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Soltellus™ Polymer 2101S/2101L

INCI: Sodium polyaspartate, CAS #94525-01-6
Regulatory: TSCA, DSL

Soltellus™ Polymer Superior Stain Removal

Soltellus™ is a biodegradable, anionic polymer produced by the polymerisation of aspartic acid, with multifunctional benefits that can replace polyacrylate in laundry detergent. In addition to anti-redeposition and soil removal, Soltellus™ has dissolution, ion sequestering and anti-scaling properties. It performs in cold water and all water hardness conditions and is on the EPA's Safer Chemical Ingredients list.

Applications	Benefits	Sustainable benefit
• Laundry detergent • Laundry booster • Machine cleaner	• Anti-redeposition • Superior stain removal • Boost enzyme activity • Sequestrant • Antiscalant • Performs in hard water	• Biodegradable • Performs in cold water • Weight efficient • Suitable for cold manufacturing process • Polyacrylate substitution

Performance

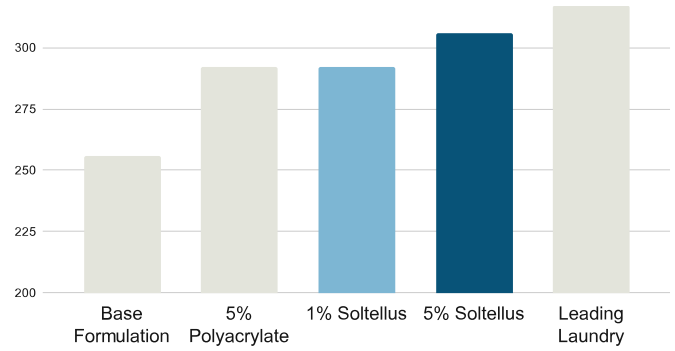
ANTI-REDEPOSITION

Soltellus™ binds soils and keeps them in the wash water preventing their redeposition on fabrics.

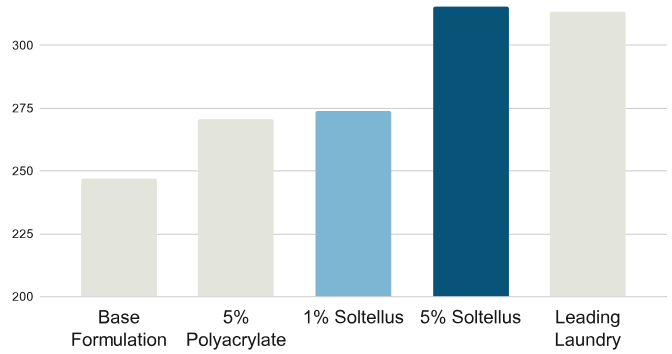
SUPERIOR SOIL REMOVAL

- enhances stain removal in cold water in all water hardness conditions for
  - enzyme sensitive stains (blood, grass, oatmeal, egg yolk, starch, gum)
  - oily stains
  - particulates
  - iron-containing stains like blood or clay because of its affinity to iron
- weight efficient: performance of 1% Soltellus™ equivalent to 5% polyacrylate
- in hard water, 5% Soltellus™ in a base laundry detergent performs at parity with the leading conventional laundry detergent

Overall Stain Removal In Soft Water[i]



Overall Stain Removal In Hard Water[ii]



Testing conditions: Whirlpool, front loader, 16°C, ASTM D4265-14. Tandell Research Ltd
i) 20 common stains, front loader at 16°C, 110 ppm $CaCO_3$
ii) 20 common stains, front loader at 16°C, 330 ppm $CaCO_3$

Technical Data Sheet: Laundry Detergent Applications

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Added Benefits

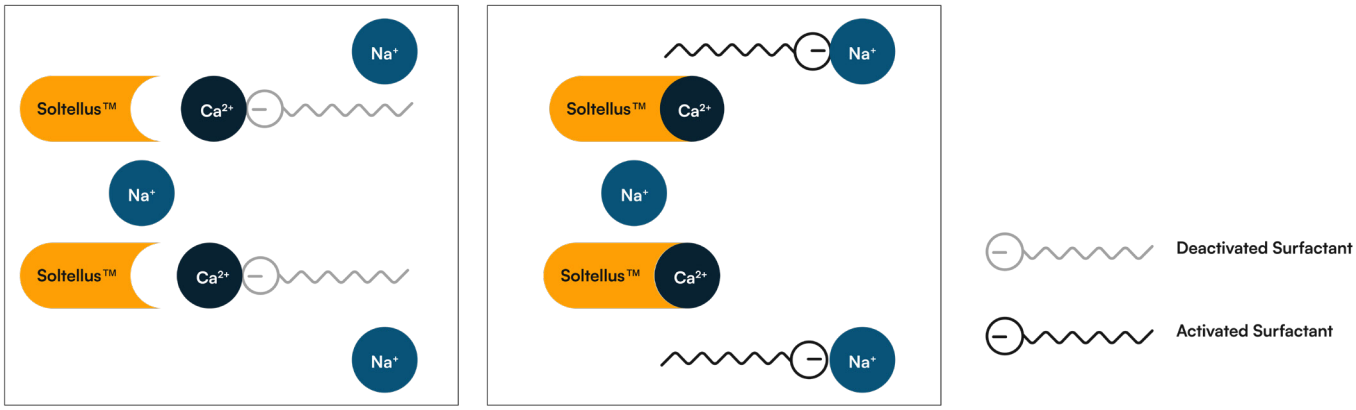
GREAT PERFORMANCE IN HARD WATER

In the USA, over 85% of households have hard water and only 20% of them have water softener which leaves 65% of the households with hard to clean clothes. Thanks to Soltellus triple mode of action as an anti-deposition, sequestrant and a dispersant, it will enhance stain removal while caring for your clothes.

