

# Gelatin and Hydrolyzed Collagen Solutions

Trusted Solutions for High-Quality Products



 **KOVALUS**  
Separation Solutions™

# The KSS Advantage

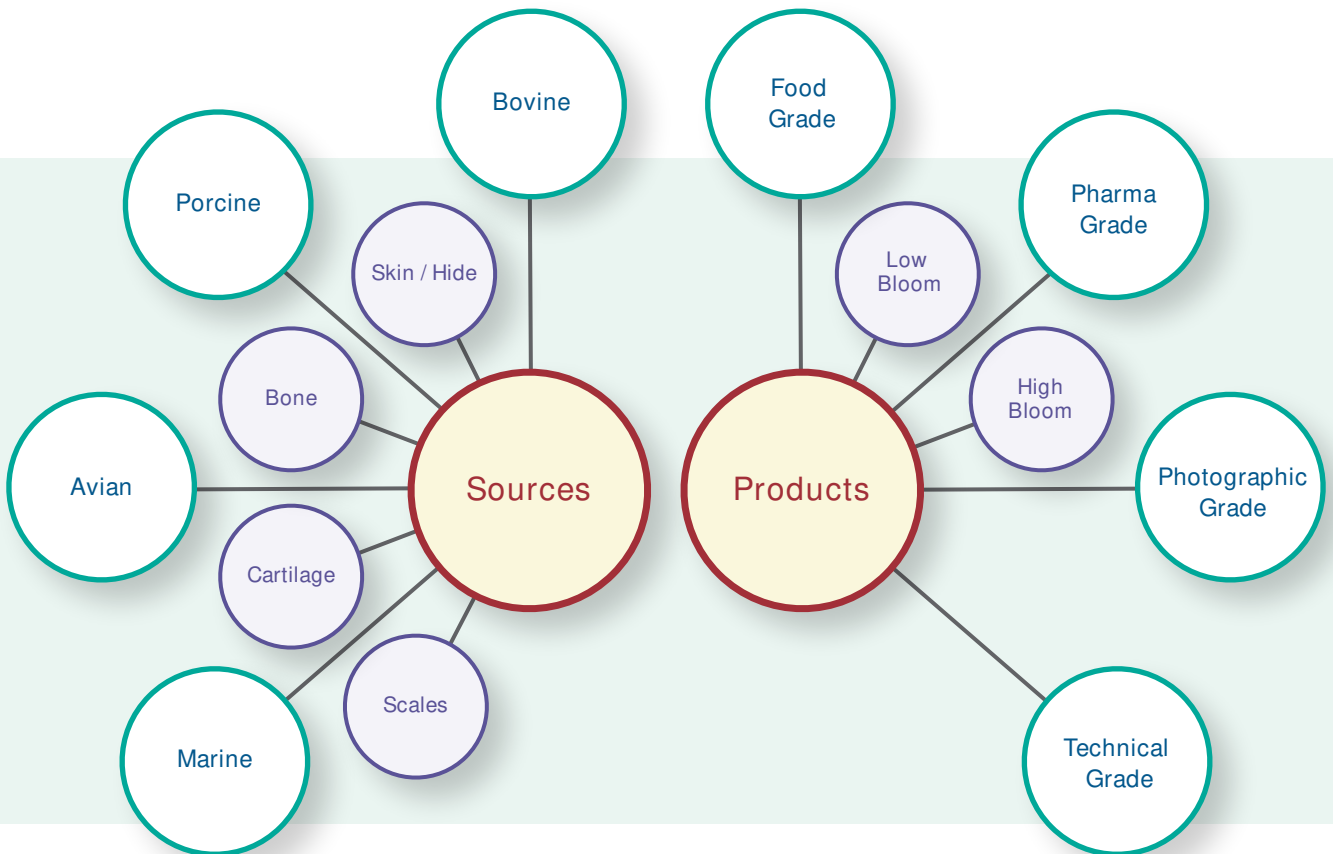
KOVALUS SEPARATION SOLUTIONS™ (KSS) is transforming the landscape of separations by leveraging a synergistic approach combining technologies such as membrane filtration, Eco-Tec ion exchange, and RELCO® evaporators and dryers. Our comprehensive, start-to-finish solutions are tailored to improving product quality, increasing process efficiency, and driving down costs for food manufacturers around the world.

