



Dow Consumer & Industrial Solutions

TRITON™ CG-425 Alkyl Polyglucoside Surfactant

TRITON™ CG-425 offers good wetting and detergency properties, exhibits low streaking and filming, and produces stable foam.



Derived from plant-based materials and mild to the skin, Dow TRITON™ CG-425 Alkyl Polyglucoside Surfactant has been developed for a range of all-purpose household and industrial cleaners to offer a variety of desirable end-use benefits.

TRITON™ CG-425 is readily biodegradable and eligible for listing on CleanGredients, providing all conditions are met and compliant with DfE criteria.

Benefits offered:

- Excellent wetting properties
- Excellent reduction of surface tension
- Hard water tolerance
- Very compatible
- Non-streaking
- Favorable ecotoxicological profiles
- Made from renewable materials (including alcohols derived from natural sources and sugar)
- Readily biodegradable
- Alkyl chain length distribution, C8-C14, <1% C16

Chemical

Name: Alkyl Polyglucoside

Description

Surfactant Type: Nonionic; Alkyl chain length distribution, C8-C14, <1% C16

Recommended Applications

- Hand Dishwash Detergents
- Hard Surface Cleaners
- Highly Alkaline Detergents
- Floor Strippers
- Glass Cleaners
- Bathroom Cleaners
- Drain Cleaners
- Bottle Washing
- Grill Cleaners*
- Window Cleaners*

* A starting point formulation for this application is included in this brochure.



Product Information

Solubility and Compatibility

- Soluble in water
- Soluble in concentrated electrolyte solutions
- Chemically stable in presence of acids, bases and salts
- Compatible with anionic, cationic and other nonionic surfactants

Storage and Handling

If crystallization or sedimentation occurs when stored at temperature below 15°C, the product can be heated and stirred until uniform before use. The maximum storage temperature is 40°C.

Preservation

- TRITON™ CG-425 has high pH 11.5–12.5, free of preservatives
- Based on this high pH, TRITON™ CG-425 as supplied is not readily subject to microbial growth or bacterial or fungal activity

TRITON™ CG-425 Surfactant Product Information

Chemical Description: Name: Alkyl Polyglucoside | Surfactant Type: Nonionic

Typical Physical Properties	Avg
Actives % / Solvent	51.0 / water
Cloud Point ⁽¹⁾	> 100°C
CMC ⁽²⁾ / Surface Tension ⁽³⁾	61.0 / 28.8
Foam Height ⁽⁴⁾	140
Pour Point (°C)	-18
Form ⁽⁵⁾	Yellowish Slightly Cloudy Liquid
pH, 1% aq solution	11.9
Viscosity at 25°C (77° F), cP	478.0
Density at 25°C (177°F), g/mL	1.10
Flash Point, Closed Cup, ASTM D93	None
Draves 25 sec wetting conc. Wt% at 25°C	0.18
Magnesium levels, typical	< 50 ppm

(1) Cloud Point: C, 1% Aqueous, (2) Critical micellization concentration: ppm at 25°C, (3) Surface Tension: dynes/cm at 0.1% actives, (4) Ross-Miles foam height: mm at 0.1% actives 25°C, (5) Form at 25°C.

These are typical properties, not to be construed as specifications.

TRITON™ CG Alkyl Polyglucoside Surfactant Comparison

Chemical Description: Name: Alkyl Polyglucoside | Surfactant Type: Nonionic

Typical Physical Properties	TRITON™ CG-50	TRITON™ CG-425	TRITON™ CG-600	TRITON™ CG-650
Actives %/Solvent	50.0/water	50.0/water	50.0/water	50.0/water
Cloud Point ⁽¹⁾	> 100°C	> 100°C	> 100°C	> 100°C
CMC ⁽²⁾ / Surface Tension ⁽³⁾	87.1/28.7	61.2/28.8	74.3/28.7	67.2/28.7
Foam Height ⁽⁴⁾	112/112	140	80/80	110/110
Pour Point (°C)	0	-18	6	-18
Form ⁽⁵⁾	Yellowish Slightly Cloudy Liquid	Yellowish Slightly Cloudy Liquid	Viscous Liquid	Liquid
pH, 1% aq solution	10.9	11.9	11.8	11.9
Viscosity at 25°C (77° F), cP	3000	478.0	1643*	2193*
Density at 25°C (177°F), g/mL	1.08	1.10	1.09	1.11
Flash Point, Closed Cup, ASTM D93	None	None	100°C (est)	100°C (est)
Draves 25 sec wetting conc. Wt% at 25°C	0.13	0.18		

(1) Cloud Point: C, 1% Aqueous, (2) Critical micellization concentration: ppm at 25°C, (3) Surface Tension: dynes/cm at 0.1% actives, (4) Ross-Miles foam height: mm at 0.1% actives 25°C, (5) Form at 25°C.

