



Alcoguard[®] H 5240



A high-performance sustainable,
bio-based polymer dispersant for
cleaning

Nouryon

Alcoguard® H 5240

Introducing novel and sustainable Alcoguard H 5240, a versatile and cost-effective dispersant. This product is based on unique and patented technology.

A greener, safer choice

Alcoguard H 5240 meets U.S. EPA Safer Product Standards and is approved to be included on the "Safer Choice" list for package labelling.

Alcoguard H 5240 is an amazing hybrid bio-polymer technology for the homecare market. Alcoguard H 5240, "inherently biodegradable" according to OECD (Organization for Economic Cooperation and Development) test #301 standards, is a marriage of selected polysaccharides and synthetic monomers reacted together, designed to prevent scale formation in detergent applications such as automatic dishwash, hard surface cleaning and laundry detergent systems. This polymer is particularly effective at minimizing filming and spotting in zero phosphonate automatic dishwasher formulations and is just as effective as acrylate/maleate co-polymers in detergents. Used in various applications, this effective dispersing agent is used for scale removal and control.

Environmental benefits

Diversify your supply chain with Alcoguard H 5240 polymer, primarily made from polysaccharides (not petrochemicals). This eco-premium technology performs similarly to widely available petrochemicals but is based on over 60% renewable resources and uses sustainable feedstocks. As a direct result, Alcoguard H 5240 has a significantly lower carbon footprint (lifecycle assessment available) than traditional petrochemical based polymers. Hybrid polymers are also biodegradable and have a low toxicity, which makes them an environmentally friendly alternative to traditional polymers.

Advantages of using Alcoguard H 5240

- High renewable carbon index, 64%
- Quick biodegradation of all polysaccharides
- Raw material source reduction and energy/water conservation during production

Alcoguard H 5240 is a perfect choice for the laundry, hard surface cleaning, manual dishwashing, ADW (automatic dishwashing) and detergent markets. It is a sustainable, greener choice for customers seeking a product that is safer for the environment and represents the next generation of hybrid polymers. It is also the first hybrid polymer that fulfills the DfE criteria for safer ingredients (lower toxicity, pollution prevention, raw material source reduction, reduction in exposures or releases, conserving energy and water).

Alcoguard H 5240 in Automatic DishWash (ADW)

In an ADW application, polymers are used as co-builders. They prevent the formation and the deposition of scales on dishes, glassware, cutlery, etc.

Polycarboxylates generally used in ADW formulations provide:

- Threshold stabilization (polymer sequesters Ca_2^+ and Mg_2^+ to prevent the formation of insoluble salts)
- Dispersion (polymers disperse particles using steric stabilization and electrostatic repulsion)
- Crystal growth inhibition

Alcoguard H 5240 provides the same functions as synthetic polycarboxylates in ADW formulations.

ADW formulation example - solid

Ingredient	%
Tri-Sodium Citrate – 2H ₂ O	30.0
Sodium carbonate	20.0
Sodium percarbonate	10.0
Sodium disilicate ("SKS-6")	5.0
TAED	5.0
Protease purafect OX 400E	3.0
Amylease purastar OXAm 4000E	2.0
Sodium sulphate	10.0
Polymer "as is"	6.0
Synperonic 810	2.5
Synperonic 850	2.5

Filming data for Citrate built autodish formulation

6% polymer, 10 cycles at 60°C (140°F)



Polyacrylate

Acrylate-Maleate

Alcoguard H 5240

Alcoguard H 5240 in Hard Surface Cleaning (HSC)

Due to the chemical structure of the hybrid polymers (combining natural and synthetic polymer moieties), Alcoguard H 5240 shows high stability in alkaline conditions, making it suitable for household but also Industrial & Institutional (I&I) cleaning applications. A small addition of Alcoguard H 5240 in HSC products boosts the cleaning performance of the formulation.

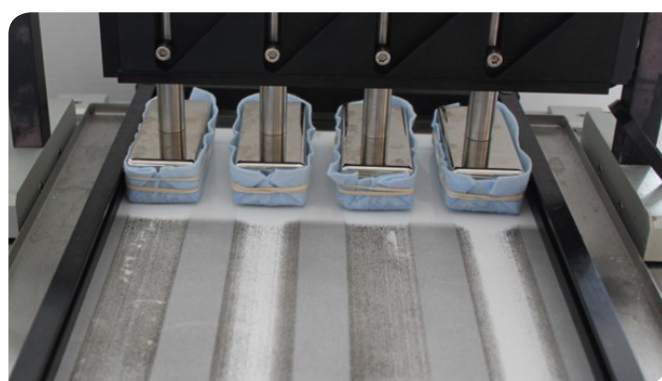
HSC formulation for test

Base formulation

Surfactant mix	10%
Polymer	1%
Citric acid	0.05%
pH	6-7
Dilution	1:30
Dosage/cloth	5 ml

HSC results with Alcoguard H 5240

Alcoguard H 5240 clearly outperforms and shows positive results after a number of IKW evaluation method test strokes. Test performed with artificial soil based on oil, clay and carbon black.



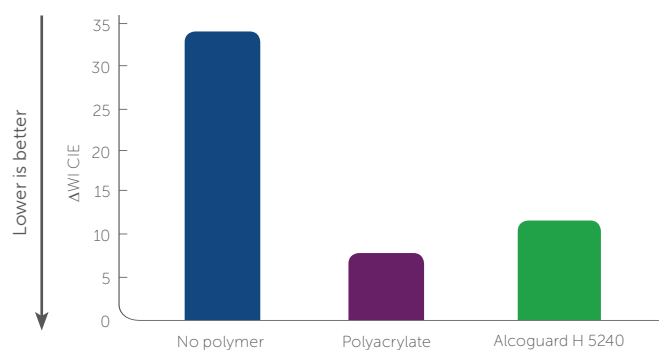
Polymer 1 Polymer 2 No polymer Alcoguard H 5240

Alcoguard H 5240 in Laundry applications

Adding Alcoguard H 5240 to a laundry application supplies a number of advantages for the user. The product helps with anti-redeposition and prevents stains from being redeposited back on to "clean" substrates. The anti-encrustation benefits help to prevent the salts of hard water ions from being deposited on to fabric while preventing the "graying" of whites.

Alcoguard H 5240 in Laundry applications - powder

Clay soil anti-redeposition – 1 cycle at 30°C (86°F)
10 ppm polymer, 250 ppm hardness, 500 ppm clay soil



- Shows the comparative performance of the hybrid versus the polyacrylate and no polymer (control with significantly higher clay soil redeposition)
- Whiteness Index (WI): The measure which correlates the visual ratings of whiteness for certain white and near-white surfaces
- Delta (Δ) WI CIE is defined by the whiteness index taken before and after washing using the standard CIE Whiteness Index

Summary

- High performance replacement for polyacrylates with a far superior sustainability profile
- Less reliant on petrochemical feed stocks, uses renewable and sustainable feedstocks instead
- Less subject to volatile acrylic acid pricing and availability
- Lower environmental impact (0.5 ton reduction of CO₂ emission for each ton of synthetic polymer replaced)
- Effective in various Homecare and I&I applications, multiple end-uses
- Safer Choice approved

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