Ingredients +Specialties

From UnivarSolutions

When cleaning becomes challenging

May 2026

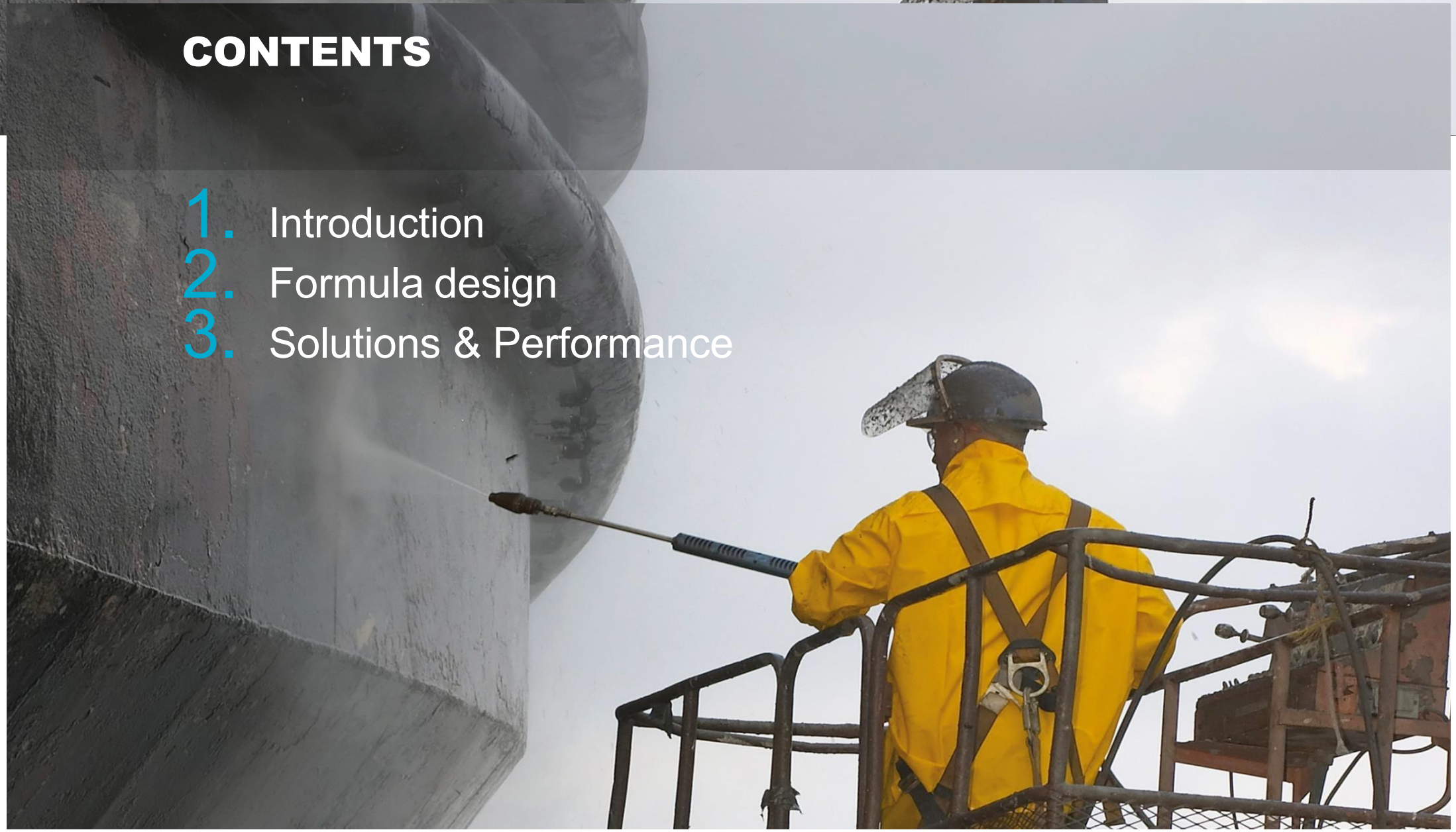
In Partnership with Kao Chemicals

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Introduction

Industrial & Institutional

Industrial & Institutional (I&I) cleaning is one of the most challenging areas for surfactants.

