



DOW Surfactants

A Guide to Products and
Performance for Household and
Institutional & Industrial Cleaners

Surfactants



Quality Solutions from the New Leader in Surfactants for Household and I&I Cleaners

In North America, a new hard surface disinfectant spray cleaner appears on store shelves to help protect families against harmful germs and bacteria in the home. Meanwhile, in Europe, a more powerful industrial cleaner is launched to remove grease build-up from floors and improve worker safety in large metalworking plants. In Asia, a fine restaurant maintains its spotless reputation with sparkling clean dinnerware washed with a reformulated mechanical dishwashing detergent. And in Latin America, vacationers enjoy a clearer view of the colorful world outside their hotel, thanks to the streak-free performance of a new window cleaner.



But, the total package of value Dow Surfactants brings to you goes beyond our brand names. Our investments in surfactant products and technology have created a capabilities platform unsurpassed in the industry...

A wide range of chemistries enables us to deliver solutions that meet almost any performance requirement.

Experience across the full range of cleaning applications equips us to help you optimize surfactant performance and economy in your formulation.

Our knowledge and resources foster innovation, resulting in new products and technology in anticipation of your future requirements and in response to the challenges you face today.

No matter where you go in the world, life is made better by cleaning products containing DOW surfactants. Today Dow is one of the world's leading suppliers of surfactants and provides valuable cleaning formulations expertise and support. Our broad and diverse portfolio of surfactant chemistries for household and industrial & institutional (I&I) cleaning product formulations, includes such well recognized brands as:

- TRITON™ specialty nonionic and anionic surfactants
- DOWFAX® specialty anionic surfactants
- TERGITOL™ specialty and general purpose nonionic surfactants
- HAMPOSYL™ specialty anionic surfactants
- HAMPSHIRE™ chelating surfactants





Awareness of regulations and legislation allows us to provide reliable information as well as complete product stewardship assistance for our products.

A global sales, distribution and technical support network means we are “on the ground” in your local area, ready to serve your surfactant needs.

World-class surfactant manufacturing facilities contribute to Dow operational excellence and ensure that our high performance solutions are consistently available and cost-effective.

A broad portfolio of Dow ingredients for cleaning product formulations offers you the convenience of single-source supply and equips us with in-depth knowledge of all formulation components.

With the power of Dow behind us, we’re a highly reliable supplier of critical formulating ingredients. Dow is a leading science and technology company that provides innovative chemical, plastic and agricultural products and services to many essential markets. With annual sales approaching \$30

billion, Dow serves customers in more than 170 countries and a wide range of markets with products that are vital to human progress.

Our Broad Range of Surfactant Chemistries Expands Your Possibilities

DOW surfactants include many diverse products across several surfactant chemistries. The unique functional and economic characteristics of these materials open the door to innovative surfactant solutions for cleaning product applications—from commercial dishwashing detergents to home floor and carpet care; and from dairy and food process cleaners to hard surface cleaners for household kitchens and bathrooms.

Dow offers almost 200 surfactant products. Described in the following pages are major families of DOW surfactants, their functional contributions and key applications. Please contact your Dow representative for additional information (contact information is provided on the back cover of this brochure).



Explore Your Nonionic Surfactant Possibilities

Secondary Alcohol Ethoxylates

- TERGITOL 15-S Series Surfactants
- TERGITOL TMN Series Surfactants

TERGITOL 15-S Series surfactants and TERGITOL TMN Series surfactants offer a unique combination of superior emulsification, wetting and detergency. These nonionic surfactants also offer favorable handling and formulating properties, rapid dissolution in cold water, and narrow aqueous gel ranges. TERGITOL 15-S Series surfactants are used to formulate laundry detergents, hard surface cleaners, all purpose cleaners, hydrocarbon and water-based prespotters, as well as car wash and car care products.

TERGITOL TMN Series surfactants set the standard for wetting power and offer excellent hard surface cleaning performance. They can help reduce or eliminate the need for fluoro-surfactants in floor care applications. TERGITOL TMN Series surfactants are the unsurpassed choice for silicone oil emulsification.

Low Foam Surfactants

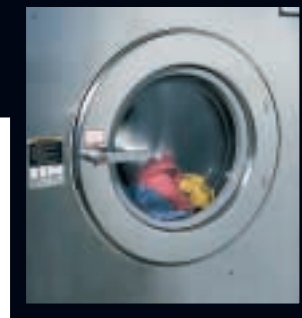
- TRITON CF Surfactants
- TRITON DF Surfactants
- TERGITOL MinFoam Surfactants
- TERGITOL MDS-42 Surfactant
- EO/PO Copolymers

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. Superior food and protein soil defoaming performance is also provided. DOW Low Foam surfactants are especially suitable for rinse aids, commercial dishwashing, and metal cleaning applications.