## Gelatin and Hydrolyzed Collagen

KSS streamlines production of gelatin and hydrolyzed collagen using integrated separation technologies to optimize process efficiencies, reduce costs, and produce a more competitive product.

We work collaboratively with our customers to understand their unique processing needs and offer a complete package solution that meets their goals, eliminating the need for multiple equipment vendors.

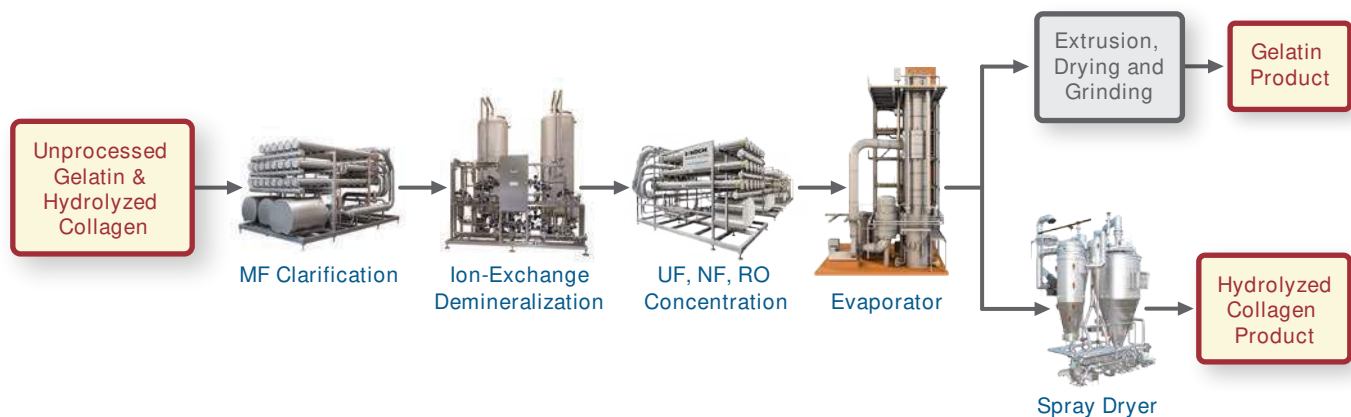
KSS has a wealth of experience covering many different animal sources and final products.



# The KSS Advantage

## Integrated Solutions

Partnering with KSS allows customers to gain access to trusted separation technology, customer focused R&D capabilities, field service, process monitoring, and long-term support. We optimize process efficiencies in gelatin production by leveraging the synergistic capabilities of combined separation technologies, resulting in significant reductions in energy consumption and operating costs. Working with KSS as a complete solution provider simplifies maintenance and support while offering gelatin producers a higher degree of control over their operation.



## Collaborative Innovation

KSS offers an extensive portfolio of membrane and thermal separation technology to guarantee the best-fit solution for our customers. We work collaboratively with customers, combining our deep applications knowledge with their unique process expertise, to develop and optimize new solutions for the gelatin and hydrolyzed collagen industry.



