



# Your Trusted Partner in Premium Softgel Manufacturing

**Why Softgels?** Softgels remain one of the most trusted and effective delivery formats in the nutraceutical industry—and for good reason. With decades of manufacturing excellence, Sirio Pharma elevates softgel production with advanced technology, formulation expertise, and market-driven innovation.

## The Benefits of Sirio Softgels

### Enhanced Bioavailability

Softgels are an ideal delivery format for fat-soluble and oil-based nutrients, such as omega-3 fatty acids, CoQ10, and vitamins A, D, E, and K. The encapsulation process disperses active ingredients in an oil matrix, improving their absorption and ensuring your formulas deliver maximum efficacy to the end user.

### Consumer Preferred

Smooth, tasteless, and easy to swallow, softgels remain one of the most popular dosage forms across all age groups. Their convenient format encourages regular use, contributing to better adherence and long-term consumer loyalty, achieving their intended health outcomes.



### Potency and Shelf Stability

Softgels offer a sealed environment that protects active ingredients from oxidation, moisture, heat, and light. This protection safeguards the formula's potency throughout its shelf life, reducing degradation and waste.

### Clean Label Capabilities

Sirio provides a full range of plant-based, carrageenan-free, and gelatin-free options to support clean-label claims. These solutions meet consumer expectations for transparency, allergen-free labeling, and wellness-focused formulations.

### High-Quality and Precision Dosing

Each softgel is manufactured to exacting standards, delivering consistent dosing and exceptional uniformity. Fill weight, shell thickness, and active content are controlled with precision to ensure product quality and regulatory compliance.

### Versatile Customization

From capsule color, shape, and size to logo embossing, softgels can be tailored to fit your brand identity. Flavor masking and odor control technologies enhance the sensory experience, making supplementation more enjoyable for consumers.

### Superior Thermal and Chemical Stability

Softgel shells are designed to withstand a range of environmental and processing conditions, making them suitable for complex or sensitive actives that require protection against temperature swings, humidity, or reactive ingredients. **Specialized Softgel Capabilities**  
Bovine, porcine, and piscine gelatin-based softgel solutions. Extensive experience with complex formulas, including multi-ingredient and paste fills. Advanced delivery technologies such as microemulsion, chewable formats, enteric coating, and two-color capsules



# Trusted Technical Excellence in Softgel Manufacturing.



## CLEAN LABEL CAPABILITIES

A full range of plant-based, carrageenan-free and gelatin-free shell options to support clean-label claims. These solutions meet consumer expectations for transparency, allergen-free labeling and wellness-focused formulations.



## HIGH-QUALITY AND PRECISION DOSING

Softgels are made to strict standards with consistent dosing and uniformity. Fill weight, shell thickness, and active content are tightly controlled for quality and compliance.



## VERSATILE CUSTOMIZATION

Softgels can be customized in color, shape, and size, with logo embossing available. Flavor masking and odor control improve the consumer experience.



## SPECIALIZED SOFTGEL CAPABILITIES

- Bovine, porcine, and piscine gelatin-based solutions
- Carrageenan-based and carrageenan-free plant-based solutions
- Extensive experience with complex formulas, including single oils, oil suspensions, semi-solid pastes, viscous gels, or beadlet-in-oil systems, with controlled delivery or added stability.
- Advanced delivery technologies, enable the combination of multiple active ingredients, providing targeted release and enhanced product performance.
- Specialized techniques protect oxidation and pH-sensitive actives, such as omega-3s, probiotics, enzymes, and botanicals, from degradation during processing, storage, and digestion.

# Versatility in Every Dose.

At Sirio Pharma, we offer one of the industry's most extensive portfolios of softgel shapes, fill options, and shell technologies. Whether your product is designed for general wellness, sports nutrition, beauty-from-within, or highly specialized therapeutic applications, we have the perfect format to support your brand vision.

## SHELL MATERIAL

**Animal-Derived Options:** Bovine, porcine, and piscine gelatin-based shells for proven performance and stability.

**Non-Animal Options:** Plant-based alternatives to support vegan and vegetarian formulations.

**Optional Enteric Coating:** Available for acid-sensitive actives requiring targeted release in the small intestine.

## SHAPES

**Common Shapes:** Oval, round, oblong, twist-off, and tube-shaped formats to meet a variety of dosage and application needs.

**Specialty Shapes:** Heart-shaped, suppository, and other custom mold designs for unique branding or functional purposes.