Alkyl Polyglucosides

- TRITON BG-10 and TRITON CG-110 Surfactants

TRITON BG-10 and TRITON CG-110 specialty surfactants are nonionic products used in household and industrial & institutional detergent formulations where high, stable foam is required or where high caustic concentrations are necessary. These surfactants are good wetting agents, providing detergency as well as low streaking and filming performance, making them ideal for glass bottle washing formulations. They are also suitable for food and dairy process cleaners.



Octylphenol Ethoxylates

- TRITON X Series Surfactants

TRITON X Series surfactants are versatile nonionic specialty surfactants recognized for wetting and detergency performance. They provide superior hard surface and metal cleaning performance. Emulsification performance is also excellent. TRITON X Series surfactants are used in almost every type of liquid, paste, and powdered cleaning compound, ranging from heavy-duty industrial products to gentle detergents.

Nonylphenol Ethoxylates

- TERGITOL NP Series Surfactants

TERGITOL NP Series surfactants deliver a combination of economy and performance in a wide variety of cleaning applications. Used anywhere there is a need for increased surface activity, these nonionic surfactants provide excellent all-purpose detergency and wetting, as well as solubilization and emulsification. Specific cleaning applications for TERGITOL NP Series surfactants include household and industrial laundry detergents, all purpose cleaners, hard surface cleaners, degreasers, and transportation cleaners.

Alcohol Alkoxylate

- TRITON XL-80N Surfactant

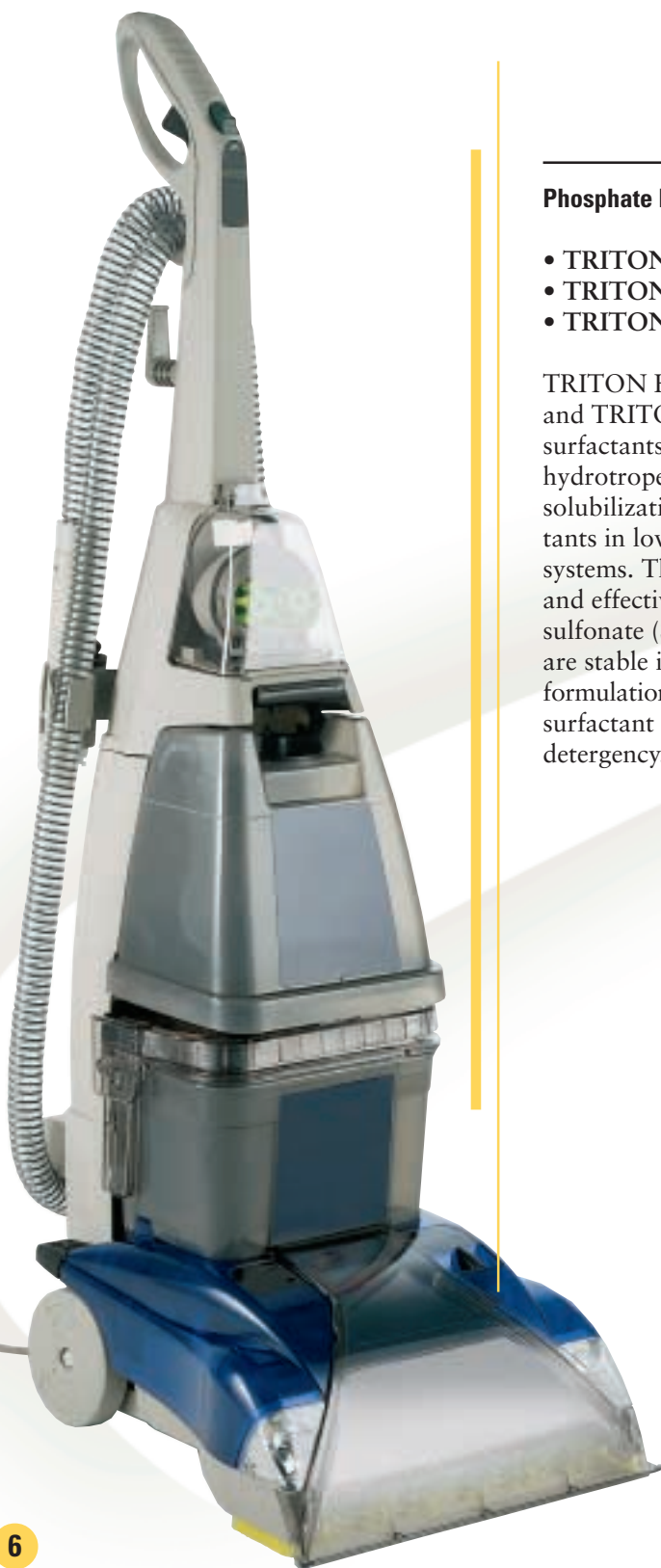
TRITON XL-80N surfactant is a unique nonionic surfactant offering an outstanding combination of performance, processing, and formulating advantages. This product is one of the most versatile water-soluble nonionic surfactants, providing excellent detergency and wetting properties as well as rinsibility, solubility and rapid dissolution rates. It is an outstanding oily soil detergent. TRITON XL-80N surfactant is used in a variety of applications, including hard surface cleaners and degreasers, household and industrial laundry detergents, laundry prespotters, metal cleaners, and soak tank cleaners.

