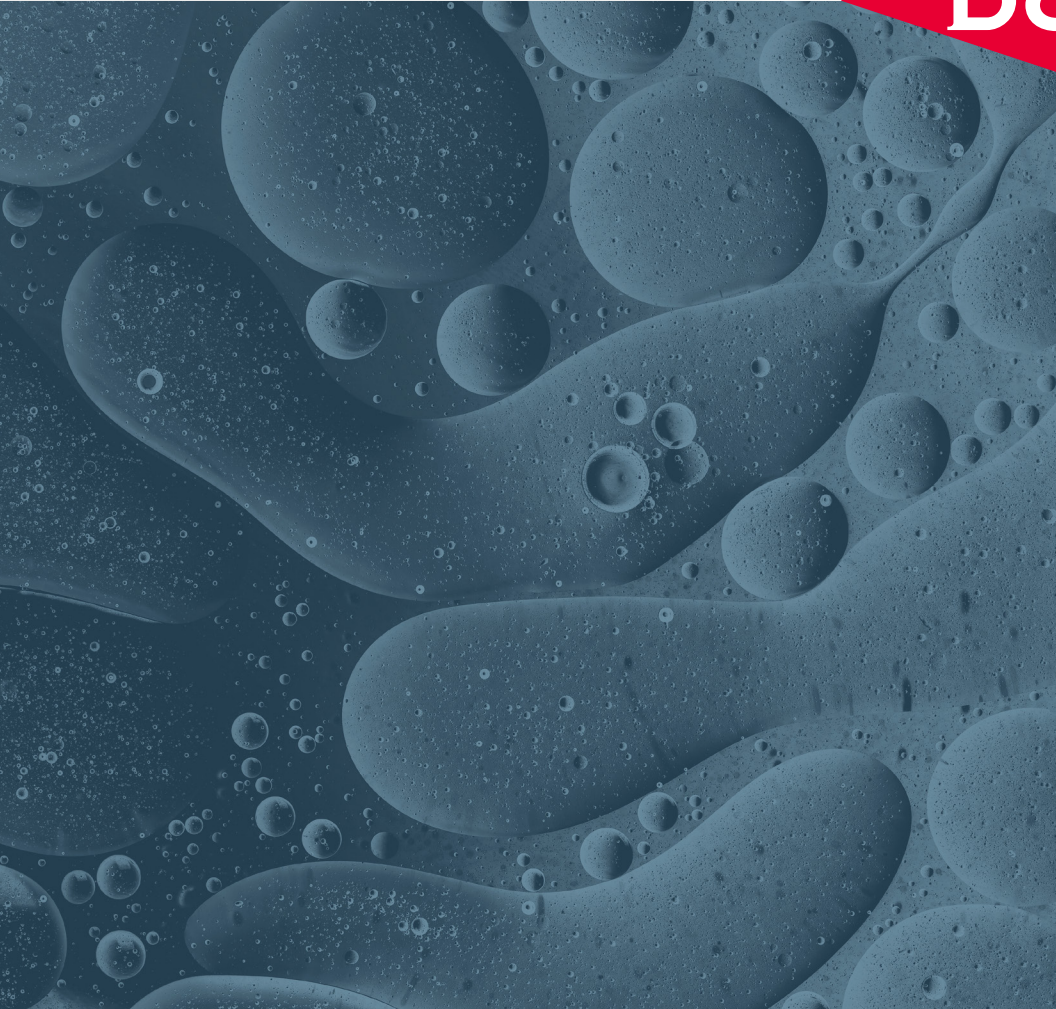


# Dow Surfactants

## Reference Chart



**DOW**





# Table of contents

Introduction .....	3
Nonionic surfactants .....	4-9
Bio-based nonionic surfactants .....	10-11
Polypropylene glycols and random copolymers .....	12
Anionic surfactants .....	13
Low foam surfactants .....	14-15



# A broad range of nonionic and anionic products

## Including...

DOWFAX™ Anionic 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, industrial and institutional cleaning products. 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 products which are:

### **Readily biodegradable**

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

### **CleanGredients™**

CleanGredients™ is a database of chemical ingredients used primarily to formulate residential, institutional, industrial and janitorial cleaning products that have been pre-approved to meet the U.S. EPA's Safer Choice Standard.

### **EPA inerts list**

Dow produces surfactants that act as emulsifiers, dispersants, wetting agents for crop protection and antimicrobial products. These surfactants can be used as Inert Ingredients in pesticide and antimicrobial formulations under EPA Inert Regulations. See the EPA website for specific EPA Status <https://iaspub.epa.gov/apex/pesticides/f?p=inertfinder:mixtures>.

### **EU Ecolabel**

EU Ecolabel is a label of environmental excellence that evaluates raw material extraction, production, distribution and disposal.

We invite you to review the product features, physical and performance properties and application information for more detail.

## Total support capabilities

Our investments in surfactant products and technology create one of the strongest capability platforms in the industry while providing sustainable and safer product alternatives.

Dow is your collaborative source for solutions. We will work closely with you to find innovative, more sustainable answers to address all of your surfactant requirements.

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

With Dow surfactants, you also receive...

