TOURNAIRE
Taking care of the essentials

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PUBLICATION

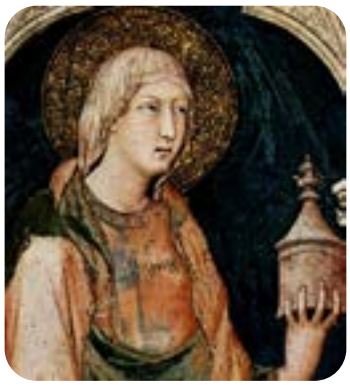
THE EVOLUTION OF AROMATIC SUBSTANCE PACKAGING THROUGH THE MATERIALS USED BY PERFUMERS

The question of preserving aromatic substances arose as soon as their use became widespread, at the heart of religious practices around 5000 BCE. Originally, perfumery relied exclusively on natural plant and animal products. By the late 19th century, with the development of organic chemistry, the perfumery industry and synthetic aromas emerged. Over the ages, the increasing number of combinations and the endless possibilities for blending quickly highlighted the importance of carefully selecting packaging.
Thus, the choice of material became crucial, serving as a key component for the conservation, transport, and diffusion of perfumes. The role of the bottle was shaped around ergonomics, aesthetics, and the control of interactions with the precious substances it contained. The continuous pursuit of preserving the organoleptic characteristics of raw materials and compositions necessitated a rigorous selection of packaging.
We will first examine the history and fundamental functions of aromatic substance packaging, before exploring the gradual evolution of materials used to manufacture these packages, reflecting the evolution of the perfumery profession itself.

I. HISTORY OF EARLY PACKAGING SOLUTIONS AND THEIR FUNDAMENTAL FUNCTIONS

1. EARLY PACKAGING SOLUTIONS

What packaging materials were available when the first uses of perfume appeared? Copper, bronze, iron, stone, ceramic, clay, glass, wood, animal hides, bladders, bones… These were the same materials used to produce everyday objects.



Simone Martini, Sainte Marie Madeleine - 1317. Assise, chapelle Saint Martin. Courtesy of Fragonard

Initially, aromatic substances were burned to release their fragrance during embalming rituals, a practice that paralleled the use of pigments in early prehistoric painting. Burning these materials allowed the fragrance (“per fuma,” from the Latin meaning “through smoke”) to fill the atmosphere and serve as an offering to the gods, carrying prayers skyward.
Chips and powders: burning perfume originated from the use of fire. Just as it was essential to create and maintain embers, precious chips, powders, balms, and oils needed careful preservation.

Bottles, pots, boxes, and leather flasks represent early packaging solutions derived from everyday objects, adapted to the viscosity and quantity of the substance being stored. Their use evolved alongside human lifestyles, nomadic first, then sedentary. Distribution of perfumes was linked to travel and, later, to the famed Silk Road; perfumes were transported alongside gold and salt, playing a central role in human trade and religious practices.
Usage contexts directly influenced the choice of materials and the most suitable packaging forms. Empirical observation quickly led to certain conclusions: myrrh and incense, ointments and creams must not be exposed to air, leak, or permeate the container walls. Packaging had to allow full access to its contents and, in case of mishandling, resist shocks. A distinction emerged between transport packaging and stationary-use packaging.

In the Middle Ages, Crusaders introduced the practice of perfuming gloves and garments in Europe. One can imagine the conditions under which perfumes traveled, in a chest on a mule, strapped to a Knight Templar’s saddle, or in the hands of a physician at the University of Montpellier, exposed to temperature fluctuations, impacts, and attacks.

PERFUME AND ITS PACKAGING: FROM TOMBS TO MODERN INDUSTRY

Perfume and its packaging were often included in tombs alongside the favorite objects of the deceased—whether a Merovingian warrior or a Pharaoh. The packaging had to be beautiful, worthy of a leader, and sometimes reflective of the personality of its owner in life. Many of these concerns remain unchanged today.

The different natures of the products, their viscosity, transport conditions, and temperature variations throughout the supply chain continue to be central considerations in packaging selection. Reuse of packaging after it is empty is possible, but it must be cleanable or refillable with the same substance or perfume. When a bottle has traveled long distances, the new shipment is delivered in a new container. Similarly, for packaging "pure" raw materials, variations in plant quality and harvest yield necessitate the use of new bottles for each production campaign.

Very early on, the need to ensure product integrity arose. It became essential that the "customer" be the first to open the precious bottle. Security measures such as seals, manufacturer-branded paper, and wax stamps were quickly introduced to guarantee the authenticity and origin of the product. The concept of tamper-evidence, therefore, has very deep historical roots.

Unguentarium from the 1st or 2nd century, Roman civilization
Courtesy of Fragonard

2. FUNDAMENTAL FUNCTIONS OF PERFUME PACKAGING

Perfume packaging for raw materials serves four essential functions :

2.1. Preservation

First and foremost, packaging protects the perfume from external aggressions without contaminating it with the packaging material. Users and their surroundings must also be protected, except when the packaging is intended to diffuse the fragrance. Presenting perfume in soiled or damaged packaging is unacceptable.

