



# Finnfix<sup>®</sup> LD carboxymethyl cellulose

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Biopolymer anti-redeposition aid  
for liquid laundry applications

**Nouryon**

# Finnfix® LD carboxymethyl cellulose

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Tried and tested carboxymethyl cellulose (CMC) anti-redeposition (ARD) technology now available for use in liquid laundry products.

For years, CMC has provided excellent anti-redeposition (ARD) performance in laundry powder systems ARD. The polyanionic water soluble polymers effectively bind to cellulosic fabric surfaces and repel the deposition of soils from the wash liquor – keeping white's white, and colors bright. Conventional CMCs typically become unstable over time when formulated into liquid laundry systems, requiring formulators to find alternative technologies to CMC ARD polymers.

Now, with Finnfix® LD CMC, we introduce the first CMC that is fully compatible with heavy duty liquid (HDL) laundry formulations. This concentrated liquid aqueous product (30-35% active) can be easily incorporated into liquid laundry systems, unlocking for the first time the exceptional ARD performance of CMC previously only available for powder laundry applications.

Finnfix® LD CMC also offers significant sustainability advantages versus polyacrylate or polyethylene imine technologies used broadly for this function in HDL today. These synthetic polymers are typically made from non-renewable resources, have high product carbon footprints and are not biodegradable.

Unlike synthetic polymers, Finnfix® LD CMC is produced primarily from renewable wood-based cellulose, has a low carbon footprint and is ultimately biodegradable. The product is benign, has no hazard labels, and is suitable for use in various Ecolabel compliant formulations. Finnfix® LD CMC also is as equally effective in low temperature laundry conditions as more conventional 40°C laundering.





## Performance benefits

- Only CMC suitable for liquid laundry formulations
- Superior whiteness retention for cellulosic fabrics, keeps white's white and colors bright
- Anti-dye transfer functionality
- Stain release in second wash
- Cold temperature performance and enzyme stable
- Advantaged dose effectiveness versus other ARD's for liquid laundry
- Easily pumpable concentrated liquid ingredient with high solids (30-35%), and low viscosity
- Easy incorporation into liquid formulations
  - Compatible with anionic/nonionic surfactants
  - Compatible with other polymers in the system
  - Top dose or include earlier in formulation development

## Sustainability benefits

- Natural biopolymer with >78% RCI
- Inherently, ultimately biodegradable
- Locally sourced raw material and production in Finland
- High activity product (30-35%)
- Weight-efficiency advantages versus synthetic ARDs
- Non-label ingredient
- Low-product carbon footprint
- Suitable for use in EU Ecolabel formulations
- Non-hazardous
- Non-GMO
- As effective in low temperature wash (10°C) as in standard temperature wash (40°C)



## Compatible with commercial laundry liquids



Finnfix® LD CMC no separation      Best commercial CMC separation      Regular purified CMC separation

Formulated with a commercial laundry liquid, top dosed with 1% active CMC

Finnfix® LD CMC is unique in that it can be incorporated into liquid laundry systems without showing phase separation. The above image shows what happens when conventional CMC is used, illustrating the superiority of Finnfix® LD CMC in formulation compatibility and addressing the concern of shelf stability.

Lab tests show the Finnfix® LD CMC can be top-dosed or incorporated earlier in the HDL formulation preparation process.

## Dose-effective solution

ARD aids are used to reduce the transfer of stains released from soiled clothing onto white or colored fabrics that were previously unsoiled. Insufficient use of ARD agents results in greying of whites and a dulling of colors over time. Fatty and oily soils in particular contribute to this problem.

The performance of Finnfix® LD CMC can already be observed at low dosages. The image below illustrates the ARD performance at different dosage levels for a pigmented oily soil onto a cotton knit swatch in a simulated wash condition using a tergotometer.

### ARD – Lamp black particulate soil ARD dose study with Finnfix® LD CMC



Commercial laundry liquid formulated with 1% active CMC  
Conditions: Tergotometer, 8 int.rep, 25°C, 18°dH, 1 cycle, 60 min wash + 15 min rinse  
(Ref. = Commercial detergent w/o CMC)

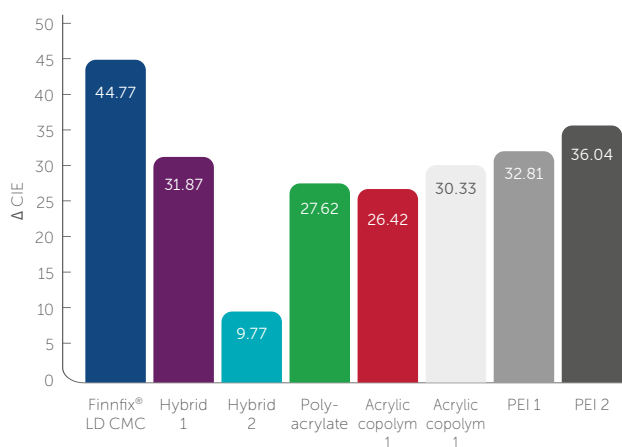




## Superior ARD performance

We compared Finnfix® LD CMC to various commercial polymeric products available on the market today, top dosed at 1% active ARD agent into a commercial HDL formulation that contained no ARD agent. The polymers were added at equal active level and tergotometer tests run to determine the change in whiteness ( $\Delta$  CIE).