- A wide range of chemistries
- Extensive applications expertise
- The knowledge and resources to innovate
- Expertise 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

## Nonionic surfactants

Product	Product highlights	APE based <sup>1</sup>	Cloud point <sup>2</sup>	HLB <sup>3</sup>	Moles EO	CMC <sup>4</sup> / Surface tension <sup>5</sup>	Foam height <sup>6</sup>	Pour point <sup>7</sup>	Form <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 Surfactant		No	Disp	7.9	PRT	480/30	0/0	-21	L	Excellent oil-soluble emulsifier, low foam, low odor, good handling, very low aquatic toxicity, listed on CleanGredients™ for US EPA Safer Choice Formulations	Cleaners and degreasers, textiles, agrochemicals
ECOSURF™ EH-6 Surfactant		No	40	10.8	PRT	914/30	20/0	5	L	Exceptional wetting and hard surface cleaning, low odor, excellent handling and formulation properties, very low aquatic toxicity, listed on CleanGredients™ for US EPA Safer Choice Formulations	Concentrates, cleaners and detergents, paints and coatings, textile processing, agrochemicals
ECOSURF™ EH-9 Surfactant		No	61	12.5	PRT	1066/31	60/0	16	L	Exceptional wetting and hard surface cleaning, low odor, excellent formulation properties, very low aquatic toxicity, Listed on CleanGredients™ for US EPA Safer Choice Formulations	Concentrates, cleaners and detergents, paints coatings, textile processing, agrochemicals
ECOSURF™ EH-9 (90%) Surfactant		No	61	12.5	PRT	1066/31	60/0	-5	L	Exceptional wetting and hard surface cleaning, low odor, improved handling and formulation properties, very low aquatic toxicity, listed on CleanGredients™ for US EPA Safer Choice Formulations	Concentrates, cleaners and detergents, prewash spotters, paints and coatings, textile processing, agrochemicals
ECOSURF™ EH-14 (90%) Surfactant		No	86	14	PRT	4018/32	70/10	6	L	Exceptional wetting and hard surface cleaning, low odor, improved handling and formulation properties, very low aquatic toxicity, listed on CleanGredients™ for US EPA Safer Choice Formulations	Concentrates, cleaners and detergents, prewash spotters, paints and coatings, textile processing, agrochemicals
ECOSURF™ EH-40 (75%) Surfactant		No	>100	18.0	PRT	8454/46	100/45	3	L	Excellent emulsion stabilizer, low odor, improved handling and very low aquatic toxicity	Emulsion polymerization, paints and coatings, agrochemicals, floor polish and wax emulsions

Readily biodegradable CleanGredients™ EPA inerts list EU Ecolabel

ECOSURF™ products are sold under trade name TERGITOL™ in Canada and Japan.

### Footnotes:

<sup>1</sup>APE = Alkyl phenol ethoxylate

<sup>2</sup>Cloud point: °C, 1 wt% actives aqueous solution

<sup>3</sup>HLB range: <10 w/o emulsifier, >10 o/w emulsifier, 10-15 good wetting, 12-15 detergents

<sup>4</sup>Critical micelle concentration: ppm at 25°C

<sup>5</sup>Surface tension: dynes/cm at 1% actives, 25°C

<sup>6</sup>Ross-Miles foam height: mm at 0.1 wt% actives, 25°C, initial / 5 minute

<sup>7</sup>Pour point: °C

<sup>8</sup>Form at 25°C: L = Liquid, S = Solid

MWF = Metalworking fluids






























Ins = Insoluble

Disp = Dispersible

PRT = Proprietary

























## Nonionic surfactants

Product	Product highlights	APE based <sup>1</sup>	Cloud point <sup>2</sup>	HLB <sup>3</sup>	Moles EO	CMC <sup>4</sup> / surface tension <sup>5</sup>	Foam height <sup>6</sup>	Pour point <sup>7</sup>	Form <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 Surfactant	 	No	Insoluble	8.0	3	Ins	Ins	-46	L	Excellent hydrocarbon compatibility and detergency	Defoamers, textile, pulp/paper, prewash spot removers, agrochemicals, dry cleaners
TERGITOL™ 15-S-5 Surfactant	 	No	Dispersible	10.5	5	Disp	Disp	-25	L	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 Surfactant	 	No	37	12.1	7	38/30	117/28	1	L	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 Surfactant	   	No	60	13.3	9	52/30	124/43	9	L	Excellent detergency, rapid dissolution and good rinseability, low odor, excellent formulation and handling properties, listed on CleanGredients™ for US EPA Safer Choice Formulations	High performance cleaners, paints and coatings, agrochemicals, textile, pulp/paper, oilfield
TERGITOL™ 15-S-12 Surfactant	  	No	89	14.5	12	104/33	124/43	22	S	Excellent detergent and dispersant, good handling properties, higher temperature wetting, listed on CleanGredients™ for US EPA Safer Choice Formulations	Agrochemicals, dispersions, high temperature systems
TERGITOL™ 15-S-12 (90%) Surfactant	  	No	89	14.5	12	107/34	130/28	-8	L	Excellent detergent and dispersant, good handling properties, higher temperature wetting, listed on CleanGredients™ for US EPA Safer Choice Formulations	Agrochemicals, dispersions, high temperature systems
TERGITOL™ 15-S-15 Surfactant	  	No	>100	15.4	15	162/36	126/24	29	S	High HLB emulsifier and dispersant, provides freeze thaw and ionic stability, listed on CleanGredients™ for US EPA Safer Choice Formulations	Emulsion polymerization, paper and textile processing, solid cleaners
TERGITOL™ 15-S-20 Surfactant	 	No	>100	16.3	20	315/38	112/42	35	S	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%) Surfactant	 	No	>100	16.3	20	315/38	112/42	6	L	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 Surfactant	 	No	>100	17.4	31	558/43	115/30	39	S	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 Surfactant	 	No	>100	18.0	41	783/44	110/24	43	S	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%) Surfactant	 	No	>100	18.0	41	1314/45	103/28	5	L	Emulsion stabilizer, provides freeze thaw and ionic stability, good handling properties	Emulsion polymerization, paint and coatings, floor polish and wax emulsions



