

MAKON[®] NF-180

MAKON NF-180 is a nonionic surfactant designed for low-foaming and defoaming applications. The performance properties of **MAKON NF-180** make it well-suited for both elevated- and low-temperature institutional and industrial (I&I) warewash rinse aids and home dishwasher rinse aids.

The combined properties of:

- fast wetting,
- low surface tension, and
- defoaming

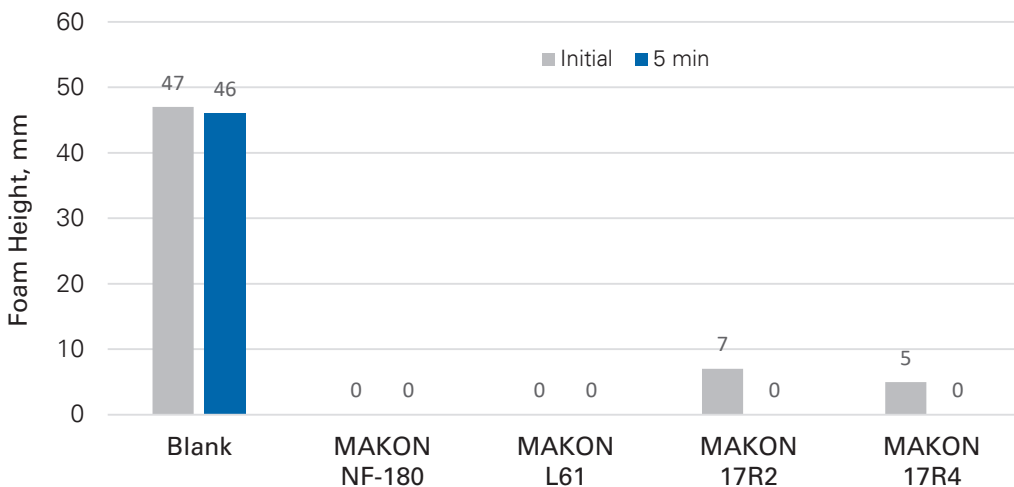
reduce filming, streaking and spotting by allowing water to sheet off of flatware, glasses and dishes.

Properties	MAKON NF-180
Actives, %	100
Molecular Weight, g/mol	2562
Cloud Point, °C (°F), (1% aqueous)	18 (65)
Cloud Point, °C (°F), (5g in 25g Butyl Carbitol 25%)	34 (94)
Pour Point, °C (°F)	-7 (19)
Surface Tension (0.1% aqueous), dynes/cm	32.6
Solubility in Water at 25°C (77°F)	Soluble >11 wt%

High Shear Foam Behavior

Along with having a low-foam profile, **MAKON NF-180** exhibits defoaming characteristics. The Defoaming Blender Method shows the foam behavior under high shear conditions with food soil and alkalinity at elevated temperatures. **MAKON NF-180** performs similarly to other nonionic surfactants designed for low-foaming and defoaming applications.

High Shear Defoaming at 50°C



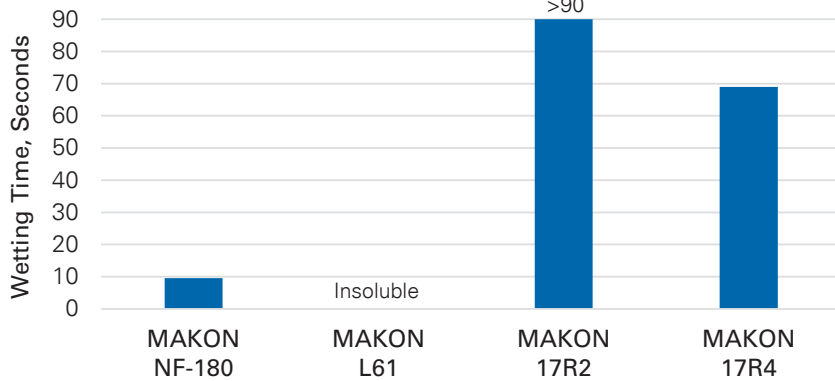
Stepan Defoaming Blender Method:

Test solution: 0.02 wt% surfactant, 1 wt% NaOH (sodium hydroxide), and 2 wt% fresh egg white in deionized water (Blank = no surfactant present)
For method details, contact North America Technical Service at (800) 745-7837.

Rapid Wetting

Rinse aids improve the wetting of flatware, glasses and dishes by reducing the contact angle on these surfaces. **MAKON NF-180** is a fast-wetting, nonionic surfactant, making it an excellent choice for rinse aid applications.

Draves Wetting at 25°C



Draves Wetting Method:
ASTM D2188-10, 0.1 wt% in deionized water



Starter Formulations

Rinse aids provide a sheeting action to enhance the drying time and shine on dishes. These two starter rinse aid formulations contain **MAKON NF-180** and citric acid, which helps prevent calcium salt deposits left behind by hard water and food soils. These ingredients work in harmony to leave your dishes, glassware and utensils spot and film free.

Versatile Rinse Aid Formulation No. 1342

Ingredient	% by weight
Deionized Water	q.s. to 100
MAKON NF-180	15
STEPANATE® SCS	10
Citric Acid	5
Colorant, Preservative	q.s.

Typical Properties

Appearance at 25°C	Clear liquid
Viscosity at 25°C, cps	<50
Cloud Point (as is), °C (°F)	75 (167)
Cloud Point (1% aq. by wt), °C (°F)	33 (91)

Low-Temperature Rinse Aid Formulation No. 1343

Ingredient	% by weight
Deionized Water	q.s. to 100
MAKON NF-180	40
STEPANATE SCS	10
Citric Acid	5
Colorant, Preservative	q.s.

Typical Properties

Appearance at 25°C	Clear liquid
Viscosity at 25°C, cps	<150
Cloud Point (as is), °C (°F)	82 (180)
Cloud Point (1% aq. by wt), °C (°F)	34 (93)

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