Choosing the right hydrotrope for liquid cleaners

Product selection guide

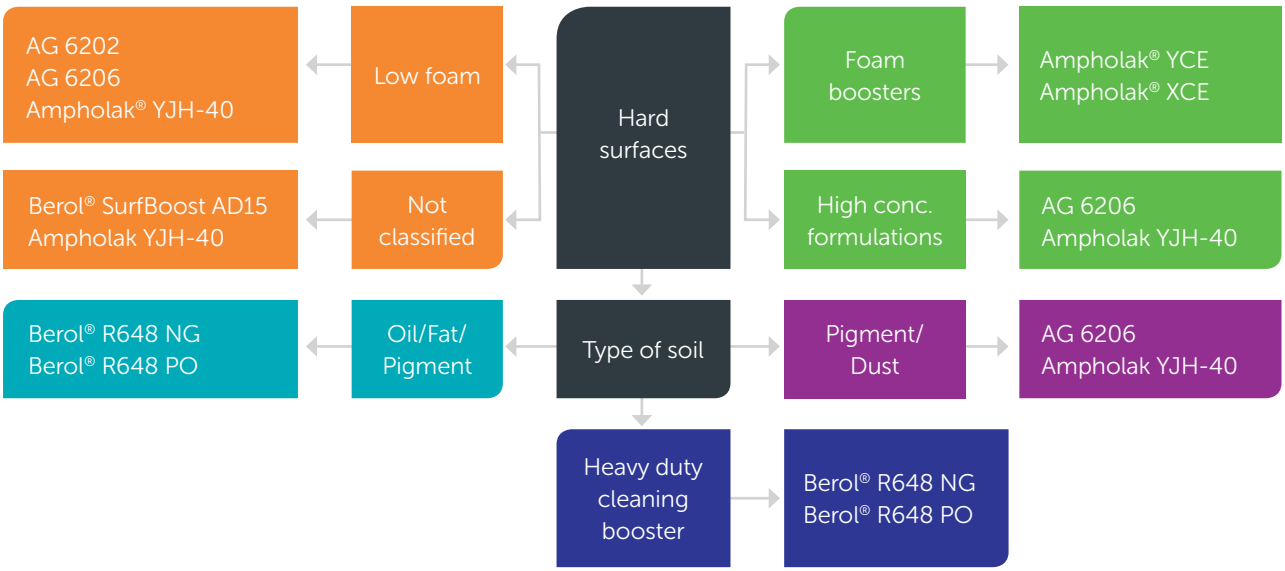
Nouryon

Essential ingredients for efficient water-based products

Choosing the right hydrotrope

Hydrotropes are organic compounds that increase the solubility of a surfactant in a formulation. Traditional hydrotropes, such as sodium cumene sulfonate, bring no additional value to the cleaning process.

Multifunctional hydrotropes are cosurfactants that bring additional value to formulations in synergy with the primary surfactant. High performance at low concentration, foam control, tolerance to alkali and electrolytes, minimal impact on the environment and low human and aquatic toxicity are examples of such additional benefits.



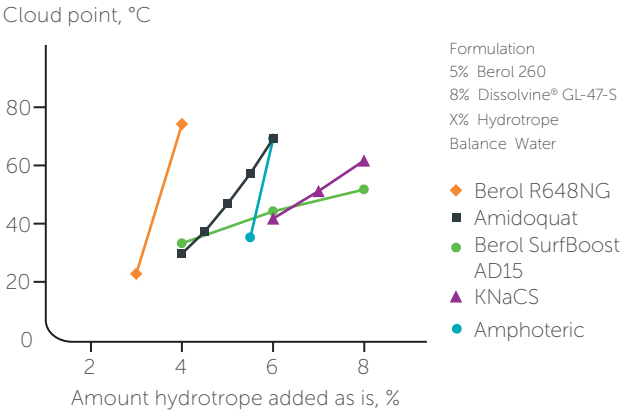
Product name	Foam height, mm* immediately	after 5 min	CLP, GHS**	Type	Readily biodegradable	Anaerobic biodegradability
AG 6202	8	0	-	Alkyl glucoside	R	Y
AG 6206	0	0	-	Alkyl glucoside	R	Y
Ampholak XCE	150	150	Not classified	Amphoteric	R	Y
Ampholak YCE	125	120	-	Amphoteric	R	O
Ampholak YJH-40	15	0	Not classified	Amphoteric	R	O
Berol R648 NG	32	3	-	Cationic surfactant	R	N
Berol R648 PO***	32	3	-	Cationic surfactant	R	N
Berol SurfBoost AD15	30	10	Not classified	Alkyl amide ethoxylate	R	Y