## Nonionic surfactants

Product	Product highlights	APE based <sup>1</sup>	Cloud point <sup>2</sup>	HLB <sup>3</sup>	Moles EO	CMC <sup>4</sup> / surface tension <sup>5</sup>	Foam height <sup>6</sup>	Pour point <sup>7</sup>	Form <sup>8</sup>	Features	Applications
<b>TERGITOL™ Ethylene Oxide/Propylene Oxide (EO/PO) Copolymers</b> High-performance, nonionic surfactants for defoaming, wetting and emulsifying. TERGITOL™ Surfactants deliver low foam, excellent solvency, chemical stability and reliable formulation performance in a number of fermentation, food processing, metalworking and other applications.											
Polyglycol EP-436		No	18	-	PRT	1886/35	Ins	-39	L	Foam control agent, wetting agent and dispersant	Foam control, food processing, paper processing and chemical intermediates.
TERGITOL™ L-61 Surfactant	   	No	24	3	PRT	-/40	0/0	-32	L	Efficient foam control, wetting agent. AOF (Antioxidant free) version is listed on CleanGredients™ and approved for US EPA Safer Choice formulations	Foam control for fermentation, food washing, water treatment, MWF, machine dishwash, food and dairy process cleaning, agrochemicals
TERGITOL™ L-62 Surfactant	   	No	32	7	PRT	-/41	45/30	-2	L	Efficient foam control agent, wetting agent	Foam control for fermentation, MWF, machine dishwash, food and dairy process cleaning, paints and coatings, agrochemicals
TERGITOL™ L-64 Surfactant	   	No	62	15	PRT	-/44	48/18	7	L	Higher temperature foam control, good detergency	Fermentation, food processing, adhesives, paper processing, MWF, sanitizing solutions
TERGITOL™ L-81 Surfactant		No	20	2	PRT	-/36	Disp	-20	L	Low temperature foam control	Fermentation, MWF, chemical intermediates
TERGITOL™ L-101 Surfactant		No	18	1	PRT	-/33	30/25	-24	L	Low temperature foam control	Fermentation processes, MWF
TERGITOL™ P-104 Surfactant		No	80	13.0	PRT	-/33	96/71	32	S	Excellent detergent and emulsifier agent, effective steric stabilizer and wetting agent	Agrochemicals, iodophors and high temperature systems
TERGITOL™ P-105 Surfactant		No	90	13.8	PRT	-/39	99/84	45	S	Excellent detergent and emulsifier agent, effective steric stabilizer and wetting agent	Agrochemicals, high temperature systems
TERGITOL™ 25R2 Surfactant	 	No	31	-	PRT	12/38	40/12	-40	L	Foam control agent, wetting agent and dispersant	Foam control, MWF, household cleaning, water treatment, agrochemicals, chemical intermediates and paper processing
TERGITOL™ 17R2 Surfactant		No	35	-	PRT	29/45	30/0	-43	L	Foam control agent, wetting agent and dispersant	Foam control, MWF, household and industrial cleaning, paints and coatings, agrochemicals, chemical intermediates and paper processing
TERGITOL™ 17R4 Surfactant	 	No	45	-	PRT	56/44	0/0	0	L	Foam control agent, wetting agent and dispersant	Foam control, MWF, household and industrial cleaning, paints and coatings, agrochemicals, chemical intermediates and paper processing
TERGITOL™ HB-5100 Surfactant	-	No	50	10	PRT	-	-	-29	L	Low foaming, high chemical and thermal stability, easily rinsed from surfaces	Fermentation processing, textile processing, paints and coatings, metal cleaners, agrochemicals

 Readily biodegradable  CleanGredients™  EPA inerts list  EU Ecolabel

### Footnotes:

<sup>1</sup>APE = Alkyl phenol ethoxylate

<sup>2</sup>Cloud point: °C, 1 wt% actives aqueous solution

<sup>3</sup>HLB range: <10 w/o emulsifier, >10 o/w emulsifier, 10-15 good wetting, 12-15 detergents

<sup>4</sup>Critical micelle concentration: ppm at 25°C

<sup>5</sup>Surface tension: dynes/cm at 1% actives, 25°C

<sup>6</sup>Ross-Miles foam height: mm at 0.1 wt% actives, 25°C, initial / 5 minute

