

Berosol™ EC Easy-clean solutions

Easier next time cleaning through
surface modification



AkzoNobel

Tomorrow's Answers Today



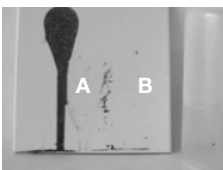
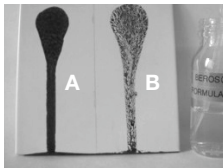
New multifunctional cleaning technology

Berosol™ EC is an optimized surfactant blend that offers a way to introduce easy-clean benefits to hard surface cleaning formulations through temporary hydrophilic surface modification. Berosol™ EC can be used to clean ceramic tile, glass or porcelain in the form of ready to use or concentrated formulations, sprays and wipes.



Berosol™ EC provides for easier removal of greasy soils from ceramic tile

Test Method: Surface was treated with the formulation, sprayed and wiped. 1 gram of soil* was weighed on each side (untreated and treated). Tile was held in vertical position for 15 sec then rinsed carefully with water.



CLEANER APPLIED

- A** Control (untreated)
- B** Treated with Berosol™ EC formulation

*Soil: Lambert soil, vegetable oil and water



Target consumer convenience with Berosol™ EC – a multifunctional hard surface cleaner that modifies surfaces while cleaning and generates “easy-clean” behavior.

What is Berosol™ EC?

- A multifunctional, readily biodegradable, and water soluble cleaning product
- Easy to formulate with builders, complexing agents, acids and many other surfactants
- Berosol™ EC is an optimized surfactant blend that delivers long-lasting cleaning properties
- Berosol™ EC is TSCA listed

Why use Berosol™ EC?

- To make hard surface cleaners that modify surfaces while cleaning to generate “easy-clean” behavior:
 - Less effort to clean next time around, and/or
 - Less frequent cleaning required
- To deliver anti-soiling and anti-fogging properties to surfaces:
 - Prevents soil deposition by making surfaces very hydrophilic
 - Provides excellent wetting properties which will prevent fogging on glass windows and mirrors
- Surfaces cleaned with formulations containing Berosol™ EC:
 - Resist soap scum build-up
 - Greasy soil is more easily removed

TYPICAL PROPERTIES OF BEROSOL™ EC

Active content	50%
Appearance, 20°C	Liquid
pH, 1% in water	6 - 8
Clear point	-2°C
Density, 20°C	1095 kg/m ³
Viscosity, 20°C	230 cP
Surface tension (0.1% solution)	28.3 mN/m

SOLUBILITY

Ethanol, isopropyl alcohol, low aromatic solvent, propylene glycol	Insoluble
Water	Soluble

SURFACE ACTIVE CHARACTERISTICS

Foam height, 50°C, 0.05% (Ross-Miles)	Immediately 140 mm, After 5 min. 100 mm
Surface tension, 25°C, 0.1% DI 53 914 (Du Noüy)	30 mN/m
Wetting power, 25°C, 0.1% (Draves)	95 sec

A clean deal: Add Berosol™ EC to the mix and add value to your cleaners!

Recommended applications

- Hard surface cleaners for kitchens and bathrooms
- Glass and mirror cleaners
- All-purpose cleaners and wipes
- Dilutable concentrated cleaners



Guideline formulations

READY-TO-USE KITCHEN CLEANER/ALL-PURPOSE ALKALINE CLEANER

Ingredient	A	B	C
Berosol™ EC	2.0	2.0	2.0
Berol® 260 SA	-	0.5	-
Na ₄ EDTA (40%)	1.0	-	-
Na ₄ EDTA (40%) or Trisodium citrate	-	1.0 0.5	-
Trisodium citrate, 100%	-	-	0.5
Water	97.0	to 100.0	97.5
Cloud point, °C	>60	>40	>60
pH	11	8.5-11	8.5

CONCENTRATED ALKALINE CLEANER

Ingredient	D	E
Berosol™ EC	10.0	10.0
Na ₄ EDTA (40%)	5.0	-
Trisodium citrate	-	2.5
Water	85	87.5
Cloud point, °C	>40	>40
pH	10.5	8.5

Dilution 1:5

ACIDIC CLEANER/TOILET BOWL CLEANER

Ingredient	F
Berosol™ EC	2.0 - 10.0
Citric, phosphoric or hydrochloric acid	2.0 - 40.0
Water	Balance
Cloud point, °C	>60

Can be used in different dilutions depending on end concentration needed in your formulation

WINDOW CLEANER

Ingredient	G
Berosol™ EC	2.0
Na ₄ EDTA (40%)	0.5
IPA	3.0
Propylene glycol	0.5
Water	Balance

Hydrophilic surface modification

Ceramic tile, porcelain and glass surfaces that are hydrophilically modified with Berosol™ EC resist soap scum build-up and allow for easier removal of greasy soils.

- Hydrophobic soil has less affinity for treated surface
 - Slides off more easily and easier to rinse
 - Shorter cleaning time, less effort required to clean
- Not permanent, but surfaces need cleaning less often
- Added benefit: moisture attracted to hydrophilic surface
 - Forms film instead of droplets
 - Anti-fogging effect on glass and mirrors





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