**Custom Design Capability:** Tailored shapes to match your product positioning and brand identity.

## SIZES

**Swallowables:** 3-24 minims for easy oral consumption.

**Non-Swallowables:** Up to 56 minims for topical, suppository, or specialty delivery formats.

## VISUAL CUSTOMIZATION

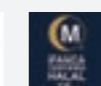
**Softgels can be visually tailored to enhance brand identity and consumer appeal:**

- Wide range of colors, levels of transparency, and finishes
- Embossing and branding directly on the shell
- High-quality printing for dosage differentiation or marketing impact

Global Facilities – Certified plants in Asia, Europe, and North America.

Supply Chain – Reliable sourcing and on-time delivery worldwide.

Local Solutions – Formulations tailored to market needs and regulations.





# Global Regulatory Expertise for Seamless Market Entry

With a deep understanding of international regulations and in-market insights from our global network, we help brands navigate compliance challenges with speed and confidence.

## 1. End-to-End Regulatory Guidance

Our regulatory affairs team partners with clients from concept to launch, ensuring every formulation, process, and document aligns with global dietary supplement regulations — reducing compliance risks and accelerating time-to-market.

## 2. Product Registration & Dossier Preparation

We manage registration and dossier compilation for markets in North America, Europe, LATAM, and APAC. Our expertise in country-specific requirements streamlines approvals and minimizes costly rework.

## 3. Label Compliance & Claims Review

We review and advise on labels to ensure compliance with ingredient disclosures, permissible claims, mandatory warnings, and formatting rules, protecting brand integrity across retail and e-commerce channels.

## 4. Clinical Substantiation & Claims Support

Where scientific evidence is required, we facilitate clinical trials or leverage existing data to substantiate health and structure/function claims, ensuring marketing messages meet both regulatory and industry standards.

## 5. Certified Global Manufacturing Standards

With cGMP, FDA, IFS, BRC, TGA, and Health Canada certifications, our facilities meet or exceed stringent quality and safety requirements, enabling seamless market entry across multiple regions.

# Plantegrity® Sirio's Comprehensive, Solution Of Plant-Based Softgel.

With decades of manufacturing excellence, Sirio Pharma elevates softgel production with advanced technology, formulation expertise, and market-driven innovation.

## FOUR CUTTING EDGE, PLANT-BASED SHELL TECHNOLOGIES

Carrageenan -Based

Gellan Gum -Based

Enteric Plant -Based Non -Coated

Tapioca Starch-Based



### WIDE APPLICATIONS

- Health food, functional food, etc.
- Filling - pure oil, suspension, etc.
- 100+ ready-to-formulation
- 500+ mil. softgels commercialized



### STRONG BARRIERS

- 1st commercialized gellan gum softgel
- 13 patents covering 4 countries
- Meet USP pharmacopoeial standards

# Plantegrity®: Comprehensive Plant-Based Softgel Solutions

## CARRAGEENAN BASED

### Carrageenan

- Soft, translucent shell
- Can be formulated for chewable versions
- Affordable and reliable

## CARRAGEENAN FREE

### Gellan Gum

- Silky, shell
- Affordable and reliable
- Excellent heat & humidity resistance

### Enteric Plant-based Non-coate

- Translucent shell
- Excellent acid resistance: less aftertaste, protects acid-sensitive active ingredients

### Tapioca Starch

- 100% plant-derived, sustainable
- Ideal for "natural" positioning

# Plantegrity® APPLICATIONS

## PURE OIL

- Omega-3: DHA Algal Oil, Linseed Oil, Fish Oil
- Omega-6: Evening Primrose Oil, Borage Seed Oil, Perilla Oil
- Fat-soluble Vitamins: VA, VD, VE, VK
- Phospholipid: PC/phosphatidylcholine, PS/phosphatidylserine

## SUSPENSION

- Multi-vitamins: Calcium + VD + VK, etc.
- Calcium: Milky Calcium
- Vitamins: Folic Acid, VB, Biotin, etc.
- Carotene: Lutein, Zeaxanthin,  $\beta$ -carotene
- CoQ10
- Melatonin

## CROSS-BENEFITS ACROSS ALL FORMATS



Excellent Heat Resistance



Clean-Label Compliant



Odorless



Easy To Store And Transport



Easy To Swallow



Environmental Friendly



Excellent Stability

# Plantegrity® Carrageenan Softgel

Carrageenan is a hydrophilic colloid derived from red algae seagrasses, also known as Eucheuma Gum, Gelidium gum and Chondrus gum.