DIFFERENT TYPES OF:	IT REQUIRES…	IN ORDER TO…
Soils Processes of cleaning Formulation environments	good understanding of the cleaning mechanism for each application	address our customers towards the right product to formulate

TOWARDS SUSTAINABLE DEVELOPMENT

Kao's principles:
Safe and sustainable products to guarantee the future

Full commitment to sustainability and in an endeavor to achieve optimal performance

Biodegradable products in accordance with Regulation EC 648/2004

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Formula Design

Selection of ingredients

Ingredients have different properties:

- Properties must be balanced by a careful selection of ingredients

To achieve the best cleaning effect



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Emulsifying & Wetting

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Emulsifying & Wetting

DANOX® 511-B & DANOX® DB-1

Optimised surfactant solutions with strong emulsifying effect for use in water based I&I cleaning products

Properties

Stability	Stable under all conditions
Cleaning	High degreasing efficiency No anti-foam effect
Formulability	Solubilizes electrolytes Compatible with anionic, cationic and non ionic surfactants Compatible with all cleaning ingredients
Raw Material	Low cloud point (by cooling)

Applications

- Metal cleaning (spraying and dipping)
- All-purpose cleaners
- Workshop cleaners
- Professional kitchen cleaners
- Acid cleaners for aluminium, stainless steel, sanitary…
- Industrial degreasers
- Car Wash (pre-wash)

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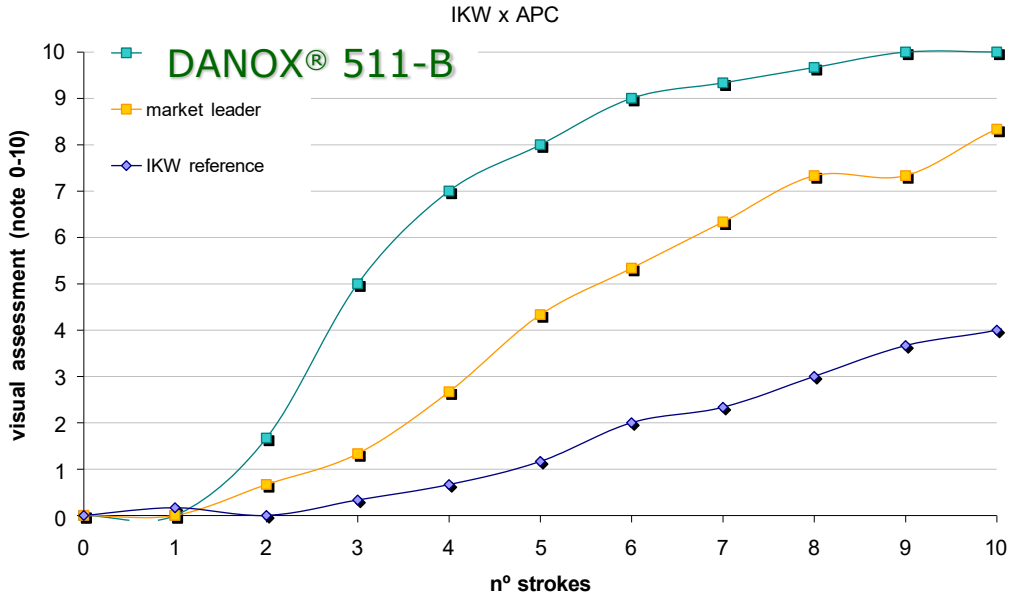
Emulsifying & Wetting

Performance

IKW TEST METHOD for Kitchen degreasers



IKW test method



Model formulation	%
FINDET® 10/18 Wetting	2.5
DANOX® 511-B Cleaner	1.0
TKPP	1.2
MEA	3.0
PnB	5.0
Deionized Water	Up to 100
pH	11.4

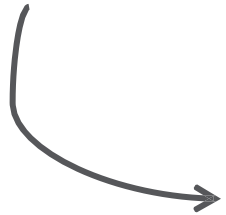
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Emulsifying & Wetting

FINDET® 10/18

INCI name: Deceth-6

- Excellent wetting agent for I&I applications



Which improves the contact with the surface and therefore the detergency of the final formulation.

