PETER GREVEN Your partner for pharmaceutical excipients

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Your partner for oleochemicals

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Oleochemical additives are among the most important and extensively used excipients in the pharmaceutical industry. Formulation requirements continue to demand higher performance ingredients and industry regulation is increasing. Peter Greven began addressing these requirements many years ago and dedicated a production facility for the manufacture of vegetable stearates. Today, Venlo manufactures pharmaceutical grade stearates of uncompromising quality, consistency, performance and regulatory compliance. The complexity of operations requires a continuous process of improvement and customisation. For decades we have embraced this challenge and are now the market leader for Pharmaceutical Stearates in Europe.

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LIGAMED® High Quality Excipients for the Pharmaceutical Industry

Our brand name LIGAMED® is dedicated to our high quality excipients, specifically developed for use in pharmaceutical applications. LIGAMED® offers an industry leading portfolio of attributes covering exceptional physical and chemical characteristics, dedicated technical support and robust regulatory compliance.

Key quality characteristics and product advantages:

- Our LIGAMED® grades are produced from **vegetable based renewable sources** and are produced according **to strict IPEC PQG GMP regulations.**
- LIGAMED® products comply with **all major pharmacopoeias: Ph.Eur, USP/NF, BP, JP, DAB**
- Kosher and Halal certified grades are available in the LIGAMED® range of products.
- All LIGAMED® products are manufactured using a specific precipitated manufacturing process. Our process has been carefully engineered to produce a high specific surface area (SSA). This particle size and shape offers high formulation efficiencies and improved formulated product results.
- A high percentage of **fine particles** and a narrow particle size spectrum offer exceptional **lubrication, release and separation during the formulation process.**
- LIGAMED® products are manufactured on **dedicated production lines.** There is no possibility of cross contamination.
- Only the very best vegetable based raw materials are used in the production of LIGAMED® products. We offer a comprehensive audit trail to reaffirm our raw material sourcing.
- We are a member of the **Roundtable on Sustainable Palm Oil (RSPO)** and Peter Greven actively supports the development of sustainable palm oil.
- LIGAMED® **batch continuity** is controlled by constant supervision.
- Our LIGAMED® range has been developed from decades of pharmaceutical grade stearate production. This product range will continue to anticipate and serve the highest demands of the pharmaceutical industry.

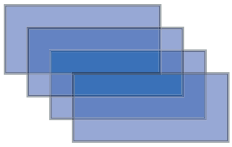
Our **LIGAMED®** grades cover an extensive range of application in the pharmaceutical industry:

- Tableting agent
- Lubricant
- Flowability agent
- Separating agent
- Water repellent

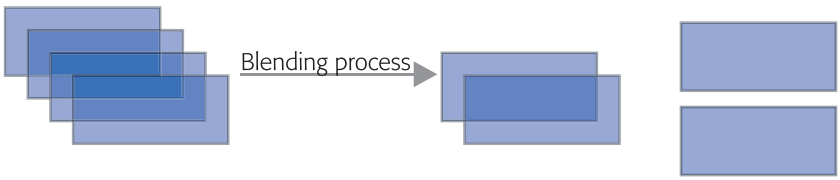
MAGNESIUM STEARATE

Magnesium Stearate is the most widely used excipient in the pharmaceutical industry: it ranks as number one in the list of the Top Ten excipients used in solid oral dosage forms. In the US alone, more than 2.500 pharmaceutical products include Magnesium Stearate.

How does **LIGAMED®** Magnesium Stearate work?



The crystal structure of high quality Magnesium Stearate is often pictured as a deck of cards. Due to the lamella structure Magnesium Stearate offers a very high specific surface area.



During the blending process with active ingredients, carriers or fillers, the "plates" of Magnesium Stearate dismantle from the decks, piece by piece, to coat other particles.