## Over 15 Years of Commercial Success

Proven global usage with strong consumer trust

## Consumer Familiarity & Trust

Seaweed-derived and plant-based, aligns with clean-label requirements

## High Clarity & Gloss

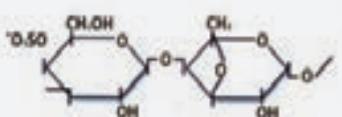
Attractive shelf presentation with customizable colors and transparency

## Formulation Versatility

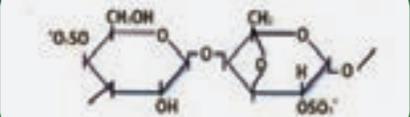
Compatible with oils, suspensions, and botanical blends

## CARRAGEENAN

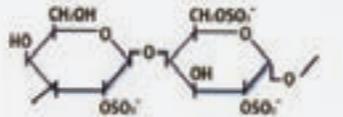
- Ester sulfate-amount & position
- 3,6 anhydro-D-galactose
- Molecular composition



Kappa



Iota



Lambda

The chemical structure of carrageenan is mainly composed of calcium, potassium, sodium and ammonium salts of polycarbohydrate sulfate composed of galactose and dehydrated galactose, and can be divided into  $\kappa$ -type (Kappa),  $\iota$ -type (Iota) and  $\lambda$ -type (Lambda) according to the different binding forms of sulfate.

The FDA has recognized carrageenan as Generally Recognized as safe (GRAS), which indicates that carrageenan is considered safe for adults and children under specified conditions of use. In 2001, the Expert Committee on Food Additives (JECFA) of the International Food and Agriculture Organization (FAO) and the World Health Organization (WHO) removed the allowable daily intake (ADI) of carrageenan.

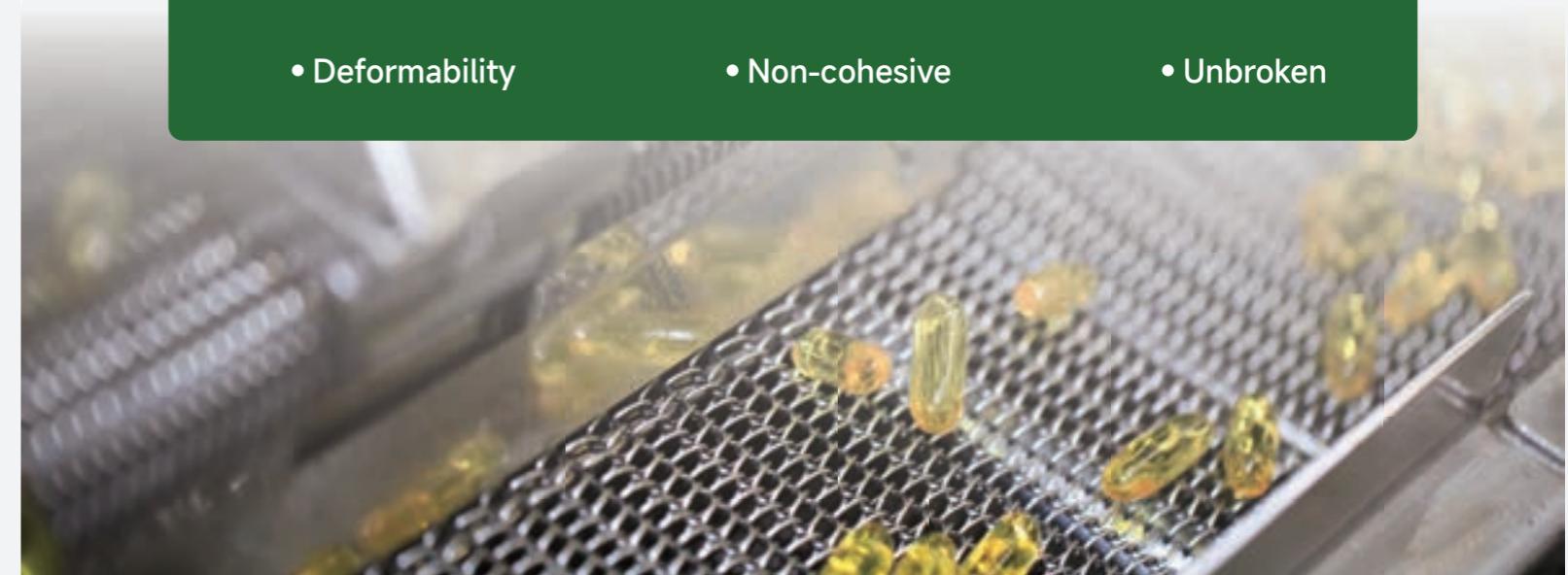
# Plantegrity® Carrageenan Softgel Good Temperature Resistance

The dark color is gelatin softgel, and the light color is carrageenan softgel.