Alkylamine Ethoxylates

- TRITON RW Series Surfactants

TRITON RW Series surfactants are nonionic surfactants with unique reversible surfactancy. In caustic solutions, these amine ethoxylates act as surfactants. However, in acidic media, they lose their surfactancy. This characteristic allows for easier separation of emulsified oils from aqueous waste streams. TRITON RW Series surfactants are especially well-suited for industrial laundry applications and deliver exceptional metal cleaning performance.

Explore Your Anionic Surfactant Possibilities



Phosphate Esters

- TRITON H-55 Surfactant
- TRITON H-66 Surfactant
- TRITON QS-44 Surfactant

TRITON H-55, TRITON H-66 and TRITON QS-44 specialty surfactants are unique anionic hydrotropes that provide solubilization for nonionic surfactants in low to highly built cleaner systems. They are more efficient and effective than sodium xylene sulfonate (SXS). These products are stable in acid and alkaline formulations. TRITON QS-44 surfactant also provides good detergency.

Alkyl Diphenyl Oxide Disulfonates (ADPODS)

- DOWFAX Surfactants

DOWFAX specialty anionic surfactants are stable in acid-, bleach-, and caustic-based cleaning formulations. Low visible residue makes them particularly well-suited for window, mirror and other cleaning formulations that must dry clear without streaking. Other performance attributes include excellent rinsability, solubility, hard water tolerance, and rapid dissolution. Specialty cleaning product grades available in both liquid and powder forms include DOWFAX Detergent and DOWFAX Hydrotrope.



Chelating Surfactants

- **HAMPSHIRE Chelating Surfactants**

HAMPSHIRE N-acyl ED3A chelating surfactants are unique anionic formulating ingredients that combine the surface activity of a surfactant with the sequestering action of a chelating agent in a single molecule. HAMPSHIRE chelating surfactants can be used to formulate a variety of highly effective yet mild cleaners. Examples include hard surface cleaners, high alkaline cleaners, metal cleaners and polishes, dishwashing rinse aids, and laundry detergents.

Sulfosuccinates

- **TRITON GR Series Surfactants**

TRITON GR-Series anionic surfactants are also known as dioctyl sulfosuccinates. These products offer excellent wetting and dispersing properties and are used in industrial and institutional cleaning applications as well as drycleaning. They are compatible with a wide range of solvents from water to hydrocarbons.



N-Acyl Sarcosines

- **HAMPOSYL Surfactants**

HAMPOSYL N-acyl sarcosinate surfactants are mild anionic products that provide high foam, hard water tolerance, surface substantivity, and detergency. HAMPOSYL surfactants are compatible with nonionic, other anionic, and cationic surfactants. Cleaning product applications for HAMPOSYL surfactants include rug shampoos, corrosion inhibitors in aerosol sprays, hand dishwashing detergents, and specialty detergents.

Match One or More DOW Surfactants to Your Performance Requirement

DOW surfactants include products designed to provide a wide range of valuable functional contributions to cleaning product formulations. Refer to the table below to identify the most likely Dow solutions to meet your functional requirements.

