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## Dow Surfactants

### Reference Chart

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## A Broad Range of Anionic and Nonionic Products

### Including...

DOWFAX™ Anionic and Nonionic Surfactants  
 ECOSURF™ Nonionic Surfactants  
 TERGITOL™ Nonionic Surfactants  
 TRITON™ Anionic and Nonionic Surfactants

Dow surfactants include some of the most familiar anionic and nonionic products in the industry, known worldwide for excellent emulsification and dispersion. They increase the cleaning and wetting properties of household cleaners as well as industrial and institutional cleaning product formulations. Dow surfactants are also used by formulators of paints, coatings, and inks for pigment wetting, film leveling, and pigment and dye stabilization.

Dow surfactants contribute desired mechanical properties and storage stability to emulsion polymerization systems, including styrene-butadiene, vinyl, acrylic, and other copolymer latex resin systems. They are also broadly used in agricultural formulations, textile processing, paper manufacturing, and oilfield operations.

### An Overview of Dow Surfactants

This brochure provides an overview for Dow nonionic, anionic, and low foam surfactant products. Included are readily biodegradable\* products which are labeled with our “leaf” symbol as well as non-APE based products. We invite you to review the product features, physical and performance properties, and application information detailed in the following pages.

### Total Support Capabilities

The total package of value you get with Dow surfactants goes beyond our brand names. Our investments in surfactant products and technology have created one of the strongest capability platforms in the industry.

Dow is a collaborative source of solutions, willing to work closely with you to find innovative answers to your performance and other surfactant requirements.

For your convenience, we offer a comprehensive library of starting formulations and other technical information on our website at [www.dow.com/surfactants](http://www.dow.com/surfactants). This information is frequently updated to meet the latest requirements for formulation performance and sustainability.

With Dow surfactants, you also receive...

- A wide range of available chemistries
- Extensive applications expertise
- The knowledge and resources to innovate
- Active participation in and awareness of current regulations and legislation
- A global sales, distribution and technical support network
- Global supply from world-class manufacturing facilities
- The strength and stability of Dow for confidence and peace of mind

\*Readily biodegradable as defined in OECD Guidelines for the Testing of Chemicals, Section 3 (Rev. 23 March 2006)

### Dow Biodegradable Nonionic Surfactants

Product	Cloud Point <sup>(1)</sup>	HLB <sup>(2)</sup>	Moles EO	CMC <sup>(3)</sup> / Surface Tension <sup>(4)</sup>	Foam Height <sup>(5)</sup>	Pour Point <sup>(6)</sup>	Form <sup>(7)</sup>	APE Based <sup>(8)</sup>	Features	Applications
<b>ECOSURF™ EH Specialty Ethoxylates</b> ECOSURF™ EH series nonionic surfactants are a new generation of high-performance, readily biodegradable specialty surfactants that provide performance comparable to alkylphenol ethoxylate (APE) surfactants, and better than primary alcohol ethoxylate (PAE) surfactants in many applications, including hard surface cleaning, textile processing, and any application in which excellent wetting performance is required.										
ECOSURF EH-3	Disp	7.9	PRT	480/30	0/0	-21	L	No	Excellent oil-soluble emulsifier, low foam, low odor, good handling, very low aquatic toxicity, listed on CleanGredients® and approved for DfE Formulations	Cleaners and degreasers, textiles, agrochemicals
ECOSURF EH-6	40	10.8	PRT	914/30	20/0	5	L	No	Exceptional wetting and hard surface cleaning, low odor, excellent handling and formulation properties, very low aquatic toxicity, listed on CleanGredients® and approved for DfE Formulations	Concentrates, cleaners and detergents, paints & coatings, textile processing, agrochemicals
ECOSURF EH-9	61	12.5	PRT	1066/31	60/0	16	L	No	Exceptional wetting and hard surface cleaning, low odor, excellent formulation properties, very low aquatic toxicity, Listed on CleanGredients® and approved for DfE Formulations	Concentrates, cleaners and detergents, paints coatings, textile processing, agrochemicals
ECOSURF EH-9 (90%)	61	12.5	PRT	1066/31	60/0	-5	L	No	Exceptional wetting and hard surface cleaning, low odor, improved handling and formulation properties, very low aquatic toxicity, listed on CleanGredients® and approved for DfE Formulations	Concentrates, cleaners and detergents, prewash spotters, paints & coatings, textile processing, agrochemicals
ECOSURF EH-14 (90%)	86	14	PRT	4018/32	70/10	6	L	No	Exceptional wetting and hard surface cleaning, low odor, improved handling and formulation properties, very low aquatic toxicity, listed on CleanGredients® and approved for DfE Formulations	Concentrates, cleaners and detergents, prewash spotters, paints & coatings, textile processing, agrochemicals
ECOSURF EH-40 (75%)	>100	18	PRT	8454/46	N/A	3	L	No	Emulsion stabilizer, Electrolyte solubility, Provides Freeze/thaw & ionic stability, Good handling properties, Low odor, Readily biodegradable, Aquatic toxicity > 100 mg/L	Emulsion polymerization, paints & coatings, floor polish & wax emulsions

#### Footnotes:

- (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) Critical micelle concentration: ppm at 25°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) Pour point: °C  
 (7) Form at 25°C: L = Liquid, S = Solid  
 (8) APE = Alkyl phenol ethoxylate

- Ins = Insoluble  
 Disp = Dispersible  
 PRT = Proprietary  
 Readily biodegradable as defined in OECD Guidelines for the Testing of Chemicals, Section 3 (Rev. 23 March 2006)



