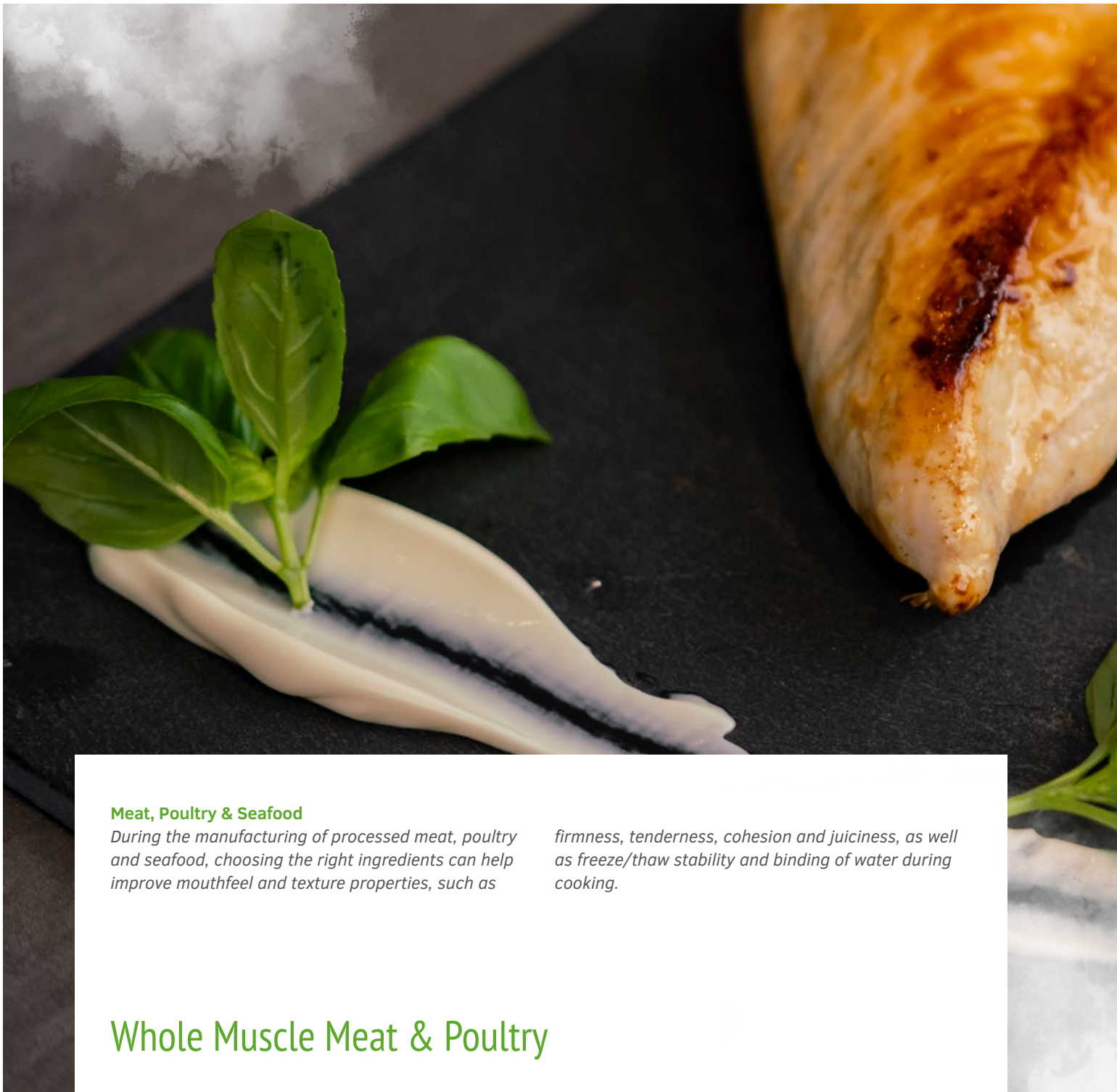




**EMSLAND GROUP<sup>®</sup>**  
using nature to create

## Meat, Poultry and Seafood



### Meat, Poultry & Seafood

*During the manufacturing of processed meat, poultry and seafood, choosing the right ingredients can help improve mouthfeel and texture properties, such as*