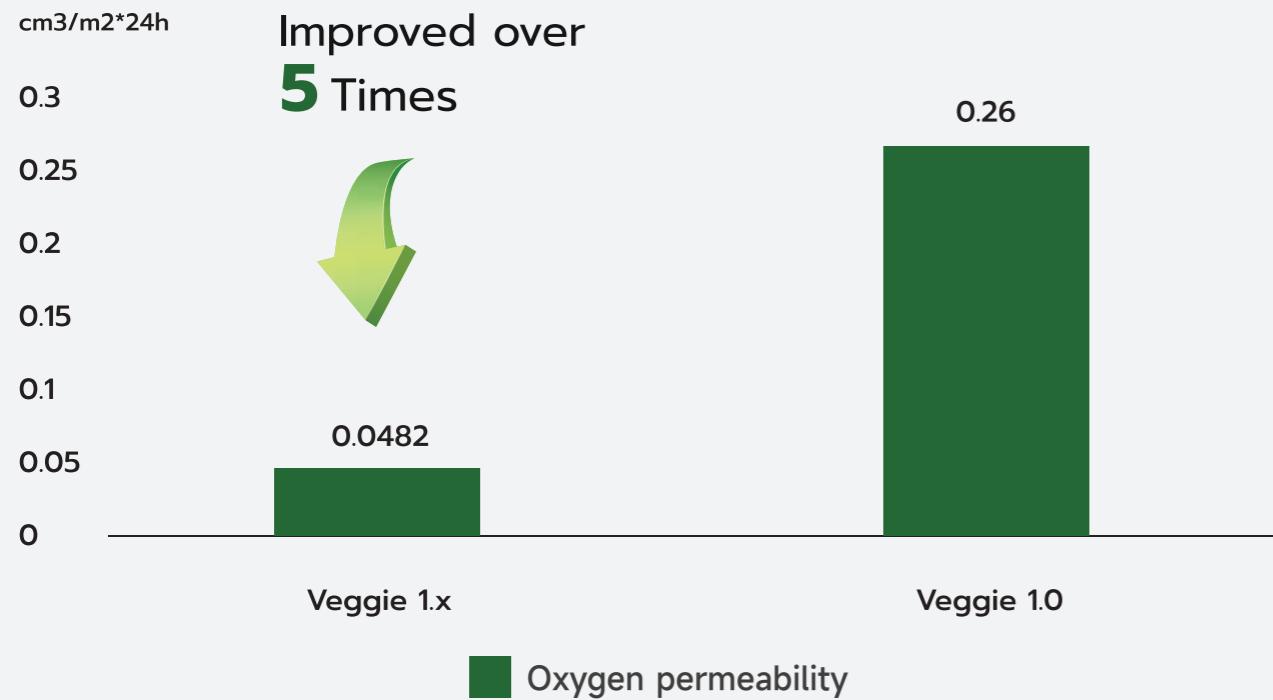


COMPARED WITH GELATIN SOFTGEL, CARRAGEENAN SOFTGEL MAINTAINED CAPSULE INTEGRITY AT 55°C.

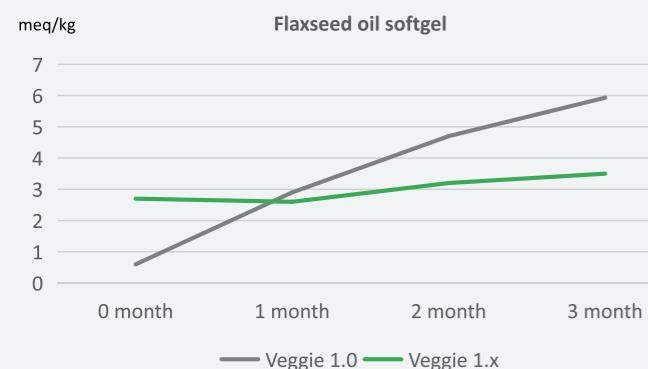
- Deformability
- Non-cohesive
- Unbroken



# Plantegrity® Carrageenan Softgel Optimized Protection Against Oxidation



THE OXYGEN PERMEABILITY OF THE SHELL OF VEGGIE 1.X IS LOWER THAN THAT OF VEGGIE 1.0, WHICH SHOWS THAT VEGGIE 1.X HAS BETTER OXYGEN BARRIER PERFORMANCE AND CAN BETTER PROTECT NUTRIENTS.



The result of accelerated stability test (40°C / 75%RH, 3 months) in HDPE bottle for flaxseed oil softgels shows that both Veggie1.x and Veggie 1.0 softgel have excellent stability in peroxide value. Veggie 1.x shows better oxidation barrier than veggie 1.0 in peroxide value.

# Plantegrity® Gellan Gum Softgel

Gellan gum is a microbially fermented polysaccharide derived from the Gram-negative bacterium *Sphingomonas paucimobilis*. It is an extracellular polysaccharide produced by using small molecule sugars as a substrate.