Dow Biodegradable Nonionic Surfactants, continued

Product	Cloud Point <sup>(1)</sup>	HLB <sup>(2)</sup>	Moles EO	CMC <sup>(3)</sup> / Surface Tension <sup>(4)</sup>	Foam Height <sup>(5)</sup>	Pour Point <sup>(6)</sup>	Form <sup>(7)</sup>	APE-based <sup>(8)</sup>	Features	Applications
<b>TERGITOL™ 15-S Secondary Alcohol Ethoxylates</b> TERGITOL™ 15-S nonionic surfactants are versatile, high performance Secondary Alcohol Ethoxylates (SAEs) that provide an unbeatable combination of performance and cost when used in place of Primary Alcohol Ethoxylates (PAEs), Nonylphenol Ethoxylates (NPEs), Octylphenol Ethoxylates (OPEs), and other general purpose surfactants in a wide range of formulating applications.										
TERGITOL 15-S-3	Insoluble	8.0	3	Ins	Ins	-46	L	No	Excellent hydrocarbon compatibility and detergency	Defoamers, textile, pulp/paper, prewash spot removers, agrochemicals, dry cleaners
TERGITOL 15-S-5	Dispersible	10.5	5	Disp	Disp	-25	L	No	Excellent emulsifier and detergent, enhances paint associative thickener efficiency, aids in rinseability of solvent-based systems	Paints and coatings, cleaners, prewash spot removers, agrochemicals, dry cleaners, textile, oilfield
TERGITOL 15-S-7	37	12.1	7	38/30	117/28	1	L	No	Excellent wetting and rinseability, excellent formulation and handling properties	Paints and coatings, cleaners, prewash spot removers, agrochemicals, textile, pulp/paper, oilfield
TERGITOL 15-S-9	60	13.3	9	52/30	124/43	9	L	No	Excellent detergency, rapid dissolution and good rinseability, low odor, excellent formulation and handling properties	High performance cleaners, paints and coatings, agrochemicals, textile, pulp/paper, oilfield
TERGITOL 15-S-12	89	14.5	12	104/33	124/43	22	S	No	Excellent detergent and dispersant, good handling properties, higher temperature wetting, listed on CleanGredients® and approved for DfE formulations	Agrochemicals, dispersions, high temperature systems
TERGITOL 15-S-12 (90%)	89	14.5	12	107/34	130/28	-8	L	No	Excellent detergent and dispersant, good handling properties, higher temperature wetting, listed on CleanGredients® and approved for DfE formulations	Agrochemicals, dispersions, high temperature systems
TERGITOL 15-S-15	>100	15.4	15	162/36	126/24	29	S	No	High HLB emulsifier and dispersant, provides freeze thaw and ionic stability, listed on CleanGredients® and approved for DfE formulations	Emulsion polymerization, paper and textile processing, solid cleaners
TERGITOL 15-S-20	>100	16.3	20	315/38	112/42	35	S	No	Excellent emulsion stabilizer with low reactor residue, provides freeze thaw and ionic stability, good handling properties	Emulsion polymerization, paper and textile processing, solid cleaners
TERGITOL 15-S-20 (80%)	>100	16.3	20	315/38	112/42	6	L	No	Excellent emulsion stabilizer with low reactor residue, provides freeze thaw and ionic stability, good handling properties	Emulsion polymerization, paints and coatings, floor polish and wax emulsions
TERGITOL 15-S-30	>100	17.4	31	558/43	115/30	39	S	No	Excellent emulsion stabilizer with low reactor residue, provides freeze thaw and ionic stability	Emulsion polymerization, paints and coatings, floor polish and wax emulsions
TERGITOL 15-S-40	>100	18.0	41	783/44	110/24	43	S	No	Emulsion stabilizer, provides freeze thaw and ionic stability, good handling properties	Emulsion polymerization, paint and coatings, floor polish and wax emulsions
TERGITOL 15-S-40 (70%)	>100	18.0	41	1314/45	103/28	5	L	No	Emulsion stabilizer, provides freeze thaw and ionic stability, good handling properties	Emulsion polymerization, paint and coatings, floor polish and wax emulsions