APPLICATIONS PROPERTIES

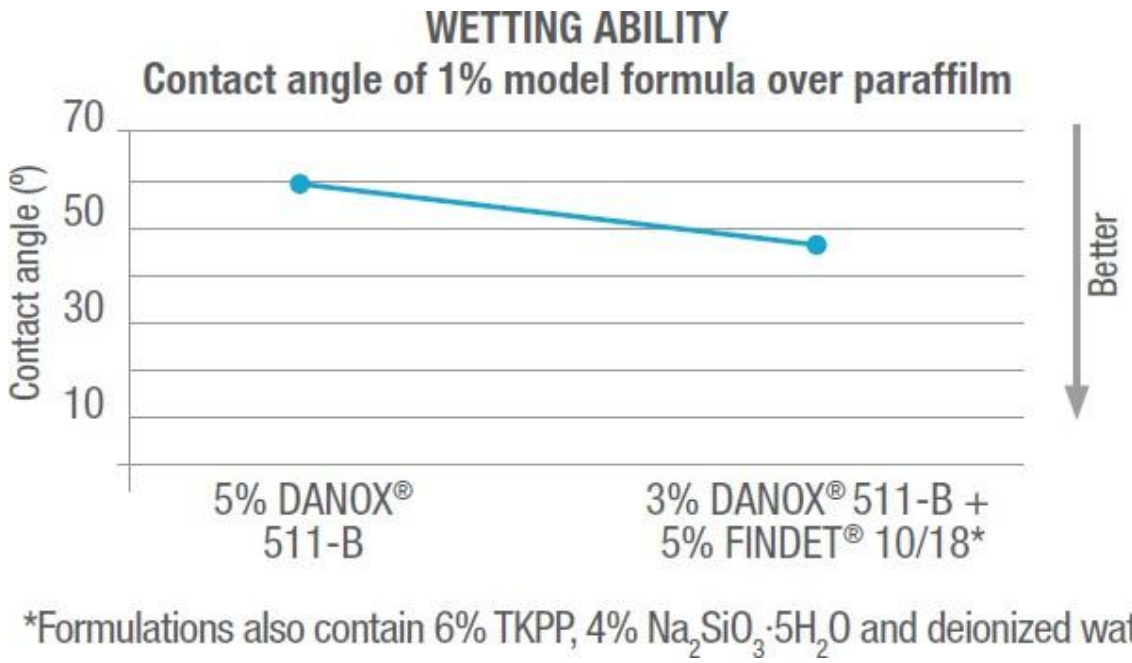
- Such as wetting, emulsifying and foaming, besides some solubilizing effect.
- Reduces the surface tension of water increasing the spreading ability of a detergent solution.

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Emulsifying & Wetting

Performance

In the graph, the lower contact angle, the better wetting and spreading ability.



*Formulations also contain 6% TKPP, 4% $Na_2SiO_3 \cdot 5H_2O$ and deionized water.

FINDET® 10/18 reduces the surface tension of water increasing the spreading ability of a detergent solution.

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Hydrotropy

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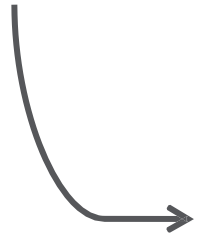
Hydrotropy

TETRANYL® DM-24

Chemical name: Quaternary ammonium compounds, alkyltrimethyl, methosulfate

Cationic hydrotrope recommended for water-based degreasing products in all kinds of electrolyte and alkaline systems

- Large quantities of builders and other electrolytes are used in I&I cleaners.



This medium gives hazy and poorly stable formulations with conventional non-ionic surfactants

To formulate clear and stable products, a hydrotrope is required:

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Hydrotropy

TETRANYL® DM-24

Properties

Stability	Stable under all conditions
Cleaning	Enhances the degreasing properties of DANOX® 511-B and DANOX® DB-1 Anti-static properties
Formulability	High hydrotrope effect Compatible with cationic and non-ionic surfactants Compatible with all kind of electrolites
Raw Material	Easy to handle – liquid and water soluble

