Custom Premixes & Microencapsulation

For the food and beverage industry

At Watson, we are dedicated to building on our family tradition of quality and commitment to customers, which has formed the foundation from which we have grown and will continue to grow for generations.

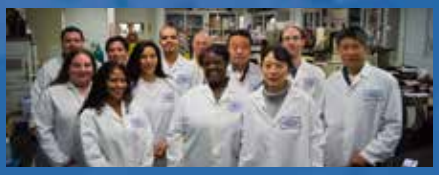
Watson

CONTENTS

Custom Nutrient Premixes
Page 5

Research & Development / Support
Page 5

Microencapsulation
Page 8



Quality
Page 12

Certificates of Analysis
Page 13

Quality Statement
Page 14

WATSON ... WHAT WE DO

We provide the ingredients to healthy foods, beverages, and dietary supplements.

Together with our customers we strive to improve health and wellness around the world.

We are more than just a manufacturer. We believe in partnering and building long term relationships with our customers.

We are committed to assisting our customers reach their goals in product formulation, market growth, and new product launches as well as their long term strategic goals.

Part of this partnership involves the sharing of ideas. Our customers look to us to provide them with more than just quality ingredients. They look to us for new product concepts, ideas for product line extensions, and re-formulations of their existing products.

We work with you to ensure you meet your development, production, and marketing goals.

We take care of all the logistical details so you know the products you need will be delivered to you on time. We focus on your nutrient requirements and your orders so you can focus on your business.

ADVANTAGES
That give you a competitive edge

EXPERIENCE
That makes the difference

PEOPLE
Who care about your success

TECHNOLOGY
That powers your innovation

SOLUTIONS
That overcome your challenges

FLEXIBILITY

At our modern facilities in Connecticut and Illinois, Watson has the capabilities to produce both dry and liquid premixes. We use a wide range of commercial blenders to accommodate batch sizes ranging from bench top development to full scale production run, while ensuring homogeneity of every Watson premix.

YOUR NUTRIENT PREMIX

CUSTOM

An exact fit to your goals and your product

Watson's Custom Nutritional Premixes represent precise combinations of micro- and macronutrients specifically designed to suit your unique food product. Each nutrient component is prescaled and precision blended into a premix. This premix can then be custom packaged to fit your batch size requirements.

Typically, premixes are perceived to consist of only vitamins and minerals. At Watson, we have the capability to custom formulate a premix to include such functional ingredients as fibers, gums, amino acids, and other ingredients.

When vitamins, minerals, and functional ingredients are added to a food product, they must be added in precisely the right amount, in the proper chemical form, and at the right time during your production process in order to achieve accurate fortification. Because every food product and process is unique, there is no single formula to satisfy every need. Watson will custom formulate a premix to suit the characteristics of your finished product.

SUPPORT

Critical to your success

At Watson we are committed to complete support of you, our customer.

The members of Watson's Nutritional Product Development Team are experts in the development of quality premixes and also offer a diverse knowledge base in the production of a wide range of food and beverage products. Watson's development team helps our customers through all stages of the development process.

The critical point in the development process begins after the vitamin/mineral levels have been established for the finished product. It is at this point that overages must be calculated to compensate for any losses that may occur during the manufacture and shelf life of the finished food product. Decisions must also be made as to the most suitable form of a nutrient, based on many factors including finished product characteristics (such as pH, moisture level, and metallic ion level), possible ingredient interactions, processing conditions, and packaging. The optimum point at which the fortification should be added during the manufacturing process needs to be determined and consideration must also be given to temperature and the degree of exposure to oxygen, among other factors.

SAVE TIME

The benefits of a custom premix

- Improves purchasing efficiency by minimizing the number of raw materials and vendors.
- Watson's Certificate of Analysis reduces the Quality Control process at your facility.
- Reduces lengthy scaling processes.
- Premix homogeneity simplifies the finished good Quality Control process.

SAVE MONEY

The benefits of a custom premix

- Reduces freight costs on individual ingredients.
- Reduces inventory / warehousing.
- Eliminates costly scaling errors.
- Reduces waste.
- Reduces labor costs.
- Reduces Quality Control costs.
- Reduces the need for outside assays.
- Reduces the number of purchase orders processed.
- Simplifies the complex product development process.
- Delivers optimum nutrient value.