<b>ECOSURF™ SA Seed Oil Surfactants</b> ECOSURF™ SA series nonionic surfactants are a new generation of patent pending, biodegradable nonionic surfactants based on seed oil based materials. These surfactants offer outstanding performance across a wide range of parameters including wetting and detergency, as well as excellent formulation and handling properties. They are ideal candidates for paints & coatings, household and industrial & institutional cleaners, and textiles.										
ECOSURF SA-4	Disp	7.5	PRT	Disp	Disp	-8	L	No	Based on seed oil, low odor, no gel range, excellent wetting, oil soluble emulsifier	Concentrates, cleaners and detergents, prewash spotters, dry cleaning, paints & coatings, textile processing
ECOSURF SA-7	37	9.7	PRT	17/29	100/20	3	L	No	Based on seed oil, low odor, no gel range, rapid dissolution, excellent wetting & detergency, effective emulsifier	Concentrates, cleaners and detergents, prewash spotters, paints & coatings, textile processing, agrochemicals
ECOSURF SA-9	57	11.1	PRT	22/29	100/20	4	L	No	Based on seed oil, low odor, no gel range, rapid dissolution, excellent wetting & detergency, effective emulsifier	Concentrates, cleaners and detergents, prewash spotters, paints & coatings, textile processing.
ECOSURF SA-15	>100	13.5	PRT	153/34	130/25	27	S	No	Based on seed oil, low odor, rapid dissolution, excellent wetting & detergency especially at higher temperatures, effective emulsifier.	Concentrates, higher temperature cleaners and detergents, paints & coatings, textile processing
<b>ECOSURF™ LF Low Foam Surfactants</b> ECOSURF™ LF Surfactants are non-APE based, low foaming readily biodegradable nonionic surfactants that provide excellent pigment wetting, improved color acceptance and improved flow in paint and coating formulations. ECOSURF™ LF's are subject to a SNUR in the U.S. and subject to SNAc in Canada.										
ECOSURF LF-20	20	10	PRT	22/30	70/10	-22	L	No	Excellent wetting, low foam, stable in caustic, outstanding formulation & handling properties, effective cloud point defoamer	Paints & coatings, high performance cleaners, foam control, hard surface cleaners, pulp & paper, textiles, oilfield
ECOSURF LF-30	30	11	PRT	26/30	60/5	-5	L	No	Excellent wetting, low foam, stable in caustic, outstanding formulation & handling properties, effective cloud point defoamer	Paints & coatings, high performance cleaners, foam control, hard surface cleaners, pulp & paper, textiles, oilfield
ECOSURF LF-45	45	12	PRT	28/32	120/10	6	L	No	Excellent wetting, low foam, stable in caustic, outstanding formulation & handling properties, effective cloud point defoamer	Paints & coatings, high performance cleaners, foam control, hard surface cleaners, pulp & paper, textiles, oilfield
<b>TERGITOL™ L Ethylene Oxide/Propylene Oxide (EO/PO) Copolymers</b> TERGITOL™ L Series Surfactants are high-performance, nonionic surfactants for defoaming, wetting and emulsifying. Readily biodegradable, TERGITOL™ L Series Surfactants deliver low foam, excellent solvency, chemical stability and reliable formulation performance in a number of fermentation, food processing, metalworking and other applications.										
TERGITOL L-61	24	3	PRT	-/40	0/0	-32	L	No	Efficient foam control agent, wetting agent	Foam control for fermentation, food washing, water treatment, MWF, machine dishwash, food & dairy process cleaning, agrochemicals
TERGITOL L-62	32	7	PRT	-/41	45/30	-2	L	No	Efficient foam control agent, wetting agent	Foam control for fermentation, MWF, machine dishwash, food & dairy process cleaning, paints & coatings, agrochemicals
TERGITOL L-64	62	15	PRT	-/44	48/18	7	L	No	Higher temperature foam control, good detergency	Fermentation, food processing, adhesives, paper processing, MWF, sanitizing solutions
TERGITOL L-81	20	2	PRT	-/36	Disp	-20	L	No	Low temperature foam control	Fermentation, MWF, chemical intermediates
TERGITOL L-101	18	1	PRT	-/33	30/25	-24	L	No	Low temperature foam control	Fermentation processes, MWF

**Footnotes:**  
 (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) Critical micelle concentration: ppm at 25°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) Pour point: °C  
 (7) Form at 25°C: L = Liquid, S = Solid  
 (8) APE = Alkyl phenol ethoxylate  
 MWF = Metalworking fluids  
 Ins = Insoluble  
 Disp = Dispersible  
 PRT = Proprietary  
 Readily Biodegradable  
 TSCA Statement: All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30. This product contains a substance that is subject to a TSCA Section 5(a)(2) Significant New Use Rule (SNUR) and export notification under TSCA 12(b). The SNUR is described in 40 CFR 721.10400.  
 Canada DSL Statement: All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed. This product contains a substance subject to a Significant New Activity Notice (SNAc) under Section 81(3) of the Canadian Environmental Protection Act (CEPA 1999).



## Dow Biodegradable Nonionic Surfactants, continued

Product	Cloud Point <sup>(1)</sup>	HLB <sup>(2)</sup>	Moles EO	CMC <sup>(3)</sup> / Surface Tension <sup>(4)</sup>	Foam Height <sup>(5)</sup>	Pour Point <sup>(6)</sup>	Form <sup>(7)</sup>	APE Based <sup>(8)</sup>	Features	Applications
<b>TRITON™ Alkyl Polyglucosides</b> TRITON™ BG and TRITON™ CG specialty surfactants are non-ionic products used in household and industrial & institutional detergent formulations where high, stable foam is required or where high caustic concentrations are necessary										
TRITON BG-10	>100	-	0	1591/28	112/115	-5	L	No	Soluble in highly alkaline solutions, good detergency and wetting properties, mild, listed on CleanGredients® and approved for DfE formulations	Bottle washing, metal cleaners, highly alkaline detergents, paint strippers, aluminum brighteners, agrochemicals
TRITON CG-50	>100	-	0	870/27	112/112	0	L	No	Soluble in highly alkaline solutions, mild, good detergent and wetter, high stable foam, listed on CleanGredients® and approved for DfE formulations	Bottle washing, metal cleaners, highly alkaline detergents, paint strippers, aluminum brighteners, agrochemicals
TRITON CG-110	>100	-	0	1748/27	105/100	-15	L	No	Soluble in highly alkaline solutions, mild, low skin drying effects, good detergent and wetter, high stable foam, listed on CleanGredients® and approved for DfE formulations	Bottle washing, metal cleaners, highly alkaline detergents, paint strippers, aluminum brighteners, agrochemicals
TRITON CG-425	>100	-	0	61/29	140/140	-18	L	No	Soluble in highly alkaline solutions, mild, good detergent and wetter, high stable foam	Glass cleaners, highly alkaline detergents
TRITON CG-600	>100	-	0	74/29	80/80	6	L	No	Soluble in highly alkaline solutions, mild, good detergent and wetter, high stable foam	Glass cleaners, highly alkaline detergents
TRITON CG-650	>100	-	0	67/29	110/110	-18	L	No	Soluble in highly alkaline solutions, mild, good detergent and wetter, high stable foam	Glass cleaners, highly alkaline detergents

### Footnotes:

(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) Critical micelle concentration: ppm at 25°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) Pour point: °C  
(7) Form at 25°C: L = Liquid, S = Solid  
(8) APE = Alkyl phenol ethoxylate

Readily biodegradable as defined in OECD Guidelines for the Testing of Chemicals, Section 3 (Rev. 23 March 2006)

## DOWFAX™ Nonionic Surfactants

DOWFAX™ Nonionic Surfactants are high-performance products that feature excellent solvency, low foam characteristics, chemical stability, and a long list of other valuable performance properties. They serve as foam control agents, emulsifiers, wetting agents, and coupling agents in a wide range of applications. Cleaning products, industrial foam control agents, oil and gas production fluids, and industrial surfactants are just a few of the many uses for these versatile polyglycols.