## Superior Thermal & Humidity Resistance

Ideal for global distribution and  
hot climates

### Enhanced Oxygen Barrier

Preserves oxidation-sensitive ingredients like PUFAs and botanical oils

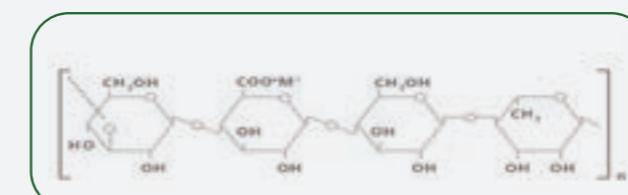
## Exceptional Mechanical Strength

Protects capsule integrity during manufacturing and shipping

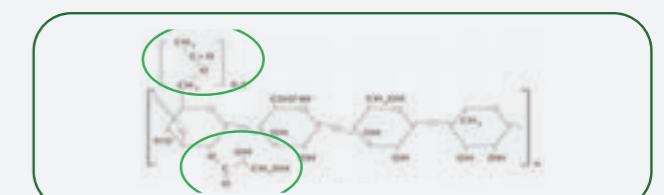
## Minimal Cross-Linking

Maintains clarity and efficacy throughout shelf life

## GELLAN GUM



## Low acyl gellan gum



## High acyl gellan gum

Gellan gum is a linear polysaccharide composed of four monosaccharides as repeating structural units. It is commercialized in two forms: one is high acyl gellan gum (also called natural gellan gum), and the other is low acyl gellan gum. Acyl gellan gum (also called deacylated gellan gum).

As a food additive, gellan gum has been approved by many countries such as China, the United States, the European Union, and Japan. It is widely used as a gelling agent and suspending agent in the fields of food, beverages, industry, and consumer goods.

# Plantegrity® Gellan Gum Softgel Superior Stability In Challenging Conditions

- ◆ Better heat and humidity resistance, less stickiness and deformation.



## Land transportation

In double-layer film bag (contain 8000 softgels, 0.5g per softgel) and aluminum compound bag (contain 3000 softgels, 1g per softgel) Have been successfully transported in a round trip between the South China and the North China for 15 days in Aug, 2020 No cold-chain transportation (14.8° C-33.6° C)