<sup>7</sup>Pour point: °C

<sup>8</sup>Form at 25°C: L = Liquid, S = Solid









MWF= Metalworking fluids

Ins = Insoluble

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## Nonionic surfactants

Product	Product highlights	APE based <sup>1</sup>	Cloud point <sup>2</sup>	HLB <sup>3</sup>	Moles EO	CMC <sup>4</sup> / surface tension <sup>5</sup>	Foam height <sup>6</sup>	Pour point <sup>7</sup>	Form <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		No	74	-	PRT	-/38	60/25	34	S	Excellent steric and freeze thaw stabilizer, effective pigment and carbon black dispersant	Agrochemicals, paints and coatings dispersions, iodophors, emulsion polymerization
TERGITOL™ XH		No	95	-	PRT	-/41	80/40	40	S	Provides lubricity, effective steric and freeze thaw stabilizer, solubilizes iodine	Fiber lubricants, emulsion polymerization, iodophors, agrochemicals
TERGITOL™ XJ		No	49	-	PRT	-/36	53/13	27	S	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		No	Ins	8.1	3	Ins	Ins	-49	L	Excellent oil soluble emulsifier, hydrocarbon compatibility	Low HLB emulsifier for textiles and paper applications, degreasers
TERGITOL™ TMN-6 (90%)		No	36	13.1	8	800/27	130/22	<-40	L	Excellent wetting agent, penetrant and dispersant, silicone emulsifier, narrow gel range	Paper and textile processing, pigment and wax/resin dispersants, hard surface cleaners, agrochemicals, paints and coatings
TERGITOL™ TMN-100X (90%)		No	65	14.0	9	830/27	150/24	-6	L	Non-APE alternative for TRITON™ X-100, excellent wetting, penetrant and dispersant, superior emulsification	Paints and coatings, paper & textile processing pigment and wax/resin dispersants, cleaners
TERGITOL™ TMN-10 (90%)		No	76	14.4	11	1313/30	118/28	-19	L	High temperature penetrant and dispersant, high HLB emulsifier, narrow gel range	Paper and textile processing, pigment and wax/resin dispersants, cleaners, paints and coatings
<b>TRITON™ Specialty Alkoxyates</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™ HW 1000		No	Ins	10.8	5	Ins	Ins	-18	L	Non-silicone-based, superior wetting and leveling agent, low foaming, wets various substrates, improves gloss and smoothness of coating films, penetrant and rapid pigment dispersant, narrow gel range	Inks and printing, waterborne and laminate adhesives, coatings, paints, paper & textile processing, pigment and wax/resin dispersion, agrochemicals

 Readily biodegradable  CleanGredients™  EPA inerts list  EU Ecolabel

### Footnotes:

<sup>1</sup>APE = Alkyl phenol ethoxylate

<sup>2</sup>Cloud point: °C, 1 wt% actives aqueous solution

<sup>3</sup>HLB range: <10 w/o emulsifier, >10 o/w emulsifier, 10-15 good wetting, 12-15 detergents

<sup>4</sup>Critical micelle concentration: ppm at 25°C

<sup>5</sup>Surface tension: dynes/cm at 1% actives, 25°C

<sup>6</sup>Ross-Miles foam height: mm at 0.1 wt% actives, 25°C, initial / 5 minute

<sup>7</sup>Pour point: °C

<sup>8</sup>Form at 25°C: L = Liquid, S = Solid

















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## Nonionic surfactants

Product	Product highlights	APE based <sup>1</sup>	Cloud point <sup>2</sup>	HLB <sup>3</sup>	Moles EO	CMC <sup>4</sup> / surface tension <sup>5</sup>	Foam height <sup>6</sup>	Pour point <sup>7</sup>	Form <sup>8</sup>	Features	Applications
<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		Yes	Ins	8.9	4	Ins	Ins	-28	L	Excellent oil-soluble surfactant, low HLB emulsifier	Cleaners and degreasers, dry cleaning, dispersant for petroleum oil
TERGITOL™ NP-6		Yes	Ins	10.9	6	Ins	Ins	-26	L	Excellent emulsifier, wetting agent, stabilizer, couples detergent range nonionics into hydrocarbon systems	Cleaners and degreasers, dry cleaning, adhesives, agrochemicals
TERGITOL™ NP-7		Yes	20	12.0	7	39/32	20/19	-19	L	Excellent detergency, outstanding wetting	Cleaners and degreasers, paper and textile processing, prewash spotters, agrochemicals, MWF, oilfield chemicals
TERGITOL™ NP-8		Yes	43	12.6	8	61/32	103/95	-6	L	Excellent detergency, outstanding wetting, good rinseability	Cleaners and detergents, paper and textile processing, paints and coatings, agrochemicals, MWF
TERGITOL™ NP-9		Yes	54	12.9	9	60/32	105/90	-1	L	Excellent detergency, outstanding wetting, good rinseability	Cleaners and detergents, paper and textile processing, laundry, paints and coatings, dust control, agrochemicals, MWF
TERGITOL™ NP-9.5		Yes	59	13.1	9.5	62/32	115/102	7	L	Excellent detergency, outstanding wetting	Cleaners and detergents, paper and textile processing, paints and coatings, agrochemicals, MWF
TERGITOL™ NP-10		Yes	63	13.2	10	55/33	115/110	6	L	Excellent detergency, outstanding wetting	Cleaners and detergents, paper and textile processing, paints and coatings, agrochemicals, MWF
TERGITOL™ NP-11		Yes	72	13.5	11	71/34	112/92	11	L	Excellent detergency, outstanding wetting	Cleaners and detergents, paper and textile processing, paints and coatings, agrochemicals, MWF
TERGITOL™ NP-12		Yes	78	13.8	12	85/35	117/115	13	L	Excellent detergency, outstanding wetting	Cleaners and detergents, paper and textile processing, paints and coatings, agrochemicals, MWF
TERGITOL™ NP-13		Yes	82	13.9	13	66/35	118/97	14	L	Excellent detergency, outstanding wetting	Cleaners and detergents, paper and textile processing, paints and coatings, agrochemicals, MWF
TERGITOL™ NP-15	-	Yes	>100	15.0	15	90/41	128/95	25	S	Excellent detergency, outstanding wetting, suitable for higher temperatures	Cleaners and detergents, paper and textile processing, paints and coatings, agrochemicals, MWF
TERGITOL™ NP-30		Yes	>100	17.1	30	157/46	125/77	37	S	Highly water soluble emulsifier and stabilizer, effective at high temperatures	Wetting agents and stabilizers, emulsifiers and dispersants, agrochemicals
TERGITOL™ NP-30 (70%)		Yes	>100	17.1	30	160/42	125/77	-8	L	Highly water soluble emulsifier and stabilizer, effective at high temperatures	Wetting agents and stabilizers, emulsifiers and dispersants, agrochemicals
TERGITOL™ NP-40		Yes	>100	17.8	40	230/50	123/115	48	S	Effective at high temperatures, highly water-soluble emulsifier and stabilizer, wetting	Paper and textile processing, paints and coatings, agrochemicals
TERGITOL™ NP-40 (70%)		Yes	>100	17.8	40	232/50	123/115	2	L	Effective at high temperatures, highly water-soluble emulsifier and stabilizer	Paper and textile processing, paints and coatings, agrochemicals
TERGITOL™ NP-50 (70%)		Yes	>100	18.2	50	256/53	115/110	2	S/L	Effective at high temperatures, highly water-soluble emulsifier and stabilizer	Paper and textile processing, paints and coatings, agrochemicals
TERGITOL™ NP-55 (70%)	-	Yes	>100	18.3	55	39/45	105/60	15	S/L	Effective at high temperatures, highly water-soluble emulsifier and stabilizer	Paper and textile processing, paints and coatings, agrochemicals
TERGITOL™ NP-70 (70%)		Yes	>100	18.7	70	287/51	105/100	15	S	Effective at high temperatures, highly water-soluble emulsifier and stabilizer	Paper and textile processing, paints and coatings, agrochemicals