Product	Cloud Points <sup>(1)</sup>			Surface Tension <sup>(3)</sup>	Foam Height <sup>(4)</sup> Init/After 5min.	Viscosity <sup>(5)</sup>			Pour Point <sup>(6)</sup>	Features	Application
	1% aqueous	10% aqueous	10% solvent <sup>(2)</sup>			cSt@25°C	cSt@40°C	cSt@100°C			
Units	°C	°C	°C	mN/m	mm/mm@25°C	cSt@25°C	cSt@40°C	cSt@100°C	°C		
20A42	<4	<4	52	31.0	8/4	52	32	7	<-10	Good wetting, high degree of surfactancy, low foam	High-pressure spray cleaning, rinse aid, automatic dishwashing, metal cleaning, textile, household cleaner, metalworking fluid, water treatment, and as defoamers in food processing
20A64	30	28	51	29.4	72/8	63	34	-	-10	Good wetting, high degree of surfactancy, low foam	High-pressure spray cleaning, rinse aid, automatic dishwashing, metal cleaning, textile, household cleaner, metalworking fluid, water treatment, and as defoamers in food processing
20B102	32	31	44	30.9	50/5	78	40	8	-8	Good wetting, high degree of surfactancy, low foam	High-pressure spray cleaning, rinse aid, automatic dishwashing, metal cleaning, textile, household cleaner, metalworking fluid, water treatment, and as defoamers in food processing
25A414	13	6	27	-	-	110	65	10	-7	Good wetting, high degree of surfactancy, low foam	High-pressure spray cleaning, rinse aid, automatic dishwashing, metal cleaning, textile, household cleaner, metalworking fluid, water treatment, and as defoamers in food processing
DF-103	22	-	-	-	1/0	450	-	-	<-20	Efficient foam control agent, wetting agent, higher thermal and chemical stability, low foam, low toxicity	Fermentation of monosodium glutamate, lactic and citric acids, food processing, food washing, sugar production, water treatment, metal working fluid
DF-104	15	-	-	-	0/0	300	-	-	<-20	Efficient foam control agent, wetting agent, higher thermal and chemical stability, low foam, low toxicity	Fermentation of monosodium glutamate, lactic and citric acids, food processing, food washing, sugar production, water treatment, metal working fluid
DF-105	24	-	-	-	0/0	-	168	-	<-20	Efficient foam control agent, wetting agent, higher thermal and chemical stability, low foam, low toxicity	Fermentation of monosodium glutamate, lactic and citric acids, food processing, food washing, sugar production, water treatment, metal working fluid
DF-107	22	16	29	35.3	1/0	465	-	-	<-20	Efficient foam control agent, wetting agent, higher thermal and chemical stability, low foam, low toxicity	Fermentation of monosodium glutamate, lactic and citric acids, food processing, food washing, sugar production, water treatment, metal working fluid
DF-111	20	15	26	34.3	1/0	790	372	54	<-20	Efficient foam control agent, wetting agent, higher thermal and chemical stability, low foam, low toxicity	Fermentation of monosodium glutamate, lactic and citric acids, food processing, food washing, sugar production, water treatment, metal working fluid
DF-117	10	8	35	33.1	1/0	710	313	46	<-20	Efficient foam control agent, wetting agent, higher thermal and chemical stability, low foam, low toxicity	Fermentation of monosodium glutamate, lactic and citric acids, food processing, food washing, sugar production, water treatment, metal working fluid
DF-141	13.5	6	28	32.1	-	192.5	-	-	<-20	Efficient foam control agent, wetting agent, higher thermal and chemical stability, low foam, low toxicity	Fermentation of monosodium glutamate, lactic and citric acids, food processing, food washing, sugar production, water treatment, metal working fluid

### Footnotes:

(1) Cloud point: ASTM D 2024  
(2) 10% surfactant in a solution of 25% diethylene glycol butyl ether in water  
(3) Surface Tension: ASTM D 1331; Temperature 20°C, 1% surfactant in water

(4) Ross-Miles Test: ASTM D 1173; 0.1% surfactant in water  
(5) Viscosity: ASTM D 445/446  
(6) Pour Point: ASTM D 97

