

A U S T R A L I A N

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Bulk nutritional supplements blended in pharmaceutical grade rotary mixer

Nutritional supplements producer Daily Manufacturing says a mini rotary batch blender, supplied by Munson, is easier to clean, more consistent and more reliable than the rotary blender it replaced.



The 0.28m³ capacity Munson Rotary Batch Mixer at Daily Manufacturing's plant. The drum rotating on external twin pillow block roller bearing assemblies gently but thoroughly mixes ingredients having different bulk densities, according to the manufacturer.



Munson says its mixer is suited for blending small quantities of additives as it inter-mixes ingredients – even trace amounts – thoroughly and rapidly.

Daily Manufacturing, a small business which aims to produce high quality nutritional products from natural sources such as vitamins and minerals, was founded in 1979. It originally manufactured just one product for Dr Carey Reams, an agricultural biochemist who eventually developed an entire line of nutritional products derived from natural sources.

Over the past 35 years Daily Manufacturing has grown to become the manufacturer of all products sold under the Reams brand name and its own. The manufacturer also provides natural products to producers of other nutritional products around the world.

A key step in the manufacturing process is blending of the various ingredients that make up each of the company's range of more than 50 products.

Compliance with FDA sanitation standards is critical, as the agency performs regular inspections of the company's manufacturing facilities.

"The 0.425 cubic metre ribbon blender that we formerly used was difficult to clean, especially the centre shaft, which was difficult to reach," explains Jim Daily III, Daily Manufacturing's vice president, and son of the founder.

"It also had internal bearings that became damaged by the

abrasive particles that we process and had to be replaced frequently because fine powders could escape."

Daily manufacturing replaced the ribbon blender with a mini rotary batch mixer from Munson.

"The drum rotates on external twin pillow block roller bearing assemblies rather than having an internal shaft and bearings," Daily describes. "It gently but thoroughly mixes ingredients having different bulk densities, generating much smaller amounts of fine powder than the ribbon blender. It also is easy to clean when we switch products."

"The Munson mixer is ideally suited for blending these minute quantities of additives," says Mark Brown, a graduate chemist employed as Daily Manufacturing's production coordinator.

"The blender's rotating drum has internal mixing flights that provide a 4-way mixing action – continuous tumbling, turning, cutting and folding – to assure thorough and rapid inter-mixing of all ingredients, even trace amounts, with zero stratification and segregation."

Daily Manufacturing produces more than 50 blended products in batch sizes ranging from 15kg up to 200kg.

"The mini mixer thoroughly blends a batch in less than half the time required by the ribbon blender, greatly increasing our



Continuous rotation of the drum helps assure total discharge, which is important as Daily Manufacturing changes products processed in the mixer several times a week. Hand wheel eases operation of the discharge gate.

productivity, and is flexible enough to meet our current and future needs," Brown says.

"With a capacity of 0.28m³, it can easily handle a wide variation in batch sizes and provides equally efficient mixing at 100% down to 10% of maximum capacity, even with ingredients added in trace quantities. The bulk densities of our ingredients vary from 0.38 to 0.45g/cm³ and often have disparate particle sizes. Although none of our current products requires addition of a liquid spray during mixing, the mixer has this capability should we ever need it."

With such a diversity of products, ease of cleaning between batches was an important consideration in selecting the mini rotary batch mixer.

"On average, we change products being processed in the mixer several times a week," Brown explains. "An important feature was 100% discharge upon completion of the mix cycle, with only an insignificant amount of residual dust. It's pretty easy to get rid

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The mixer is built to pharmaceutical standards, with polished continuous internal welds and product contact surfaces constructed of stainless steel. Internal mixing flights provide 4-way mixing action to assure thorough and rapid mixing of ingredients without stratification and segregation.



Daily Manufacturing says the mini mixer cleans easily and quickly between product runs, as its mixing action leaves only small amounts of fine powder.



Daily Manufacturing incorporates the most natural ingredients available, such as bee pollen with a blend of herbs.



A selection of Daily Manufacturing products made by the mixer.

of that small amount of residue by rinsing the blender with hot water containing surfactants, running it for about ten minutes and then doing a plain hot water rinse, especially since all interior areas are readily accessible for fast, thorough sanitising.

"The entire process takes only about 15 minutes, compared with the 30 minutes it used to take to clean the ribbon blender."

The mixer's internal mixing flights are spaced for easy access and continuously welded to the drum wall for total product discharge. All internal welds are polished and have a minimum 6.35mm radius to eliminate corners, cracks and crevices for material entrapment and are polished to better than 32Ra (surface roughness average). All product contact surfaces are constructed of stainless steel and its support structure and guards are epoxy painted.

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DRYING

GEA Barr-Rosin dryer for Arab Potash plant

Middle Eastern miner Arab Potash Company (APC) has chosen a GEA Barr-Rosin rotary drier for its plant in Jordan, where it processes potash harvested from the Dead Sea.

GEA Barr-Rosin, which is based in the UK but has major offices in Canada and the US, supplied the plant with a number of dryers and a cooler in 2006.

The supplier says machinery destined for the Jordanian plant has to be able to operate in harsh, desert conditions, where temperatures soar in the day and can plummet to near freezing at night.

It says its heavy-duty rotary dryer is designed to withstand these conditions, and is prepared for the corrosive environment endured at the APC plant.

GEA Barr-Rosin sales and marketing manager Dominique Kuehner said the key to achieving a new contract with APC was the supplier's success in the past, supplying the same equipment to the same environment.

"We have built a very close working relationship with APC," Kuehner said "We provide reliable, high specification equipment that is tough enough for this demanding duty and extreme environment.

"We are very careful to make sure that the servicing needs of the



Interior of an industrial dryer similar to the one sold to APC.

equipment are kept up to date and support is always on hand," he added. "When you are working by the Dead Sea and face pressure to meet production commitments, the last thing we want is an unscheduled stoppage."

GEA Barr-Rosin says its dryers are ideally suited to potash applications.

APC is a leading potash producer in the region and a major supplier to Asian and Mediterranean markets.

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