Systems of Synergy

Stabilising systems for meat and sausage

- Cooked ham and restructured meat products
- Scalded, cooked and raw sausage
- Plant-based meat alternatives

Viscosity

Texture

Volume
We see ourselves not just as a supplier of innovative stabilising systems, but also as a source of ideas for new, trend-ready products that become successful through close cooperation between us and our customers. Our large and growing team of food technologists and experts works daily to make food better, by developing highly effective functional systems from combinations of individual ingredients, in constant communication with customers in many industries. Our long international experience in the development of custom systems is the foundation on which we have become a worldwide supplier of first-class, application-specific stabilising and emulsifying systems.

Our Technology Centre in Ahrensburg near Hamburg, Germany – a place for creativity and innovation

Our team for application-centric R&D combines passion, enthusiasm and curiosity. In 3000 square meters of lab space, they create innovative product solutions that improve our customers’ products and in some cases even make them possible in the first place. Our Technology Centre has applications laboratories for different foods, where our process and food technologists and scientists develop, analyse, and improve stabilising systems for dairy, meat, deli and fish products.

Direct communication and a culture of dialogue accelerate the creation of solutions that are an exact fit, and whose effectiveness we tailor precisely to customer wishes through extensive test runs on our pilot production lines. Throughout, we keep our customers’ actual production conditions firmly in mind.

Worldwide demand for meat is rising rapidly, and with it interest in new meat and sausage products that meet the highest requirements of flavour, texture and economy. Hydrosol addresses market demands with functional systems for butchery products and customer-oriented application service.

The meat and sausage market is always changing – and we’re always a step ahead.
The Experts from the Stern-Wywiol Gruppe: from Single Ingredients to Functional Systems

The Hydrosol headquarters at the Stern–Technology Center in Hamburg–Ahrensburg

The Stern–Wywiol Gruppe – a unique competence centre for custom ingredients in many categories

Hydrosol is part of the Stern–Wywiol Gruppe, an owner–operated family company active around the world that is known for its high–quality, custom functional systems. To offer our worldwide customers the best in on–site service, our Hamburg–based group maintains offices in 15 countries and is represented in all of the world’s key markets through certified partners.

The Stern–Wywiol Gruppe has 12 ingredient companies in Germany, whose research and development work is concentrated in the group’s own Technology Centre near Hamburg.

Here, Hydrosol’s experts find all the applications technology resources they need, and plenty of room to think through and test innovative solutions. This naturally takes place in close collaboration with customers, as well as exchanges of information with colleagues in the Group’s other specialist companies.
Research and development: the future belongs to synergies.

From among hundreds of individual ingredients, we can test the right combinations to develop stabilising systems that are an exact fit for specific customer needs. It takes a great deal of specialist knowledge and experience to anticipate how individual raw materials will interact, to develop the optimum synergistic effects.

An understanding of the way each component works is the key to good results. Only a comprehensive knowledge of customer manufacturing processes and the interplay of all ingredients, such as proteins, hydrocolloids and emulsifiers, makes it possible to develop formulations with the desired synergy effects that fit the target application.

Stabilising systems that are an exact fit: formulation development and improvement

Economy, processing, shelf life, texture, stability and flavour – almost all the qualities of meat and sausage products can be influenced with the targeted compounding of ingredients. Therefore, before we do anything else we clarify the requirements for the final product. Key factors in developing Hydrosol systems with multiple effects include the sequence in which ingredients will be added, the process, temperature, transportation and storage conditions, and naturally consumer expectations.
Over 3000 m² of space for product development and applications technology

To make sure the results meet all demands, we test the product many times over together with the customer.

The meat laboratory – focus on cost effectiveness

High quality with low production costs is what our customers look for most of all. Frequently, they want to reduce the proportion of lean meat in cooked sausage and ham, or substitute more economic raw materials. Longer shelf life and – especially with restructured meat products – good binding are very important in developing just the right functional systems. We use animal and vegetable proteins, thickening and gelling hydrocolloids, special starches, phosphates and flavourings. Thanks to the versatile and advanced equipment in our meat laboratory, we can test each formulation and tune it to the customer’s production conditions.