If you require...	We recommend...	Because...
Surface Tension and Wetting	<ul style="list-style-type: none"> • TERGITOL 15-S Series • TERGITOL TMN Series • TRITON XL-80N • TRITON CG-110 • TRITON GR Series • HAMPOSYL Sarcosinates 	<p>DOW surfactants efficiently reduce surface tension to very low values, effectively improving water wetting of surfaces, including oily or greasy surfaces.</p>
Detergency	<p><u>Oily soils:</u></p> <ul style="list-style-type: none"> • TERGITOL 15-S Series • TRITON XL-80N • TRITON X Series • TERGITOL TMN Series • TERGITOL NP Series <p><u>Particulate soils:</u></p> <ul style="list-style-type: none"> • DOWFAX Surfactants • HAMPOSYL Surfactants • TRITON GR Series 	<p>DOW surfactants can handle all kinds of cleaning challenges from oily-greasy soils to ground-in particulate soils on all types of surfaces. Our nonionic surfactants provide superior detergency performance on oily soils. The anionic surfactants are better suited for particulate soils. TERGITOL NP Series surfactants provide cost-effective detergency on soft surfaces, whereas TRITON X Series surfactants are supreme in hard surface cleaning applications. Blends of nonionic surfactants and anionic surfactants can form powerful detergents for a broad range of soils.</p>
Foam Enhancement or Control	<p><u>High Foam:</u></p> <ul style="list-style-type: none"> • HAMPOSYL Surfactants • TRITON X-200 • TRITON BG-10 • TRITON CG-110 <p><u>Moderate Foam:</u></p> <ul style="list-style-type: none"> • TERGITOL 15-S Series • TRITON X Series • DOWFAX Detergent <p><u>Low Foam:</u></p> <ul style="list-style-type: none"> • TRITON CF Series • TRITON DF Series • TERGITOL MinFoams 	<p>Whether you are formulating a high foam product such as a hand dishwashing detergent, or a product such as an automatic dishwash detergent requiring little or no foam, a DOW Surfactant can meet your needs. Choose from among high, moderate, or low foaming options to optimize your foam performance.</p>
Coupling/Hydrotroping	<ul style="list-style-type: none"> • DOWFAX Hydrotrope • TRITON H-66 • TRITON H-55 • TRITON QS-44 	<p>DOW surfactants provide excellent solubilizing and cloud point modification. These hydrotropes improve the solubility of surfactants in water, particularly in systems containing high levels of builders or alkalinity.</p>
Emulsification	<p><u>Low HLB:</u></p> <ul style="list-style-type: none"> • TERGITOL NP-4 to NP-7 • TRITON X-15, X-35, X-45 • TERGITOL 15-S-3, 15-S-5 <p><u>Moderate HLB:</u></p> <ul style="list-style-type: none"> • TERGITOL NP-9 to NP-15 • TRITON X-114 to X-165 • TERGITOL 15-S-7 to 15-S-15 <p><u>High HLB:</u></p> <ul style="list-style-type: none"> • TERGITOL NP-30 to NP-70 • TRITON X-305 to X-705 • TERGITOL 15-S-20 to 15-S-40 	<p>Dow offers surfactants with a wide range of HLB values. Low HLB surfactants are oil-soluble, and can help solubilize water-soluble species into non-aqueous systems. Higher HLB surfactants are water-soluble, and allow water-insoluble species to be coupled into aqueous systems. Use products with moderate HLBs to improve detergency. Low HLB surfactants will improve degreasing and oily soil removal.</p>



