



Raw Materials and *Processing*...

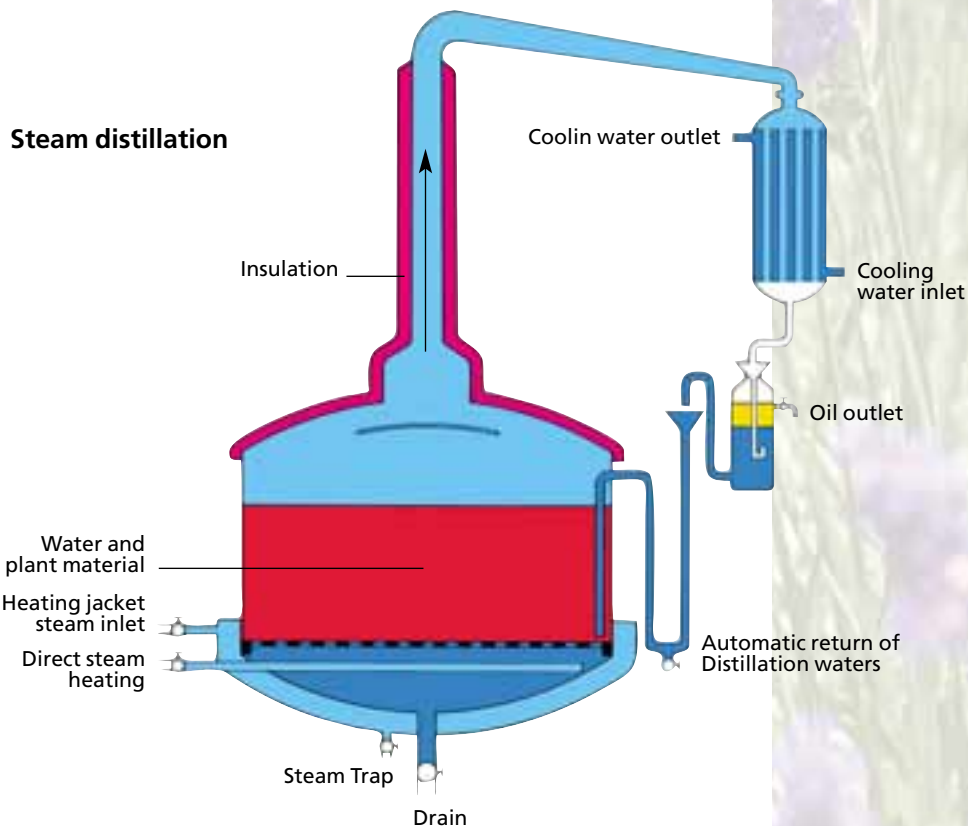
The palette of ingredients that is available to perfumers for use in their compositions is differentiated into three different product groups. The first two are of natural origin, essential oils and absolues, while the third consists of synthesized aroma chemicals.

Essential oils

Steam distillation is employed to obtain these substances from fragrant plants. Heating dissolves the plant's fragrant oil from its cells and carries it along with the steam. During the subsequent cooling process, the water and oil become liquid again and separate, as they cannot mix with one another. There is one exception: Citrus oils are not obtained through distillation, they are squeezed out of the peel (expression).

Absolues

A two-step extraction process is employed to obtain these substances from fragrant plants. In the first step, a solvent is used to dissolve the fragrant oil from the plant. What is left after the solvent has been separated is the concrete, which is often waxy and highly colored, since – as opposed to distillation – the pigments and plant waxes are also dissolved during the extraction process. To remove them, the





**Southern France:
The center of la-
vender cultivation.**

Overview of various perfume raw materials – Yield, price, plant part

Product	Yield from 1 ton of raw product, in kg	World market price per kg in Euro*	Extracted Plant part
Rose oil	0,2–0,5	5.000	Petals
Jasmin concrete	2,0	3.000–5.000	Petals
Iris root butter	0,1	9.000	Roots
Tuberose absolue enfleurage	0,3	20.000	Blossoms
Sandalwood oil	40–65	450	Wood
Orange blossom absolue	1,5	5.000	Blossoms
Ylang-ylang oil	15–25	100	Blossoms
Patchouli oil	30	20–60	Herb
Ginger oil	40–44	75	Roots
Cedar oil	30–35	20	Wood

* Prices are approximate and can fluctuate on the basis of grade and market situation.

concrete is washed with alcohol; what remains after this alcohol has been removed is a liquid product that now has less color and is called an absolue.

Essential oils and absolues are complex mixtures of a wide variety of molecules that are produced by the plant's metabolism. Chemical processes can also be employed to create these molecules, producing what are called aroma chemicals.

Aroma chemicals

Aroma chemicals are often replicas of molecules that occur in nature. If they have the same chemical structure as the molecules produced by the plant's metabolism, these aroma chemicals are termed nature-identical. If the molecules have not yet been found in nature, they are called synthetic.

