



OMEGA-3 IN
DIRECT COMPRESSIBLE
POWDER FOR TABLET
FORMULATIONS

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gotab®
BY GOLDEN OMEGA

TECH details

gotab® a powder ideal for tableting.

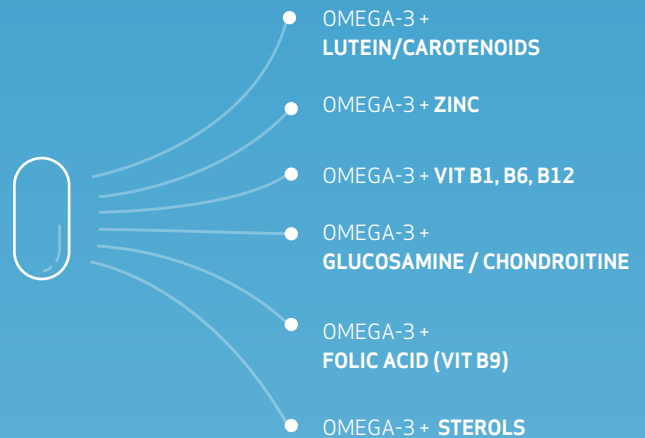
One can believe that when you have a powder, it is easy to make a tablet. **This is unfortunately not the case.**

During pressing of tablets, one is dependent upon the powder having certain essential properties in order to prepare high-quality tablets suitable for modern world production, transport and storage.

gotab® is a powder comprising of complexes where omega-3 fatty acids are physically encapsulated by a carrier. The carrier itself is a tabletable powder, however, loaded with a large and spacious substance as an omega-3 fatty acid, many carriers lose their tableting properties.

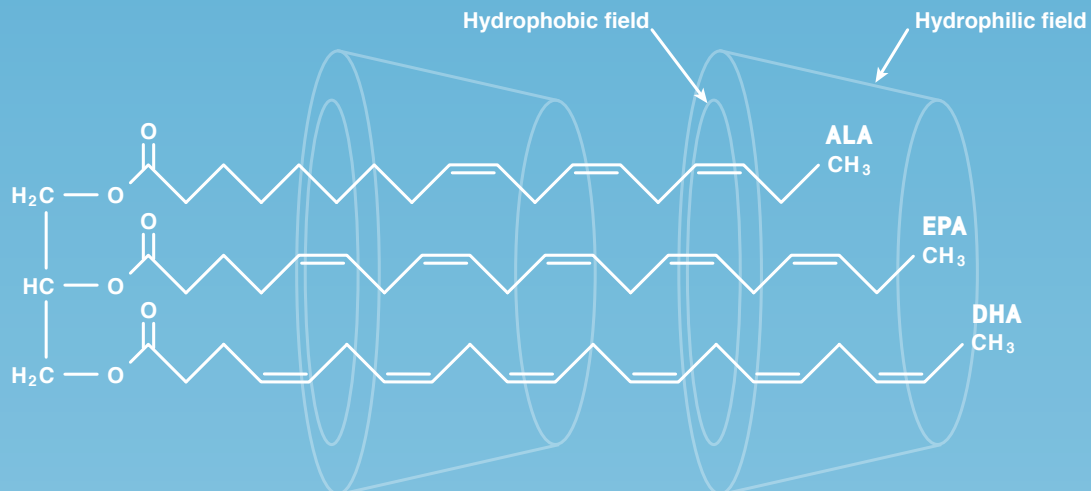
The unique complexing process performed by Golden Omega allows the tableting properties to be preserved, even with as high loading as **30% (w/w)** omega-3 oil, offering the benefits of a tabletable powder with a high content of omega-3.

Combine gotab with other active ingredients



THE OMEGA-3 TRIGLYCERIDE: CARRIER COMPLEX.

The carrier has a lipophilic cavity where the fatty acids are included. The surface of the complex is hydrophilic.





goldenomega® | gotab®

gotab® comprise of rounded particles, the ideal shape for achieving the flowability necessary for tableting.



Particle shape, size and size distribution.

Most tablet machines require excellent flow of the powder formulation to be tableted. The actual pressing of the tablet is performed in a die, a cylindrical piece of stainless steel with an opening shaped like the tablet to be made, where an upper and a lower punch meet for a fraction of a second forming the tablet. The powder is fed directly to the die from a hopper device. If the powder does not flow quickly and evenly from the hopper to the die only facilitated by gravity, the die will not be sufficiently filled, the punches will not have the proper resistance during pressing and there will be no tablet.

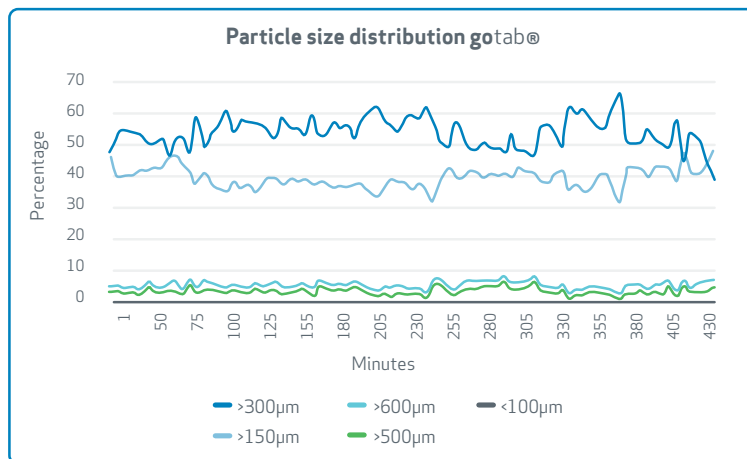
The particle size and shape in a powder give important information on the flowability. Normally, the weight of a particle increases with the size and with increased weight comes improved flowability. However, this is applicable only if the particle has a shape contributing to good powder-flow.