These are typical properties, not to be construed as specifications.

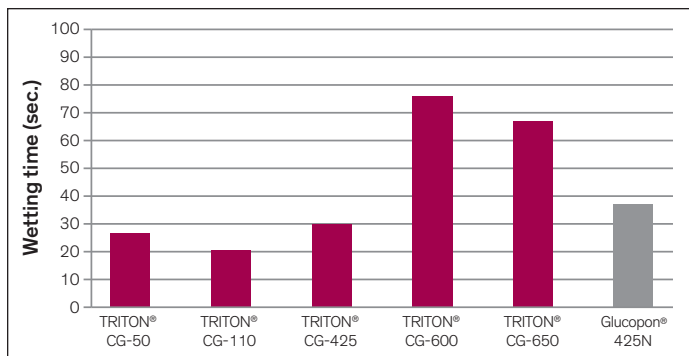
Note: Glucocon® is a trademark of BASF Corporation.

Physical Property Comparisons

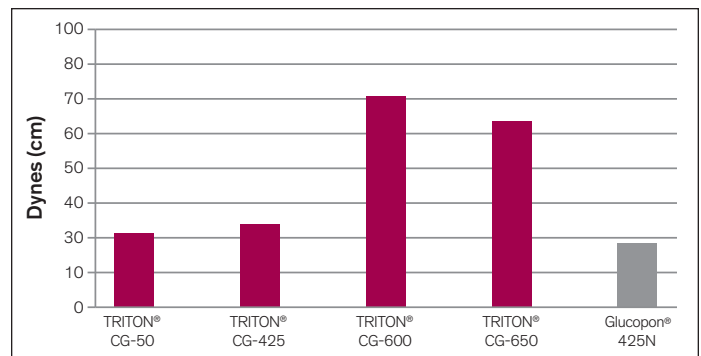
Surface tension is a contractive tendency of the surface of a liquid that allows it to resist an external force. Surfactants actually reduce the surface tension of water. By reducing surface tension, the surfactant solution is better able to wet surfaces and remove soils from surfaces. All the TRITON™ Alkyl Polyglucosides have very similar surface tensions and are comparable to the Glucopon® surfactants.

The Draves Wetting Test illustrates the efficiency of a wetting agent based on the time required for a standard skein of cotton yarn carrying a standard weight to sink in a water solution of that wetting agent. The shorter the wetting times, at the specific concentration and temperature, the faster the cotton will be wetted by the surfactant solution.

Draves Wetting
0.15% Actives Solution at 25°C



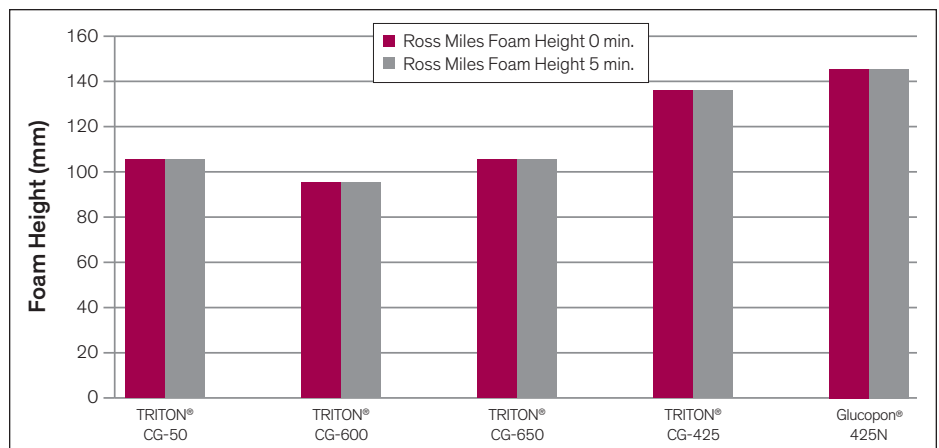
Equilibrium Surface Tension Comparison



Note: Draves test measures the ability of a surfactant solution to displace air from a weighted skein of cotton by spreading wetting. Shorter wetting times indicate more efficient wetting.

