Itaconix
For Nature with Nature™

Technical Data Sheet

Itaconix® SF 505

Natural conditioning, better foam texture & stability, and enhanced viscosity

Add 100% bio-based Itaconix® SF 505 to hair care, skin care and liquid soap products to achieve gentler formulations with better conditioning and creamier, longer-lasting lather that leave a soft nourished feel on skin and hair. Itaconix® SF 505 is a homopolymer of itaconic acid that is natural, biodegradable, and does not contain any preservatives or additives.

Applications

- Shampoos
- Leave-on and rinse-off conditioners
- Hair treatment products
- Moisturizing body wash
- Liquid hand soaps
- Facial cleansers
- Moisturizing skin care
- Sun care
- Baby care
- Formulations at extreme pH: hair relaxers, straighteners & perms

Advantages:

- Improve hair or skin feel with natural conditioning
- Increase foam height, strength and stability for dense, creamy lather
- Gain desired foam performance with less surfactant
- Reach target viscosity with less added salt
- Reduce surfactant concentration and added salt for formulations, gentler on skin and hair
- Increase sustainability of formulations
- Certified by the Natural Products Association for personal care products

Physical & Chemical Properties

INCI	sodium polyitaconate
CAS#	26099-89-8
pH at 10% solid	5.2
Odor	none
Avg. molecular weight (Mn)	8000
% Active	~83%
Chemical nature	itaconate homopolymer
Appearance	off-white powder

Recommended use level 2 - 4%

100% bio-based conditioning agent

Itaconix® SF 505 delivers multiple conditioning benefits and lubricity to skin and hair.

Cationic polymers are often added to cleansing products to counteract undesirable drying effects of surfactants and sodium chloride. Itaconix® SF 505 has demonstrated superior conditioning benefits on skin and hair in sensory study comparisons to polyquaternium-10 and guar hydroxypropyltrimonium chloride.

With the ability to improve foam quality and build viscosity with less surfactant and sodium chloride, Itaconix® SF 505 further enables personal care and home care formulators to improve conditioning and lubricity with products that are gentler on hair and natural oils of the skin.

Itaconix® SF 505 is a 100% bio-based polymer certified by the Natural Products Association that offers formulators new opportunities to add conditioning for improved hair or skin feel in natural shampoos, body washes, conditioners, moisturizers, and bar soaps.

Superior Skin Conditioning with Itaconix® SF 505

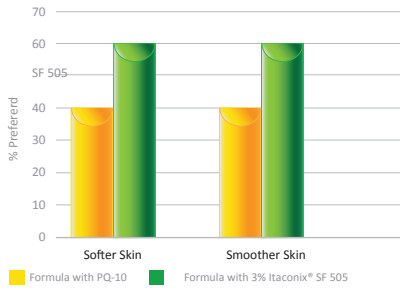

Figure 1. In a sensory panel study, using paired comparison, Itaconix® SF 505 outperformed polyquaternium -10 in several sensory attributes on skin – softer & smoother feel.

Superior Hair Conditioning with Itaconix® SF 505

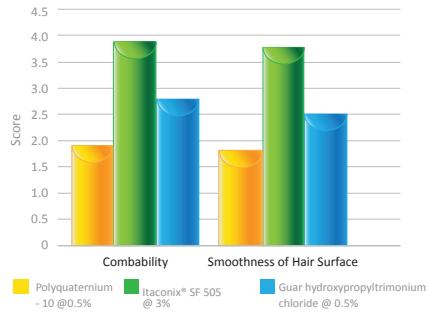

Figure 2. Combing and wet stage sensory evaluations were performed on bleached medium brown Caucasian hair to determine soft, smooth feel; attributes were scored as 0=worst, 4=best. Itaconix® SF 505 outperformed polyquaternium -10 and guar hydroxypropyltrimonium chloride for all attributes.

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Table 1

Surfactant-Based Screening Formula

INCI	Typical w/w %	With Itaconix® SF 505 w/w %
Itaconix® SF 505	0.0	3.0
Polyquaternium -10	0.1	0.0
Sodium laureth sulfate (at 27%)	40.0	30.6
Cocamidopropyl betaine (at 35%)	8.7	7.2
Sodium chloride	0.5	0.2
Cocamide MIPA (at 96%)	1.0	1.0
Phenoxyethanol and ethylhexylglycerin	0.5	0.5
DI water	qs	qs
Total	100.0	100.0
Active surfactant (%)	14.8	11.8
Foam volume (ml)	330	520
Viscosity, CPS (#3 @ 6 rpm)	1040	1060

Benefits from Itaconix® SF 505

- Surfactants reduced by 20%
- No cationic polymer
- Salt reduced by 60%

Enhance foam with less surfactants

Consumer perceptions of product quality and richness in cleansing products often depend on the viscosity of the product and the volume of foam generated during use. The higher levels of surfactants added to generate this perception increase the harshness of a formulation by causing tightness, dryness, irritation and even barrier damage to skin. Addition of Itaconix® SF 505 allows the formulator to create a milder formulation by reducing concentration of surfactants while preserving the foam volume and richness.

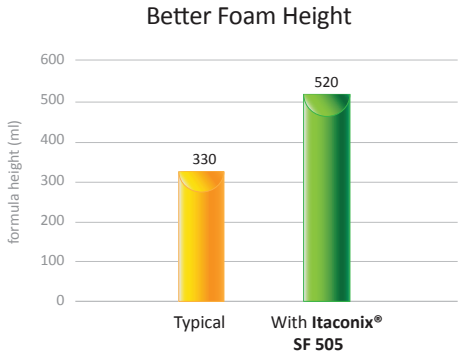

Figure 3. Foam Volume evaluations by Cylinder Shake method, in 330 ppm hard water. Addition of Itaconix® SF 505 improves flash foam/foam height up to 60%. Data based on the Screening Formula in Table 1.

Maintain viscosity with less salt

Sodium chloride is commonly used in surfactant-based formulations to increase viscosity and improve customer perception of product quality. Salt, however, further contributes to skin dryness. Itaconix® SF 505 allows the formulator to maintain target viscosity while reducing salt content.

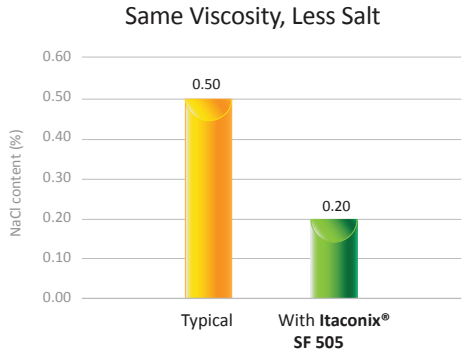

Figure 4. Viscosity measured by Brookfield Viscometer Model LV DV I spindle #3 @ 6 rmp for 1 min. Addition of Itaconix® SF 505 reduced salt requirement by 60% while maintaining target viscosity. Data based on the Screening Formula in Table 1.

Samples available on request
Please e-mail request to: samples@itaconix.com

To request information on ordering quantities and pricing
Please call: +1 (603) 775-4400 or e-mail: sales@itaconix.com

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V2.3 Published April 2024