Beta*fib*® MCF

ROYAL COSUN Biobased Products

The biobased structurant for liquid detergents

Introduction

Liquid detergents and cleaners present a challenge to formulators in terms of structuring their compositions to provide easy-to-use and homogeneous liquids. Stability and compatibility of structurants in these formulations are the main technical challenges. At the same time, the market is moving towards more environmentally friendly detergents as a result of an increasing awareness of sustainability which is supported by legislation. Beta*fib*® offers a potential solution for all of these challenges.

Beta*fib*® MCF

Beta*fib*® is a parenchymal cellulosic microfiber derived from renewable vegetable resources that do not compete with the food chain. It is a 100% natural biopolymer and has not been chemically modified. Beta*fib*® delivers high zero shear viscosity, has strong shear thinning properties and shows a distinct yield point. When poured or pumped, the gel structure becomes water-like and once the fluid comes to rest again, the network rebuilds at such speed that uniform distribution is secured. Beta*fib*® is the novel structurant that ensures maximum suspension efficacy, enables ease of dosing and is highly compatible.

Compatibility of Beta*fib*® with typical ingredients

- Stability with various electrolytes at elevated levels was demonstrated (e.g. sodium chloride and citrate)
- Structuring of formulations also carrying higher loads of anionic surfactants
- Maintain properties with neat oils
- Synergistic effects with solvents
- Unaffected by the size or charge of the particles that need to be suspended

Applications

- Liquid detergents e.g. laundry, fabric conditioner or ADW
- Hard surface cleaners including vertical surface cleaners
- High solid fluids like scouring creams

Certifications and listings

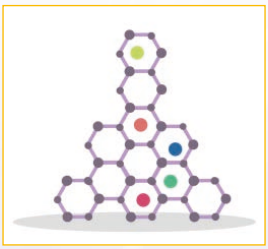
EPA: Safer Choice
INCI name: Beta Vulgaris (Beet) Root Extract
CAS-Reg.-No 9004-34-6

Available products*

Product	MCF [wt%]	Remarks
Beta*fib*® HCV1	30	moist powder

**selection only; more grades available*

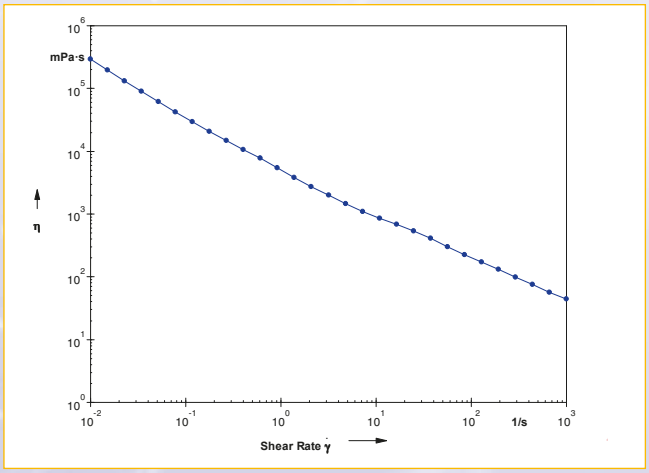
Rheology modification



The excellent shear thinning and 3D structuring behavior of Beta*fib*® is caused by its unique morphology at micro scale level that builds a physical structure in all kinds of matrices. This network enables unparalleled opportunities for performance enhancement of your products.

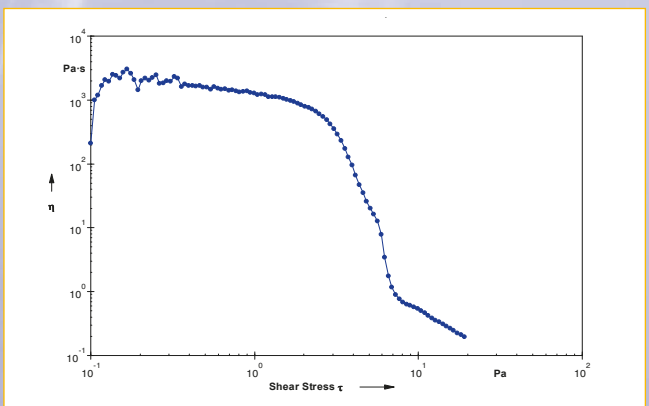
Properties of Beta*fib*® MCF

Rheological profile



Yieldpoint

- Beta*fib*® shows a distinct yieldpoint
- The plateau leading to the yieldpoint indicates a stable gel-like behavior
- The steepness of the slope after the yieldpoint represents the strong fluid-like behavior (high pourability)
- The network rebuilds within seconds (not shown on graph)



All measurements were done with 1% w/w Beta*fib*® in water using the Anton Paar Physica MCR 301 at 20 °C.

Benefits

Benefits

The use of Beta*fib*® delivers the following benefits:

- Homogeneous formulations whilst containing particles (beads, minerals, encaps, etc.) by preventing flotation and sedimentation
- Cling to (vertical) substrates
- Rinsability
- Formulability
  - ✓ Unaffected by pH from 2 to 12
  - ✓ Compatible with surfactants and actives
  - ✓ Stable under presence of electrolytes
  - ✓ Temperature stable
- Low dosages
- Freedom to operate given the Cosun IP position

Environmental profile

Beta*fib*® is made from renewable vegetable resources and does not contain any hazardous components. Beta*fib*® maintains its natural character throughout processing.

Ecotox information

Test protocol/ method	Purpose	Result
GC-MS	Presence of 26 allergenic fragrance compounds	None detected above limits of quantification
OECD 201	Toxicity towards algae	Recoveries ≥ 80% of initial concentrations after 72 hrs
OECD 202	Acute toxicity towards daphnia	Recoveries > 80% of initial concentrations after 48 hrs
OECD 203	Acute toxicity towards zebra fish	No toxic effects observed
OECD 302C	Biodegradable	Inherently biodegradable; ≥ 87% degradation after 28 days N.B. No toxicity towards microflora since absolute oxygen demand equaled control substance
OECD 423	Acute oral toxicity on rats	LD_{50} > 2000 mg/kg body weight No signs of toxicity
OECD 437	Eye damage	Not serious eye damaging (Cat. 1)

Security of supply through backward integration

Cosun Biobased Products offers biobased solutions. Our activities range from development to manufacturing and supply of biobased functional chemicals.
Our sister company Suiker Unie provides the raw materials for the natural sugar beet fiber. The sugar beet pulp is a side stream of the sugar production process. Cosun Biobased Products has its own production facilities to produce the unique Beta*fib*® material by its patented process.

Contact

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