One can imagine that if the powder consists of needle-shaped particles, an increase in particle size is not at all favourable for the flowability. gotab® comprise of rounded particles, the ideal shape for achieving the flowability necessary for tableting.

In addition to size and shape, the particle size distribution of powder is essential to achieve a good filling of a tablet die. Imagine ping-pong balls being poured into a bucket, all the space wasted around each ball due to the equal size of the balls.

A powder for tableting should have a particle size distribution wide enough to fill out most voids in the tablet die. Such voids naturally being of various sizes, several different sized particles favour a maximal fill, causing the maximum possible content of active ingredient inside the resulting tablet. At the same time, it is important that the powder distribution is not too wide or too scattered, as this among other could cause segregation of smaller particles during blending of the tablet formulation.

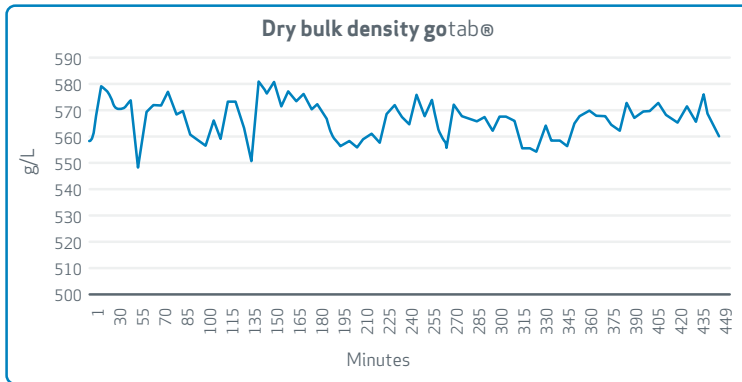
gotab® has a particle size distribution with the main bulk being between 150 to 300 microns (>90%). The outliers are mainly particles between 500 and 600 microns (approx. 5%). The section of particles less than 100 microns is zero, securing against segregation during blending, handling and storage of the powder.



A typical result from particle size distribution measurements performed regularly during production of gotab®.

100 g. of powder is sampled every 5 minutes and the particle size distribution is measured.

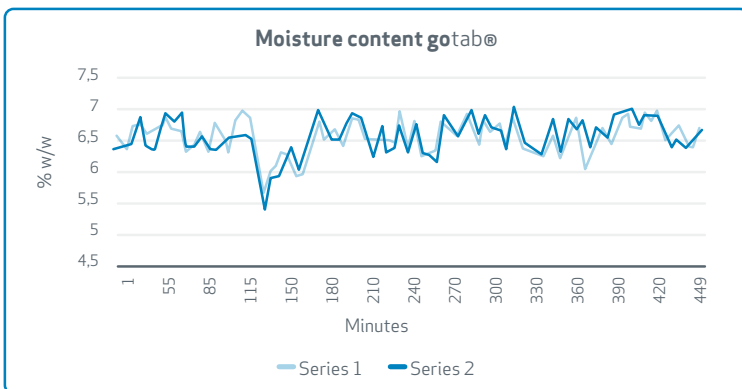
The bulk density of a powder is another indicator of how the size and shape of the particles and the particle size distribution contribute to how the powder settles when poured into a cylinder. The bulk density of **gotab®** averages at 567 g/L, ranging in the narrow scope of $\pm 3\%$ throughout the entire production.



Compressibility of the powder.

Even with ideal flow and particle size distribution, a powder cannot become a tablet if the powder does not have the properties to achieve internal locking between particles when compressed together. This property is often referred to as the compressibility, or even more describing the compactibility, of the powder.

All powders have a certain residual moisture, as water is taken up from the air and adsorb to the particles in an equilibrium determined by the water adsorption ability of the powder and the moisture content in the surroundings. A certain water content is an advantage during compression and compaction of a tablet, as the water molecules act as a lubricant reducing inter-particulate friction and facilitating binding via van der Waals forces. The ideal water content in a powder for tableting varies from powder to powder, but range typically from 5-8% (w/w).



The residual moisture in **gotab®** is measured every 5 minutes throughout the production and is on average 6.5%, ideal for tableting.

A powder is often designated as direct compressible when it is possible to compress the powder without use of facilitating excipients comprising more than 10% of the overall tablet formulation. For a powder with oil as the active ingredient, there is a risk that all the fat embedded in the powder could ruin the compressibility by forming a fatty layer between the particles, preventing the necessary particle-to-particle interlock. When the powder comprising the active ingredient itself is not direct compressible, it requires addition of direct compressible filler-binders like microcrystalline celluloses or granulated lactose to the tablet formulation to be able to include the active ingredient in a tablet.

The physical complexation of the fatty acids performed in the powder preparation process of **gotab®** ensure that the fatty acids maintain encapsulated at the molecular level and that the hydrophilic surface of each complex is available for direct interaction with the next complex, creating granules at the powder stage and ultimately a tablet where the high content of fat does not represent an issue. This makes **gotab®** the only true direct compressible powder with omega-3 available on the market.

For contract manufacturers and brands this innovation represents an opportunity to replace other filler-binders used in various health supplement tablets with **gotab®**. Doing that means replacing an inert filler-binder with a direct compressible powder comprising high amount of omega-3, for added value to the final product.



If you would like to re-refresh an existing tablet formula or launch a new tablet product containing Omega-3, then **gotab®** is the perfect solution for you.



Get to know more visiting us at www.goldenomega.cl