*firmness, tenderness, cohesion and juiciness, as well as freeze/thaw stability and binding of water during cooking.*

## Whole Muscle Meat & Poultry

### Water Binding

Processed whole muscle meat and poultry are usually treated with brine before cooking. In order to prevent moisture loss during storage and cooking, ingredients are added to bind the meat juice, keeping the meat products juicy and succulent. These ingredients should have water binding at approximately 72°C, the temperature range that is used for cooking meat and poultry hams.

Native potato starch is the preferred choice for whole muscle meat because of the high water-binding

properties at moderate temperatures. Next to standard native potato starch, the Emsland Group also offers modified starches for meat. When higher cooking temperatures are used, **Emflo® KPS 200** is the preferred option because it gives very high water-binding at high temperatures and generally a firmer texture than native potato starch. **Emes® EE** is a modified starch that binds water at low temperatures and minimizes cooking loss and moisture loss after freezing and thawing.





## Emulsified and Formed Meat

### Water Binding & Forming

In emulsified meats (sausages) and formed meats (meatballs, hamburgers), binding and forming properties are very important. The products should be easy to form and should not be too sticky. During cooking, the products should not lose moisture or fat and remain juicy and tasteful.

Native potato starch and modified potato starch **Emflo® KPS 200** can be used to prevent cooking loss and provide a juicy texture. In general, **Emflo® KPS 200** binds water at higher temperatures and gives a firmer texture. **Emes® EE** is a modified starch

that binds water at low temperatures and minimizes cooking loss and moisture loss after freezing and thawing.

For water binding under cold conditions, for example during forming, potato and pea fibers can be used. These fibers give a good consistency to meat products and, due to their high water- and fat-binding in both cold temperatures and cooking conditions, loss of fat upon preparation is minimized. The Emsland Group offers **Emfibre®** pea and potato fibers with different granule size.

## Pea and Potato Fiber Overview

	Emfibre EF 60	Emfibre EF 200	Emfibre KF 200	Emfibre KF 500
Type	Pea fiber	Pea fiber	Potato fiber	Potato fiber
Description	Pea fiber with small particle size, suitable for meat injection	Pea fiber with medium coarse particle size, good water- and fat-binding properties and a light colour suitable for white meat types	Potato fiber with medium coarse particle size, high water- and fat-binding properties and darker colour than pea fiber, therefore suitable for darker meat types	Potato fiber with coarse particle size and highest water- and fat-binding properties in this portfolio — very suitable for minced meat or hamburger patties

All products are registered®



## Seafood

### Texture

Starches are often used as a binder and texturizer in seafood, especially in surimi. This type of seafood has a typical elastic gelled texture that is not easy to obtain with hydrocolloids.

By nature, potato starch has a high gelling strength that tends to have more elastic behavior than other starches. **Emes® EE** is the preferred choice for seafood due to the elastic texture and the excellent freeze/thaw stability.

Pea starch has a natural tendency to gel due to its increased amylose content. **Emden® ESH 15** is a modified freeze/thaw stable pea starch with high gelling power that gives a texture suitable for surimi-type food.

## Starches for Meat, Poultry and Seafood

	Native potato starch	Emflo KPS 200	Emes EE	Emden ESH 15
Applications	All meat types	All meat types	All meat types and seafood	Seafood
Type	Potato starch	Cook-up modified potato starch (E1412)	Cook-up modified potato starch (E1420)	Cook-up modified pea starch (E1440)
Description	High water binding at low temperatures	Very high water binding and firm texture, preferred for high cooking temperatures	Modified potato starch that binds water at low temperatures, has low cooking loss and excellent freeze/thaw stability	Modified pea starch with high gelling power and good seafood-like texture

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## About the Emsland Group

**Using nature to create** is the guiding principle of the Emsland Group. As a global leader in refined products made from potatoes and peas, we offer a wide range of innovative products with the high quality and reliability that the Emsland Group name is known for.

