

# Berol DGR 81

*Environmentally Improved Nonionic Surfactant for a Wide Range of Water Based Cleaning Applications*

## The new environmentally adapted generation of cleaning products

Berol DGR 81 is an optimized blend of environmentally adapted nonionic surfactants based on alkylglucoside and alcohol ethoxylate.

Berol DGR 81 is low to medium foaming depending on concentration and temperature and can be used in applications where low foam is required.

Berol DGR 81 can, and should if possible, be used as the only surfactant, but it is compatible with all other types of surfactants, if for example more foam is desired.

Berol DGR 81 has very good wetting and cleaning properties. A water based alkaline cleaner based on Berol DGR 81, as the only surfactant, and an appropriate complexing agent, has extremely good cleaning and degreasing properties. It can in many applications even replace a solvent based cleaner.

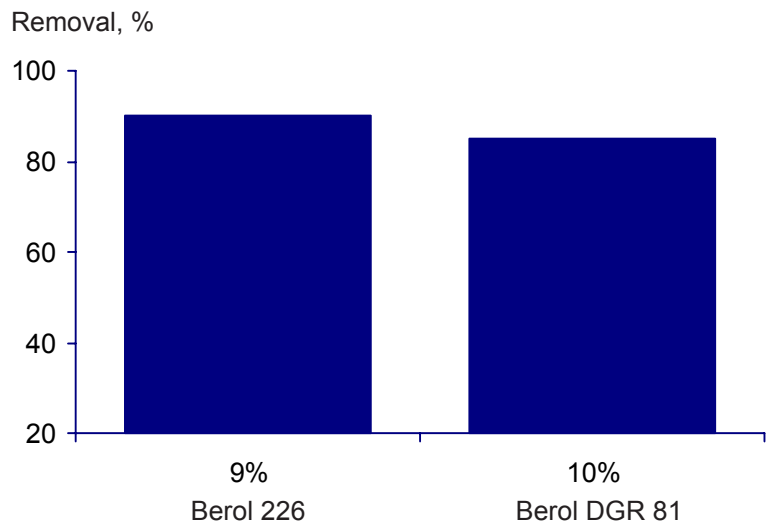
The solubility of Berol DGR 81 in water increases with increased concentration of electrolytes, which makes it possible to formulate very high concentrated cleaning products. Berol DGR 81 is even soluble in 40% NaOH, where other sufficient surfactants are impossible to solubilize.

Berol DGR 81 in 40% NaOH shows good wetting properties on Parafilm.

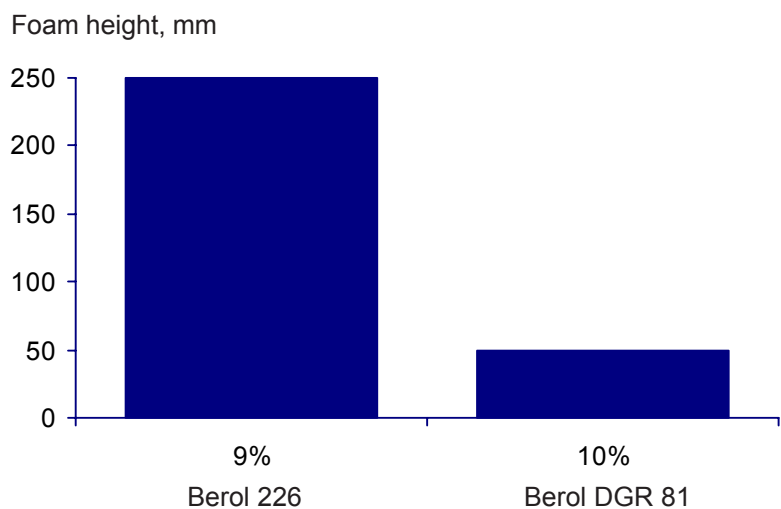
Berol DGR 81 is suitable for use in vehicle cleaning in all types of machines, both in high pressure and brush machines. Low concentrations of Berol DGR 81 are not soluble in water which helps the "drying" effect when rinsing with water. This poor solubility in low concentrations also contributes to a very good oil separation in the waste water.

Berol DGR 81 can also be used in weak/strong acid conditions.