ENHANCES THE CLEANING PERFORMANCE IN ALL WATER HARDNESS

Surfactants are the workhorse of laundry detergent. When mineral ions bind to anionic surfactants to form insoluble complexes, the surfactant becomes unavailable to clean. Therefore, more detergent is needed to achieve the same performance which is neither ecological, nor economical. Moreover, the insoluble complexes will deposit on fabrics or in the machine and cause build up or stubborn stains. By binding to hard water ions, Soltellus™ improves the performance in hard water so less detergent is needed.

Soltellus™ Binding To Calcium Ions In Water



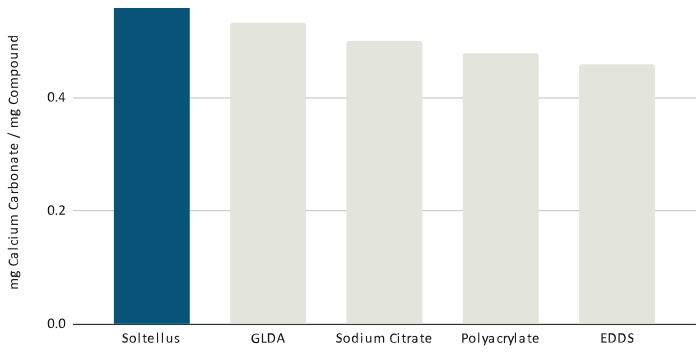
FABRIC CARE

Soltellus™ binds hard water ions and keeps minerals in solution, limiting the deposition of minerals on fabric leading to residues, dinginess, graying, stiffness and dull color. When using Sotellus™ your clothes will be softer and look brighter; darks will stay dark and the whites will be whiter.

AS A DISPERSANT, SOTELLUS™ SOLUBILIZES CALCIUM CARBONATE (ANTISCALANT)

- prevents the deposition of minerals on fabrics leading to stiffness, dullness, stains and residues on clothes
- prevents the formation of hard to remove residues on clothes and in the machine
- superior dispersion than polyacrylate, sodium citrate and other biodegradable sequestrants

Calcium Carbonate Dispersion



13% better than Sodium Citrate
17% better than Polyacrylate

Technical Data Sheet: Laundry Detergent Applications

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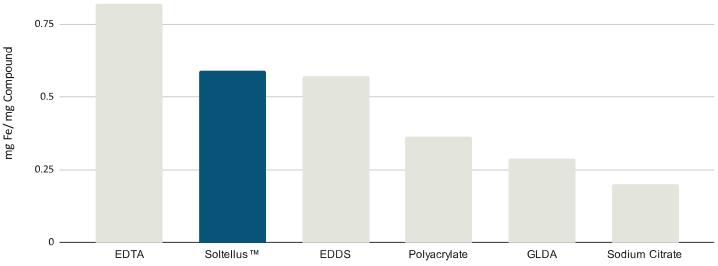
SOTELLUS™ EFFECTIVELY SEQUESTERS IRON AND CALCIUM

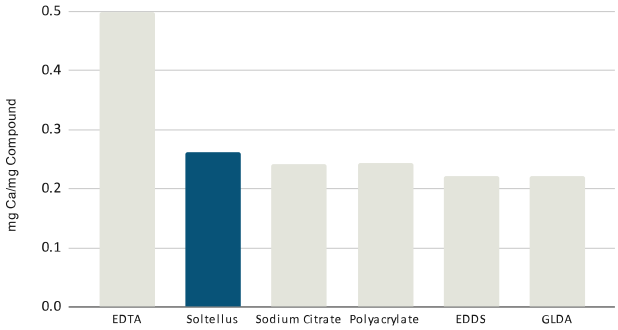
- enhances the cleaning performance in all water hardness
- prevents the formation of hard to remove residues on clothes like sebum stains
- prevent dinginess, graying and keeps color vivid by keeping the surfactant active
- enhances the removal of iron containing stains like blood and clay
- comparable activity to EDDS on iron and superior to polyacrylate (38%), GLDA (51%) and sodium citrate (66%)
- comparable performance to other biodegradable sequestrants on calcium

Iron Sequestering Capacity



38% better than Polyacrylate
51% better than GLDA
66% better than Sodium Citrate

Calcium Sequestering Capacity



7% Better than Polyacrylate

Calcium and Iron binding: Lygos internal lab testing via ion selective electrodes for calcium and optically using 2,2'-bipyridine iron indicator for iron detection. Calcium carbonate dispersion (anti-scaling): Lygos internal lab testing via turbidity measurement at pH 9
EDTA: Ethylenediamine tetracetic acid; EDDS: Ethylenediamine, disuccinic acid; GLDA: L-glutamic, diacetic acid

Physical and Chemical Properties

Parameter	Soltellus™ 2101L	Soltellus™ 2101S
Appearance	Amber liquid	Yellow powder
Total actives (%):	>35	>85
pH (40% solution)	8.0-11	6.5-10
Moisture content		<10%
Viscosity (cps)	20-60	

ECO-FRIENDLY
Biodegradable (OECD 301B)

PH STABILITY
Powder: Stable / Liquid: >7

STORAGE
Store in a closed container in a cool dry area, keep away from direct light.

Available in

Soltellus™ 2101S	Sodium polyaspartate	Low Color Powder (85% actives)
Soltellus™ 2101L	Sodium polyaspartate	Low Color Liquid (35% actives)