**Our plant-based ingredients** include native, clean label and modified potato and pea starches, proteins and fibers, as well as potato flakes and granules, which can be used as thickeners, binding agents, emulsifiers and stabilizing additives for various applications. We serve a variety of industries and offer solutions for trends such as clean label, kosher, halal, gluten-free, vegan, fiber enriched, sustainability, as well as non-GMO raw materials.

**Innovation** is a core driving force at the Emsland Group. Experts at our Innovation Centre in Germany are constantly developing and optimising products and concepts to meet the evolving demands of both the industry as well as the end user. We work closely with customers to further develop our product portfolio and overcome challenges in a sustainable way.

**Sustainability** is a responsibility that, for us, does not begin in the factory, but in the field. Since 1928, we have been relying on the innovative power of nature and working in harmony with our natural resources in all our endeavours. Our team is dedicated to continuously working to develop products that are in line with newer sustainability benchmarks, helping to drive the global trend towards more environmentally friendly and sustainable options through the production of plant-based solutions.

The Emsland Group offers product solutions for the following food segments:

- Bakery
- Confectionary
- Dairy & Alternatives
- Food Coating
- Meat Analogues
- Meat, Poultry & Seafood
- Noodles & Gluten-Free Pasta
- Potato Products
- Potato Snacks
- Retail & Food Service
- Soups & Sauces

The table below offers an overview of the most common applications of our products in all food segments. For more complete information on the Emsland Group's products and applications, please contact us at [info@emsland-group.de](mailto:info@emsland-group.de).

Ingredients	Functionality	Food applications
Potato flakes <i>Emflake</i>	Texturizing, expansion, forming	Snacks, potato products, bakery
Potato granules <i>Emgranule</i>	Texturizing, expansion, forming	Snacks
Native pea and potato starch	Thickening, texturizing, water binding, expansion, anti-caking	Soups, sauces, noodles, meat, snacks, gluten-free products
Modified pea and potato starches <i>Emes, Emflo, Emden, Emox</i>	Thickening, texturizing, gelling, binding, expansion, forming	Snacks, soups, sauces, confectionary, food coating, baked goods, processed cheese and alternatives, meat and analogues, noodles
Cold water swelling or soluble native and modified starches <i>Emjel, Emfix</i>	Instant thickening, texturizing, binding, emulsifying	Snacks, soups, sauces, bakery fillings, baked goods, cheese and alternatives
Potato and pea dextrins <i>Emdex</i>	Film forming, texturizing (crispiness)	Food coating, filler, binder
Clean label pea and potato starches <i>Empure</i>	Thickening, gelling, texturizing, binding	Soups, sauces, potato products, meat analogues
Waxy potato starch <i>Emwaxy</i>	Expansion, thickening, texturizing	Snacks, meat, noodles, cheese alternatives, fruit preparations, bakery fillings
Pea protein isolate <i>Empro</i>	Nutrition (protein enrichment), texturizing, emulsification	Meat analogues, dairy alternatives, bakery, snacks
Pea and potato fiber <i>Emfibre</i>	Nutrition (dietary fiber, water and fat binding)	Meat and analogues, bakery, snacks
Blends <i>Embat</i>	Film forming, texturizing	French fry coating, tempura & adhesion batter

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The Emsland Group is committed to producing consistently high-quality ingredients. Customer health and safety, as well as transparency regarding our manufacturing methods, are top priorities.

To view a complete list of our certifications and qualifications, scan the QR code or visit [www.Emsland-Group.com](http://www.Emsland-Group.com)







# EMSLAND GROUP<sup>®</sup>

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Disclaimer: All information and data in this brochure are in accordance with the best practise experiences and laboratory examinations of Emsland-Stärke GmbH and Emsland Food GmbH hereafter called Emsland Group. The indications are based on the current state of development, technology and research and should be taken as information on the products of Emsland Group, but must not be understood as promise of characteristics.

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