



WATER SOLUBLE BEAN FIBER WITH UNIQUE NUTRITIONAL BENEFITS. INVISIBLE FIBER. VISIBLE BENEFITS.

## SUNFIBER® COMBINATIONS, AGGLOMERATES AND EXTRUDATES

\*Concepts available via 

Product	Specification	Product Description
<b>SunCurcumin*</b>	Sunfiber® agglomerated with water dispersible curcumin (Cavamax) 6:1 ratio. Carrier free product. No emulsifier! No E-No!. Dosage is 3 – 5 g per serving.	100% water dispersible curcumin with almost no taste (depends on curcumin concentration). No emulsifier used. Contains only 2 different dietary fibers. 47 times better curcumin bioavailability. Patented formula. For powder shakes and instant beverages. Curcumin dosage can be adjusted to be 4 – 10 %.
<b>Amla-Beanfiber*</b>	Sunfiber® with water soluble amla extract. 400 mg SunAmla® PD-T per 3,6 g Sunfiber®. Dosage is 4 g per serving.	Amla-Beanfiber contains water soluble amla juice extract that has a tart and great fruity taste of Indian Gooseberry (Amla). Amla and Sunfiber® are both products coming from India with many health benefits.
<b>Sunfiber as Drying agent</b>		
<b>SunCran™ Naturelle</b>	Organic Sunfiber® agglomerated with organic cranberry juice. Carrier free product. Dosage is 3 – 5 g per serving.	Organic cranberry Juice is dried on organic Sunfiber® by a new "Infridry"-technology. Tested anti-adhesion and anti-invasion on E. Choli bacteria. Carrier free product. Sunfiber® suppresses E. Choli by supporting growth of other bacteria and decreasing of gut pH by butyrate production. Sunfiber® and cranberry act synergistically.
<b>SunRedBeet*</b>	Sunfiber® agglomerated with red beet extract (Rednite®). Carrier free product. Dosage is 3 g per serving.	Red beet juice containing 8 % nitrate is sprayed on Sunfiber® to give a water soluble SunRedBeet that is good for sports people and elderly people because nitrate increases blood flow and enhances physical performance.
<b>SunCoconut*</b>	Sunfiber® agglomerated liquid Coconut Water. Carrier free Product. Maltodextrin free product	SunCoconut is pure coconut water sprayed directly on Sunfiber® without using any maltodextrin as carrier. Coconut water is a source of natural minerals and trace elements. Sunfiber® adds the benefits of dietary fiber and helps to absorb the minerals from the coconut water.
<b>Sunfiber as bulking agent</b>		
<b>SunStevia*</b>	Sunfiber® (99 %) agglomerated with Quorus-Dolce Stevia (1 %). Carrier free product. Maltodextrin free. Can be used like sugar.	SunStevia is tabletop sweetener (Fibersweet) that is free of any sugar and contains a special, very sugar like Stevia blend (Quorus Dolce). Sunfiber® masks the off-taste of stevia and gives a better mouthfeel, such as sugar.
<b>SunAllulose*</b>	Sunfiber® agglomerated with Allulose. Carrier free Product. Maltodextrin free. Can be used like sugar.	SunAllulose is a tabletop sweetener (Fibersweet) that is free of any sugar and contains allulose the new sweetener that is not absorbed and not metabolized. Sunfiber® masks the off-taste of allulose and gives a better mouthfeel, such as sugar.
<b>FiberTea*</b>	Sunfiber® agglomerated with instant tea powder (10:1 Ratio). 300 mg instant tea per 3 g of Sunfiber®. Dosage is 3 g per serving.	FiberTea is available in 8 variations (green, black, white, organic, Oolong, Pu-Erh, Matcha and mulberry) and gives always the same great tea with real tea taste and tea health and fiber health benefits. Double AMPK activator! Tea and fiber both activate AMPK for more energy, better glucose metabolism and anti-inflammation and anti-aging!
<b>SunRelax*</b>	Sunfiber® agglomerated with Suntheanine®. (100 mg ST per 3 g SF). Carrier free product. Dosage is 3 g per serving.	SunRelax is a new gut-brain concept and a combination of 3 g of Sunfiber® with 100 mg pure L-Theanine. Theanine relaxes the gut brain and the intestinal brain (nerve system). Sunfiber® distresses the intestine and acts indirectly also the human brain.
<b>SunMineral*</b>	Sunfiber® agglomerated with minerals and Q10.	SunMineral is an isotonic instant beverage for the re-hydration of athletes and elderly people with additional Q10 for more energy. Sunfiber® supports intestinal health, immune function and the intestinal absorption of minerals.
<b>SunDuo*</b>	Sunfiber® agglomerated with a blend of probiotic strains or spores (Lactospore).	The strain can be chosen by the customer. Taiyo uses Bifido Lactis bacteria. Carrier free Product. Dosage is 3 g per serving.
<b>SunBiotic*</b>	Sunfiber® agglomerated with a blend of probiotic strains or spores (Lactospore).	The strains are application specific and can be chosen by the customer. Carrier free product. Dosage is 3 g per serving.
<b>SunDekabiotic*</b>	Sunfiber® agglomerated with a blend of 9 – 10 different probiotics.	The strain can be chosen by the customer. Carrier free product. Dosage is 3 g per serving.
<b>Sunfiber® Combinations with other fibers</b>		
<b>SunAlpha*</b>	Sunfiber® agglomerated with alpha-cyclodextrin (1:1 ratio). Carrier free product. Dosage is 6 – 10 g per serving.	EFSA approved Health Claim, for reducing postprandial blood sugar level, Increased satiety. ACD is an alpha amylase blocker but not a prebiotic. Sunfiber is a prebiotic dietary fiber. SunAlpha combines the benefits of ACD and Sunfiber®.
<b>SunAI*</b>	Sunfiber® agglomerated with Agave Inulin. (ratio variable from 1:1 to 1:10). Carrier free product. Dosage is 3 – 6 g per serving.	Sunfiber® is a mild low-FODMAP and slow prebiotic. Inulin is a very strong and fast prebiotic. Dosage of inulin can be reduced to 1 g per serving with reduced side effects and still can be claimed as dietary fiber because of 2 g of Sunfiber®. Sunfiber® also reduces the side effects of inulin.
<b>SunDuofiber*</b>	Sunfiber® agglomerated with resistant dextrin (1:1 ratio). Carrier free product. Dosage is 3 – 6 g per serving.	SunDuofiber combines two different fibers. Resistant dextrin is more a bulking agent for stool and less a prebiotic whereas Sunfiber® is a mild low-FODMAP and slow prebiotic. SunDuofiber combines the benefits of soluble and insoluble fibers in a water-soluble form.
<b>SunSweet*</b>	Sunfiber® agglomerated with Isomalto-oligo-saccharide (IMO). (1:1 ratio). Carrier free product. Dosage is 3 – 6 g per serving.	SunSweet combines two different fibers. IMO is sweet tasting fiber with great taste and prebiotic benefits whereas Sunfiber® is a mild low-FODMAP and slow prebiotic.
<b>SunCrisps*</b>	Sunfiber® is extruded with protein (whey or pea) and starch.	Sunfiber® is able to reduce the starch content of extruded crisps for cereals, yogurts, bars or chocolate. Starch content can be only 12%, fiber 18% and 70% protein (pea or whey protein).