2.2. Application

Perfume packaging must be practical at every stage—from transport between the production site and the point of use to presentation to the customer. It may be used for fumigation, religious ceremonies (baptisms, weddings, embalming, funerals), purification rituals, or everyday purposes. The usage context is closely linked to social signaling: perfumes often denote the status of a Prince, Noble, Bourgeois, or medical practitioner. Spillage, contamination, or exposure of the product could have disastrous consequences. Whether tied to the sacred or to prestige, the correct bottle must be used. Even today, ritualized use persists, often in a secularized form.

2.3. Aesthetics

For consumers, particularly when perfume acts as a social marker, the appearance and style of packaging become an integral part of the product. Bottle design is embedded in popular imagery and narratives of exotic lands where precious essences were sourced. Refined and attractive containers ensure both practical functionality and preservation of the product.

2.4. Security

Security has two aspects. The first is limiting interactions between the content and the container. If the perfume loses its olfactory quality, trust between the customer and perfumer is broken. Alteration can be misinterpreted: the customer may suspect dilution or cost-cutting measures.
The second, and more critical, aspect is product integrity. Lockable cases prevent breakage of glass, ceramic, or clay bottles and restrict access to the perfume itself. Tamper-evidence remains a fundamental security feature.

2. THE GRADUAL EVOLUTION OF AROMATIC SUBSTANCE PACKAGING MATERIALS

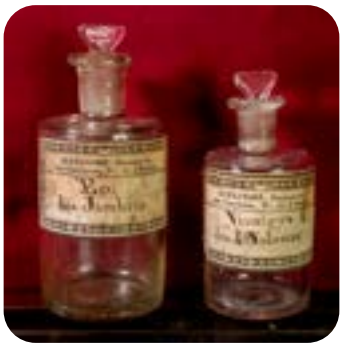
1. TRADITIONAL EMPIRICAL KNOWLEDGE

Tradition plays a central role in perfumery knowledge. Early perfumers, apothecaries, and alchemists knew precisely which packaging materials were suitable for plants, essential oils, and powders. Each pot or vial had a specific use and label, creating a typology that educated the customer to associate certain materials with particular fragrances. Changes in perfume compositions occurred gradually, as did changes in bottles.

Traces of packaging materials from Antiquity can still be found in perfumes, along with residues from the transformation of natural substances, sand, limestone, wood, that were imperceptible but contributed to olfactory performance. The risk of contamination was critical, especially when perfumes were part of ointments or essential oils used for medicinal purposes.

Given these risks, professionals were slow to change their packaging. Knowledge of interactions between materials and raw substances was transmitted over centuries, and selecting the right container became a critical, long-learned skill. Similar to how wine tastes different in a silver cup versus a plastic glass, packaging for perfumes and aromas must exhibit perfect neutrality. Any alteration in scent or flavor prevents perfumers from confidently composing fragrances, just as a painter's soiled palette disrupts color preparation.

2. METAL AND GLASS: A SLOW EVOLUTION



Bottles from an apothecary's case, early 19th century
Courtesy of Fragonard

Packaging materials evolve conservatively. Only material shortages, changes in usage conditions, or regulatory developments prompted change. With the birth of perfumery in the Orient and its spread to Europe, packaging became more specialized, distinguishing between process containers and final consumer packaging. Ancient packaging ranged from bone to glass, metals, wood, or ceramics, reflecting regional practices. Standardization emerged slowly, especially with the introduction of the metric system in France (1790).

Throughout the 19th century, perfume production remained artisanal, with hand-made bottles varying in size from one craftsman to another. Glass, produced individually by artisans, became the primary packaging material for essential oils transported from Grasse. Its fragility posed financial and contamination risks, in addition to fire hazards.

With the development of trade routes, packaging quantities and transport evolved: from sea transport in the late 18th century to faster routes via improved roads and railways by the mid-19th century. Packaging needed to accommodate quantities from 15 g samples to 25 kg containers. The choice of packaging often depended on the client, reflecting quantity and usage requirements.

The transformation from artisanal glove-perfumers to industrial perfume makers in Grasse led to the development of specialized tools and packaging solutions. Copper, initially from coppersmith expertise, became widely used for conservation and transport. "Estagnons" (tinned copper containers) were adapted from alembics, along with a variety of pouches and accessories for creation, handling, mixing, transport, and sampling. Tin plating protected copper from oxidation, reflecting centuries-old metallurgical knowledge.

By the early 20th century, new metallurgical technologies brought aluminum. Derived from abundant bauxite, aluminum was light, strong, chemically neutral, UV-resistant, and more economical than tinned copper. Its recyclability and modularity made it ideal for industrial use in essential oils, compositions, and perfumes.