Meat laboratory equipment:
• Vacuum and microcutter
• Combined cooking and smoking plant
• Various injector and tumbler machines
• Vacuum filler
• Forming machine for meat preparations
• Coextrusion line for alginate casings

What you can expect from us:
• Development of tailor-made stabilising solutions
• Development of new formulations and recipe improvements
• Process improvements
• Versatile applications lab with extensive test facilities
• Assistance with product testing
• Training and seminars
• Help with new marketing concepts
• On-site consulting
Each year, up to 40,000 tonnes of food ingredients, effective ingredient complexes and functional systems leave our Wittenberg facility. Eight separate mixing lines let us fill orders simultaneously while preventing cross-contamination. A central process control and visualisation system makes it possible to mix and reproduce any order. Our mixing lines with spray and tempering functions create the basis for compounding even poorly miscible substances into homogeneous premixes.

Rigorous quality management to ensure top product quality

Our stabilising systems are based exclusively on selected raw materials. In–house and external test labs ensure their quality. To ensure the high functionality of our compounds, all process steps are precisely defined and subject to constant monitoring. Customers can be sure that the products they receive meet all quality criteria.
Whether for fresh meat, ham, sausage or restructured meat products, Hydrosol offers many highly specialised emulsifying and stabilising systems. If desired, we work with customers to develop individual ingredient compounds, tailored to the gram for the specific need.
Scalded sausage and bratwurst

A homogeneous emulsion in the cutter and stable structure when heated are essential for quality products. With Hydrosol compounds it is possible to get stable textures and avoid common defects like gel and fat separation.

For eating hot

<table>
<thead>
<tr>
<th>Application</th>
<th>Stabilising system</th>
<th>Properties</th>
<th>Dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalded sausage and bratwurst</td>
<td>PLUSmuslon CS</td>
<td>Cutter aid for good protein exposure and firm bite</td>
<td>3–4 g/kg</td>
</tr>
<tr>
<td>Sodium-reduced sausage products</td>
<td>Hydrolon LS</td>
<td>For targeted sodium reduction in meat products, without bitter aftertaste</td>
<td>18–22 g/kg</td>
</tr>
<tr>
<td>For economical solutions</td>
<td>HydroTOP CS CMC</td>
<td>Improves bite and texture, boosts protein content</td>
<td>25–28 g/kg</td>
</tr>
<tr>
<td>Sausages with extra bite</td>
<td>HydroTOP Firm–Tec LA</td>
<td>Bite and texture for economy products</td>
<td>10–20 g/kg</td>
</tr>
</tbody>
</table>

For eating cold

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</tr>
</thead>
<tbody>
<tr>
<td>Cold cuts</td>
<td>PLUSmulson PROT 30</td>
<td>For the production of cooked sausages. Very good emulsifying ability, for high fat formulations with up to 40 % fat content</td>
<td>10–20 g/kg</td>
</tr>
<tr>
<td>Cold cuts</td>
<td>HydroTOP Mix 50</td>
<td>Improves elasticity and sliceability, reduces synaeresis</td>
<td>3–7 g/kg</td>
</tr>
</tbody>
</table>
**Sausage from cooked meat**

Liver sausage and patés are made of pre-cooked ingredients. Emulsifier systems of special emulsifiers assist in the formation of a water in oil emulsion and ensure a creamy consistency.

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<tbody>
<tr>
<td>Emulsifier for liverwurst and marinades</td>
<td>PLUSmulson RTU</td>
<td>Pasty emulsifier (esterified monoglycerides) for direct application</td>
<td>5–10 g/kg</td>
</tr>
<tr>
<td>Emulsifier paste for liverwurst without palm fat</td>
<td>PLUSmulson RTU PF</td>
<td>For direct use, declaration-friendly and without palm fat</td>
<td>5–10 g/kg</td>
</tr>
</tbody>
</table>

**Raw sausage**

Our solutions for raw sausage improve the cohesion of raw meat and fat inclusions, and improve the homogeneous distribution of both components.

