

EO/PO Block Copolymers

Properties

Stepan Company's Ethylene Oxide/Propylene Oxide (EO/PO) Block Copolymers are generated utilizing a variety of hydrophobe bases and across a range of HLB values. Our EO/PO product portfolio can be used as dispersants, emulsifiers and wetting agents in multiple water- and solvent-based formulation types.

Trade Name	CAS No. (Alt. CAS No.)	Base	HLB	Avg Molecular Weight	Surface Tension, 0.1% aqueous, dynes/cm	Cloud Point, 1% aqueous, °C	Pour Point, °C
STEP-FLOW® 26	9003-11-6	PPG/PEG	13	5,900	34.5	82	32
STEP-FLOW 26 F	9003-11-6	PPG/PEG	13	7,900	35.0	82	7
STEP-FLOW 26-18 ¹	9003-11-6	PPG/PEG	13	5,900	34.9	-8.6	<-40
STEP-FLOW 27 ²	9003-11-6	PPG/PEG	>13	12,000	39.6	>100	46
STEP-FLOW LF-ULTRA ²	9003-11-6	PPG/PEG	3	2,000	Pending	23	-39
TOXIMUL® 8321	9003-11-6	PPG/PEG	7	3,650	34.5	28	-3
TOXIMUL 8322 ²	9003-11-6	PPG/PEG	15	6,500	35.1	63	35
TOXIMUL 8323	9003-11-6	PPG/PEG	17	3,800	36.5	82	27
TOXIMUL 8323/33	9003-11-6	PPG/PEG	17	3,800	36.5	84	-6
TOXIMUL L62 ²	9003-11-6	PPG/PEG	7	2,500	42.3	24	-3
TOXIMUL L64 ²	9003-11-6	PPG/PEG	15	2,900	41.5	60	18
TOXIMUL 8325	9038-95-3	Butyl	11	4,000	38.2	20	26
TOXIMUL 8320	9038-95-3	Butyl	12	5,500	45.0	48	21
TOXIMUL 8315	9038-95-3	Butyl	15	3,500	39.7	71	3
TOXIMUL 8350 ²	9038-95-3	Butyl	14	6,200	34.7	71	21
MAKON® NF-5	64175-88-8 (64175-92-4)	Isopropanolamide	5	1,000	36.4 ³	-1	4
NIPOL® 2782	37251-69-7	Nonylphenol	13	2,700	35.2	82	27
STEP-FLOW 1500	132580-45-1 (70880-56-7)	Tristyrylphenol	13	1,510	43.6	61	4

¹ European product only.

² For commercial status of this product, please contact your Stepan Sales Representative.

³ Measure at 0.25% aqueous.

Formulation Types

Trade Name	CAS No. (Alt. CAS No.)	HLB	EC	ME	SC	SE	WG	WP	OD	OW
STEP-FLOW 26	9003-11-6	13	●	●	●	●	●	●		
STEP-FLOW 26 F	9003-11-6	13	●	●	●	●				
STEP-FLOW 26-18	9003-11-6	13	●	●	●	●	●	●		
STEP-FLOW 27	9003-11-6	>13	●	●	●	●	●	●		
STEP-FLOW LF-ULTRA	9003-11-6	3	●	●	●	●				
TOXIMUL 8321	9003-11-6	7	●	●	●	●				
TOXIMUL 8322	9003-11-6	15	●	●	●	●				
TOXIMUL 8323	9003-11-6	17	●	●	●	●				
TOXIMUL 8323/33	9003-11-6	17	●	●	●	●				
TOXIMUL L62	9003-11-6	7	●		●					●
TOXIMUL L64	9003-11-6	15	●		●	●				
TOXIMUL 8325	9038-95-3	11	●	●	●	●			●	
TOXIMUL 8320	9038-95-3	12	●	●	●	●			●	
TOXIMUL 8315	9038-95-3	15	●	●	●	●				
TOXIMUL 8350	9038-95-3	14	●	●	●	●			●	
MAKON NF-5	64175-88-8 (64175-92-4)	5	●	●	●	●				
NIPOL 2782	37251-69-7	13	●	●	●	●				
STEP-FLOW 1500	132580-45-1 (70880-56-7)	13	●	●	●	●				

Formulation Examples

Tebuconazole 240 g/L (2E) Emulsifiable Concentrate

Component	Amount (wt%)
Tebuconazole Technical	25.99
HALLCOMID® M-12-14	64.01
TOXIMUL 8320	2.00
TOXIMUL 8323	2.00
MAKON TSP-16	4.00
NINEX® MT-630F	2.00

Tebuconazole 480 g/L Suspension Concentrate

Component	Amount (wt%)
Tebuconazole Technical	39.30
STEP-FLOW 4000	2.00
TOXIMUL 8320	2.20
SAG™ 1572 (Momentive Performance Materials Inc.)	0.50
PROXEL™ GXL (Lonza Group Ltd.)	0.20
KELZAN® S (CP Kelco)	0.30
Propylene Glycol	5.00
Tap Water	50.50

Trifluralin 480 g/L (4E) Emulsifiable Concentrate

Component	Amount (wt%)
Trifluralin Technical	44.60
HALLCOMID M-8-10	50.40
NINATE® 60E	1.00
TOXIMUL 8240	1.50
TOXIMUL 8320	1.25
MAKON TD-12	1.25

Captan Suspension Concentrate

Component	Amount (wt%)
Captan Technical	41.10
STEP-FLOW 26F	0.50
Surfactants	3.30
Other Components	55.10

Methyl Ester OD Oil Dispersion

Component	Amount (wt%)
STEPAN® C-65	90.00
TOXIMUL 8320	2.50
Surfactants	7.50

To order a sample or contact Technical Service, visit www.stepan.com.

© Stepan Company, 2018. All Rights Reserved.

HALLCOMID®, MAKON®, NINATE®, NINEX®, NIPOL®, STEPAN®, STEPFLOW®, and TOXIMUL® are registered trademarks of Stepan Company.

The information contained herein is based on the manufacturer's own study and the works of others and is subject to change without prior notice. The information is not intended to be all-inclusive, including as to the manner and conditions of use, handling, storage or disposal or other factors that may involve additional legal, environmental, safety or performance considerations. Nothing contained herein grants or extends a license, express or implied, in connection with any patents issued or pending of the manufacturer or others, or shall be construed as a recommendation to infringe any patents. STEPAN COMPANY MAKES NO PRODUCT WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR USE, EXPRESS OR IMPLIED, AND NO OTHER WARRANTY OR GUARANTY, EXPRESS OR IMPLIED, IS MADE, INCLUDING AS TO INFORMATION REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY, ACCURACY, COMPLETENESS, OR ADEQUACY. Stepan Company (and its employees, subsidiaries and affiliates) shall not be liable (regardless of fault) to the vendee, its employees, or any other party for any direct, indirect, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy, furnishing, use, or reliance upon information provided herein. The vendee assumes and releases Stepan Company (and its employees, subsidiaries and affiliates) from all liability, whether in tort, contract or otherwise to the fullest extent possible under the relevant law.

March 2019