Applications

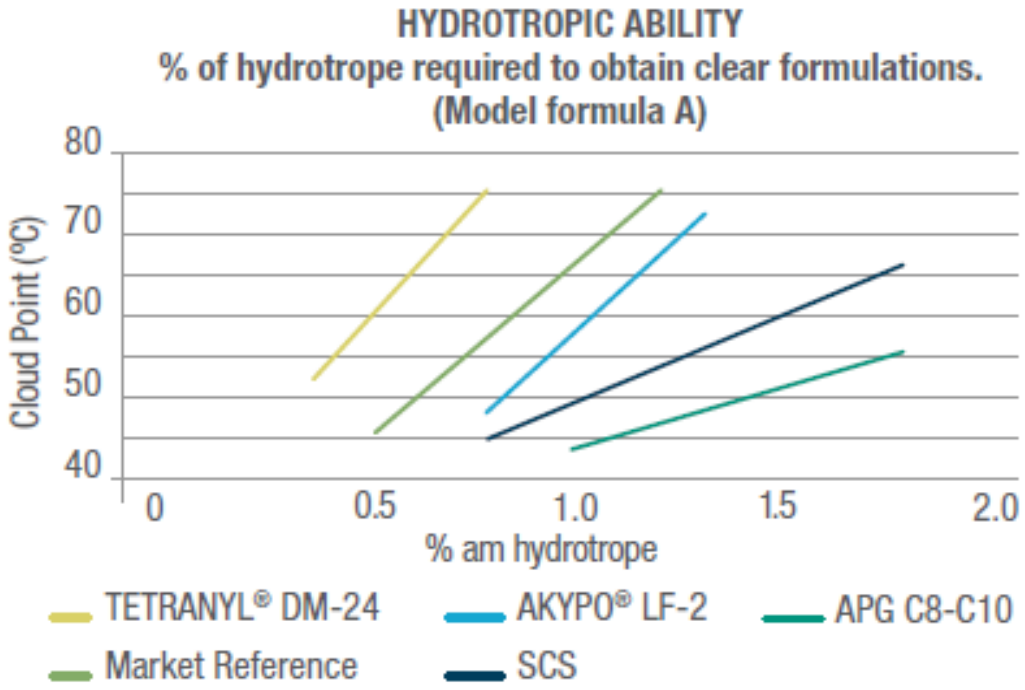
- Hydrotrope for water based degreasing products
- Hydrotrope for all electrolytes and alkaline systems
- Good emulsifier in rinse-aid formulations
- Hydrophobic compound in all purpose cleaners
- Corrosion inhibitor

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Hydrotropy

Performance



MODEL FORMULA A **%**

Emulsifier	x
MGDA-Na_3	6.0
FINDET® 10/18 Deceth-6	3.0
KOH	(pH = 13.0)
Deionized Water	Up to 100%

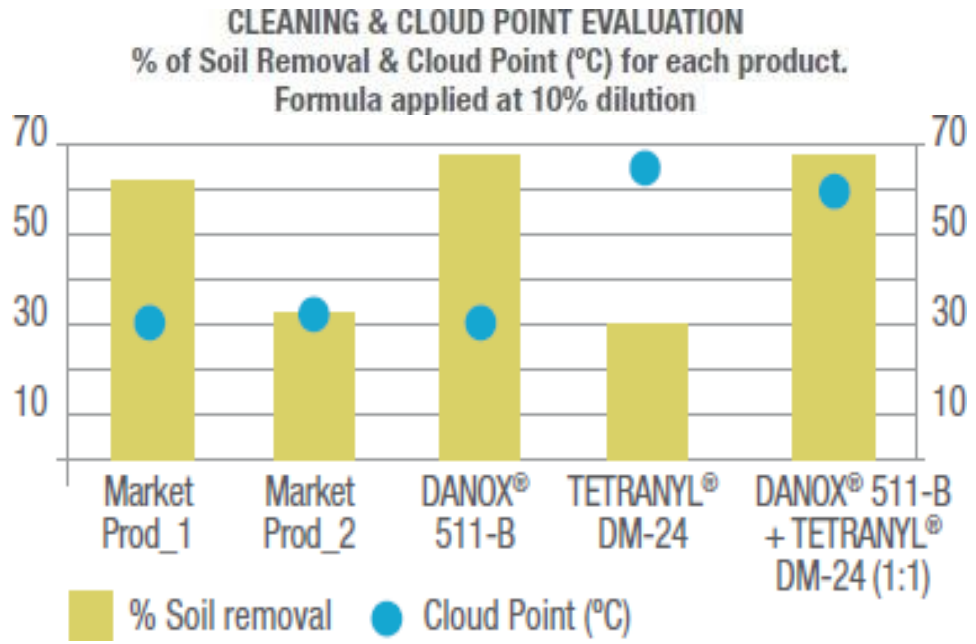
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Hydrotropy