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<tr>
<td>Naturally cured raw sausage</td>
<td>Hydolon DS natur</td>
<td>Compound for naturally cured raw sausage products, provides the typical flavour and a safe curing process</td>
<td>6 g/kg</td>
</tr>
<tr>
<td>Fast–cured raw sausage</td>
<td>Hydolon DS rapid</td>
<td>Compound for fast–cured raw sausage products, gives fast and safe curing</td>
<td>10 g/kg</td>
</tr>
<tr>
<td>Hot smoked raw sausages</td>
<td>Hydolon CASAL</td>
<td>Integrated compound/fast curing compound with seasoning</td>
<td>30 g/kg</td>
</tr>
</tbody>
</table>
Cooked ham

Stabilising systems of proteins, fibre and special hydrocolloids for ham ensure good water binding, problem-free shaping, high slicing firmness and minimal dripping loss.

Injection system

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</tr>
</thead>
<tbody>
<tr>
<td>Delicatessen cooked ham and Kasseler</td>
<td>PLUSstabil CM HAM 75</td>
<td>A special combination of functional ingredients to minimise carrageen stripes, for injection of 40–75%</td>
<td>6.5 kg/100 l brine</td>
</tr>
<tr>
<td>Necks, bellies and poultry</td>
<td>PLUSstabil Unibac ST</td>
<td>Specially developed for highly marbled meat and white meat, for 20–60% injections</td>
<td>4–6 kg/100 l brine</td>
</tr>
</tbody>
</table>

Tumbling system

<table>
<thead>
<tr>
<th>Application</th>
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<th>Properties</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Restructured cooked ham</td>
<td>PLUSstabil Unibac 40 OA</td>
<td>Outstanding texture and elasticity for high +80 % to +150 % yields</td>
<td>2 % in final product</td>
</tr>
<tr>
<td>Reconstituted cooked ham</td>
<td>PLUSstabil HAM 100 PLUS</td>
<td>Outstanding texture and elasticity for medium to high +60% to +100% yields</td>
<td>2 % in final product</td>
</tr>
</tbody>
</table>
Fat emulsions

With our stabilising systems for fat emulsions, the visible fat pieces characteristic of salami and mortadella can be made from vegetable fat. The use of vegetable instead of animal fats significantly cuts production costs.

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<tbody>
<tr>
<td>Bacon, fat, meat, chicken skin, oil</td>
<td>PLUSmulson PROT 300-F</td>
<td>For gelling, heat-stable fat emulsions, low dosing</td>
<td>1:16:32 (Emulsifier: Fat:Water)</td>
</tr>
<tr>
<td>Oil in water emulsions, non-gelling</td>
<td>PLUSmulson PROT 200 PLUS</td>
<td>Gives spreadable fat emulsions, very high yield</td>
<td>1:20:30 (Emulsifier: Fat:Water)</td>
</tr>
<tr>
<td>Oil in water emulsions, gelling</td>
<td>PLUSmulson F-03</td>
<td>Gives a heat-stable, firm gel, especially for oil emulsions</td>
<td>1:8:12 (Emulsifier: Fat:Water)</td>
</tr>
</tbody>
</table>
**Fresh meat**

Special functional systems for moisture-enhanced and marinated meat ensure that natural meat fibres are retained for a tender, moist consistency.

### Injection system

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Fresh meat, plain or marinated</td>
<td>PLUSstabil FM PY 15</td>
<td>For poultry, very high output through low dosing, moderate yields</td>
<td>5 kg/100 l brine</td>
</tr>
<tr>
<td>Fresh meat, plain or marinated</td>
<td>PLUSstabil FM Uni</td>
<td>Universal injection system, for moderate to high yields</td>
<td>6 kg/100 l brine</td>
</tr>
<tr>
<td>Fresh meat, plain or marinated</td>
<td>PLUSstabil FM pH extra</td>
<td>Stabilises the natural pH of meat, also usable for cooked products</td>
<td>2 kg/100 l brine</td>
</tr>
</tbody>
</table>

### Restructured fresh meat

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>For restructured meat</td>
<td>Hydrogum NA 400 S</td>
<td>Without enzymes, salt-tolerant system</td>
<td>2% in final product</td>
</tr>
<tr>
<td>Schnitzel and steaks</td>
<td>PLUSmulson F-03</td>
<td>Makes it possible to make restructured products from ends for up to +50% higher yield</td>
<td>2% in final product</td>
</tr>
</tbody>
</table>

### Ground meat

<table>
<thead>
<tr>
<th>Application</th>
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<th>Properties</th>
<th>Dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burgers, nuggets, kebab preparations</td>
<td>HydroTOP Perfect E</td>
<td>For the production of an all-purpose emulsion</td>
<td>As needed</td>
</tr>
<tr>
<td>Burgers, nuggets, kebab preparations</td>
<td>HydroTOP Perfect D</td>
<td>Direct addition, high water binding</td>
<td>As needed</td>
</tr>
</tbody>
</table>
**Plant-based meat alternatives**

Hydrosol’s all-in compounds for plant-based meat alternatives provide firm bite, authentic mouth feel, appetising appearance, and if needed a pleasing basic seasoning.