## Nonionic surfactants

Product	Product highlights	APE based <sup>1</sup>	Cloud point <sup>2</sup>	HLB <sup>3</sup>	Moles EO	CMC <sup>4</sup> / surface tension <sup>5</sup>	Foam height <sup>6</sup>	Pour point <sup>7</sup>	Form <sup>8</sup>	Features	Applications
<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	-	No	Ins	6-8	2	Ins	Ins	< -6	L	Oil soluble emulsifier, pH reversible	Degreasers, MWF
TRITON™ RW-50	-	No	Disp	12-14	5	260/29 pH=12 -/51 pH=2	28/2 pH=12	< -6	L	Low HLB emulsifier, pH reversible	Metal cleaners, industrial laundry, transportation cleaners, MWF
TRITON™ RW-150	-	No	>100	>16	15	860/30 pH=12 -/54 pH=2	135/15 pH=12	11	L	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	 	Yes	Ins	4.9	1.5	Ins	Ins	3	L	Oil soluble emulsifier, solubilizer	Defoamers, dye solubilizer, chemical intermediate
TRITON™ X-35	 	Yes	Ins	7.8	3	Ins	Ins	-9	L	Excellent compatibility with aliphatic or aromatic hydrocarbons and polar organic solvents	Defoamers, pulp/paper, textile, dry cleaning, MWF, chemical intermediate
TRITON™ X-45	 	Yes	Disp	9.8	4.5	136/29	23/9	-24	L	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	 	Yes	25	12.3	7.5	120/31	55/40	-14	L	Excellent wetting and detergency	Cleaners, paints and coatings, pulp/paper, textile, agrochemicals, MWF, oilfield
TRITON™ X-100	 	Yes	66	13.4	9.5	189/33	128/107	1	L	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		Yes	88	14.4	12	267/36	124/75	13	L	Excellent detergent and dispersant	Dispersions, high temperature systems
TRITON™ X-165 (50%)		Yes	>100	15.5	16	not run/40	115/45	2	L	Excellent emulsion stabilizer and dispersant	Paints and coatings, dispersions
TRITON™ X-165 (70%)		Yes	>100	15.5	16	570/39	124/68	22	L	Excellent emulsion stabilizer and dispersant	Paints and coatings, dispersions
TRITON™ X-305 (70%)		Yes	>100	17.3	30	1916/49	103/25	-7	L	Excellent emulsion stabilizer, provides freeze thaw and ionic stability	Emulsion polymerization, paints and coatings, floor polish, wax emulsions
TRITON™ X-405 (70%)		Yes	>100	17.6	35	2442/52	93/22	-6	L	Excellent emulsion stabilizer, provides freeze thaw and ionic stability	Emulsion polymerization, paints and coatings, floor polish, and wax emulsions
TRITON™ X-705 (70%)		Yes	>100	18.4	55	3585/44	80/55	2	L	Excellent emulsion stabilizer	Emulsion polymerization

 Readily biodegradable  CleanGredients™  EPA inerts list  EU Ecolabel

Footnotes:

<sup>1</sup>APE = Alkyl phenol ethoxylate

<sup>2</sup>Cloud point: °C, 1 wt% actives aqueous solution

<sup>3</sup>HLB range: <10 w/o emulsifier, >10 o/w emulsifier, 10-15 good wetting, 12-15 detergents

<sup>4</sup>Critical micelle concentration: ppm at 25°C

<sup>5</sup>Surface tension: dynes/cm at 1% actives, 25°C

<sup>6</sup>Ross-Miles foam height: mm at 0.1 wt% actives, 25°C, initial / 5 minute

