

**Rousselot**

| by Darling Ingredients

# Why is gelatin the biomaterial of choice for embolization applications?

Find out how gelatin can support safe and effective medical interventions

# Gelatin for safe and effective embolization

## **1. Advancing embolization with gelatin-based biomaterials**

Explore recent innovations in embolization applications

## **2. Why is gelatin a good embolization material?**

Discover the advantages of gelatin-based embolic agents

## **3. Why is X-Pure the gelatin of choice for embolization?**

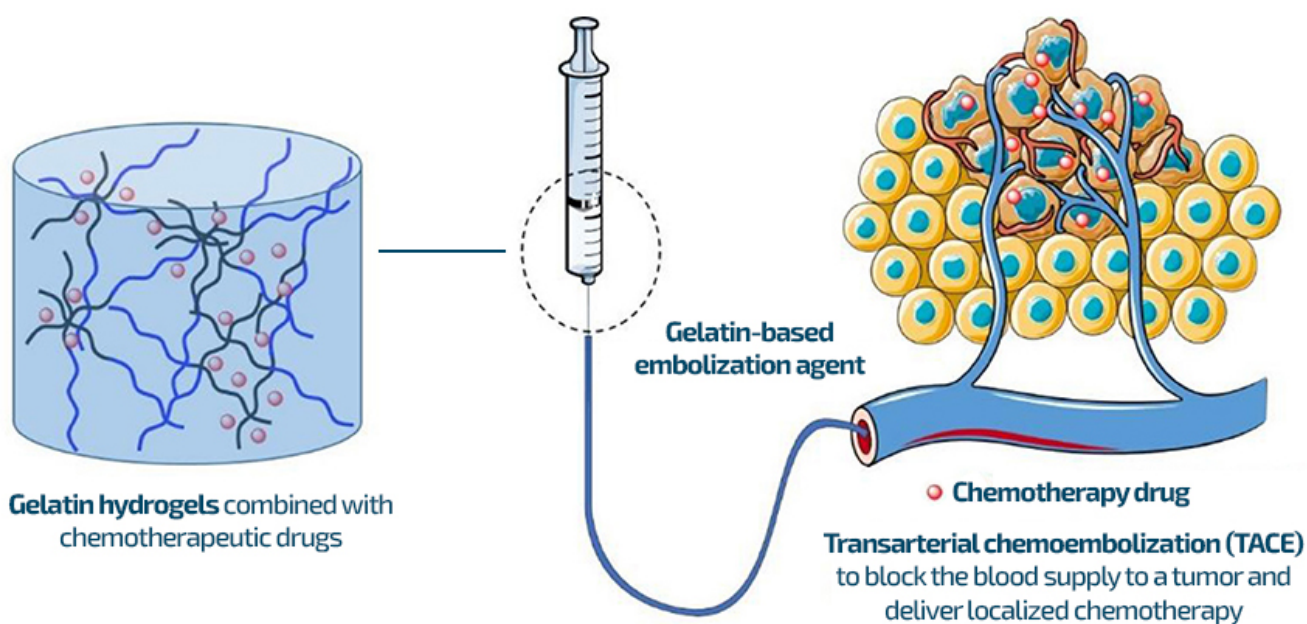
Find out how Rousselot's X-Pure gelatins support safe and effective medical interventions

# Advancing embolization with gelatin-based biomaterials

## Recent innovations in embolization applications

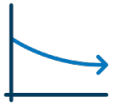
Embolization, a medical procedure that involves intentionally blocking blood vessels, can be used to treat various conditions such as excessive internal bleeding, abnormal tissue growth (e.g., fibroids and tumors), vascular malformations or unwanted vascularization (e.g. in joints).

In the treatment of hypervascularized tumors, blocking the blood vessels will starve the tumor cells from oxygen and nutrients. Embolizing agents are typically combined with chemotherapy (transarterial chemoembolization or TACE) or radiotherapeutic agents (transarterial radioembolization or TARE), in which anti-cancer treatment is delivered in a more localized and controlled manner to increase efficacy and safety, while also blocking blood flow to the tumor.



Schematic illustration of design of transarterial chemoembolization (TACE) using gelatin-based embolization agents<sup>1</sup>

## Why is gelatin a good embolization material?



### Biodegradability

Gelatin is biodegradable, breaking down naturally in the body over time, allowing the blood vessel to reopen after the treatment period and the necrotized tissue to regenerate. This temporary nature minimizes the risk of long-term complications associated with permanent embolizing agents.



### Degradation control

The biodegradation rate is tunable to match the desired persistence, from hours to weeks.



### Biocompatible

Gelatin is biocompatible with the human body and therefore less likely to trigger immune responses or cause adverse reactions, promoting better patient outcomes.



### Ease of manipulation

Gelatin can be easily molded into different forms, including microspheres and foams, enabling physicians to target specific vessels or tissues more accurately.



