

Advantages of Filtermat Technology

There are many different methods used for producing powders but the most common method used in the food industry is spray drying. Bioriginal's partner, Kievit, uses a specific spray drying process known as filtermat drying technology which offers significant advantages over conventional spray drying.

Conventional Spray Drying Process

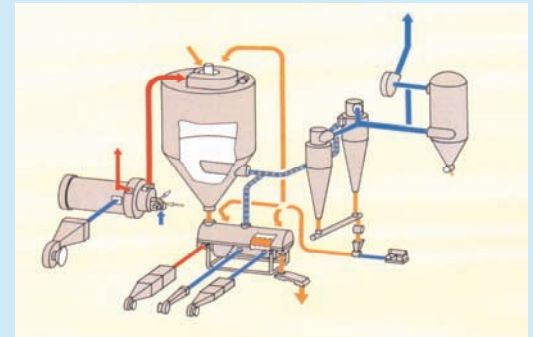
Spray drying involves producing an emulsion in which all the ingredients of the final powder are present. This emulsion is then sprayed into a heated tower. As the fine emulsion droplets fall under gravity to the bottom of the tower the water present in the emulsion is evaporated and a dry powder results.

Filtermat Drying Process

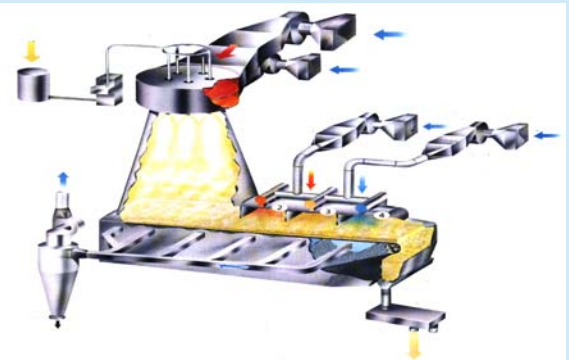
Both conventional spray drying and filtermat drying processes produce an emulsion that is sprayed into a tower. However, the similarities end there as 4 key differences are apparent in the filtermat drying process:

- The air flow in the tower is laminar* and not turbulent** as is the case with conventional spray drying, which means particles are subject to less physical damage as they fall down the tower. This results in more consistent mesh size with fewer broken particles, thus a better encapsulation
- Lower drying temperatures mean less thermal stress is applied to the particles, thereby reducing the risk of oxidation damage to the oil
- The residence time in the tower is much longer
- The wet powder particles fall onto a belt at the bottom of the tower which then transports the powder on for further mild drying

Conventional Spray-Drying Technology



Filtermat Drying Technology



Filtermat Drying Benefits

The four differences outlined for filtermat drying technology result in milder process conditions compared to “standard” spray drying which means that oil deterioration effects are kept to an absolute minimum resulting in the highest quality powder possible. In addition, the increased residence time in the tower gives greater flexibility on the oil loading and hence the ability to tailor powder production to meet the demands of a specific product application more closely.

Filtermat Drying	Conventional Spray Drying
Higher oil load (minimum 50%)	Lower oil load (maximum 50%)
Laminar air flow*	Turbulent air flow**
Low physical stress on powder particles	High physical stress on powder particles
Low free oil	High free oil
Long residence time in the tower	Short residence time in the tower
Minimal thermal stress	High thermal stress

* Laminar is characterized by layers of air moving in the same direction and at the same velocity.

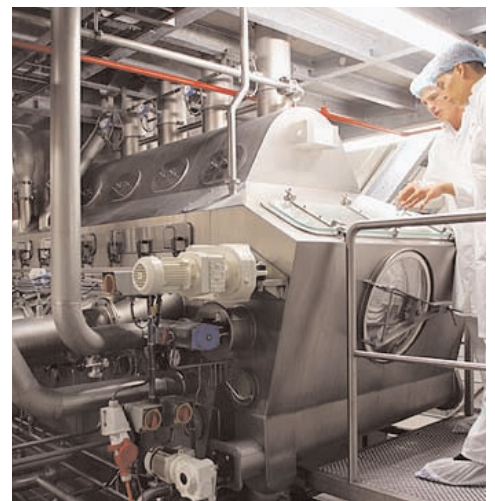
** Turbulent airflow is characterized by disorganized air molecules flowing at speeds that are constantly changing. Thus, powders experience increased stress as they are bumped around by the disorganization of airflow.

Quality Assurance

Bioriginal’s partner Kievit produces the EFA powders in a state-of-the-art facility in The Netherlands. As with all Bioriginal products, pride, care and attention to detail ensures that the highest possible quality standards have been established for all of the EFA powders.

The quality assurance program consists of:

- Fully traceable ingredients
- Premium raw materials are selected and analyzed prior to use
- Kosher and Halal certification on specific products
- Complete hygienic redesign of production to infant formula standards
- ISO 9001, HACCP, BRC, EU 92146 and GMP certified facility



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102 Melville Street, Saskatoon, Saskatchewan, Canada S7J 0R1
Telephone: (306) 975-1166 • Facsimile: (306) 242-3829
Website: www.bioriginal.com • Email: business@bioriginal.com

© Bioriginal Europe/Asia

Bosland 40, 3258 AC Den Bommel, The Netherlands
Telephone: +31 (0) 187 618 020 • Facsimile: +31 (0) 187 618 040
Website: www.bioriginal.nl • Email: info@bioriginal.nl

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