Sunfiber® is a water-soluble bean fiber derived from the Indian Guar Bean (partially hydrolysed guar gum, PHGG). Sunfiber® is all natural and 100% water soluble. Sunfiber® is a dietary fiber prepared by enzymatic fermentation from Indian Guar Beans. Sunfiber® is tasteless, colorless and odorless. Sunfiber® improves functionality of foods and beverages. Sunfiber® delivers a high dietary fiber content and excellent stability over a wide pH-range, it is highly heat, freeze and thaw stable. Clinically proven to lower glycemic index, improve mineral absorption and promote intestinal regularity. Sunfiber® is slowly but 100% fermented by the gut bacteria, especially by Bifidus bacteria.

### SUNFIBER® IS A SOLUBLE BEAN FIBER FROM INDIAN GUAR BEANS

The Indian Guar Bean (*Cyamopsis tetragonolobus*) is high in soluble dietary fiber. In a very mild process at low temperature the guar bean seeds are mixed with water and the main dietary fiber (galactomannan) is enzymatically fermented and the water-soluble bean fiber Sunfiber® is extracted. Sunfiber® is one the longest water soluble dietary fibers with a molecular weight of 20.000 – 40.000 Dalton. Sunfiber® has no gelling properties anymore and does NOT increase the viscosity of foods or beverages.

Sunfiber® is produced in a very sustainable and economically friendly way in Rajasthan in the Northwest of India. Rajasthan is the hottest and most dry area of India and the Guar Bean is one of the only plants that can grow there. Taiyo Kagaku India produces Sunfiber® in a dedicated factory in Aurangabad. Taiyo Kagaku India gives work for more than 80.000 farmers in this poor area of India. The Guar Bean is the only livelihood for these families. The Guar Bean has a long tradition in the Indian diet and it's rich in soluble fiber.

### SUNFIBER® IS CERTIFIED AS TRUE DIETARY FIBER BY THE NEW FDA DIETARY FIBER DEFINITION OF 2016

In May 2016 the US FDA created a new definition for dietary fibers based on clinical evidence that proves fiber benefits. Sunfiber® is one of only five natural fibers that fulfill this new FDA fiber definition. Sunfiber® is the one of the five that is 100% water soluble and non-viscous fiber that can be used in beverages and can still be labelled as a "dietary fiber" in the US. All other complex carbohydrates that do not yet fulfill this fiber definition have to prove that they have fiber benefits within the next two years.