Properties

TETRANYL® DM-24 + DANOX® 511-B

Synergistic combination. Outstanding effects in terms of cleaning and stability



MODEL FORMULA B	%
Hydrotrope	2.5
FINDET® 10/18 Deceth-6	2.5
NaTTP	3.0
MGDA-Na_3	3.0
Deionized Water	Up to 100%

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Dispersing & Low Foaming

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Dispersing & Low Foaming

AKYPO® LF range - Alkyl Ether Carboxylic acids

Low foaming surfactants with high dispersing and hydrotropic properties

Properties

Stability	Stable under all conditions Stable in presence of oxidizers and electrolytes
Cleaning	Exceptional dispersing ability and oil emulsifier Low foaming Enhances dispersing effect of builders Removes static dust
Formulability	High hydrotrope effect Compatible with anionic and non-ionic surfactants Compatible with all kind of electrolytes
Raw Material	Easy to handle – liquid and water soluble High active content product

Applications

- Specially recommended for vehicle cleaning
- High concentrated (≈ 90%)
- Touchless truck cleaning
- Institutional automatic dishwashing
- CIP cleaning
- Oven cleaners
- Low foaming acid cleaners
- Solubilizer for oxidizing formulations
- Hydrotrope in high alkaline formulations
- Limescale remover

AKYPO® LF-1	**C_8**	**5 EO**
AKYPO® LF-2	C_8	8 EO
AKYPO® LF-4	C_6 / C_8	3 + 8 EO
AKYPO® LF-6	C_4 / C_8	1 + 8 EO

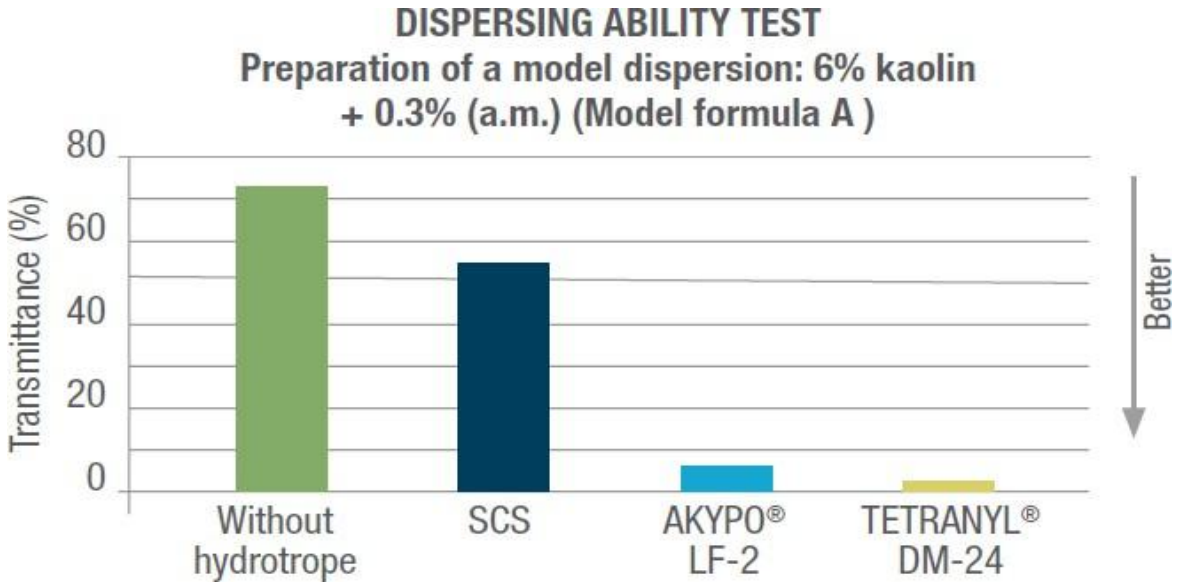
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Dispersing & Low Foaming