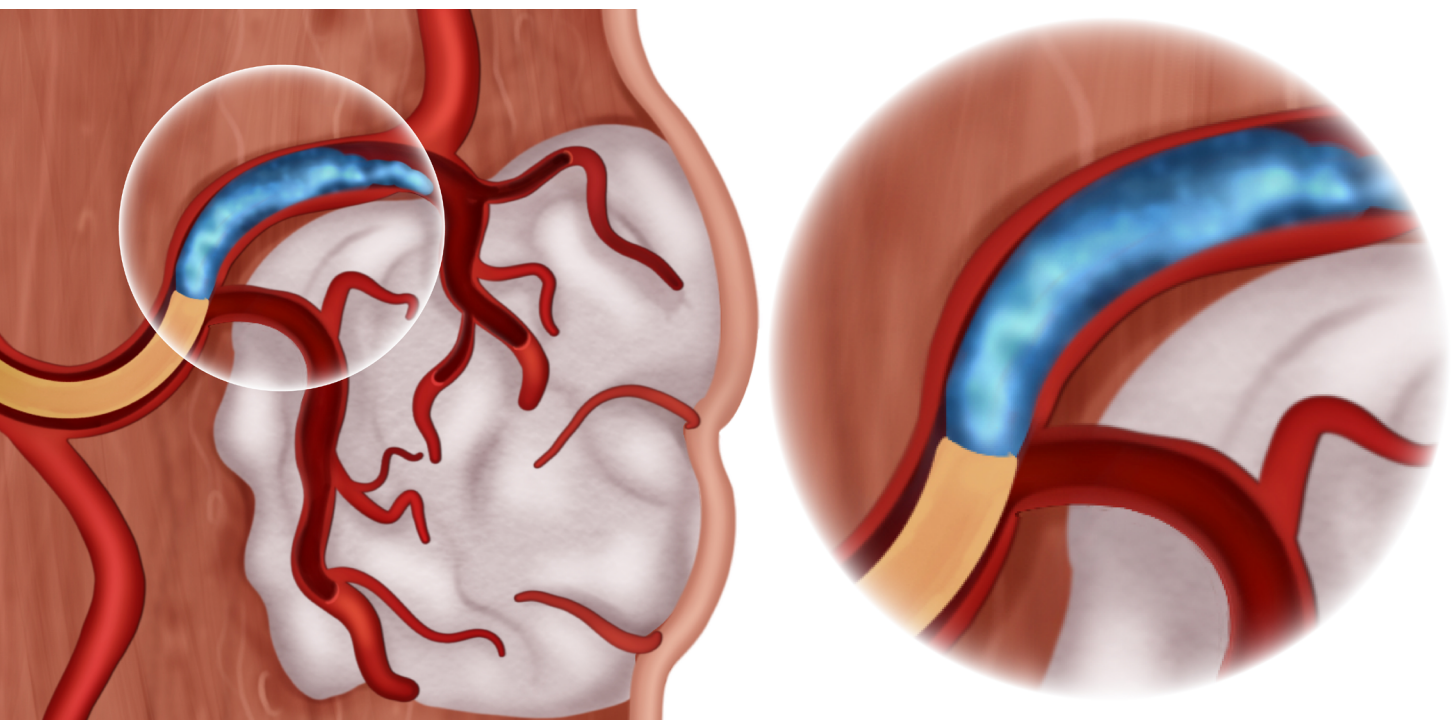
### Compatibility

Gelatin can be mixed with imaging compounds, such as iodinated contrast agents, allowing interventional radiologists to visualize the embolic material's precise location.<sup>2</sup>



### Tailor-made solutions

Gelatin is customizable and can be formulated to achieve different visco elastic properties, from shear-thinning liquid to solid particles.



## Discover X-Pure® From Rousselot. Customizable, Purified & Consistent

X-Pure® is one of the purest gelatins available and it's currently being used as a biomaterial for embolization for a range of different applications. It not only supports safe and effective medical interventions but also serves as the ideal base for creating various embolic agents like particles and gels.



### Why is X-Pure the gelatin of choice for embolization?



#### Consistency

With consistent quality and uniform product properties, X-Pure gelatins always behave in the same way, reducing procedural variability.



#### Purity

Purified gelatins with low endotoxins levels (<10 endotoxin units (EU)/g) help to ensure safe and effective medical devices.



#### Documentation

All Rousselot products come with supporting documentation for compliance of medical devices with the new European Medical Device Regulation (MDR) ((EU) 2017/745), documented traceability up to the farm (ISO 22442-2), validated viral inactivation (ISO 22442-3) and IPEC GMP Compliance.

## Speak to our experts to find the perfect gelatin for your embolization application

With over 130 years of gelatin expertise, Rousselot has a deep understanding of the properties and functionalities of gelatin. We listen carefully to our customers to understand their challenges and provide a solution tailored to their needs.

### References

1. This image is a modified version of Figure 1 from Chen, Y. P., Zhang, J. L., Zou, Y., & Wu, Y. L. (2019). Recent Advances on Polymeric Beads or Hydrogels as Embolization Agents for Improved Transcatheter Arterial Chemoembolization (TACE). *Frontiers in chemistry*, 7, 408. <https://doi.org/10.3389/fchem.2019.00408>
2. Hu, J., Albadawi, H., Chong, B. W., Deipolyi, A. R., Sheth, R. A., Khademhosseini, A., & Oklu, R. (2019). Advances in Biomaterials and Technologies for Vascular Embolization. *Advanced materials (Deerfield Beach, Fla.)*, 31(33), e1901071. <https://doi.org/10.1002/adma.201901071>