### EARLY-STAGE DEVELOPMENT

- Understand challenge & identify desired outcomes
- Evaluation of separation properties & bench testing
- Access to Process and R&D experts

### FIELD TESTING

- Pilot testing
- Process optimization
- Full scale costing and design recommendation

### FULL-SCALE EXECUTION

- Project management & execution of capital projects
- Construction and installation
- Commissioning and operator training

### LONG-TERM SUPPORT

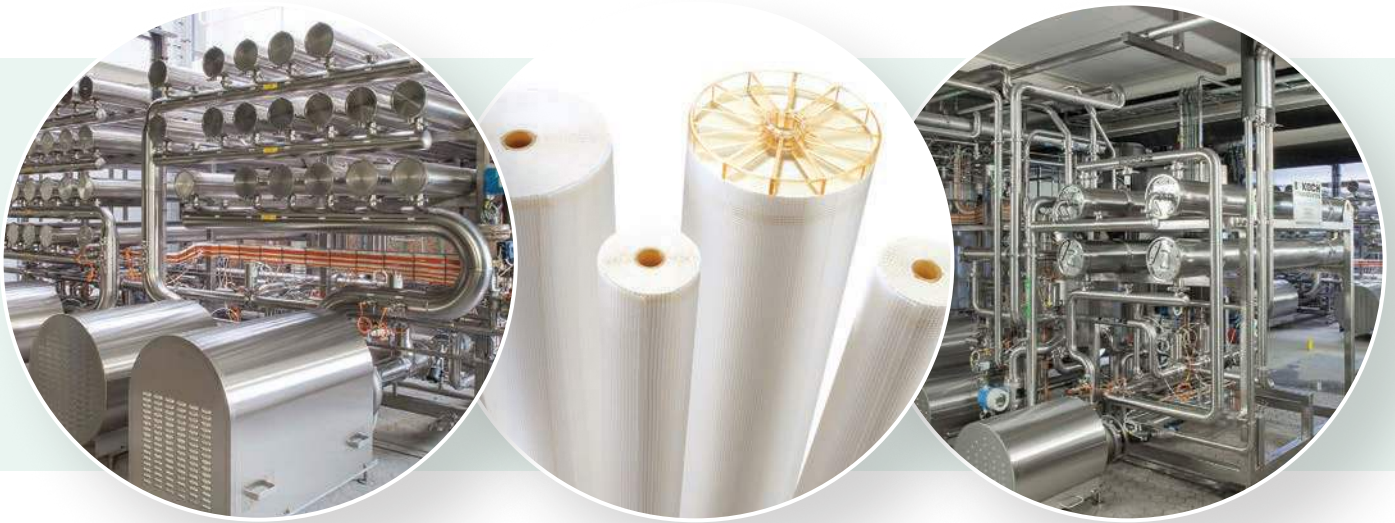
- Complete after-sales services
- System troubleshooting
- Performance optimization through remote digital monitoring program

# Major Applications

## Membrane Clarification and Concentration

KSS is the preferred partner for membrane-based gelatin clarification and concentration. With over 50 installations worldwide, our ceramic and sanitary spiral membrane systems are the industry standard for gelatin processing.

- **Clarification:** Our ceramic membranes offer improved cleanability and greater suspended solids and high temperature tolerance, making them the ideal solution for protein clarification.
- **Concentration:** Spiral ultrafiltration (UF) and nanofiltration (NF) membrane systems feature KSS' long-trusted Sani-Pro® membranes. Energy efficiency and durability make these membrane systems a top choice in the gelatin industry.



## Sani-Pro Spiral Membrane Systems

KSS Sani-Pro® spiral membrane systems are the optimal solution for the concentration of gelatin or hydrolyzed collagen from any source. We offer both standard and custom-designed and engineered systems to meet customers' specific needs. Sani-Pro systems rely on advanced crossflow filtration membranes that combine innovative construction techniques and optimized subcomponents.

### Benefits:

- High productivity
- Energy efficient operation
- Reduced operating costs and water consumption
- Advanced remote monitoring and control options
- Unparalleled customer service and support through KSS ASSIST™
- Robust sanitary construction
- FDA, 3-A, EU, and Halal compliance

# Major Applications

## Demineralization

As part of our complete package solution, KSS offers options for demineralization and ash removal from gelatin and hydrolyzed collagen products. As experts in the gelatin industry, we help customers identify the best-fit solution for implementing a demineralization step in their process.