Improved whiteness retention for a commercial household liquid detergent with added ARD's



Conditions: Tergotometer, 8 int.rep, 25°C, 18°dH, 1 cycle, cotton load, 60 min wash + 15 min rinse  
(Ref. = Same detergent w/o polymers)

As illustrated, Finnfix® LD CMC performs better than competitive polymers in the tested commercial HDL formulation. Finnfix® LD CMC also delivers this superior performance with a much stronger sustainability value proposition.

Finnfix® LD CMC provides differentiated anti-redeposition performance for liquid laundry systems, delivering:

- Outstanding anti-redeposition performance, especially on cotton and other cellulosic fabrics – keeping white's white, and colors bright
- A high-activity liquid biopolymer additive, easily blended and stable in liquid detergent systems
- A low product carbon footprint solution made from natural, renewable raw materials that biodegrade in the environment, without compromising performance, that is effective even in low temperature laundering



## Example formulation 1

Regular liquid laundry formulation with Finifix® LD CMC

Trade name	Description	%w/w	Supplier
<b>Finifix® LD CMC, 31%</b>	<b>Anti-redeposition agent</b>	<b>1.00</b>	<b>Nouryon</b>
Linear Alkylbenzene Sulfonate	Anionic surfactant	5.00	Generic
Sodium Lauryl Ether Sulfate (SLES), 27%	Anionic surfactant-neutralized	14.80	Generic
C <sub>12</sub> -C <sub>14</sub> alcohol ethoxylate EO 7	Nonionic primary surfactant	12.20	Generic
1,2-Propylene glycol	Solvent	3.00	Generic
C <sub>12</sub> -C <sub>18</sub> fatty acid (PKO or Coconut oil)	Soap	2.00	Generic
Citric acid, 50%	Buffer / Builder	4.00	Generic
Protease / Amylase / Mannanase / Cellulase	Enzymes	total 1	Generic
Sodium hydroxide, 50%	pH adjuster	~4.30	to pH 8.2
Water		to 100	

### Procedure

Start with water, add about 90% of the sodium hydroxide, followed by solvent and citric acid.

Add Finifix® LD CMC, it will dissolve easily into the formulation.

Add LAS at slower addition rate to prevent gel phase, mix 10 minutes.

Add nonionic surfactant and SLES.

Add fatty acid and adjust the pH to 8.0-8.5, with sodium hydroxide.

Cool down to room temperature.

Add enzymes, and other possible additives, top up to 100 parts with water.

Final pH should be 8.0-8.5.

### Direction of use

Dose 50 ml in the laundry machine and start the wash program.



## Example formulation 2

### Compact liquid laundry formulation with Finnfix® LD CMC

Trade name	Description	%w/w	Supplier
Finnfix® LD CMC, 31%	Anti-redeposition agent	1.00	Nouryon
Dissolvine® GL Premium	Chelating agent	1.00	Nouryon
Linear Alkylbenzene Sulfonate	Anionic surfactant	3.00	Generic
Sodium Lauryl Ether Sulfate (SLES), 27%	Anionic surfactant-neutralized	11.10	Generic
C <sub>12</sub> -C <sub>14</sub> alcohol ethoxylate EO 7	Nonionic primary surfactant	12.00	Generic
C <sub>12</sub> -C <sub>14</sub> alcohol ethoxylate EO 9	Nonionic primary surfactant	12.00	Generic
C <sub>12</sub> -C <sub>18</sub> fatty acid (PKO or Coconut oil)	Soap	1.00	Generic
Citric acid, 50%	Buffer / Builder	2.00	Generic
Protease / Amylase / Mannanase / Cellulase	Enzymes	total 1	Generic
Sodium hydroxide, 50%	pH adjuster	~2.20	to pH 8.2
Water		to 100	

### Procedure

Start with water, add about 90% of the sodium hydroxide, followed by solvent, citric acid and Dissolvine® GL Premium chelating agent.

Add Finnfix® LD CMC, it will dissolve easily into the formulation.

Add LAS at slower addition rate to prevent gel phase, mix 10 minutes.

Add nonionic surfactants and SLES.

Add fatty acid and adjust the pH to 8.0-8.5, with sodium hydroxide.

Cool down to room temperature.

Add enzymes, and other possible additives, top up to 100 parts with water.

Final pH should be 8.0-8.5.

### Direction of use

Dose 50 ml in the laundry machine and start the wash program.



Contact us directly for detailed product  
information and sample request  
website | [nouryon.com/markets/cleaning](https://nouryon.com/markets/cleaning)  
email | [cleaning@nouryon.com](mailto:cleaning@nouryon.com)

# Nouryon

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