ADVANCED EXPERT GUIDANCE

Technologies and capabilities

Watson's sophisticated production capabilities incorporate advanced technologies such as microencapsulation, offering a wide range of barrier properties for flavor masking and to overcome moisture, heat, and oxygen sensitivities. We also offer spray drying, micronizing, and instantizing.

To accelerate your R&D timeline

The Watson Nutritional R&D laboratory plays a pivotal role in bringing our customers' new product concepts into reality. Watson's Nutritional R&D Team is composed of individuals from a wide range of disciplines, including food scientists, nutritionists, cereal scientists, chemists, chemical engineers, pharmacologists, biologists and analytical chemists.

Watson's Nutritional R&D Team is well positioned to guide our customers through the process of product development and the development of in-house analytical methods.

MICRO-ENCAPSULATION

Customization & benefits

Customization: In addition to the products listed on the next page, Watson offers custom encapsulation technologies. Our research and development team would be happy to work with you to design specialized encapsulants developed specifically to suit the properties of your finished product and processing conditions.

Benefits: Watson's encapsulated vitamins and minerals afford the benefits of increased stability, prolonged shelf life, and reduction of overages, resulting in significant cost savings. Furthermore the vitamins and minerals are effectively protected from reactions with other ingredients in the blend or finished product. In this way, even the most sensitive or oxygen reactive ingredients can be effectively protected. A higher level of customer appeal is achieved through taste masking and minimization of unpleasant odors. An additional benefit offered by Watson's encapsulated ingredients is superior free flowing characteristics.

WHY?

Reasons to use encapsulated Ingredients

- **Reduce Overages:** To ensure label claim is met, often higher levels ("overages") of nutrient must be added to compensate for expected losses in potency that occur during processing and over the course of shelf life. Given the high cost of many nutrients, these overages can add up to significant amounts over time. Encapsulation protects these nutrients. Reducing losses and minimizing overages, resulting in considerable cost savings.
- **Protection:** From moisture, acids, ingredient interactions, heat, and exposure to oxygen.
- **Release Parameters:** Engineered so that the nutrient can be protected from processing losses and released only when desired, for instance at a specified temperature or in the stomach for digestion.
- **Flavor and Odor Masking:** Increases consumer acceptance by minimizing unpleasant tastes and odors associated with certain nutrients.
- **Ease of Handling:** Encapsulated ingredients are dry and free flowing.
- **Precision:** The stability afforded by encapsulated ingredients allows measuring and delivery of precise levels of the desired nutrient.
- **Effectiveness:** Encapsulation is critical to such products as medical foods, nutra-cueticals and meal replacement products where such characteristics as stability, bioavailability, delivery, and effectiveness are closely regulated.
- **Quality Assurance:** Watson's in-house quality control laboratory verifies the quality and potency of every raw material before it is used in any Watson product. Our blends are produced under rigorous quality control standards. Each batch of encapsulated product is then assayed after production to assure homogeneity, particle size, and potency. Every order is shipped with a Certificate of Analysis.
- **Complete Support:** Watson's experienced technical service and development staff are available to help determine the best form of vitamin, mineral, or encapsulant material for your application, considering such factors as finished product characteristics, process conditions, and storage.

MICRO-ENCAPSULATED VITAMINS

Ascorbic Acid 60%

Watson's encapsulated Ascorbic Acid is a white to off white, free flowing powder. Each gram of encapsulated material contains 600 mg of Ascorbic Acid USP completely encompassed in a protective matrix. Watson's encapsulated Ascorbic Acid is an excellent source of vitamin C. Watson's specialized encapsulants prevent the vitamin C from interacting with other components or ingredients. Watson's encapsulated form of vitamin C is significantly more stable, increasing shelf life and reducing the overages needed. Taste masking and odor minimization is also achieved.

Niacinamide 33 1/3%

Watson's encapsulated Niacinamide is a white, free flowing powder. Each gram of encapsulated material contains 333 mg of Niacinamide encompassed in a protective matrix. Watson's encapsulated Niacinamide is an excellent source of niacin. Watson's encapsulation provides taste masking and minimization of odors.