## Dow Nonionic Surfactants

Product	Cloud Point <sup>(1)</sup>	HLB <sup>(2)</sup>	Moles EO	CMC <sup>(3)</sup> / Surface Tension <sup>(4)</sup>	Foam Height <sup>(5)</sup>	Pour Point <sup>(6)</sup>	Form <sup>(7)</sup>	APE Based <sup>(8)</sup>	Features	Applications
<b>TERGITOL™ X Ethylene Oxide/Propylene Oxide (EO/PO) Copolymers</b> TERGITOL™ X surfactants are versatile nonionic specialty surfactants that provide excellent stabilizer and dispersant performance for aqueous systems. They are used in conjunction with other surfactants to provide stability and freeze-thaw resistance to emulsions, dispersions, and emulsion polymer systems. They can also provide lubricity for fibers and solubilization of iodine for germicidal cleaners.										
TERGITOL XD	74	-	PRT	-/38	60/25	34	S	No	Excellent steric and freeze thaw stabilizer, effective pigment and carbon black dispersant	Agrochemicals, paints and coatings dispersions, iodophors, emulsion polymerization
TERGITOL XDLW	74	-	PRT	-/32	100/45	15	L	No	Excellent steric and freeze thaw stabilizer, effective pigment and carbon black dispersant	Agrochemicals, paints and coatings dispersions, iodophors, emulsion polymerization
TERGITOL XH	95	-	PRT	-/41	80/40	40	S	No	Provides lubricity, effective steric and freeze thaw stabilizer, solubilizes iodine	Fiber lubricants, emulsion polymerization, iodophors, agrochemicals
TERGITOL XJ	49	-	PRT	-/36	53/13	27	S	No	Excellent emulsifier for aromatic and chlorinated solvents, steric and freeze thaw stabilizer	Emulsion and dispersion systems, emulsion polymerization, agrochemicals
<b>TERGITOL™ TMN Branched Secondary Alcohol Ethoxylates</b> TERGITOL™ TMN Series surfactants are highly effective nonionic wetting agents having low aqueous dynamic and equilibrium surface profiles. They offer excellent performance in cleaners, emulsification polymerization, and paints and coatings applications.										
TERGITOL TMN-3	Ins	8.1	3	Ins	Ins	-49	L	No	Excellent oil soluble emulsifier, hydrocarbon compatibility	Low HLB emulsifier for textiles and paper applications, degreasers
TERGITOL TMN-6 (90%)	36	13.1	8	800/27	130/22	-40	L	No	Excellent wetting agent, penetrant & dispersant, silicone emulsifier, narrow gel range	Paper & textile processing, pigment & wax/resin dispersants, hard surface cleaners, agrochemicals, paints & coatings
TERGITOL TMN-100X (90%)	65	14.0	9	830/27	150/24	-6	L	No	Non-APE alternative for TRITON X-100, excellent wetting, penetrant & dispersant, superior emulsification	Paints & coatings, paper & textile processing pigment & wax / resin dispersants, cleaners
TERGITOL TMN-10 (90%)	76	14.4	11	1313/30	118/28	-19	L	No	High temperature penetrant & dispersant, high HLB emulsifier, narrow gel range	Paper & textile processing, pigment & wax/resin dispersants, cleaners, paints & coatings
<b>TRITON™ Specialty Alkoxylates</b> These TRITON™ surfactants are used as emulsifiers, wetting agents or detergents in applications including paints and coatings, agrochemicals, paper and textile processing, emulsification systems, household and industrial cleaning and oilfield chemicals.										
TRITON CA	Disp	10-12	PRT	-/32	10/0	-20	L	Yes	Improves color acceptance and prevents agglomeration of pigments, oil-in-water emulsifier	Paints & coatings, textile printing & fiber finish, pigment dispersions
TRITON N-57	Disp	10.0	5	-/31	18/12	-28	L	Yes	Emulsifier, enhance associative thickener efficiency, improves colorant acceptance	Pigment wetting agent and stabilizer, defoamer, paints & coatings, MWF, agrochemicals
TRITON X-207	Disp	10.7	PRT	-/32	20/16	-14	L	Yes	Emulsifier for refined paraffinic and white oils, forms stable brine-in-oil emulsions	Pigment dispersions, textile finishes and coning oils, oilfield
TRITON HW-1000	Ins	10.8	5	Ins	Ins	-18	L	No	Non-silicone-based, superior wetting & leveling agent, low foaming, wets various substrates, improves gloss and smoothness of coating films, penetrant & rapid pigment dispersant, narrow gel range	Inks & printing, waterborne and laminate adhesives, coatings, paints, paper & textile processing, pigment & wax/resin dispersion, agrochemicals

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## Dow Nonionic Surfactants, continued

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<b>TERGITOL™ NP Nonylphenol Ethoxylates</b> TERGITOL™ NP Series surfactants cover a wide range of ethoxylation and HLB values. They are used as emulsifiers, wetting agents and dispersants in a variety of applications, including emulsion polymerization, cleaning applications, and paints and coatings.										
TERGITOL NP-4	Ins	8.9	4	Ins	Ins	-28	L	Yes	Excellent oil-soluble surfactant, low HLB emulsifier	Cleaners & degreasers, dry cleaning, dispersant for petroleum oil
TERGITOL NP-6	Ins	10.9	6	Ins	Ins	-26	L	Yes	Excellent emulsifier, wetting agent, stabilizer, couples detergent range nonionics into hydrocarbon systems	Cleaners & degreasers, dry cleaning, adhesives, agrochemicals
TERGITOL NP-7	20	12.0	7	39/32	20/19	-19	L	Yes	Excellent detergency, outstanding wetting	Cleaners & degreasers, paper & textile processing, prewash spotters, agrochemicals, MWF, oilfield chemicals
TERGITOL NP-8	43	12.6	8	61/32	103/95	-6	L	Yes	Excellent detergency, outstanding wetting, good rinseability	Cleaners & detergents, paper & textile processing, paints & coatings, agrochemicals, MWF
TERGITOL NP-9	54	12.9	9	60/32	105/90	-1	L	Yes	Excellent detergency, outstanding wetting, good rinseability	Cleaners & detergents, paper & textile processing, laundry, paints & coatings, dust control, agrochemicals, MWF
TERGITOL NP-9.5	59	13.1	9.5	62/32	115/102	7	L	Yes	Excellent detergency, outstanding wetting	Cleaners & detergents, paper & textile processing, paints & coatings, agrochemicals, MWF
TERGITOL NP-10	63	13.2	10	55/33	115/110	6	L	Yes	Excellent detergency, outstanding wetting	Cleaners & detergents, paper & textile processing, paints & coatings, agrochemicals, MWF
TERGITOL NP-11	72	13.5	11	71/34	112/92	11	L	Yes	Excellent detergency, outstanding wetting	Cleaners & detergents, paper & textile processing, paints & coatings, agrochemicals, MWF
TERGITOL NP-12	78	13.8	12	85/35	117/115	13	L	Yes	Excellent detergency, outstanding wetting	Cleaners & detergents, paper & textile processing, paints & coatings, agrochemicals, MWF
TERGITOL NP-13	82	13.9	13	66/35	118/97	14	L	Yes	Excellent detergency, outstanding wetting	Cleaners & detergents, paper & textile processing, paints & coatings, agrochemicals, MWF
TERGITOL NP-15	>100	15.0	15	90/41	128/95	25	S	Yes	Excellent detergency, outstanding wetting, suitable for higher temperatures	Cleaners & detergents, paper & textile processing, paints & coatings, agrochemicals, MWF
TERGITOL NP-30	>100	17.1	30	157/46	125/77	37	S	Yes	Highly water soluble emulsifier & stabilizer, effective at high temperatures	Wetting agents & stabilizers, emulsifiers & dispersants, agrochemicals
TERGITOL NP-30 (70%)	>100	17.1	30	160/42	125/77	-8	L	Yes	Highly water soluble emulsifier & stabilizer, effective at high temperatures	Wetting agents & stabilizers, emulsifiers & dispersants, agrochemicals
TERGITOL NP-40	>100	17.8	40	230/50	123/115	48	S	Yes	Effective at high temperatures, highly water-soluble emulsifier & stabilizer, wetting	Paper & textile processing, paints & coatings, agrochemicals
TERGITOL NP-40 (70%)	>100	17.8	40	232/50	123/115	2	L	Yes	Effective at high temperatures, highly water-soluble emulsifier & stabilizer	Paper & textile processing, paints & coatings, agrochemicals
TERGITOL NP-50 (70%)	>100	18.2	50	256/53	115/110	2	S/L	Yes	Effective at high temperatures, highly water-soluble emulsifier & stabilizer	Paper & textile processing, paints & coatings, agrochemicals
TERGITOL NP-70 (70%)	>100	18.7	70	287/51	105/100	15	S	Yes	Effective at high temperatures, highly water-soluble emulsifier & stabilizer	Paper & textile processing, paints & coatings, agrochemicals

