



AKYPO® LF types

Low foaming multifunctional bridge to water
(solubilizers / hydrotropes / couplers)

The AKYPO® LF products are ideal additives for low foaming metalworking and metal cleaning fluids.

MAIN PROPERTIES

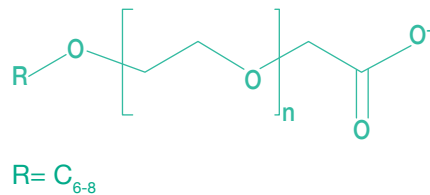
- Short alkyl chain (C₆₋₈) ether carboxylic acid
- Low foaming solubilizers
- Outstanding hydrotropic properties
- Electrolyte stability booster
- Liquid and easy to formulate

AKYPO® LF types are globally registered.

APPLICATION BENEFITS

- Synergistic effects with long chain AKYPO®, such as AKYPO® RO, by lime soap solubilization and low foaming
- Improve self emulsification of fluid (blooming)
- Improve tramp oil rejection
- Overall chemical stability
- Wettability modifiers supporting rinsing behavior (adjustment of the drip off behavior and improve removal of metal chips)

AKYPO® LF



ECO FRIENDLY PROFILE

- Sustainable product design
- Responsible production process (certified for safety and quality according to ISO 9001 and ISO 14001)
- Supports label-free and end-formulations
- Safe handling in metalworking and metal cleaning fluids (non-irritant to eye and skin as neutralized diluted product)
- Improved fluid longevity
- WGK 1 (German water hazard class 1)

Types	Chemical description	Hard water stability (in-house method)	Alkaline compatibility (% NaOH)	Low foaming ability	Hydrotropic properties (in-house method)	Wettability (0,1% in deionized water water with DSA from Krüss on steel)
AKYPO® LF 1	Capryleth-6 carboxylic acid	● ● ●	15	● ● ●	● ●	● ● ●
AKYPO® LF 2	Capryleth-9 carboxylic acid	● ● ●	10	● ● ●	● ● ●	● ●
AKYPO® LF 4	Hexeth-4 carboxylic acid + Capryleth-9 carboxylic acid	● ●	15	● ● ●	● ●	●
AKYPO® LF 10	Iso-Capryleth-9 carboxylic acid	● ●	10	● ● ●	● ●	● ●
AKYPO® TEC AM VG	Hexeth-4 carboxylic acid + Capryleth-9 carboxylic acid + Oleth-10 carboxylic acid	● ● ●	15	● ●	● ● ●	● ●





Self-emulsification and tramp oil rejection

AKYPO® LF has a positive effect on the self emulsification of the formulation and is beneficial for the tramp oil rejection behavior of metalworking fluids because of its hydrophilic and anionic structure.



Watch the performance:
<https://www.youtube.com/watch?v=4WEgLBMcT0c>



Electrolyte stability booster

5% MWF emulsion in 50°gH (890 ppm) Ca²⁺ water with standard co-emulsifier (picture A) and with AKYPO® LF 4 (picture B) was stored for 2 weeks and increased electrolyte conditions by the adjustment of 200°gH (2080 ppm) NaCl. AKYPO® LF stabilize the emulsion by lime soap solubilization.



A. Soap formation without AKYPO® LF



B. No soaps with AKYPO® LF

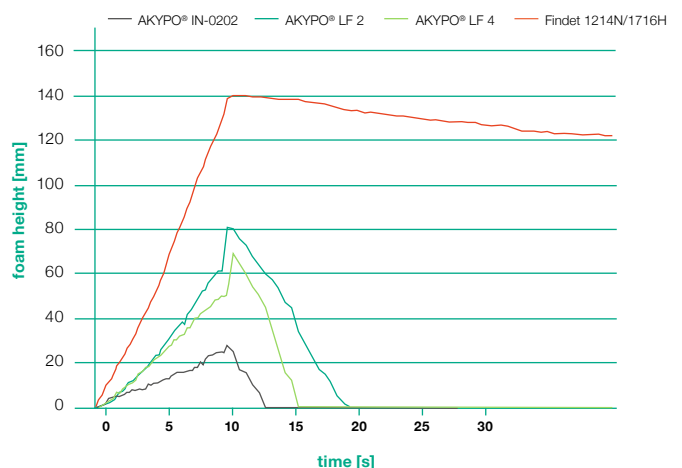
Hydrotropes for metal cleaning formulations

Neutral cleaner formulation	%
Tetrapotassiumpyrophosphate (TKPP)	1.0
FINDET 1214N-1716H (EOPO non-ionic) / AKYPO® LF2	0.5
H ₂ O	98.5
Total (Adjusted to pH=8)	100

FINDET 1214N-1716H (EOPO non-ionic) / AKYPO® LF2

	CP [°C]	Cloud Point ↓
100:0	28	
90:10	31	
75:25	39	
66:33	39	
50:50	41	
25:75	49	
10:90	58	

AKYPO® LF will increase the cloud point and make the cleaner formulation clear (hydrotropic effect). During cleaning the AKYPO® ethercarboxylic acids will help to disperse the dirt. AKYPO® LF can be used in (high) acid, (high) alkaline, chlorine and even peroxide based cleaners.



The information and recommendations in this publication are, to the best of our knowledge, reliable. However, nothing herein should be construed as a warranty or representation. Users should conduct their own tests to determine the applicability of this information or the suitability of any products for their own particular purposes. Statements concerning the use of the products described here are not to be construed as recommending the infringement of any patent, and no liability for infringement arising out of any such use is assumed.

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