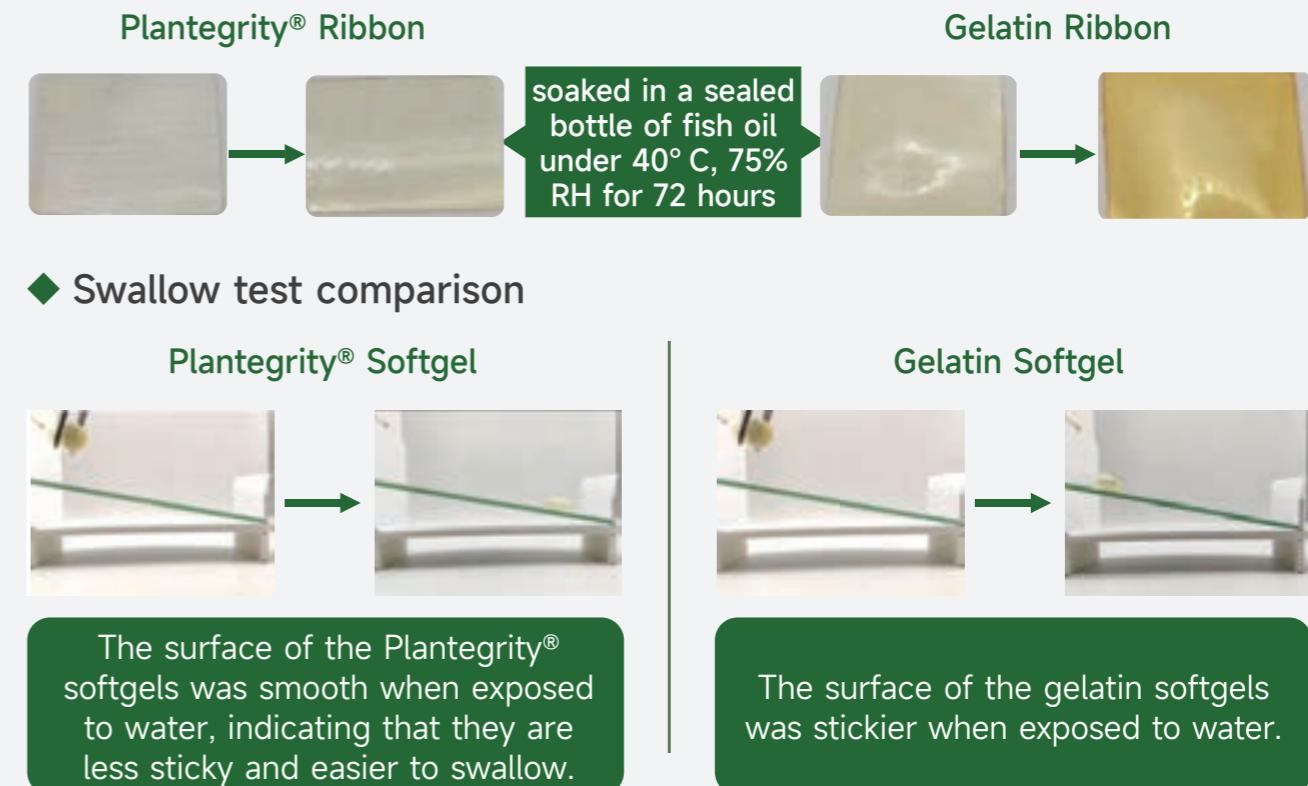


## Shipping

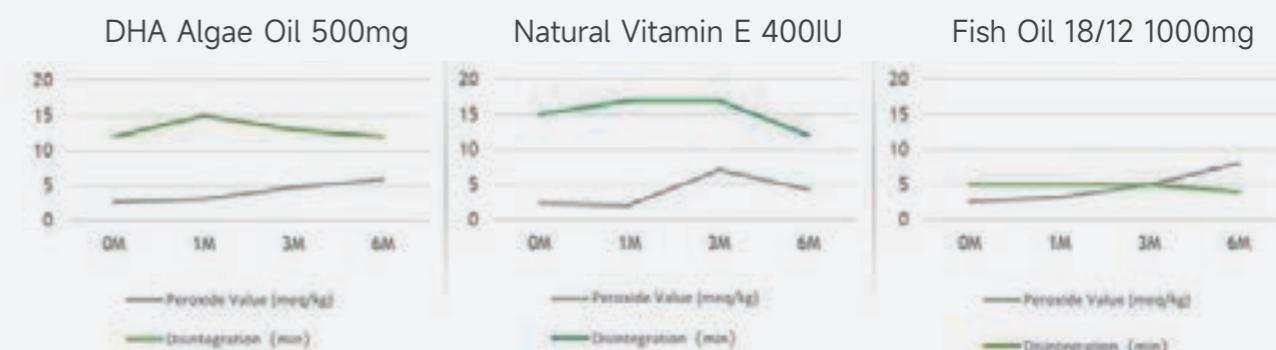
In double-layer film bag (contain 5000 softgels, 1g per softgel) Have been successfully transported from Shantou to Ayanda for 20 days in 2021 No cold-chain transportation (27.5° C-31° C)

# Plantegrity® Gellan Gum Softgel Proven Stability & Consistent Performance

- ◆ Appearance stability and cross-linking comparison



- ◆ Good stability results in different applications



The results of the accelerated stability test (40° C/75%RH, 6 months) in HDPE bottles of DHA algae oil, vitamin E and fish oil soft capsules met the internal control standards that disintegration\* time less than 30min and Peroxide Value less than 10 meq/kg.

# Plantegrity® EnteriClear™

## Plantegrity® Enteric Plant-based Non-coated Softgel



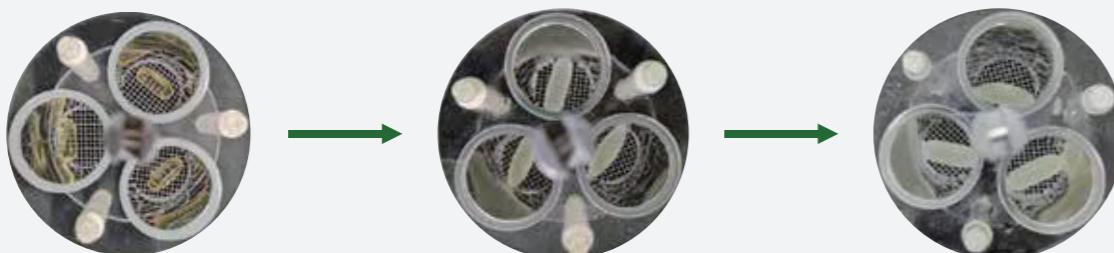
Sirio's end-to-end manufacturing expertise enables brands to launch differentiated enteric softgel products faster, without compromising on quality or compliance.