### Vegan

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Vegan cold cuts</td>
<td>HydroTOP VEGAN</td>
<td>All-vegetable all-in system, optimum bite and excellent sliceability</td>
<td>15% in final product</td>
</tr>
<tr>
<td>Vegan hotdogs</td>
<td>HydroTOP VEGAN HT</td>
<td>All-in system, outstanding texture for eating hot</td>
<td>21% in final product</td>
</tr>
<tr>
<td>Soy-free vegan cold cuts</td>
<td>HydroTOP VEGAN SF</td>
<td>Soy-free all-in system with many uses – bologna, salami, bacon etc.</td>
<td>Depends on product</td>
</tr>
<tr>
<td>Soy-free vegan hot dogs</td>
<td>HydroTOP VEGAN HT S</td>
<td>Soy-free, gluten-free all-in system, outstanding texture for eating hot</td>
<td>14% in final product</td>
</tr>
</tbody>
</table>

### Convenience

<table>
<thead>
<tr>
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<th>Properties</th>
<th>Dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegan burgers, nuggets and schnitzel</td>
<td>HydroTOP High Gel 30</td>
<td>Outstanding texture improvement, oil and water binding</td>
<td>As needed</td>
</tr>
<tr>
<td>Vegan burgers, nuggets and fish alternatives</td>
<td>HydroTOP High Gel 1002–UK</td>
<td>Improves water binding, declaration-friendly</td>
<td>As needed</td>
</tr>
</tbody>
</table>
**Preservation**

Hydrosol's preservatives for raw and pasteurised meat and sausage products are antibacterial and help foods to retain their appetising colour and good taste.

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Preservative</td>
<td>Hydrolon Super</td>
<td>A combination of proven preservatives</td>
<td>2–3 g/kg</td>
</tr>
<tr>
<td>Preservative</td>
<td>Hydrolon Fresh Plus 18</td>
<td>Many uses, effective against bacteria and yeast</td>
<td>3 g/kg</td>
</tr>
<tr>
<td>Preservative</td>
<td>Hydrolon Fresh TA 21</td>
<td>Preservative and anti-oxidant effect, improves colour retention of meat</td>
<td>3 g/kg</td>
</tr>
<tr>
<td>Preservative</td>
<td>Hydrolon Fresh BS</td>
<td>Synergies with other preservatives, suitable for surface treatment</td>
<td>2 g/kg</td>
</tr>
</tbody>
</table>

**Seasoning**

Seasoning and stabiliser in one – these stabilising systems from Hydrosol are enriched with flavourings and seasonings, and enable individual product tuning.

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</tr>
</thead>
<tbody>
<tr>
<td>Gives a savoury flavour</td>
<td>Naturom TopNAT</td>
<td>In combination with other seasonings and flavourings, the specific product flavour stays fresh longer</td>
<td>20 g/kg in final product</td>
</tr>
<tr>
<td>Sausages and hot dogs</td>
<td>Naturom Wiener Würstchen</td>
<td>Classic flavour</td>
<td>5–7 g/kg</td>
</tr>
<tr>
<td>Cooked ham and ham products</td>
<td>Naturom Ham K</td>
<td>Seasoning and herbal extracts</td>
<td>1–3 g/kg</td>
</tr>
<tr>
<td>Cooked ham and vegan products</td>
<td>Naturom VEG FR</td>
<td>Glutamate-free, rounds out the flavour</td>
<td>10–15 g/kg</td>
</tr>
</tbody>
</table>
Hydrosol can do more!

We also have the right compounds for dairy, deli and ready meals, along with plenty of inspiration.
And what can we do for you?

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