Pyridoxine HCl 33 1/3%

Watson's encapsulated Pyridoxine HCl is a white, relatively free flowing powder. Each gram of encapsulated material contains 333 mg of Pyridoxine Hydrochloride USP-FCC encompassed in a protective matrix. Watson's encapsulated Pyridoxine Hydrochloride is an excellent source of vitamin B6. Watson's encapsulants provide improved stability, flavor masking, and the reduction of characteristic odors.

Riboflavin 33 1/3%

Watson's encapsulated Riboflavin is an orange, free flowing powder. Each gram of coated material contains 333 mg of Riboflavin USP-FCC encompassed in a protective matrix. Watson's encapsulated Riboflavin is an excellent source of vitamin B2. Watson's encapsulants provide improved stability, flavor masking and the reduction of characteristic odors.

Sodium Ascorbate 50%

Watson's encapsulated Sodium Ascorbate is a white, free flowing powder. Each gram of encapsulated material contains 500 mg of Sodium Ascorbate encompassed in a protective matrix. Watson's encapsulated Sodium Ascorbate is a specialized source of vitamin C that affords increased stability and is ideally suited for high temperature processes. Watson's specialized encapsulants protect the vitamin C from interacting with other components or ingredients. Watson's encapsulated form of vitamin C is significantly more stable, increasing shelf life and reducing overages needed. Taste masking and odor minimization is also achieved.

Thiamine Mononitrate 33 1/3%

Watson's encapsulated Thiamine Mononitrate is an off white, free flowing powder. Each gram of encapsulated material contains 333 mg of Thiamine Mononitrate in a protective matrix. Watson's encapsulated Thiamine Mononitrate is an excellent source of thiamine. Watson's encapsulants provide improved stability, flavor masking, and the reduction of characteristic odors.

MICRO-ENCAPSULATED MINERALS

Copper Gluconate 50%

Watson's encapsulated Copper Gluconate is a blue-green, free flowing powder. Each gram of coated material contains 500 mg of Copper Gluconate protected in a matrix. Watson's encapsulated Copper Gluconate is an excellent source of copper. Each gram of encapsulated material delivers 70 mg of copper. Watson's encapsulants provide excellent taste masking and protection against reactions with other ingredients.

Ferrous Fumarate 60%

Watson's encapsulated Ferrous Fumarate is a reddish brown, free flowing material. Each gram of coated material provides 600 mg of Ferrous Fumarate USP protected in a matrix. Watson's encapsulated Ferrous Fumarate is an excellent source of iron. Watson's encapsulants provide excellent taste masking and protection against reactions with other ingredients.

Ferrous Sulfate 60%

Watson's encapsulated Ferrous Sulfate is an off white, free flowing powder. Each gram of coated material contains 600 mg of Ferrous Sulfate USP protected in a matrix. Watson's encapsulated Ferrous Sulfate is an excellent source of iron. Watson's encapsulants provide excellent taste masking and protection against reactions with other ingredients.

Magnesium Oxide 40%

Watson's encapsulated Magnesium Oxide is a white, free flowing powder. Each gram of coated material contains 400 mg of Magnesium Oxide USP protected in a selectively permeable matrix. Watson's encapsulated Magnesium Oxide is an excellent source of magnesium. Each gram delivers 241.2 mg of magnesium. Watson's encapsulants provide excellent taste masking and protection against reactions with other ingredients.

Sodium Bicarbonate 50%

Watson's encapsulated Sodium Bicarbonate is a white, free flowing powder. Each gram of coated product contains 500 mg of Sodium Bicarbonate USP in a time release matrix. Watson's encapsulated Sodium Bicarbonate prevents premature release of CO^2 in baked goods. The reaction occurs predictably at the desired moment in the baking process.

Watson's microencapsulated vitamins and minerals are widely used in fortification of RTE granolas, snack foods, health foods, medical foods, powdered beverages, infant feeding products, tablets, and capsules.

The above is only a partial listing of our micro-encapsulated product line. For a complete list of products please contact sales at 1-800-388-3481 or 203-932-3000.

HIGH QUALITY STANDARDS

All data reported on the Watson C of A is checked for accuracy by two technicians and two laboratory managers prior to the C of A being issued.