## Ion Exchange

Many gelatin producers use ion exchange to improve product purity while removing ash and other compounds causing undesirable taste, odor, or color. Eco-Tec ion exchange systems provide efficient demineralization of gelatin and hydrolyzed collagen.

## Features & Benefits

- Seamless integration with KSS membrane and thermal technologies
- Simplified centralized control of gelatin processing plant
- Optimized feed distribution to ensure long resin life
- FDA/EU Food Contact compliant design



## Diafiltration

KSS Sani-Pro® spiral membrane systems can be designed to perform diafiltration on the concentrated gelatin product. Diafiltration is an effective method of reducing the ash content of the product, ensuring any required standards are met. Combining ash removal with membrane concentration reduces costs and simplifies the process.

# Major Applications

## Evaporation

RELCO® evaporators offer a flexible and efficient method for concentrating gelatin and hydrolyzed collagen. Our systems are custom engineered for a variety of total solids concentrations and operate with high efficiency to produce stable final products.

### Features & Benefits

- Available in tubular or plate configuration
- Thermal (TVR) or Mechanical (MVR) vapor recompression available
- Flexible design for capacity variation
- Sterilization unit can be combined with evaporator or operate independently
- Integrated or external separator available
- Option to supply with scaffolding platform
- Flexible CIP options

## Drying

RELCO spray drying technology is the ideal solution for hydrolyzed collagen production. Designed with operator safety in mind, our spray dryers are easy to control and have low capital and operating costs.

### Features & Benefits

- Tall form bustle dryer with fluid bed
- Integrated cyclones and bag filter
- Effective dehumidification of inlet air prevents sticking
- Flexible fines return options for effective agglomeration
- pH control prior to drying process
- Option to preheat dryer feed



## Powder Handling & Packaging

For a complete processing solution, we provide conveying systems, packaging systems, bulk bag fillers, powder gassing and blending equipment.

- High-rate transfer of fragile powders by pressure or vacuum
- Hygienic semi-automatic or automatic powder packaging lines
- Stable and accurate bag filling, simplified bag transport, and robust bag unloading

# Major Applications

## Water and Wastewater Treatment

KSS is an industry leader in sustainable and energy efficient water and wastewater treatment solutions. As part of our start-to-finish solution for gelatin and hydrolyzed collagen processing, we offer process water treatment, RO for water reuse and minimizing waste, and MBR treatment for a variety of wastewater. Our water and wastewater treatment technologies help customers meet stringent wastewater discharge standards, produce high-quality water for reuse at their facility, and meet their overall sustainability goals.



### PURON® MP Systems for Water Treatment

- Low maintenance, cost-effective, and reliable water treatment
- Optimal separation properties for high quality water production
- Constructed with a strong, virtually unbreakable hollow fiber to extend membrane lifetime

### Best-In-Class Wastewater Treatment

- INDU-COR™ HD external MBR featuring tubular crossflow membranes for optimized system performance and footprint
- Low-energy PULSION® immersed MBR featuring virtually unbreakable hollow fiber membrane for effective removal of organics and solids

### FLUID SYSTEMS® NF and RO for High-Purity Water

- Polishing of MBR, MF, and UF effluents to produce high quality water for reuse
- Pre-engineered or custom-designed systems



## KOVALUS SEPARATION SOLUTIONS

KOVALUS SEPARATION SOLUTIONS™ (KSS) is a global leader in separation technologies.

With best-in-class domain expertise, technologies and systems, KSS is uniquely positioned to help customers purify and recover valuable process streams and achieve sustainability goals across food and beverage, life science, and general industrial markets.

### Services & Support

After-Sales Services & Maintenance Programs • SepTrac™ Smart System



[www.kovalus.com](http://www.kovalus.com) • [getinfo@kss-sep.com](mailto:getinfo@kss-sep.com)

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