Performance

AKYPO® LF range: DISPERSING ABILITY



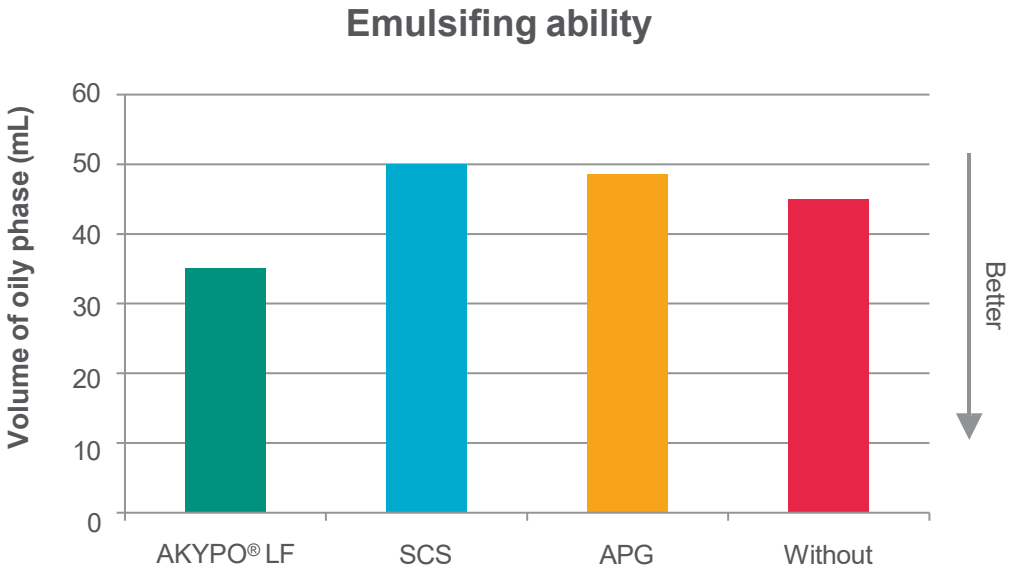
MODEL FORMULA A	%
Emulsifier	x
MGDA-Na_3	6.0
FINDET® 10/18 Deceth-6	3.0
KOH	(pH = 13.0)
Deionized Water	Up to 100%

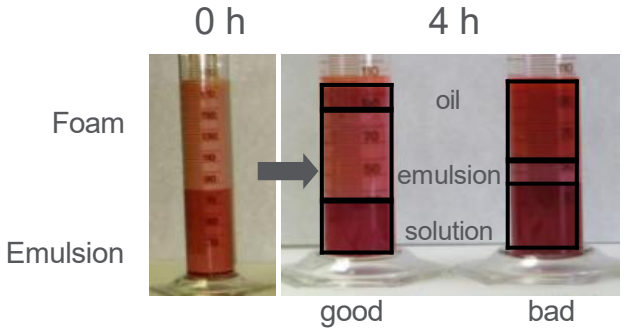
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Dispersing & Low Foaming

Performance

AKYPO® LF range: EMULSIFYING ABILITY





MODEL FORMULA A	%
Emulsifier	x
MGDA-Na_3	6.0
FINDET® 10/18 Deceth-6	3.0
KOH	(pH = 13.0)
Deionized Water	Up to 100%

AKYPO® LF shows the best emulsifying ability, improving emulsifying ability of POE-fatty alcohol.

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Foaming

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Foaming

The foam behavior of a cleaner is very much dependent on:

- **pH value, Electrolyte content, Surfactant type, Concentration**

We propose the following surfactants in regards to foam.