EnteriClear™ integrates pH-responsive plant-based polymers into the capsule shell matrix to create a barrier that

- Acid-Resistant Protection:** Withstands the low pH of the stomach, preventing premature release or degradation of actives.
- Targeted Intestinal Delivery:** Rapidly dissolves at the higher pH of the small intestine, releasing actives where absorption is optimal.

## ◆ Excellent Acid Resistant and Stability

Detect the sample in simulated gastric fluid (pH 1.2) after 3 months accelerated Stability (40°C /75%RH), the result shows the EnteriClear™ uncoated enteric softgel has excellent acid resistant.



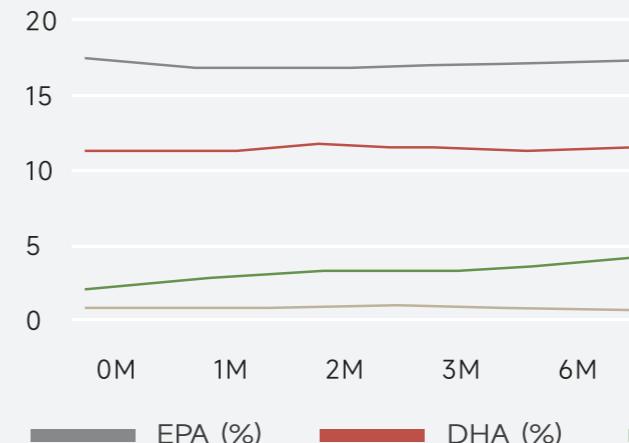
Sample after 3 months accelerated stability

After 1 hour in simulated gastric fluid (pH 1.2)

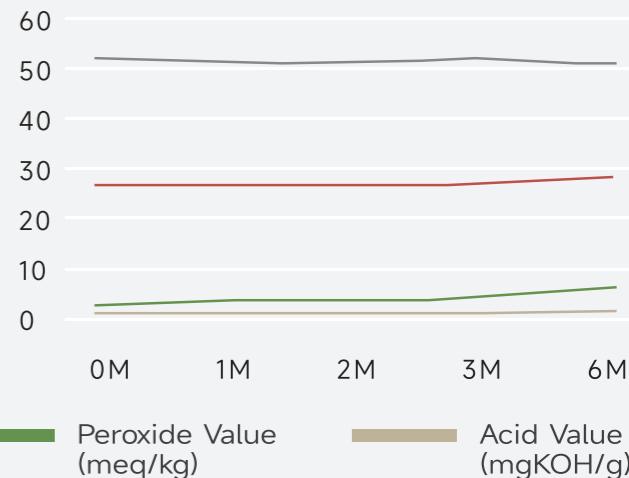
After 2 hours in simulated gastric fluid (pH 1.2)

## ◆ EnteriClear™ Excellent Stability

### GASTRIC SOLUBLE SOFTGEL



### UNCOATED ENTERIC SOFTGEL

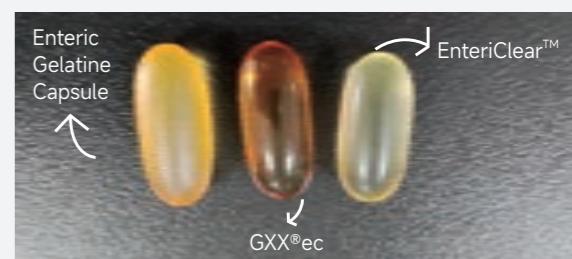


The result of accelerated Stability Test (40° C/75%RH, 6months) with HDPE bottle for fish oil 18/12 TG in gastric soluble softgel and fish oil 50/25 EE in uncoated enteric softgel shows both Plantegrity® and EnteriClear™ softgel have the excellent stability.

## ◆ From Plantegrity to EnteriClear™ Uncoated Enteric Softgel

	Enteric-Coated Gelatine softgel	Enteric Softgel GXX®ec.	EnteriClear™ Uncoated Enteric Softgel
RM Source	Gelatin	Gelatin	Plant-based
Process	Two step	One step	One step
Appearance	Non-transparent	Transparent	Transparent
Odor	Fishy smell	Fishy smell	Odorless
Color	Maillard reaction	Maillard reaction	Stable

Based on Plantegrity® plant-based softgel technology, gellan gum and modified starch are used to make enteric-coated soft capsules through a one-step molding process without additional coating. The disintegration time of the product complies with the USP requirement.



# Plantegrity® Tapioca Blend Shell

## Balanced Performance with Trusted Ingredients

A next-generation plant-based softgel that blends the clean-label appeal of tapioca with the proven strength of carrageenan. Designed for brands seeking reliable vegan delivery with smooth texture, scalability, and broad consumer acceptance.