<sup>7</sup>Pour point: °C

<sup>8</sup>Form at 25°C: L = Liquid, S = Solid


















MWF= Metalworking fluids


Ins = Insoluble

Disp = Dispersible

PRT = Proprietary

## Bio-based nonionic surfactants

Product	Product highlights	APE based <sup>1</sup>	Cloud point <sup>2</sup>	HLB <sup>3</sup>	Moles EO	CMC <sup>4</sup> / surface tension <sup>5</sup>	Foam height <sup>6</sup>	Pour point <sup>7</sup>	Form <sup>8</sup>	Features	Applications
<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	 	No	Disp	7.5	PRT	Disp	Disp	-8	L	Based on seed oil, low odor, no gel range, excellent wetting, oil soluble emulsifier	Concentrates, cleaners and detergents, prewash spotters, dry cleaning, paints and coatings, textile processing
ECOSURF™ SA-7	 	No	37	9.7	PRT	17/29	100/20	3	L	Based on seed oil, low odor, no gel range, rapid dissolution, excellent wetting and detergency, effective emulsifier	Concentrates, cleaners and detergents, prewash spotters, paints and coatings, textile processing, agrochemicals
ECOSURF™ SA-9	  	No	57	11.1	PRT	22/29	100/20	4	L	Based on seed oil, low odor, no gel range, rapid dissolution, excellent wetting and detergency, effective emulsifier	Concentrates, cleaners and detergents, prewash spotters, paints and coatings, textile processing
ECOSURF™ SA-15	 	No	>100	13.5	PRT	153/34	130/25	27	S	Based on seed oil, low odor, rapid dissolution, excellent wetting and detergency especially at higher temperatures, effective emulsifier	Concentrates, cleaners and detergents, prewash spotters, paints and coatings, textile processing, agrochemicals
<b>TERGITOL™ ECO Castor Oil Ethoxylates</b> TERGITOL™ ECO Series are biodegradable nonionic surfactants, based on renewable vegetable resources with different degrees of ethoxylation. These surfactants offer powerful emulsification performance over a wide range of applications agrochemicals, household and institutional cleaning and textile processing. Dow can vary the polymer architecture according to customer requests and application needs.											
TERGITOL™ ECO-20	 	No	Disp	10	20	56/40	50/25	-30	L	Excellent emulsifier and dispersant, water dispersable	Agrochemicals, textile and leather processing, household and institutional cleaning
TERGITOL™ ECO-30 HP	 	No	>100	-	30	53/41	68/60	0	L	Excellent emulsifier and dispersant, water soluble. High purity grade, low salts concentration	Agrochemicals, textile and leather processing, household and institutional cleaning
TERGITOL™ ECO-36	 	No	80	13	36	44/40	60/50	12	L	Excellent emulsion stabilizer	Agrochemicals, textile and leather processing, household and institutional cleaning
TERGITOL™ ECO-40	 	No	80	13	40	50/40	60/55	15	L	Excellent emulsion stabilizer	Agrochemicals, textile and leather processing, household and institutional cleaning

 Readily biodegradable  CleanGredients™  EPA inerts list  EU Ecolabel

ECOSURF™ products are sold under trade name TERGITOL™ in Canada and Japan.

### Footnotes:

<sup>1</sup>APE = Alkyl phenol ethoxylate

<sup>2</sup>Cloud point: °C, 1 wt% actives aqueous solution

<sup>3</sup>HLB range: <10 w/o emulsifier, >10 o/w emulsifier, 10-15 good wetting, 12-15 detergents

<sup>4</sup>Critical micelle concentration: ppm at 25°C

<sup>5</sup>Surface tension: dynes/cm at 1% actives, 25°C

<sup>6</sup>Ross-Miles foam height: mm at 0.1 wt% actives, 25°C, initial / 5 minute

<sup>7</sup>Pour point: °C

<sup>8</sup>Form at 25°C: L = Liquid, S = Solid




















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## Bio-based nonionic surfactants

Product	Product highlights	APE based <sup>1</sup>	Cloud point <sup>2</sup>	HLB <sup>3</sup>	Moles EO	CMC <sup>4</sup> / surface tension <sup>5</sup>	Foam height <sup>6</sup>	Pour point <sup>7</sup>	Form <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 and institutional detergent formulations where high, stable foam is required or where high caustic concentrations are necessary											
TRITON™ BG-10	  	No	>100	-	0	1591/28	112/115	-5	L	Soluble in highly alkaline solutions, good detergency and wetting properties, mild, listed on CleanGredients™ and US EPA Safer Choice Formulations	Bottle washing, metal cleaners, highly alkaline detergents, paint strippers, aluminum brighteners, agrochemicals
TRITON™ CG-50	   	No	>100	-	0	870/27	112/112	0	L	Soluble in highly alkaline solutions, mild, good detergent and wetter, high stable foam, listed on CleanGredients™ for US EPA Safer Choice Formulations	Bottle washing, metal cleaners, highly alkaline detergents, paint strippers, aluminum brighteners, agrochemicals
TRITON™ CG-110	  	No	>100	-	0	1748/27	105/100	-15	L	Soluble in highly alkaline solutions, mild, low skin drying effects, good detergent and wetter, high stable foam, listed on CleanGredients™ and US EPA Safer Choice Formulations	Bottle washing, metal cleaners, highly alkaline detergents, paint strippers, aluminum brighteners, agrochemicals
TRITON™ CG-425	  	No	>100	-	0	61/29	140/140	-18	L	Soluble in highly alkaline solutions, mild, good detergent and wetter, high stable foam	Glass cleaners, highly alkaline detergents
TRITON™ CG-600	  	No	>100	-	0	74/29	80/80	6	L	Soluble in highly alkaline solutions, mild, good detergent and wetter, high stable foam	Glass cleaners, highly alkaline detergents
TRITON™ CG-650	  	No	>100	-	0	67/29	110/110	-18	L	Soluble in highly alkaline solutions, mild, good detergent and wetter, high stable foam	Glass cleaners, highly alkaline detergents