* According to Ross-Miles, 50°C, 0,05%
** CLP (Classification, Labeling and Packaging of substances and mixtures)
GHS (Globally Harmonized System of classification and labeling of chemicals)
*** Vegetable based product available with RSPO Mass Balance certification

R = Readily biodegradable according to OECD guidelines
Y = Biodegradable under anaerobic conditions
O= The ingredient has not been tested or data is missing
N = Not biodegradable under anaerobic conditions

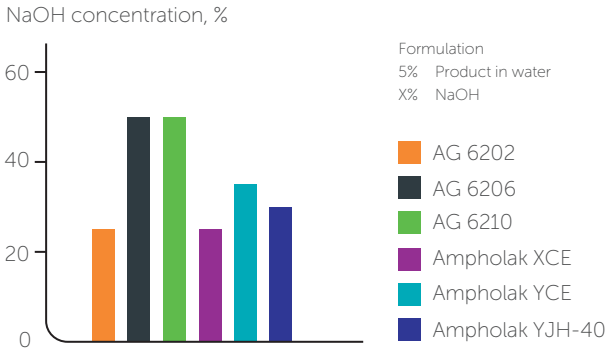
Hydrotropic effect

The requisite amount of hydrotrope depends on the amount and cloud point of the nonionic, but also on the amount and type of builders.



Solubility of hydrotropes in NaOH solution

Alkyl glucosides and amphoteric hydrotropes can be successfully used in concentrated salt and alkali formulations.



Boosting degreasing at room temperature

Black box cleaning test on kitchen soil, dilution 1:10

Amphoteric Amidoquat KNaCS Berol SurfBoost AD15

Black box cleaning test on train soil, dilution 1:80

Berol R648 NG Amphoteric Amidoquat KNaCS

Boosting cleaning performance using only

0.5%	Nonionic
0.8%	Complexing agent
0.36%	Hydrotrope

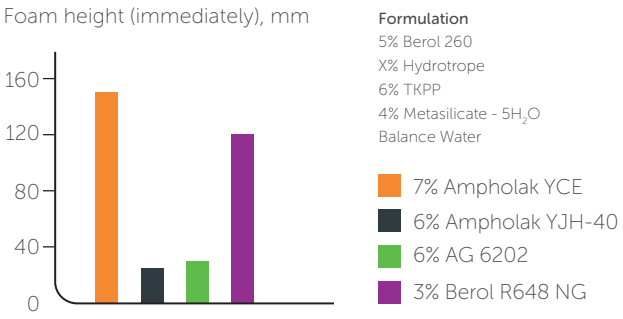
pH adjusted to 10 with citric acid

Boosting cleaning performance using only

0.06%	Nonionic
0.1%	Complexing agent
Variable	Hydrotrope added at level to provide formulation with a cloud point of >70°C

Foaming in "Vindan"

Ampholak YJH-40 and AG 6202 give low foam when combined with a low foaming nonionic surfactant. If extremely low foam is required, Berol 840 can be used in the formulation instead of Berol 260.



Temperature: 20°C; Concentration: 5 g/l; Water hardness: 4°dH

Contact us directly for detailed product information and sample request at cleaning@nouryon.com

USA and Canada
Chicago, USA
T +1 312 544 7000

South America
Itupeva, Brazil
T +55 11 4591 8938

Central America and Caribbean
Mexico City, Mexico
T +52 55 5261 7895

China
Shanghai, China
T +86 21 2220 5000

South East Asia
Singapore
T +65 6635 5183

India
Mumbai, India
T +91 22 6842 6700

Europe
Stenungsund, Sweden
T +46 303 850 00

Middle East
Dubai, United Arab Emirates
T +971 (0) 4 2471500

Russia
Moscow, Russia
T +7 495 766 1606

About Nouryon

We are a global specialty chemicals leader. Markets worldwide rely on our essential chemistry in the manufacture of everyday products such as paper, plastics, building materials, food, pharmaceuticals, and personal care items. Building on our nearly 400-year history, the dedication of our 10,000 employees, and our shared commitment to business growth, strong financial performance, safety, sustainability, and innovation, we have established a world-class business and built strong partnerships with our customers. We operate in over 80 countries around the world and our portfolio of industry-leading brands includes Eka, Dissolvine, Trigonox, and Berol.

For more information visit **surfacechemistry.nouryon.com**

Nouryon

00554_260919