If you require...	We recommend...	Because...
Compatibility with Acids, Bases	<u>Acid Stable:</u> <ul style="list-style-type: none"> • DOWFAX Surfactants • TRITON CF Surfactants • TRITON DF Surfactants • TERGITOL MinFoam • TERGITOL MDS-42 <u>Base Stable:</u> <ul style="list-style-type: none"> • DOWFAX Surfactants • TRITON CF • TRITON DF • TERGITOL MinFoams • TRITON BG-10 • TRITON CG-110 • HAMPOSYL Surfactants 	<p>Certain DOW surfactants offer important stability in acid and alkaline environments. They reduce the chance of phase separation, agglomeration, and precipitation and ensure product uniformity and storage stability. Products suitable for dry and liquid formulations are available.</p>
Bleach Compatibility	<ul style="list-style-type: none"> • DOWFAX Surfactants • TRITON X-200 	<p>DOWFAX surfactants are compatible with hypochlorite and peroxide bleaches, even in liquid formulations. Products formulated with these surfactants exhibit exceptional shelf life compared to formulations containing most other surfactants.</p>
Low Visible Residue, Non-Streaking, Clarity	<ul style="list-style-type: none"> • DOWFAX Surfactants • TRITON BG-10 • TRITON CG-110 	<p>These DOW surfactants rinse readily and leave low visible residue on glass and shiny surfaces, making them excellent choices for window and windshield cleaners, rinse aids, and non-rinse products requiring high clarity and non-streaking performance.</p>
Low Irritancy	<ul style="list-style-type: none"> • HAMPOSYL Surfactants • TRITON X-200 • TRITON CG-110 	<p>If you require a surfactant that won't dry or irritate, these mild surfactants are the answer. These TRITON surfactants have been used in hand creams, personal care products, and hand dish detergents. HAMPOSYL surfactants offer exceptional mildness, suitable even for baby shampoos.</p>
Reversibility with pH	<ul style="list-style-type: none"> • TRITON RW Series 	<p>Choose DOW surfactants when you want to use pH to control wetting, foaming, or emulsification. The unique structure of TRITON RW Series surfactants allows you to control your cleaning performance by modulating the pH. And when the cleaning solution must be treated as waste, you can simply lower the pH and separate the emulsified oil from the water.</p>
Aqueous Viscosity	<ul style="list-style-type: none"> • TERGITOL MDS-42 • TRITON TMN Series • TRITON XL-80N • TERGITOL 15-S Series 	<p>These DOW surfactants provide lower aqueous viscosities, narrow gel ranges, and rapid aqueous dissolution rates to enhance handling and formulation of cleaning products.</p>



Select the DOW Surfactant that Suits Your Needs

DOW Surfactant Selection Guide

Category	Applications	TERGITOL 15-S Series	TERGITOL TMN Series	Low Foam Surfactants	TRITON BG-10 & CG-110	TRITON X Series	TERGITOL NP Series	TRITON XL-80N	TRITON RW Series	DOWFAX Surfactants	HAMPSHIRE Surfactants	TRITON GR Series	HAMPOSYL Surfactants
Household	Dishwash and Rinse Aids			•						•	•		
	Car Wash and Car Care	• _{1,2,3}	•			• _{1,2,3}		•				•	
	Floor and Carpet Care	• _{1,2,3}	•	•						•			•
	Hand Dishwash				•						•		•
	Hard Surface Cleaning	• _{1,2}	•		•	• _{1,2}	• _{1,2}	•		•	•	•	•
	Laundry	• _{1,2}			•		• _{1,2}	•					•
	Prewash Spotter	• _{1,2}					• _{1,2}	•					
Industrial & Institutional	Commercial Dishwash and Rinse Aids			•							•		
	Commercial Laundry						• _{1,2}	•	•				
	Food and Dairy Process Cleaner			•	•			•		•			
	Electronic/Precision Cleaner	• _{1,2}	•	•		• _{1,2}		•		•			
	Janitorial Cleaners	• _{1,2}	•			• _{1,2}		•		•			
	Metal Cleaners	• _{1,2}	•	•		• _{1,2}	• _{1,2}	•	•			•	
	Transportation Cleaners	• _{1,2}		•		• _{1,2}	• _{1,2}	•	•	•			
Floor and Carpet Care	• _{1,2}	•	•				•		•		•		

1. Oil-soluble surfactants, oil emulsifiers (HLB values 3-10)
2. All-purpose wetting agents and detergents (HLB values 10-15)
3. Highly water-soluble emulsifiers and stabilizers (HLB values >15)





Look to Dow for a Wide Array of Cleaning Product Ingredients



In addition to DOW Surfactants, The Dow Chemical Company also supplies a variety of other high performance formulating ingredients for cleaning products, including:

- CARBOWAX™ PEGs and MPEGs
- DOW Polyglycols (including PPGs)
- CELLOSIZETM Hydroxyethyl Cellulose
- DOWANOL* Glycol Ethers and CELLOSOLVE™ and CARBITOL™ Solvents
- DOWICIL*, DOWICIDE*, AQUICAR™, BIOBAN™ and UCARCIDE™ Antimicrobials, Biocides, and Preservatives
- DOW Specialty Alkanolamines
- POLYOX™ Water-Soluble Resins
- VERSENE* Chelating Agents

Contact your Dow representative or distributor to learn more about specific solutions to your formulation requirements.

Contact Dow Today for the Surfactant Solutions and Support You Need

Dow stands ready to support its surfactants customers with product and applications technical assistance, starting point formulations, regulatory information and the other support you may require. To access our cleaning product experts, just contact the number for your area, listed on the back of this brochure.

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DOW Surfactants

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Printed in January, 2002

