

Breakthrough beverages start with

Q-NATURALE[®] emulsifier



Ingredion.

Transform your beverage emulsification capabilities and efficiencies, **naturally**

The beverage revolution is happening all around us, with consumers demanding more from their favorite drinks, including **fun refreshment, exotic flavors, added nutrition, an energy boost and, increasingly, an all-natural, clean label.**

Q-NATURALE high-efficiency emulsifier helps you meet all these trends head on. We've perfected this revolutionary ingredient to give you unique and renewable solutions for emulsifying weighted and non-weighted beverages—even clear, fortified or alcoholic beverages.

- Emulsifies sparkling and still beverages with actives, intense flavors and vibrant colors
- Enables a high oil load with brilliant clarity, even in alcoholic beverages
- Helps you to achieve manufacturing and supply chain efficiencies that save you money
- Offers sustainability and environmental benefits throughout the supply chain
- Stabilizes emulsions and beverages for up to one year



BROAD RANGE OF USE LEVELS

EMULSIFIER	Q-NATURALE	GUM ARABIC	OSA STARCH
OIL-TO-EMULSIFIER RATIO	4:1	1:1.5	1:1
OIL LEVEL	8–50%	8–12%	8–12%
DISSOLUTION OR HYDRATION TIME	none	1 day	1 day
MEAN PARTICLE SIZE (MICRON)	0.25	0.35	0.28

Q-NATURALE emulsifier offers the same stability as traditional emulsifiers at a broad range of usage levels and with less hydration time.

UNPARALLELED HIGH OIL LOAD

	12% OIL	30% OIL	40% OIL	50% OIL
Preservative	1.5	1.5	1.5	1.5
Q-NATURALE emulsifier	30.0	75.0	100.0	125.0
Water	849.0	639.0	519.0	398.5
Oil phase	120.0	300.0	400.0	500.0
Total	1000.0	1000.0	1000.0	1000.0
Mean PS	0.25	0.32	0.35	0.35
Emulsion stability (over 1 year)	Stable	Stable	Stable	Stable
Beverage stability	No ringing	No ringing	No ringing	No ringing
Beverage turbidity fresh (NTU)	250.0	276.0	308.0	318.0

No other emulsifier can deliver up to a 50% oil load for processing and manufacturing efficiencies—and exactly the beverage transparency or opacity you want.

Q-NATURALE emulsifier carries three to four times the oil load of traditional systems, such as gum arabic, enabling you to achieve significant efficiencies in production, warehousing and shipping. What's more, it comes in a solution-ready liquid, allowing you to capture savings by eliminating time-consuming hydration.

With its ability to create a fine particle-size emulsion, Q-NATURALE emulsifier offers stability across a broad range of pH levels and temperatures. You even can eliminate weighting agents in many applications, saving you more money.

Get extraordinary results with Q-NATURALE emulsifier

Make startlingly clear beverages you never thought possible. Even when using oil-based colors and flavors. Do the unexpected by delivering a difficult color (such as beta-carotene) to a citrus carbonate—or fortifying clear water or good-for-you fruit juice with omega-3s.

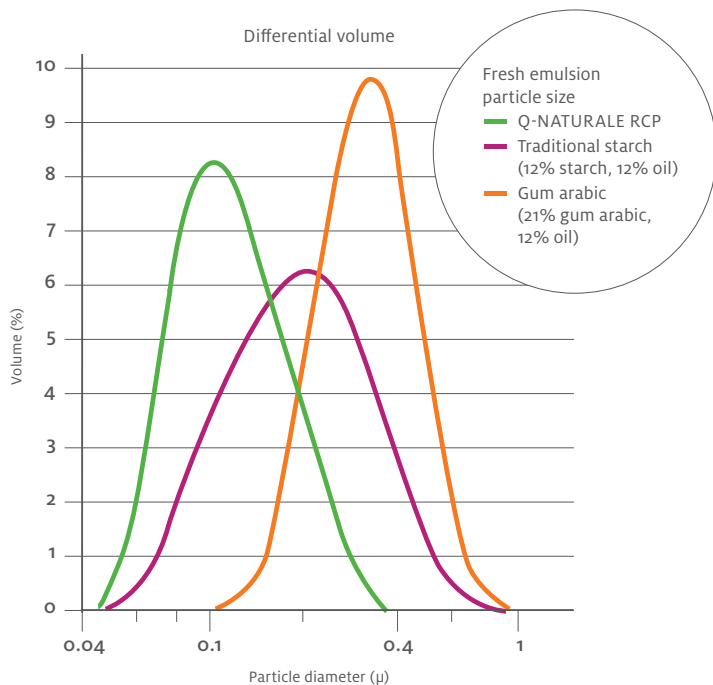
Q-NATURALE emulsifier can enable Random Close Pack (RCP)* emulsions. Our patent-pending Q-NATURALE RCP emulsification technology describes making emulsions at close to 64% volume fraction of the discrete phase (oil plus surfactant). The method takes advantage of a close pack system for efficient atomization and viscosity to produce stable non-weighted flavor emulsions with particle size of 0.08 μ to 0.15 μ . The particle size and emulsion stability are not otherwise achievable in dilute or non-close-pack emulsions.

Q-NATURALE emulsifier lets you solve your most daunting formulation challenges. Achieve the performance attributes you and your consumers seek in the beverage experience. Do it all, more easily than you ever thought possible, with Q-NATURALE emulsifier.

THE POWER OF Q-NATURALE RCP EMULSIONS



Q-NATURALE EMULSIFIER VS. GUM ARABIC VS. TRADITIONAL STARCH



The smaller particle size of Q-NATURALE emulsifier leads to improved emulsion stability.

*Rintoul, J. Chem. Phys. 105 (20), 1996.



Quillaja is sustainably farmed, creating an abundant supply.

A trusted, sustainable supply chain

Free from price and supply chain pressures currently associated with gum arabic, Q-NATURALE emulsifier is derived from the quillaja tree and grown in Chile using sustainable agriculture practices certified by the Forest Stewardship Council. Quillaja plantations can provide enough product to replace the world's supply of gum arabic used in beverages. Our exclusive partnership with Chilean growers of quillaja means formulators can have access to a secure and cost-effective alternative to gum arabic.

Q-NATURALE high-efficiency emulsifier gives you what you need

Natural, sustainable Q-NATURALE emulsifier helps you produce on-trend, clean label beverages at higher margins.

Dramatic efficiencies

- High oil load—up to four times higher than traditional systems—for lower usage levels
- Concentrated emulsion reduces inventory/warehousing, shipping and labor costs
- Solution-ready liquid for easy dispersion
- Ability to eliminate costly weighting agents in some applications

Superior attributes

- Great alternative to gum arabic
- Can be labeled as part of the flavor system for a clean label
- Fine particle-size emulsion for greater stability
- Secure and cost-effective supply
- FDA approved/GRAS/FEMA 2973/organic certified/kosher
- Certified by Forest Stewardship Council

Unique applications

- Helps produce clear and alcoholic beverages
- Delivers tough-to-formulate actives, such as omega-3s, conjugated linoleic acid (CLA), vitamins and more, in weighted and non-weighted systems
- Delivers challenging colors such as beta-carotene



Use Q-NATURALE emulsifier to deliver oils, colors and actives in these applications:

- Carbonated beverages
- Fruit and vegetable juice drinks
- Energy drinks
- Sports drinks
- Fortified waters
- Ready-to-drink teas
- Clear and cloudy beverages
- Flavored alcoholic beverages

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