 Readily biodegradable  CleanGredients™  EPA inerts list  EU Ecolabel

### Footnotes:

<sup>1</sup>APE = Alkyl phenol ethoxylate

<sup>2</sup>Cloud point: °C, 1 wt% actives aqueous solution

<sup>3</sup>HLB range: <10 w/o emulsifier, >10 o/w emulsifier, 10-15 good wetting, 12-15 detergents

<sup>4</sup>Critical micelle concentration: ppm at 25°C

<sup>5</sup>Surface tension: dynes/cm at 1% actives, 25°C

<sup>6</sup>Ross-Miles foam height: mm at 0.1 wt% actives, 25°C, initial / 5 minute

<sup>7</sup>Pour point: °C

<sup>8</sup>Form at 25°C: L = Liquid, S = Solid

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## Polypropylene glycols and random copolymers

Product	Product highlights	APE based <sup>1</sup>	Molecular weight	Specific gravity <sup>2</sup> @25/25°C	Average viscosity <sup>3</sup> , cSt @40°C	Pour point, °C	Refractive index <sup>4</sup> @25°C	Density lb/gal @25°C	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		No	250	1.091	285	-18	1.459	9.07	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, viscosity modifiers
PT700		No	700	1.033	108	-32	1.453	8.59	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, viscosity modifiers
PT3000		No	3000	1.01	235	-27	1.451	8.40	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, viscosity modifiers
PT4800		No	4800	1.018	415	-25	1.45	8.5	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, viscosity modifiers
P425		No	425	1.007	33	-45	1.447	8.39	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
P600		No	600	1.006	55	-25	1.447	8.39	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
P1000TB		No	1000	1.005	78	-25	1.448	8.38	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
P1200		No	1200	1.003	91	-40	1.448	8.38	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
P2000		No	2000	1.002	160	-30	1.449	8.34	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
P3000		No	3000	1.002	265	-25	1.45	8.36	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Synthetic lubricants, foam control, chemical intermediates, cosolvents
P4000		No	4000	1.004	455	-26	1.45	8.36	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		No	2400	1.069	180	51	1.460	8.90	Compatibility, solvency, low toxicity, low odor, natural lubricity, low ash, non-varnishing, chemically stable	Foam control, chemical intermediates, viscosity modifiers

Readily biodegradable CleanGredients™ EPA inerts list EU Ecolabel

Footnotes:

<sup>1</sup>APE = Alkyl phenol ethoxylate









<sup>2</sup>ASTM D 892


<sup>3</sup>ASTM D 445/446

<sup>4</sup>ASTM D 1218



## Anionic surfactants

Product	Product highlights	APE based <sup>1</sup>	Actives	Diluent	Form <sup>2</sup>	Surface tension <sup>3</sup>		Foam <sup>4</sup>		Features	Applications
						Neutral <sup>5</sup>	Alkaline <sup>6</sup>	Neutral <sup>5</sup>	Alkaline <sup>6</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 Surfactant		No	45	Water	L amber	34	35	140/130	145/145	Excellent solubility and 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 Surfactant		No	45	Water	L yellow/ it brown	37	38	135/135	140/120	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 Surfactant		No	35	Water	L light brown	44	46	120/25	140/25	Emulsion stabilizer, excellent solubility, stable in oxidizing systems, high level of particulate soil detergency, excellent rinseability	Emulsion polymerization, cleaners and detergents, oil field chemicals, textile, pulp and paper
DOWFAX™ C6L Surfactant	-	No	45	Water	L light brown	34	34	145/140	145/130	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 Surfactant		No	45	Water	L yellow/ brown	35	37	135/125	130/115	Low streaking and low visible residue, rapid dissolution, excellent stability	Glass and all-purpose cleaners and other detergents, agrochemicals
<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		No	60	IPA <sup>7</sup> / water	L colorless	26	NR <sup>8</sup>	190/180	NR	Excellent wetting, emulsifying and dispersing ability	Paints and coatings, paper and textile, agrochemicals, cleaners, oilfield
TRITON™ GR-7M		No	64	Petroleum distillate <sup>9</sup>	L amber	Ins	Ins	Ins	Ins	Excellent emulsifying and dispersing ability, oil soluble	Dry cleaning, paints and 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		No	50	Water	L amber	45	53	8/0	25/0	Hydrotrope, stable in acidic and alkaline conditions	Solubilizer for surfactants into highly built detergents
TRITON™ H-66		No	50	Water	L yellow	45	41	50/8	105/25	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	-	Yes	80	Water	L amber	38	39	130/65	150/140	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	-	Yes	70	Water	L amber	46	46	145/130	130/120	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, and cleaners.											
TRITON™ QS-15	-	No	100	None	L amber	33	36	95/70	150/15	Excellent detergent, soluble and 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	-	Yes	60	Ethanol/ water	L amber	33	32	170/165	170/170	Excellent wetting, emulsifying and dispersing ability, hypochlorite stable	Emulsion polymerization, wax emulsification, cleaners

 Readily biodegradable  CleanGredients™  EPA inerts list  EU Ecolabel

### Footnotes:

<sup>1</sup>APE = Alkyl phenol ethoxylate

<sup>2</sup>Form at 25°C: L = Liquid, S = Solid

<sup>3</sup>Surface Tension: dynes/cm at 1 wt% actives, 25°C

<sup>4</sup>Ross-Miles foam height: mm at 1 wt% actives, 25 °C, initial / 5 minute