Foaming is an important parameter of surfactants for hard surface cleaning applications. The presence of bubbles is a sensory signal to the consumer that the cleaning agents are available to remove soils from a given substrate. The test method shown in this chart covers the determination of foaming properties of surface-active agents. Glass tubing apparatus for this test method shall include pipette and a receiver. (ASTM D1173-63)

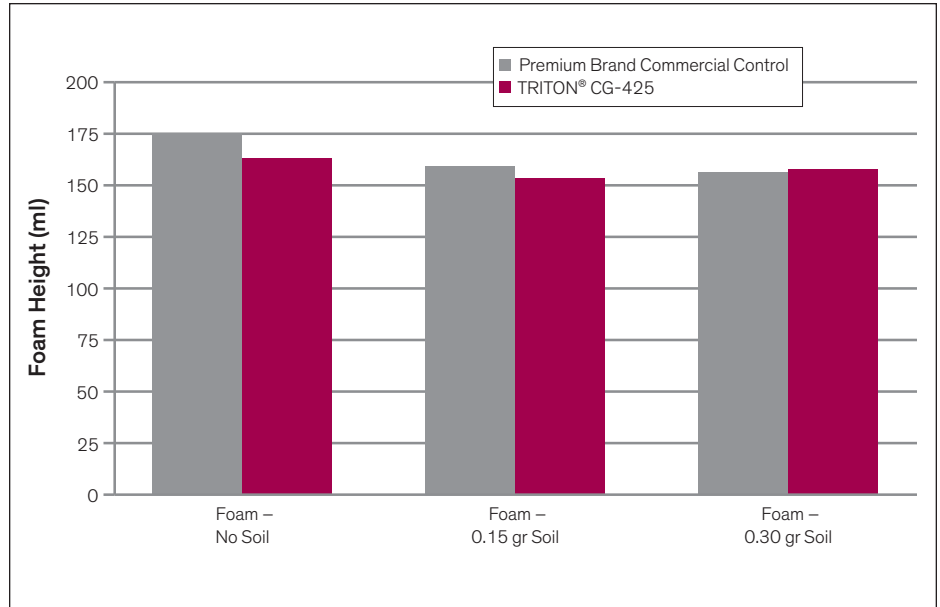
Ross Miles Foam Height Comparison – 0.1% actives



Hand Dish Wash – Premium Formulation

Consumers prefer foamy, clean dishwater – and this formulation for a premium hand dishwash product yields the end-use benefits customers desire. As the chart indicates, in a complete formulation, the foam height with or without food soil present is comparable to a control formulation. The presence of foam is a sensory indicator of cleaning effectiveness – and it also provides a more luxurious experience for consumers.

TRITON™ CG-425 formulation has comparable foam height in the presence of food soil vs. Premium Control Formulation with Lauryl Myristyl Diethanolamide. The TRITON™ CG-425 formulation exhibited notably better clarity than the control despite not having Ethanol and Sodium Xylene Sulfonate as a hydrotrope.

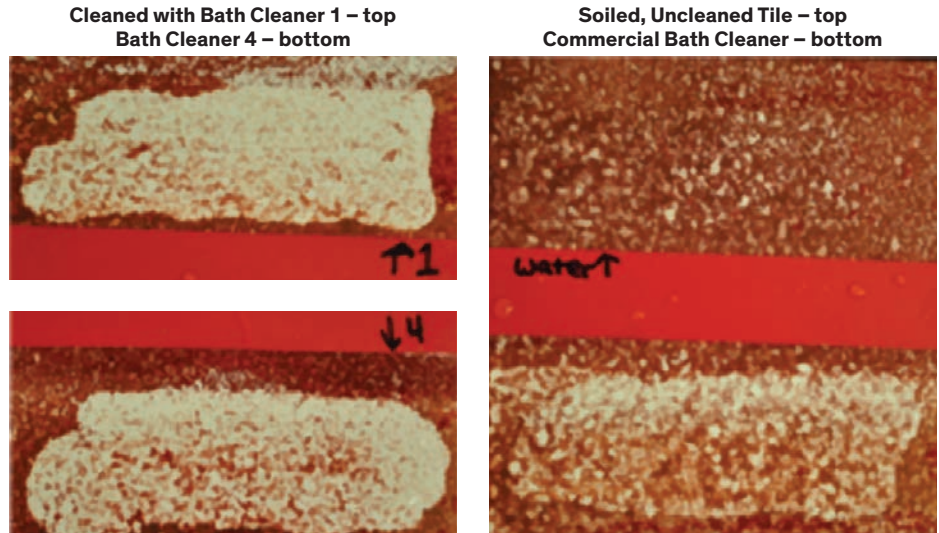


	Premium Control	TRITON™ CG-425 Premium Formulation
Linear Alkyl Benzene Sulfonate, Na salt	13.50	13.50
Sodium Alcohol Ethoxylate Sulfate	6.00	6.00
TRITON™ CG-425 Alkyl polyglucoside	–	3.00
Lauryl Myristyl Diethanolamide	3.00	–
Ethanol	4.00	–
Sodium Xylene Sulfonate (40%)	3.00	–
Deionized Water	65.88	65.88
ACUSOL™ 805S Rheology Modifier	2.00	2.00
AMP-95™ Multifunctional Neutralizer	0.49	0.49
Clarity, NTU	123	21