<b>TRITON™ RW Amine Ethoxylates</b>										
TRITON™ RW Series surfactants offer unique reversible surfactancy, allowing for easier separation of emulsified oils from aqueous waste streams. They are especially well-suited for industrial laundry applications and deliver exceptional metal cleaning performance.										
TRITON RW-20	Ins	6-8	2	Ins	Ins	< -6	L	No	Oil soluble emulsifier, pH reversible	Degreasers, MWF
TRITON RW-50	Disp	12-14	5	260/29 pH=12 -/51 pH=2	28/2 pH=12	< -6	L	No	Low HLB emulsifier, pH reversible	Metal cleaners, industrial laundry, transportation cleaners, MWF
TRITON RW-150	>100	>16	15	860/30 pH=12 -/54 pH=2	135/15 pH=12	11	L	No	pH reversible properties and emulsification	High temperature systems
<b>TRITON™ X Octylphenol Ethoxylates</b>										
TRITON™ X Series surfactants are versatile nonionic specialty surfactants that cover a wide range of ethoxylation and HLB values. They are used as emulsifiers, wetting agents and dispersants in a variety of applications, including emulsion polymerization, cleaning applications, and paints and coatings.										
TRITON X-15	Ins	4.9	1.5	Ins	Ins	3	L	Yes	Oil soluble emulsifier, solubilizer	Defoamers, dye solubilizer, chemical intermediate
TRITON X-35	Ins	7.8	3	Ins	Ins	-9	L	Yes	Excellent compatibility with aliphatic or aromatic hydrocarbons and polar organic solvents	Defoamers, pulp/paper, textile, dry cleaning, MWF, chemical intermediate
TRITON X-45	Disp	9.8	4.5	136/29	23/9	-24	L	Yes	Excellent emulsifier with good wetting, aids in rinseability of solvent-based systems	Defoamers, cleaners, MWF, agrochemicals, paints and coatings, textile, pulp/paper, oilfield
TRITON X-114	25	12.3	7.5	120/31	55/40	-14	L	Yes	Excellent wetting and detergency	Cleaners, paints and coatings, pulp/paper, textile, agrochemicals, MWF, oilfield
TRITON X-100	66	13.4	9.5	189/33	128/107	1	L	Yes	Excellent detergent, dispersant, and emulsifier for oil-in-water systems	Household and industrial cleaners, paints and coatings pulp/paper, textile, agrochemicals, MWF, oilfield
TRITON X-102	88	14.4	12	267/36	124/75	13	L	Yes	Excellent detergent and dispersant	Dispersions, high temperature systems
TRITON X-165 (50%)	>100	15.5	16	not run/40	115/45	2	L	Yes	Excellent emulsion stabilizer and dispersant	Paints and coatings, dispersions
TRITON X-165 (70%)	>100	15.5	16	570/39	124/68	22	L	Yes	Excellent emulsion stabilizer and dispersant	Paints and coatings, dispersions
TRITON X-305 (70%)	>100	17.3	30	1916/49	103/25	-7	L	Yes	Excellent emulsion stabilizer, provides freeze thaw and ionic stability	Emulsion polymerization, paints and coatings, floor polish, wax emulsions
TRITON X-405 (70%)	>100	17.6	35	2442/52	93/22	-6	L	Yes	Excellent emulsion stabilizer, provides freeze thaw and ionic stability	Emulsion polymerization, paints and coatings, floor polish, and wax emulsions
TRITON X-705 (70%)	>100	18.4	55	3585/44	80/55	2	L	Yes	Excellent emulsion stabilizer	Emulsion polymerization

**Footnotes:**

(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) Critical micelle concentration: ppm at 25°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) Pour point: °C  
(7) Form at 25°C: L = Liquid, S = Solid  
(8) APE = Alkyl phenol ethoxylate