### DUAL PLANT-ORIGIN

- Tapioca + red seaweed for a trusted vegan shell
- Tapioca ensures a soft, pleasant, non-tacky texture
- Carrageenan adds strength and consistency in production

### EFFICIENT SCALE-UP

Compatible with large-scale manufacturing for oil-based and blended fills.

### VERSATILE APPEAL

Customizable colors, translucencies, and finishes

### FORMULATION HIGHLIGHTS

- Works with oils, suspensions & semi-solid actives
- Moderate oxygen barrier for stable shelf life
- Maintains clarity & shape across climates
- Flexible for small to mid-range active loads



## Sustainability and plant-based innovation are redefining the future of softgels.

### ESG

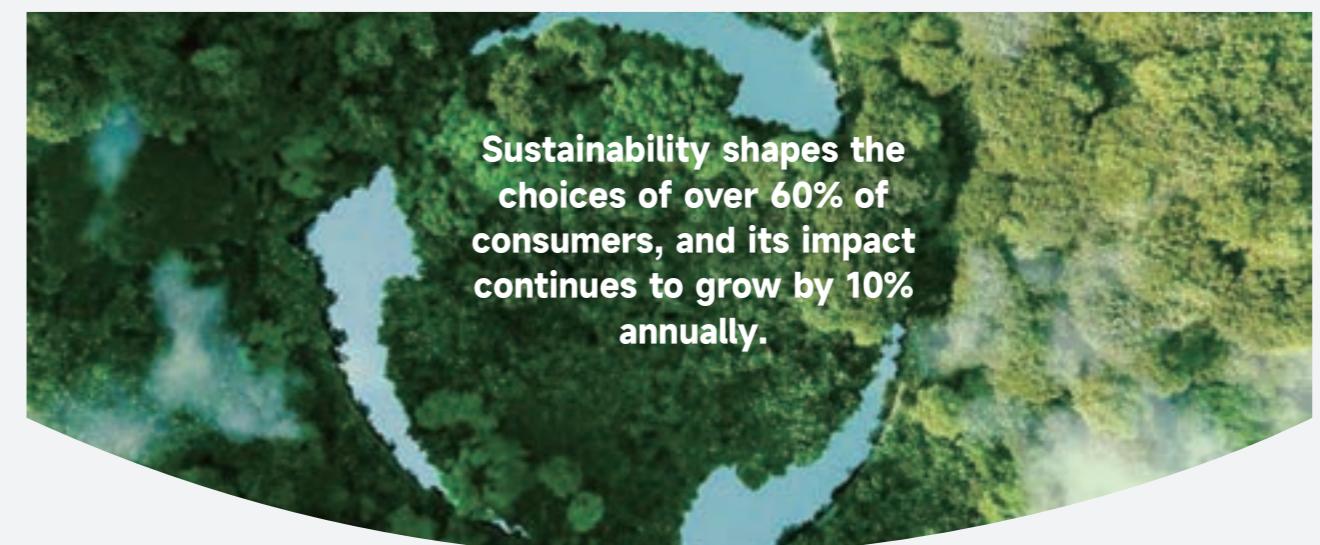
- Companies lead in ESG enjoy faster growth and higher valuations by a margin of 10-20%.
- Most of the top healthcare companies signed up to SBTi (an NGO aims at specific emission reduction), BSRT (Biopharma Sustainability Round Table), etc.

### CLEAN-LABEL

- 76% food & beverage manufacturers The number of new products with consider clean label an important part of their business strategies. The global clean label market is projected to grow at a CAGR rate of 6.75%.
- Hydrocolloids (e.g. gums, pectins) are increasingly being used to meet the clean-label megatrend.

### PLANT-BASED

- The number of new products with a plant-based claim has increased by 302% between 2018-2022. The market is expected to grow to \$160 billion by 2030.
- 45% of consumers would like to see more plant-based vitamin, mineral and dietary supplements.





# Manufacturing Locations



## **City of Industry, California, USA**

17758 Rowland St, City of Industry, CA 91748

## **Shangtou (Head Quarter), China**

Industrial Park I: No.83 Taishan Rd, Longhu District

Industrial Park II: No. 11 Zhuye South Street, Huangshan Rd,  
Longhu District

## **Ma'anshan, China**

No. 1980, South Hongqi Rd, Yushan District, Ma'anshan, Anhui

## **Zhuhai, China**

2F&4F, Zone A, Yinji Cross-border Complex Building, 37# Warehouse,  
Zhongxin Rd., Cross-Border Industrial Area, Zhuhai Free Trade Zone,  
Xiangzhou District, Zhuhai, Guangdong, China

## **Pritzwalk, Germany**

Am Hunengrab 20 16928  
Pritzwalk Brandenburg, Germany

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