Bathroom Cleaner: Soap Scum Test on Tiles

TRITON™ CG-425 was compared to Glucocon® 425N in a formulated bathroom cleaner. Soiled bathroom tiles were scrub tested and visually observed for soil removal. TRITON™ CG-425 was comparable to Glucocon® 425N, and both performed better than a commercial bathroom cleaner.

- Formulas are stable at 50°C and have minimal filming and streaking.
- TRITON™ CG-425 is comparable in performance to Glucocon® 425N in a lab prepared formulation.
- A formulation with TRITON™ CG425 showed an improvement over a commercial bathroom cleaner.



	Bath Cleaner 1	Bath Cleaner 4
Acetic Acid	3.00	3.00
VERSONAL™ 120	1.00	1.00
Butyl Carbitol™	1.50	1.50
DOWANOL™ PnP	1.50	1.50
TRITON™ CG425	3.00	
Glucocon® 425N		3.00
Water	90.00	90.00
	100.00	100.00

Procedure

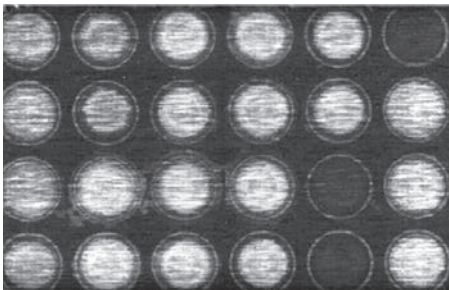
Formulations were scrubbed 10 times on a scrub tester and visually assessed for performance.



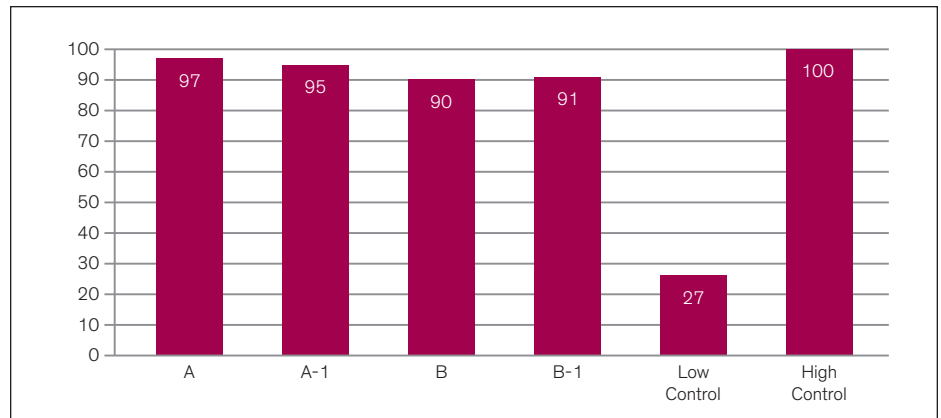
Hard Surface Cleaner (SCiD Test)

In two separate formulations, TRITON™ CG-425 was compared to Glucocon® 425N and the internal High and Low controls. The TRITON™ CG425 demonstrated similar performance to the Glucocon® 425N, and to internal low performing and high performing controls.

- Hard Surface Cleaner formulations with TRITON™ CG425 have similar whiteness index compared to the high control formulation.



Normalized SCiD Results



	Hard Surface Cleaner A	Hard Surface Cleaner A-1	Hard Surface Cleaner B	Hard Surface Cleaner B-1
DiPA	0.50	0.50	1.00	1.00
DOWANOL™ DPnB	1.00	1.00	–	–
Hexyl CELLOSOLVE™	–	–	1.00	1.00
DOWANOL™ TPG	–	–	1.00	1.00
EcoSurf™ EH-6	–	–	1.00	1.00
EcoSurf™ EH-3	2.00	2.00	–	–
TRITON™ CG-425	2.00	–	1.00	–
Glucocon® 425N	–	2.00	–	1.00
NaOH	0.20	0.20	–	–
Water	94.30	94.30	95.00	95.00

Handling Precautions

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

This communication is for release only in the United States and Canada.

Learn More

While this bulletin can serve as a brief introduction to the home care capabilities of Dow, it cannot begin to anticipate the many questions you may have about how we may help you bring a breakthrough product to light. With that in mind, contact us at the numbers below .

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