MWF = Metalworking fluids  
Ins = Insoluble  
Disp = Dispersible  
☞ Readily biodegradable as defined in OECD Guidelines for the Testing of Chemicals, Section 3 (Rev. 23 March 2006)

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## Polypropylene Glycols and Random Copolymers

Product	Molecular Weight	Specific Gravity <sup>(1)</sup> @25°C	Average Viscosity <sup>(2)</sup> , cSt @40°C	Pour Point, °C	Refractive Index <sup>(3)</sup> @25°C	Density lb/gal @25°C	APE Based <sup>(4)</sup>	Features	Applications
<b>Polypropylene Glycols</b>									
Polypropylene glycols are polymers of propylene oxide. They are clear, viscous liquids with low pour points. Viscosity increases and water solubility decreases with increasing molecular weight. DOW P-series polyglycols are linear polymers containing two terminal hydroxyl groups. DOW PT-series polyglycols are glyceryl ether polymers containing three terminal hydroxyl groups.									
PT250	250	1.091	285	-18	1.459	9.07	No	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, viscosity modifiers
PT700	700	1.033	108	-32	1.453	8.59	No	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, viscosity modifiers
PT3000	3000	1.01	235	-27	1.451	8.40	No	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, viscosity modifiers
☞ P425	425	1.007	33	-45	1.447	8.39	No	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
☞ P1000TB	1000	1.005	78	-25	1.448	8.38	No	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
☞ P1200	1200	1.003	91	-40	1.448	8.38	No	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
☞ P2000	2000	1.002	160	-30	1.449	8.34	No	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
P4000	4000	1.004	455	-26	1.45	8.36	No	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
<b>Random Copolymers</b>									
Polyglycol Copolymers are polymers of ethylene oxide and propylene oxide. Polyglycol 15-200 finds utility where a water soluble liquid with a low pour point is desired.									
15-200	2400	1.069	180	51	1.460	8.90	No	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Foam control, chemical intermediates, viscosity modifiers

**Footnotes:**

(1) ASTM D 892  
(2) ASTM D 445/446  
(3) ASTM D 1218  
(4) APE = Alkyl phenol ethoxylate

## Dow Anionic Surfactants

Product	Actives	Diluent	Form <sup>(1)</sup>	Surface Tension <sup>(2)</sup>		Foam <sup>(3)</sup>		APE Based <sup>(9)</sup>	Features	Applications
				Neutral <sup>(4)</sup>	Alkaline <sup>(5)</sup>	Neutral <sup>(4)</sup>	Alkaline <sup>(5)</sup>			
<b>DOWFAX™ Alkyldiphenyloxide Disulfonate Salts</b>										
DOWFAX™ surfactants are an excellent choice for formulations containing acids, bleach, or caustic. They provide excellent solubility and stability in concentrated electrolytes, and they're remarkably resistant to oxidative and thermal degradation.										
DOWFAX 2A1	45	water	L amber	34	35	140/130	145/145	No	Excellent solubility & stability in acidic, alkaline, bleach and other oxidizing systems, dispersant, emulsion stabilizer, rinses easily from surfaces	Cleaners, textile, pulp/paper, agrochemicals, oilfield, emulsion polymerization, fragrance solubilization
DOWFAX 3B2	45	water	L yellow/ light brown	37	38	135/135	140/120	No	Excellent stability in alkaline, acid, bleach and oxidizing systems, hard water tolerant, rinses easily from surfaces	Textile and pulp/paper processing, agrochemicals, oilfield, cleaners
DOWFAX 8390	35	water	L light brown	44	46	120/25	140/25	No	Emulsion stabilizer, excellent solubility, stable in oxidizing systems, high level of particulate soil detergency, excellent rinseability	Emulsion polymerization, cleaners & detergents, oil field chemicals, textile, pulp & paper
DOWFAX C6L	45	water	L light brown	34	34	145/140	145/130	No	Reduces gelation, provides coupling, excellent solubility and stability, hypochlorite stable, low visible residue, rinses easily from surfaces, hydrotrope	Cleaners and detergents, oilfield chemicals
DOWFAX C10L	45	water	L yellow/brown	35	37	135/125	130/115	No	Low streaking and low visible residue, rapid dissolution, excellent stability	Glass & all-purpose cleaners and other detergents, agrochemicals
DOWFAX 30599	45	water	L yellow/brown	33	34	154/145	130/125	No	Emulsion stabilizer with low reactor waste, stable in acidic, alkaline and oxidizing systems	Emulsion polymerization
<b>TRITON™ GR Dioctyl Sulfosuccinates</b>										
TRITON™ GR Series surfactants feature excellent wetting and rewetting properties as well as excellent emulsifying and dispersing ability. These versatile surfactants are available in a range of solvent compatibilities for use in cleaning, paint and coatings, emulsion polymerization and other applications.										
TRITON GR-5M	60	IPA <sup>(6)</sup> / water	L colorless	26	NR <sup>(7)</sup>	190/180	NR	No	Excellent wetting, emulsifying & dispersing ability	Paints & coatings, paper & textile, agrochemicals, cleaners, oilfield
TRITON GR-7M	64	petroleum distillate <sup>(8)</sup>	L amber	Ins	Ins	Ins	Ins	No	Excellent emulsifying & dispersing ability, oil soluble	Dry cleaning, paints & coatings, agrochemicals, oilfield chemicals
<b>TRITON™ Phosphate Esters</b>										
TRITON™ H-55, TRITON™ H-66, and TRITON™ QS-44 are anionic hydrotropes that provide solubilization for nonionic surfactants in low to highly built cleaner systems. TRITON™ QS-44 and TRITON™ XQS-20 surfactants are also used in emulsification polymerization.										
TRITON H-55	50	water	L amber	45	53	8/0	25/0	No	Hydrotrope, stable in acidic and alkaline conditions	Solubilizer for surfactants into highly built detergents
TRITON H-66	50	water	L yellow	45	41	50/8	105/25	No	Hydrotrope, stable in acidic and alkaline conditions, uniquely effective with low foam surfactants	Solubilizer for surfactants into built detergents and other formulated systems
TRITON QS-44	80	water	L amber	38	39	130/65	150/140	Yes	Hydrotrope with surface activity, good solubility in alkali, stable on solid caustic, hypochlorite stable	Cleaners, emulsion polymerization, agrochemicals, solubilizer for low built detergents
TRITON XQS-20	70	water	L amber	46	46	145/130	130/120	Yes	High HLB emulsifier and stabilizer	Emulsion polymerization
<b>TRITON™ Sulfates</b>										
TRITON™ sulfate and sulfonate anionic surfactants offer excellent wetting, emulsifying, dispersing and stabilizing ability. Applications include emulsion polymerization, wax emulsification, textile processing, personal care and cleaners.										
TRITON QS-15	100	none	L amber	33	36	95/70	150/15	No	Excellent detergent, soluble & stable in hot alkaline solutions, uniquely effective in high soil loads	Highly alkaline metal cleaners, bottle washing, zinc plating brightener, gas well cleaning
TRITON XN-45S	60	ethanol/ water	L amber	33	32	170/165	170/170	Yes	Excellent wetting, emulsifying & dispersing ability, hypochlorite stable	Emulsion polymerization, wax emulsification, cleaners