<sup>5</sup>Actual pH = 7 (distilled water)

<sup>6</sup>Actual pH = 12.5 (sodium hydroxide solution)






<sup>7</sup>IPA = Isopropanol



<sup>8</sup>NR = Not recommended; can hydrolyze under some alkaline conditions

<sup>9</sup>Blend of ethanol, naphtha, propylene glycol and naphthalene

Ins = Insoluble

## Low foam surfactants

	ECOSURF™ LFE-635	ECOSURF™ LFE-1410	TRITON™ DF-12	TRITON™ DF-16	TRITON™ DF-20
<b>Product highlights</b>					
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	100	100	100
Cloud point, 1% aqueous soln, °C (°F)	35	10	17 (63)	36 (97)	—
HLB (calculated)	10.5	8.4	10.6	11.6	—
Surface tension <sup>1</sup>	32	35	34	30	30
Critical Micelle Concentration (CMC), ppm	315	85	290	530	180
– Viscosity at 25 °C (77 °F), cP			60	35	630
– Pour point, ASTM D 97, °C (°F)	-42	5	16 (61)	-6 (22)	-25 (-13)
APE-based	No	No	No	No	No
<b>Performance characteristics</b>					
Stability on solid caustic	Poor	Poor	Good	Poor	NR <sup>2</sup>
Stability in nonoxidizing acids	Excellent	Excellent	Good	Excellent	NR
Chlorine stability in dry-blended powders <sup>4</sup>	NR	NR	NR	NR	NR
Food soil defoaming	Good	Good	Good	Poor	—
Soap soil defoaming	Poor	Poor	Fair	Poor	—
Foaming performance minimum water temperature for low foam, °C (°F)	38 (100)	16 (60)	16 (60)	38 (100)	43 (110)
<b>Applications</b>					
Food and dairy cleaners	•	•	•	•	
Ion exchange resin cleaners	•			•	
Machine dishwash	•	•	•		
Metal cleaners	•	•	•	•	•
Pigment dispersions	•			•	
Pulp and paper	•	•	•	•	
Rinse aids	•	•	•	•	
Textile processing	•			•	
Wetting agent	•	•	•	•	

 Readily biodegradable  CleanGredients™  EPA inerts list  EU Ecolabel

ECOSURF™ products are sold under trade name TERGITOL™ in Canada and Japan.

### Footnotes:



<sup>1</sup>1 wt% actives, dynes/cm



<sup>2</sup>NR - Not Recommended

<sup>3</sup>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.

<sup>4</sup>With organic chlorine release agent

## Low foam surfactants

	TERGITOL™ MinFoam 2X	TERGITOL™ MinFoam 1X	TRITON™ CF-10/CF-10 (90%)	TRITON™ CF-21	TRITON™ CF-32	TRITON™ CF-76	TRITON™ CF-87
<b>Product highlights</b>			-	-	-	-	-
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	100	100	95	100	90
Cloud point, 1% aqueous soln, °C (°F)	21	40	28 (82)	40 (104)	25 (77)	31 (88)	32 (90)
HLB (calculated)	12.1	12.6	12.6	12.9	11	12.6	12.7
Surface Tension <sup>1</sup>	31	30	36	32	37	33	34
Critical Micelle Concentration (CMC), ppm	24	34	75	130	--	25	80
- Viscosity at 25 °C (77 °F), cP	56	61	250	250	550	295	240
- Pour point, ASTM D 97, °C (°F)	<-40 (<-40)	-34 (-20)	15 (59) / -1 (30)	-27 (-16)	2 (35)	7 (45)	0 (32)
APE-based	No	No	Yes	Yes	No	Yes	Yes
<b>Performance characteristics</b>							
Stability on solid caustic	Poor	Poor	Fair	Poor	Poor	Excellent	Good
Stability in nonoxidizing acids	Excellent	Excellent	Good	Excellent	Excellent <sup>3</sup>	NR	Good
Chlorine stability in dry-blended powders <sup>4</sup>	NR	NR	Good	NR	Fair	Good	NR
Food soil defoaming	Poor	Poor	Fair	Poor	Excellent	Good	Fair
Soap soil defoaming	Fair	Fair	Fair	Poor	Good	Good	Poor
Foaming performance minimum water temperature for low foam, °C (°F)	27 (80)	43 (110)	38 (100)	43 (110)	29 (85)	35 (95)	38 (100)
<b>Applications</b>							
Food and dairy cleaners					•	•	
Ion exchange resin cleaners				•			
Machine dishwash			•		•		
Metal cleaners	•	•	•	•		•	
Pigment dispersions	•	•	•	•			
Pulp and paper	•	•	•	•			
Rinse aids			•	•	•		•
Textile processing		•	•	•			
Wetting agent	•	•	•	•			•

 Readily biodegradable  CleanGredients™  EPA inerts list  EU Ecolabel

### Footnotes:

<sup>1</sup>1 wt% actives, dynes/cm

<sup>2</sup>NR - Not Recommended

<sup>3</sup>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.

<sup>4</sup>With organic chlorine release agent

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**US, Canada, Mexico**

Call 800 447 4369

**Latin America**

Call + 55 11 5184 8722

**Europe**

Call toll-free + 800 3 694 6367\*

Call + 31 11567 2626

**Asia / Pacific**

Call toll-free + 800 7776 7776\*

Call + 60 3 7965 5392

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