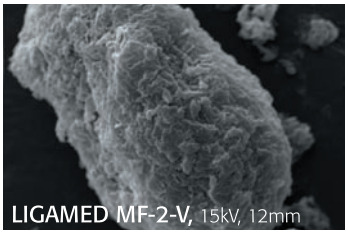




LIGAMED MF-2-V

specific surface area: 6–10 m²/g, median particle size (D50): 7–11 µm

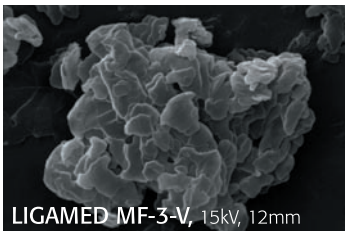
This is our most popular excipient for the production of tablets and capsules. Its high specific surface area and fine particles offer a high releasing speed during tablet pressing and constant physical performance of the tablets such as hardness and dissolution profiles. Due to the exceptional high specific surface area, typical quantity used during formulation is low: 0,2 % to 1 % by tablet weight. In addition to the application as tableting agent, this product is also used as a flowability agent for powder preblends, offering an efficient and low dosage in capsules.


LIGAMED MF-2-V, 15kV, 12mm

LIGAMED MF-3-V

specific surface area: 8–12m²/g, median particle size (D50): 5–9 µm

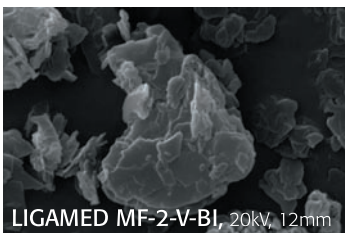
This grade is characterised by the same unique properties as LIGAMED MF-2-V but in addition MF-3-V offers an even higher specific surface area and a smaller median particle size. This product is preferred in applications where processing conditions are more critical and very fine excipients or herbal formulations are used.


LIGAMED MF-3-V, 15kV, 12mm

LIGAMED MF-2-V-BI

specific surface area: 6–8m²/g, median particle size (D50): 7–11 µm

This variation of our LIGAMED MF-2-V offers a lower specific surface area in combination with the favourable crystalline structure of LIGAMED MF-2-V. This grade supports a lower dissolution profile and is used in special formulations as tablet coatings, where a low and stable viscosity is required.


LIGAMED MF-2-V-BI, 20kV, 12mm

LIGAMED MF-2-V PREMIUM

For highly complex pharmaceutical applications (e.g. inhalation medicine) we have developed our LIGAMED MF-2-V PREMIUM. This specialty grade has a very tight specification with additional tests of fatty acid profile, particle size characterization and microbial count.

LIGAMED MF-2-K • LIGAMED MF-3-K

LIGAMED MF-2-K and LIGAMED MF-3-K are produced in accordance with strict Kosher and Halal regulations and offer the respective certifications. These certificates are required for OTC pharmaceutical and nutraceutical preparations in Jewish and Arab cultures. Kosher and Halal certification has also become an important quality standard requested by European formulators.

STEARIC ACID

Some formulations in the pharmaceutical industry are incompatible with Magnesium Stearate. For such formulations, Magnesium Stearate may be substituted by a high quality Stearic Acid. We are pleased to offer you our range of carefully engineered Stearic Acid:

LIGAMED SA-1-V

This grade is a very fine quality of a vegetable Stearic Acid. It is used as a tableting and flowability agent in specific pharmaceutical formulations. LIGAMED SA-1-V is designed to support the high demands of the pharmaceutical industry, it complies with Ph.Eur & USP/NF regulations and is produced by an innovative and complex production process.

LIGAMED SA-2-V

In addition to the characteristics offered in LIGAMED SA-1-V, this grade offers particularly low levels of impurities. This high purity level is achieved through using specially selected raw materials.

CALCIUM STEARATE

Calcium Stearate possesses characteristics assimilable to Magnesium Stearate. Likewise it is physiologically safe and is used as a lubricant, flowability agent and water repellent.

LIGAMED CPR-2-V

specific surface area: 5–9 m^2/g, median particle size (D50): 5–9 µm

Some pharmaceutical formulations include vegetable Calcium Stearate instead of Magnesium Stearate. Our LIGAMED CPR-2-V is a perfect choice encompassing all core **LIGAMED®** pharmaceutical excipient principles. CPR-2-V is also used as a water repellent agent in the production of effervescent tablets. Premature reaction of the effervescent tablet is avoided by preventing unwanted absorption of moisture.

LIGAMED CPR-2-K

Our Calcium Stearate LIGAMED CPR-2-K is produced in accordance with strict Kosher and Halal regulations and offers the respective certifications. These certificates are required for OTC pharmaceutical and nutraceutical preparations in Jewish and Arab cultures. Kosher and Halal certification has also become an important quality standard requested by European formulators.

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