### Footnotes:

- (1) Form at 25°C: L = Liquid, S = Solid  
(2) Surface Tension: dynes/cm at 1 wt% actives, 25 °C  
(3) Ross-Miles foam height: mm at 1 wt% actives, 25 °C, initial / 5 minute  
(4) Actual pH = 7 (distilled water)  
(5) Actual pH = 12.5 (sodium hydroxide solution)  
(6) IPA = Isopropanol  
(7) NR = Not recommended; can hydrolyze under some alkaline conditions  
(8) Blend of ethanol, naphtha, propylene glycol and naphthalene  
(9) APE = Alkyl phenol ethoxylate  
Ins = Insoluble  
 Readily biodegradable as defined in OECD Guidelines for the Testing of Chemicals, Section 3 (Rev. 23 March 2006)

## Dow Low Foam Surfactants

	TRITON™ CF-10/CF-10 (90%)	TRITON™ CF-21	TRITON™ CF-32	TRITON™ CF-76	TRITON™ CF-87	TRITON™ DF-12	TRITON™ DF-16	TRITON™ DF-20	TERGITOL™ MiniFoam 2X	TERGITOL™ MiniFoam 1X
Dow Low Foam surfactants include specialty products used in applications where low- to no-foam performance is required. These high performance solutions provide excellent detergency and wetting properties, as well as caustic and acid stability.										
<b>Typical Physical Properties</b>										
Active Ingredient, wt %	100	100	95	100	90	100	100	100	100	100
Cloud Point, 1% aqueous soln, °C (°F)	28 (82)	40 (104)	25 (77)	31 (88)	32 (90)	17 (63)	36 (97)	--	21	40
HLB (calculated)	12.6	12.9	11	12.6	12.7	10.6	11.6	--	12.1	12.6
Surface Tension <sup>(1)</sup>	36	32	37	33	34	34	30	30	31	30
Critical Micelle Concentration (CMC), ppm	75	130	--	25	80	290	530	180	24	34
– Viscosity at 25 °C (77 °F), cP	250	250	550	295	240	60	35	630	56	61
– Pour Point, ASTM D 97, °C (°F)	15 (59) / -1 (30)	-27 (-16)	2 (35)	7 (45)	0 (32)	16 (61)	-6 (22)	-25 (-13)	< -40 (< -40)	-34 (-20)
APE-Based	Yes	Yes	No	Yes	Yes	No	No	No	No	No
<b>Performance Characteristics</b>										
Stability on Solid Caustic	Fair	Poor	Poor	Excellent	Good	Good	Poor	NR <sup>(2)</sup>	Poor	Poor
Stability in Nonoxidizing Acids	Good	Excellent	Excellent <sup>(3)</sup>	NR	Good	Good	Excellent	NR	Excellent	Excellent
Chlorine Stability In Dry-Blended Powders <sup>(4)</sup>	Good	NR	Fair	Good	NR	NR	NR	NR	NR	NR
Food Soil Defoaming	Fair	Poor	Excellent	Good	Fair	Good	Poor	--	Poor	Poor
Soap Soil Defoaming	Fair	Poor	Good	Good	Poor	Fair	Poor	--	Fair	Poor
Foaming Performance Minimum Water Temperature for Low Foam, °C (°F)	38 (100)	43 (110)	29 (85)	35 (95)	38 (100)	16 (60)	38 (100)	43 (110)	27 (80)	43 (110)
<b>Applications</b>										
Food & Dairy Cleaners			•	•		•				
Ion Exchange Resin Cleaners		•					•			
Machine Dishwash	•		•			•				
Metal Cleaners	•	•		•		•	•	•	•	•
Pigment Dispersions	•	•				•	•		•	•
Pulp & Paper	•	•				•	•		•	•
Rinse Aids	•	•	•		•	•	•			
Textile Processing	•	•				•	•			•
Wetting Agent	•	•			•	•	•		•	•

### Footnotes:

- (1) 1 wt% actives, dynes/cm  
(2) NR - Not Recommended  
(3) Excellent stability; however, moderate foaming in acid systems. Use in combination with TRITON CF-10 or another low foam surfactant for improved low foaming performance in acid systems.  
(4) With organic chlorine release agent

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