Modern fragrance compositions are typically blends of these three product groups, because this is the only way to achieve the desired standards of quality and keep within the price that has been stipulated for the perfume oil.

Natural raw materials – essential oils and absolues – are very expensive, as a great deal of manual labor is involved in obtaining them. Weather conditions can cause the quality of the products to fluctuate from year to year; in addition, available quantities are limited by

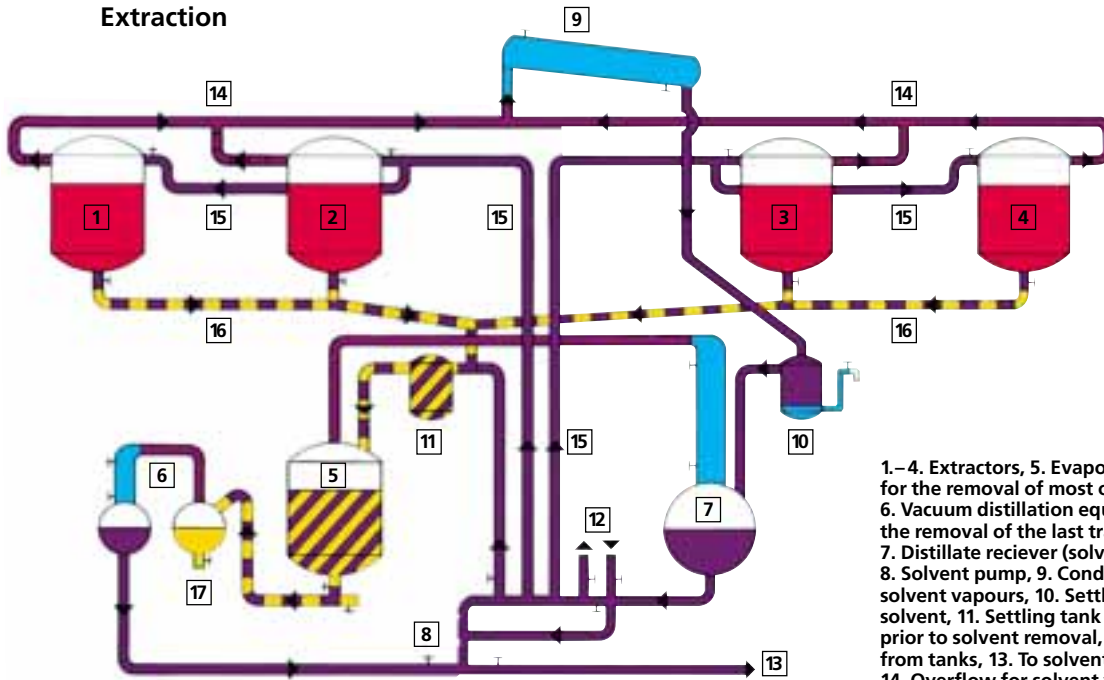


Raw Materials and Processing



Processing lavender.

Extraction



yellow: concrète, violet: solvent, red: material to be extracted, blue: water

1.-4. Extractors, 5. Evaporator – for the removal of most of the solvent, 6. Vacuum distillation equipment for the removal of the last traces of solvent, 7. Distillate receiver (solvent), 8. Solvent pump, 9. Condenser for solvent vapours, 10. Settling tank for solvent, 11. Settling tank for extracts prior to solvent removal, 12. To and from tanks, 13. To solvent rectification, 14. Overflow for solvent vapours from the extractors, 15. Solvent flow to extractors, 16. Extract flow from extractors to the evaporators, 17. Outlet for Solvent – free extracts (concrète).

the potential area available for cultivation. In fact, only 2% of all raw materials and ingredients that are employed today consist of natural products.

Nature-identical aroma chemicals can often be produced at very low cost, in unlimited quantity and in uniform quality. Moreover, they do not contain any environmental impurities, i.e. they are “cleaner.”

Synthetic aroma chemicals, finally, offer perfumers an additional source of ingredients for their creative work and enrich fragrance compositions by providing unknown sensory impressions. They enable unusual and highly esthetic creations to be developed; combinations of pure natural substances would undoubtedly be too one-sided for today’s “consumer noses.”

To simplify their work, perfumers also employ so-called bases. These are fragrance compositions that can be added to a creation in the form of ready-made fragrance modules. Originally developed to imitate the scents of plants from which no extracts can be obtained, like lily of the valley, lilac or fruits, bases are also employed today as a substitute for costly natural products.



Modern fragrance compositions usually contain both natural and synthetic raw materials and ingredients.

In addition, fantasy bases can lend a unique, special nuance to a composition.

One special sub-group of bases consists of Vitessesences. These are natural and near-natural bases that are made possible by a special analytical method, headspace technology. Under this method, the fragrant oils are very gently removed from the plant and then analyzed. The perfumer can use the results to develop especially attractive fragrance modules, Vitessesences.



In the headspace technology version shown here, fragrance oils are very carefully removed from the plant for analysis.

