mostly explored in Emulsifiable Concentrate (EC) and Suspension Concentrate (SC) formulations, as well as Capsule Suspension (CS), Microemulsion (ME), Emulsion, Oil in Water (EW) and Suspo-Emulsion (SE) formulas.

Figure 1: General PAGs Production Reaction

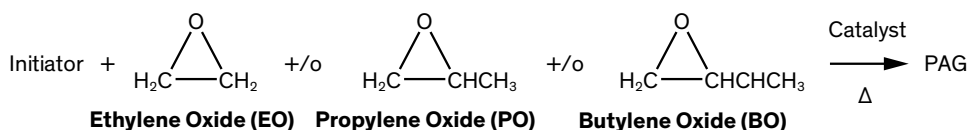
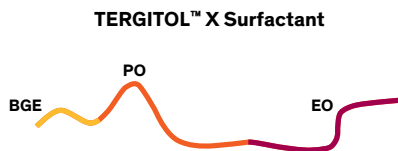


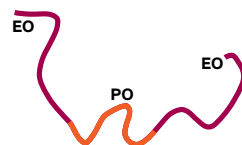
Figure 2: EO/PO Copolymers from Dow



EO/PO copolymer Initiated by butyl glycol ether (BGE):

- Excellent dispersing agent
- Excellent steric stabilizer
- Water soluble
- Distinct EO/PO ratio
- Excellent emulsifier
 - Aromatic solvents
 - Chlorinated solvents

TERGITOL™ L Surfactant



EO/PO copolymer initiated by propylene glycol (PG):

- Readily biodegradable
- Nontoxic to aquatic organisms
- Distinct EO/PO ratio
- Production flexibility
- Excellent foam control

Overview of Applications	TERGITOL™ EO/PO Copolymers							
	L-61	L-62	L-64	L-81	L-101	XD	XH	XJ
Emulsion & Dispersion						💧		💧
Emulsifier for Aromatic & Chlorinated Solvents								💧
Steric & Freeze / Thaw Stabilizer						💧	💧	💧
Wetting Agent	💧	💧						
Foam Control	💧	💧	💧	💧	💧	💧		
Higher Temperature (foam control)			💧					
Low Temperature (foam control)				💧	💧	💧		
Chemical Intermediates				💧	💧	💧		
Fermentation	💧	💧	💧	💧	💧	💧		

💧 = Readily Biodegradable

Overview of Products	TERGITOL™ EO/PO Copolymers								DOWFAX™ EO/PO Copolymers	
	L-61	L-62	L-64	L-81	L-101	XD	XH	XJ	100N50	100N50 Sol*
Cloud Point ⁽¹⁾	24	32	62	20	18	74	95	49	-	-
HLB ⁽²⁾	3	7	15	2	1	-	-	-	13.8	-
Pour Point ⁽³⁾	-32	-2	7	-20	-24	34	40	27	45	-10
Viscosity at 38 °C (100 °F), cST	168	231	284	244	399	251 ⁽⁶⁾	319 ⁽⁶⁾	149 ⁽⁶⁾	-	aprox. 9 ⁽⁶⁾
Density at 25 °C (77 °F), g/mL	1.015	1.011	1.048	1.016	1.018	1.02	1.033	1.010	aprox. 1 ⁽⁷⁾	aprox. 1 ⁽⁷⁾
Surface Tension ⁽⁴⁾	40	41	44	36	33	38	41	36	39	39
Foam Height ⁽⁵⁾	0/0	45/30	48/18	Dispersible	30/25	60/25	80/40	53/13	-	-
Draves 20 sec wetting conc, wt % at 25 °C (77 °F)	0.02	0.50	1.0	-	0.11	0.38	0.62	0.24	-	-
Appearance	Clear liquid	Pale yellow liquid	Opaque liquid	Pale yellow liquid	Pale yellow liquid	White solid	White solid	White solid	White solid	Clear liquid

⁽¹⁾ Cloud point: °C, 1 wt % actives aqueous solution

⁽²⁾ HLB Range: <10 w/o emulsifier, >10 o/w emulsifier, 10-15 good wetting, 12-15 detergents

⁽³⁾ Pour point: °C

⁽⁴⁾ Surface tension: dynes/cm at 1% actives, 25°C

⁽⁵⁾ Ross-Miles foam height: mm at 0.1 wt% actives, 25°C, initial/5 minute

⁽⁶⁾ Viscosity at 25°C (77°F), cP

⁽⁷⁾ Density at 20°C (68°F), g/mL

*18 wt % solution in water

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