High quality control standards are supported by Watson's state-of-the-art analytical laboratory. The quality control group consists of a staff of ten, all of whom possess either an MS or Ph.D. in chemistry. Mineral and trace elemental analyses are supported by two ICP emission spectrometers and an ICP mass spectrometer. Vitamin, supplement, and pharmacological active analyses are supported by eight HPLC systems, two UV spectrophotometers, and a dual beam IR spectrometer. The wide variety of specialized instrumentation and test methodology also includes specific ion electrometers, particle size classification, programmable viscometer, auto-titration, and microscopy, which are extensively employed in the quality control process.

QUALITY

The Watson difference

Analytical Data supported C of A

Watson assays several samples for each production lot. Actual results are checked by three analytical chemists prior to the Certificate of Analysis being signed.

Some companies report "Audit" in place of actual assay data. This means that batch records and supporting documentation were reviewed and that the correct amount of that nutrient should therefore be in the final blend. Reporting "Audit" as a result means no actual assay was conducted. Certificates reporting "Audit" are generally called Certificates of Compliance (C of C). They are not true Certificates of Analysis. Audited results are sometimes offered in the industry in place of true assay results to save costs. However, audits will not catch a homogeneity problem, when reactions between raw materials occur, raw material potency issues, or operator errors, such as a raw material not being added to a blender or being spilled during addition.

Prior to being released for shipment to our customer, an average Watson premix undergoes more than 45 physical and chemical tests by validated analytical methods requiring over 30 man hours.

Why you should insist on an Analytical Data supported C of A

(1) Performing analytical tests is the only way to catch many errors and problems which can occur during manufacture. C of As which report "Audit" in place of key results have no analytical data to support that an item meets specification.

(2) You have the assurance that the premix meets your specification before it is added to your product. It is not uncommon, based on typical use rates, for 1000 pounds of premix to be used to produce over 1 million consumer units of finished product. One lot of out-of-spec premix can affect an enormous amount of finished consumer product.

(3) The FDA and many consumer groups are becoming far more aggressive in taking retail products off shelves and testing them against label claim. The incidences of products not meeting label claim are the subject of many news bulletins and consumer advisory panels. A correctly formulated premix with a Certificate of Analysis is your best assurance that your product will meet label claim if tested.

(4) The costs for assay-verified ingredients, with assured potency, is the investment required for superior manufacturing.

Requiring assay verification on your nutritional ingredients is part of your overall quality program, your company's SOPs, GMPs, ISO certification, and HACCP.

BACKED BY QUALITY

Knowing you will meet label claim

Watson Nutritional Ingredients are backed by Quality, so you know your finished product will meet label claim.

Of all the efforts that a company undertakes, the most important may be quality control. In the health and wellness industry, effective quality control is essential.

When a product contains lower nutrient levels than stated on the label, it is evident that quality control procedures are failing.

Our Certificate of Analysis is critical in assuring that your product will meet label claim.

- Retained samples of all raw materials and finished goods are maintained in our archives for a minimum of one year past expiration.
- Accurate formulation of the nutritional ingredient systems in our R&D labs takes into account potency losses which can occur due to processing, packaging, and shelf life stability issues.
- Incoming raw materials are quarantined upon receipt. After QC approval by USP & FCC standards, materials are released for use in production.
- Validated analytical test methods are employed for QC release of all finished goods.
- Commitment to cGMP standards ensures the commitment to quality in all our processes.
- Science and Technology: Watson employs microencapsulation to increase nutrient stability and shelf life while preventing ingredient interactions. Many of Watson's premixes are formulated with custom microencapsulated ingredients.

THE DATA YOU NEED

The way you want to receive it

The Certificate of Analysis is sent with every shipment and a digital PDF copy is e-mailed at the time of the shipment along with a shipping confirmation and tracking number for the shipment. This assists our customers in getting the Certificates of Analysis to their Quality Departments before the shipment arrives.

We can include any of the following information on your Certificate of Analysis:

- Customer Purchase Order Number
- Customer Item Number
- Sales Order Number
- Container Number(s)
- Lot Expiration Date(s)
- Lot Manufacturing Date(s)
- Issue Date for a C of A
- Test Date(s)
- Actual Assay Result(s)
- Assay Target Specification
- Assay Minimum Specification
- Assay Maximum Specification
- Label Claim

Watson Inc.
301 Heffernan Drive
West Haven, CT 06516

Phone: (203) 932-3000
(800) 388-3481
Fax: (203) 932-8266

info@watson-inc.com
www.watson-inc.com