After World War I, Tournaire invented the monobloc aluminum canister, replacing copper estagnons for large-scale transport, conservation, and sampling. This standardization allowed safe global shipping of raw materials and compositions. Glass remained the preferred material for finished products—eau de toilette, perfumes, and eau de parfum—valued for aesthetics and technical qualities, and still used extensively for sampling. Apothecary-style glass necks remain a reference for perfumers' dosing systems. For end consumers, decorative and stylistically crafted bottles continue to be central.

With the arrival of plastics in the second half of the 20th century, low-cost packaging solutions emerged for bulk products and industrial aromas. Plastic jerrycans enabled affordable storage for less valuable products intended for rapid, large-scale use.

Today, the perfume industry has a wide choice of packaging materials (steel, stainless steel, 1000 L IBC containers), but evolving regulations increasingly disrupt traditional practices. Compliance with regulatory, technical, and CSR requirements—while remaining competitive—is now a fundamental challenge. Packaging must be recyclable, reusable, and environmentally conscious. Thanks to its heritage and intimate relationship with natural raw materials, the industry is already aware of these issues and costs. New solutions are now available, which will be explored in the next article.

3,3x
lighter than copper

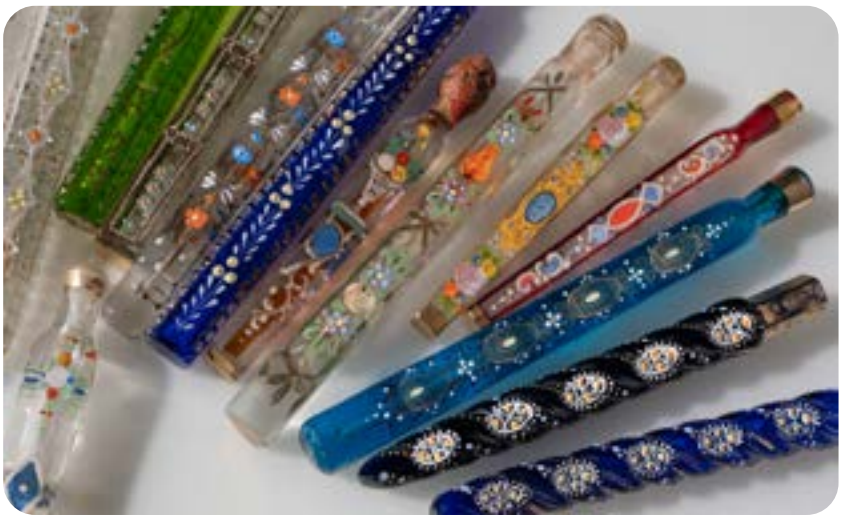
75%
of the aluminum produced since 1880 is still in circulation

5%
of the energy required for primary production is needed for recycling

After the First World War, Tournaire invented the one-piece aluminum container, and the traditional estagnon from Grasse transitioned from copper to aluminum for the preservation, transport, and large-scale international sampling of materials. Trade routes expanded, and it became necessary to transport goods safely from the farthest parts of the world. The Grasse "travelers" knew this well and standardized the use of aluminum estagnons during their journeys and at their various sourcing locations.

Thus, in the upstream part of the industry, glass gave way to aluminum for the transport and industrial preservation of compositions and raw materials. With this major technological innovation—the seamless, one-piece aluminum estagnon—the solution quickly became essential in a flourishing industry. Glass, however, remained predominant for presenting finished products such as eau de toilette, perfumes, and eau de parfum. Thanks to its aesthetic qualities and technical advantages, it also remained widely used in the world of sampling.

Today, apothecary-style glass necks are the standard for perfumers' organs. For the end consumer, the bottle plays a key role and enhances the fragrance. People choose a decorated, finely crafted bottle that follows current fashion trends.



Rose essence bottles, known as Oxford lavenders, late 18th century to 1850
Courtesy of Fragonard

Scent box, late 18th century
Courtesy of Fragonard

With the arrival of plastic in the second half of the 20th century, low-cost packaging solutions emerged for bulk products and industrial-use aromas. The jerrycan, derived from plastics manufacturing, made it possible to obtain inexpensive storage containers for less valuable products intended for rapid use in very large quantities.

Today, the perfume industry has access to a very wide range of packaging materials (steel drums, stainless-steel drums, 1000 L IBC containers…), but the ever-increasing number of standards is transforming the profession. New regulations pose challenges at every stage of the value chain—whether concerning odorant molecules or the materials used—and extend beyond the roles of perfumer and packaging manufacturer.

It is necessary to reconcile regulatory and technical requirements with the CSR commitments made by companies as well as by end customers, all while remaining competitive. These underlying trends, which benefit resource preservation, require the development of packaging that is easy to recycle and reuse.
The industry, strengthened by its heritage and its unique relationship with natural raw materials, has already recognized these challenges and their associated costs.
New solutions are now available—this is what we will explore in the next article.

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and the Tournaire team

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