### SUNFIBER® IS LOW-FODMAP CERTIFIED (MONASH UNIVERSITY)

Sunfiber® is the first fiber and first stand-alone ingredient to become a Monash University Low FODMAP Certified™ product. FODMAPs (Fermentable Oligo-saccharides, Disaccharides, Mono-saccharides and Polyols) are a group of dietary sugars which are poorly absorbed in the small intestine. They are known to cause gas related pain, intestinal distention and constipation and/or diarrhea in people suffering from functional gastrointestinal disorders (FGIDs) and irritable bowel syndrome (IBS). Low FODMAP foods and ingredients help to reduce these symptoms. Because many high-fiber foods are also high in FODMAPs, people with FGID and IBS typically have difficulty meeting the recommended daily intake of 25 to 30 grams of fiber in their diets. That means they may not get enough soluble fiber which is essential for gut health and regularity. Even more problematic, many of the short chain dietary fibers such as inulin, wheat and corn dextrin and IMO's are high FODMAP fibers and should be avoided by those looking to minimize FODMAPs in their diet.

### SUNFIBER® IS ALSO AVAILABLE AS ORGANIC CERTIFIED

Several Sunfiber® materials are also available as organic certified versions, such as Sunfiber® ST-O, Sunfiber® R-O and Sunfiber® AG-O.



### SUNFIBER® IS "VERIFIED NON-GMO"

Sunfiber® is made from absolutely natural and NOT genetically modified guar beans. In 2016 Sunfiber® was also verified as NON-GMO in the US.





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## SUNFIBER® PRODUCT RANGE

Product	Specification	Application	
<b>Sunfiber® ST</b> (Standard Grade)	> 80 % dietary fiber Bulk density: 0,50 – 0,58 g/cc Very fine dusty powder 100 % clear solution in water Light yellow color in solution Slightly beany smell and taste	✓ Use as flour ✓ Bars and crisps ✓ Protein + powder shakes ✓ Capsules and tablets ✓ Meat products	✓ Beverages ✓ Bakery products ✓ Confectionary ✓ Liquid supplements ✓ Drying agent
<b>Sunfiber® R</b> (Regular Grade)	> 85 % dietary fiber Bulk density: 0,50 – 0,58 g/cc Very fine dusty powder 100 % clear solution in water No color in solution. No taste.	✓ Use as flour ✓ Bars and crisps ✓ Protein + powder shakes ✓ Capsules and tablets ✓ Dairy and meat products	✓ Beverages ✓ Bakery products ✓ Confectionary ✓ Liquid supplements ✓ Drying agent
<b>Sunfiber® IG</b> (Intermediate Grade)	> 85 % dietary fiber Bulk density: 0,38 – 0,40 g/cc Slightly agglomerated powder Dust reduced powder Easier to incorporate in water 100 % clear solution in water No color in solution. No taste.	✓ Bars and crisps ✓ Protein + powder shakes ✓ Capsules and tablets ✓ Meat products ✓ Dairy products	✓ Beverages ✓ Bakery products ✓ Confectionary ✓ Liquid supplements ✓ Powder blends
<b>Sunfiber® AG</b> (Agglomerated Grade)	> 85 % dietary fiber Bulk density: 0,20 – 0,24 g/cc Highly agglomerated powder Very easy to dissolve in water 100 % clear solution in water No color in solution. No taste.	✓ Dietary supplements ✓ Foods for special medical purposes (FSMP) ✓ Powder blends	✓ Probiotic blends ✓ Instant beverages blends ✓ Tea bags
<b>Sunfiber® HG</b> (Highly Hydrolysed Grade)	> 85 % dietary fiber Bulk density: 0,50 – 0,58 g/cc Very fine dusty powder 100 % clear solution in water No color in solution. No taste.	✓ Dairy products ✓ Beverages ✓ Confectionary (gums) ✓ Sports gels	✓ Liquid supplements ✓ Syrups ✓ Concentrates ✓ Drinking ampoules