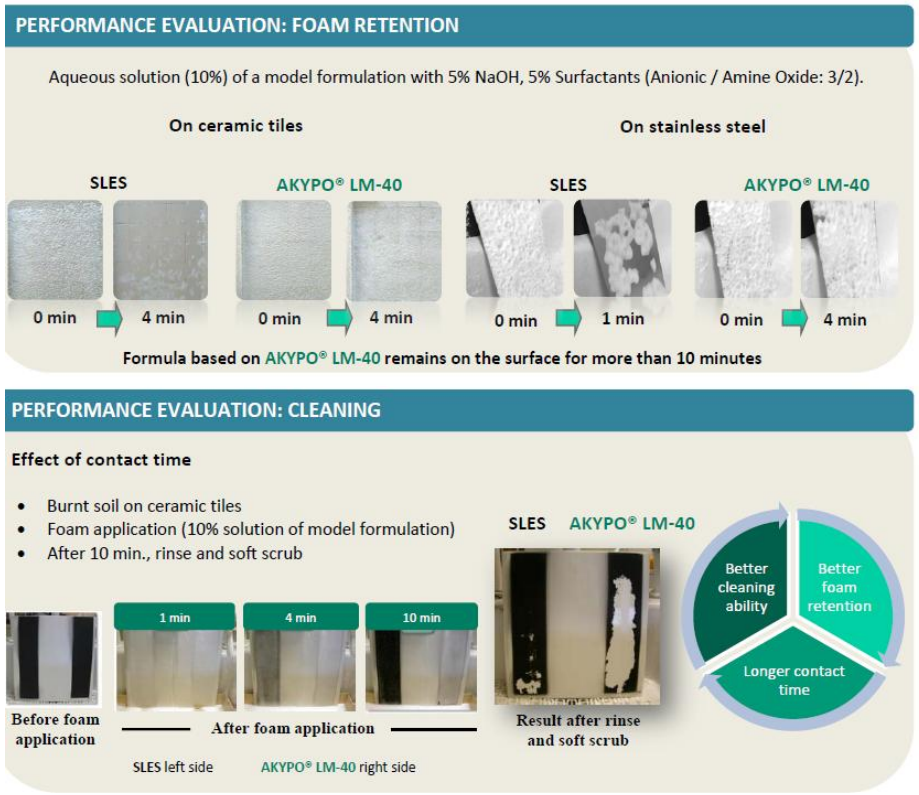
AKYPO® LM-40 - (Lauryl/Myristyl Ether Carboxylic Acid)

Outstanding foam retention in vertical cleaning

- Specially designed for vertical cleaning
- Outstanding foam retention in vertical cleaning
- Dense and stable foam at high pH
- Stable in extreme pH conditions
- Mild profile and good eco-toxicity & Unpreserved

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Foaming – AKYPO® LM40



Comparative performance of surfactants

in a model formula

FOAM RETENTION AFTER 5MIN

AKYPO® LM-40



SLES



LAS-Na



APG



Model formula (%am): 2%KOH + 2%TKPP + 2.5%DM-AO + 5% surfactant + q.s. water (pH~14) – 5% dilutions

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Foaming

BETADET® S-20 (Lauryl Hydroxysultaine)

High foaming amphoteric surfactant recommended for strong alkaline formulations

- Detoxifying effect. It decreases the irritation level of usual anionic surfactants
- Foam booster: it decreases the foam level and modifies the quality of the foam
- It performs as a viscosity modifier. It reduces the NaCl content in the formula
- It also acts as a dispersing agent for Ca^{2+} (Hard water)
- Better stability of final preparations at cold temperatures than CDEA

OXIDET® DMCLD - (Alkyl Dimethyl Amine Oxide)

Recommended for OPC and bleach formulations

- Good foam Booster
- Excellent fragrance solubiliser
- Thickener for chlorine-based bleaches

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Summary

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Selection of Ingredients

		CHEMICAL DESCRIPTION	Hydrotropy	Wetting	Hydrophobicity	Emulsifying	Dispersing	Foaming
Anionic	AKYPO® LF range	$C_4 - C_8$ Ether Carboxylic Acids	■			■	■	*
	AKYPO® LM-40	C_{12-14} Ether Carboxylic Acid		■		■	■	■
Amphoteric	OXIDET® DMCLD	Cocamine Oxide		■		■		■
	BETADET® S-20	Lauryl Hydroxysultaine		■		■		■
Cationic	TETRANYL® DM-24	Cocotrimethyl Ammonium Methosulfate	■		■	■	■	■
Non-ionic	FINDET® 10/18	Deceth-6		■		■		■
Blend	DANOX® 511-B	Proprietary mixture		■	■	■	■	■
	DANOX® DB-1	Proprietary mixture		■	■	■	■	■

■ High
■ Medium
■ Low
* Specially designed for low foaming applications
□ Not relevant

Summary of the surfactants offered by Kao Chemicals Europe for these applications, highlighting their most relevant properties.

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Ingredients +Specialties

From Univar Solutions

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