### Cleaning "Black box test"



### Foaming



### Conditions (both graphs)

Temp: 20°C      Conc: 50 g/l

9-10% Surfactant  
6% TKPP  
4% Na-metasilicate 5H<sub>2</sub>O  
rest Water

## Applications

- Vehicle cleaning
- Food industry cleaning
- Engineering cleaning
- All purpose cleaning
- Acid cleaning
- Off-shore cleaning
- Oven cleaning
- Smokehouse cleaning

## Manufacturing procedure

Berol DGR 81 is designed to be used as the only surfactant together with a complexing agent and if required sodium hydroxide. More information about the solubility of Berol DGR 81 can be found in the Product Information sheet.

1. Start with the water
2. Dissolve the salts
3. Add Berol DGR 81
4. Mix

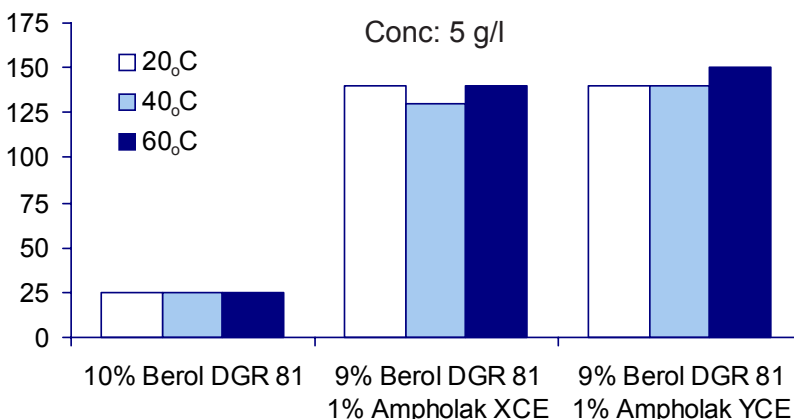
Check the temperature of the clarity interval.

## Acid cleaner

4%	Berol DGR 81
20%	Phosphoric, Citric or Hydrochloric acid
rest	Water

## High foaming formulation

Foam height, mm

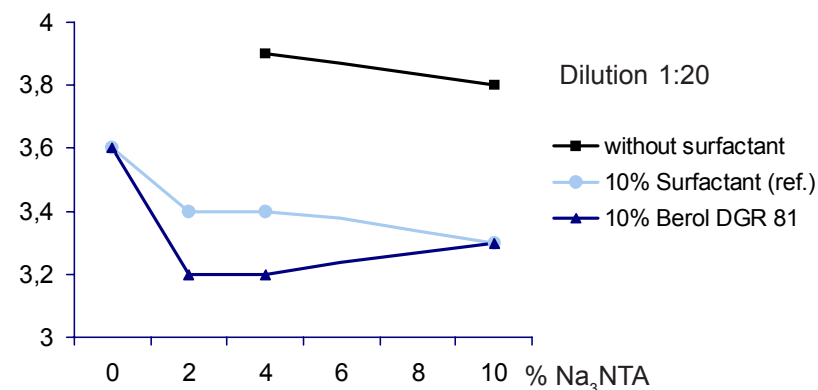


Formulation:

10%	Surfactant
9%	Na <sub>3</sub> NTA
Rest	Water

## High pressure cleaning with different amounts of Na<sub>3</sub>NTA

Residuals left (loss of lightness)



Tests have shown that 4% Na<sub>3</sub>NTA and 10% Berol DGR 81, diluted 1:20, is enough for obtaining a good result at high pressure cleaning.

## Heavy duty cleaners

	A %	B %	C %	D %	E %	F %	G %
Berol DGR 81	>10	>10	>10	>25	>35	>3	>5
Na <sub>3</sub> NTA (92%)	-	-	15	10	20	-	-
TKPP	10	6	-	-	-	-	-
Na-metasilicate 5H <sub>2</sub> O	-	4	-	-	-	-	-
Sodium carbonate	-	-	-	5	-	-	-
NaOH	-	-	-	-	-	40	20
Water	80	80	75	60	45	55	75
pH (10% solution)	~10	~12	~11.5	~11	~11.5	>13	>13

The formulations recommended in the brochure are to be seen as guidelines. Akzo Nobel strongly recommends the customer to check fitness for purpose in each individual case.

For additional information and assistance,  
please contact your local Akzo Nobel Sales Representative  
or consult our website at

**[www.surfactants.akzonobel.com](http://www.surfactants.akzonobel.com)**