## ORGANIC SUNFIBER® PRODUCT RANGE (CERTIFIED ORGANIC)

Product	Specification	Application	
<b>Sunfiber® ST-O</b> (Standard Grade Organic)	> 80 % dietary fiber Bulk density: 0,50 – 0,58 g/cc Very fine dusty powder 100 % clear solution in water Light yellow color in solution Slightly beany smell and taste.	✓ Use as flour ✓ Bars and crisps ✓ Protein + powder shakes ✓ Capsules and tablets ✓ Meat products	✓ Beverages ✓ Bakery products ✓ Confectionary ✓ Liquid supplements ✓ Drying agent
<b>Sunfiber® R-O</b> (Regular Grade Organic)	> 85 % dietary fiber Bulk density: 0,50 – 0,58 g/cc Very fine dusty powder 100 % clear solution in water No color in solution. No Taste.	✓ Use as flour ✓ Bars and crisps ✓ Protein + powder shakes ✓ Capsules and tablets ✓ Dairy and meat products	✓ Beverages ✓ Bakery products ✓ Confectionary ✓ Liquid supplements ✓ Drying agent
<b>Sunfiber® AG-O</b> (Intermediate Grade Organic)	> 85 % dietary fiber Bulk density: 0,20 – 0,24 g/cc Highly agglomerated powder Very easy to dissolve in water 100 % clear solution in water No color in solution. No Taste.	✓ Dietary supplements ✓ Foods for special medical purposes (FSMP) ✓ Powder blends	✓ Probiotic blends ✓ Instant beverages blends ✓ Tea bags

### SUNFIBER® AS NEW AGENT WITH MULTIPLE PURPOSES

Sunfiber® – the tasteless and colorless clearly water soluble dietary bean fiber from the Indian Guar Bean – can be used and labelled as dietary fiber and it offers many nutritional benefits. Moreover, Sunfiber® can be used as drying agent, bulking agent and in combination with other nutrients to develop synergistic benefits. Its sustainable and economically friendly production in Rajasthan in India is advantageous as well.

### COMBINATIONS OF SUNFIBER® WITH OTHER RAW MATERIALS

Taiyo develops more and more combinations of Sunfiber® with other raw materials in cooperation with partners and customers. These combinations are not just blends but homogenous agglomerations of Sunfiber® with other materials for use as instant products or in powder blends. These formulated, agglomerated or extruded products are produced and distributed by Taiyo's partner companies. All these combinations can be customized for individual needs if the volumes are high enough.

### SUNFIBER® AS "CARRIER-FREE" DRYING AGENT

Normally a carrier, such as maltodextrin is needed for drying juices and other herbal products. Sometimes maltodextrin is used in high quantities up to 50 – 75 %. Maltodextrin is a sugar that has to be labeled as carbohydrate with 4,2 Kcal/g. Besides its carrier function maltodextrin has NO other health benefit or other physiological function than just supplying carbohydrate calories. More and more consumers do not want maltodextrin in their products, for example overweight people, diabetic people or health conscious people. Sunfiber® can be used as a carrier to dry juices and supplies fiber with reduced caloric intake and all health benefits of dietary fiber. Sunfiber® is declared as dietary fiber and the material can be declared as carrier-free. One of the first products is the carrier free SunCran™ Naturelle, a combination of cranberry juice sprayed on Sunfiber®.

### SUNFIBER® AS "CARRIER-FREE" BULKING AGENT

Sunfiber® can be used as agent to increase the volume of products for better homogeneity and make it easier to use small quantity raw materials. For example, instant teas are used in a dosage of 300 mg per serving. 300 mg is a very small dosage and the instant teas are hygroscopic and tend to lump together. In FiberTea the 300 mg instant dosage is sprayed on 3 g of Sunfiber®. This makes FiberTea easier to use and reduces hygroscopicity and lumping. Also, L-theanine (100 – 200 mg) can be added for brain-gut health concepts or probiotics (100 – 200 mg) for prebiotic-probiotic concepts can be easily used in combination with 3 g of Sunfiber® for instant drinks.

### SUNFIBER® AS STARCH, FAT OR CARBOHYDRATE REPLACER

Sunfiber® can also be used to replace fat, starch or carbohydrates in food products. In dairy products such as yoghurt drinks Sunfiber® can be used to reduce 30 % of the sugar. In this case an EFSA Nutritional Claim for fiber enrichment and an EFSA Health Claim for sugar reduction (reduction of postprandial blood sugar) can be made for this product. In flours for baking, Sunfiber® can be used to reduce 20 – 33 % of the starch containing flour. Sunfiber® as polymer of 20.000 Da also has some foam stabilizing effects, that makes products creamier (more "fat-like") and increases the mouth feeling of dairy products such as ice cream or yoghurt drinks.

### SUNFIBER® AS TECHNICAL ADDITIVE

Sunfiber® can also be used as a technical additive for example for pressing tablets as bulking agent instead of HPMC, rice starch or maltodextrin. The advantage is the clean labelling because Sunfiber® is not a carbohydrate but a dietary fiber and can be labelled as water soluble bean fiber.

### SUNFIBER® AS SEPARATING AGENT

Sunfiber® can be used as separating agent for the production of capsules. It can be used alternatively to common separating agents as HPMC, magnesium stearate or Aerosol. As a result the product could be labelled as "separating-free" and it would include a small amount of fiber as additional benefit.