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Sense about
fragrance



Unilever



Foreword

At Unilever, Vitality is at the heart of everything we do: our brands, our people and our values. We want to meet people's everyday needs for nutrition, hygiene and personal care with brands that help them look good, feel good and get more out of life.

Our consumers overwhelmingly ask us for fragranced products, whether they are personal care products like Sunsilk shampoo and Dove body lotion, or household products like Omo laundry detergent and Cif floor cleaner. What it smells like is very often a major reason why people choose one product over another. They want a shower gel to be invigorating, or relaxing, or refreshing, and fragrance plays a big role in delivering that. They want their laundry not only to be clean but to smell fresh. And it's the same all around the house: a clean home smells clean.

This booklet is about how we meet that challenge of delivering the freshness and fragrance that our consumers are looking for, responsibly and sustainably, around the world. Fragrances are fascinating: they can be made up of hundreds of ingredients and finding the right combination is both an art and a science.

In Unilever, we work closely with some of the best fragrance houses in the world and we also have our own dedicated fragrance team that plays a leading role in the industry. We continually review and advance the high standards of safety and environmental practices that Unilever is committed to.

I hope you find this booklet useful.



Marcella Bartoletti
Fragrance & Sensory Director, Unilever

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Our sense of smell

Our noses tell us a great deal about our world: the toast is burning... the dog needs a wash... the milk's gone bad. Our sense of smell isn't just a warning system, though. We also get great pleasure from scents, like the fragrance of fresh flowers, or the aroma of hot coffee and baking bread.

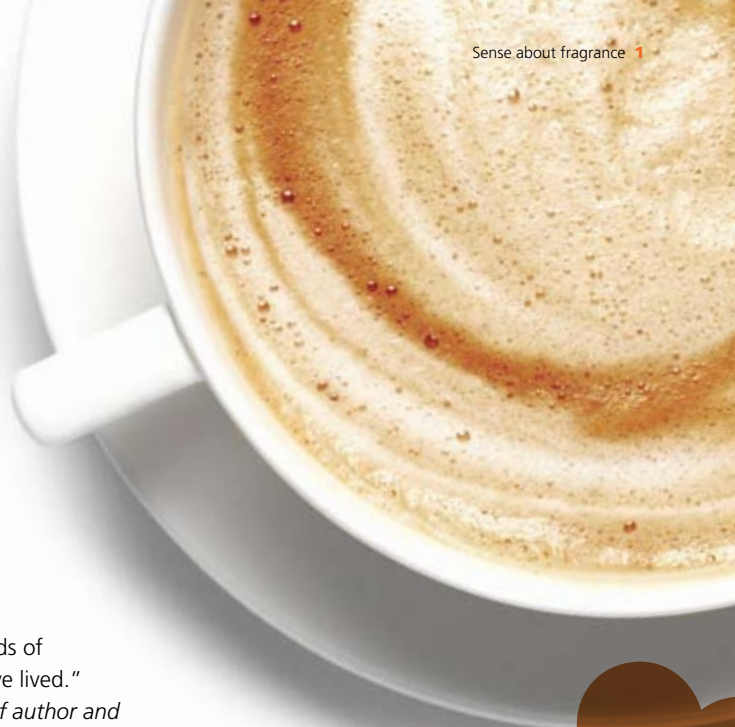
"Smell is a potent wizard that transports you across thousands of miles and all the years you have lived."
Helen Keller, US blind and deaf author and educator, 1880–1968

In fact, and perhaps surprisingly, our sense of smell is one of the most powerful of our five senses. Whether it's the lavender sachets your grandmother used to make, or the smell of the pine trees on that summer holiday by the beach, studies have shown that scent memory is more evocative and longer-lasting than sight.

Fragrances have been affecting our mood and wellbeing for thousands of years.¹ The Greeks, Romans, Egyptians and Chinese all used essential oils, not only for bathing and perfume, but for healing as well. Today, the therapeutic power of scent is recognised in the practice of aromatherapy.



An Etruscan terracotta perfume flask in the form of a lion made at Chiusi in the 4th century BC, close to modern day Lazio, Italy. The elaborate form and additional decoration in gold suggests these objects were made for a wealthy clientele.



What are fragrances made of?

Fragrances used to come directly from nature – from flowers, grasses, spices, fruit, wood, roots, resins, balsams, leaves, gums, and from animals, like castor from beavers and musk from male deer.

For environmental and animal protection reasons – as well as availability, quality and cost – many fragrances today are made at least partly from synthetic ingredients.

Synthetic fragrance ingredients have been made and used since the late 1800s. The first was coumarin, which can be extracted from the tonka bean tree and gives off the scent of newly mown hay. In 1868, an Englishman named William Perkin managed to recreate this fragrance in the laboratory.²

Coumarin was followed by musk, vanilla and violet and, eventually, hundreds more synthetic fragrances.

Today, most fragrances are a mixture of, on average, 30–50 natural and synthetic ingredients selected from a total of around 2,000 ingredients in the perfumer's palette. A complex fragrance could contain over a hundred ingredients.

It's only natural

“There is a general assumption among consumers that ‘natural’ products are better or healthier than similar ones using synthetic ingredients. Often, however, these ‘natural’ ingredients are no different in chemical composition than their synthetic counterparts. In fact, a synthetic substance which mimics a natural one can sometimes provide a purer, more stable ingredient which gives the product a longer usable life. Health Canada considers both natural and synthetic ingredients to be equally suitable for use in cosmetics.” Health Canada, Consumer Product Safety, Cosmetics Program.³

There are potential environmental and sustainability issues with using natural ingredients, especially as some popular natural fragrance ingredients are extracted from rare or endangered species such as sandalwood and the tonka bean tree.

Unilever's position is that we subject natural ingredients to the same rigorous safety and sustainability standards that we apply to synthetic ingredients. We do not justify the safety of an ingredient purely because it is of natural extract. We use natural ingredients only if they are produced under normal farming practices and always aim to use sustainable sources where available. We do not use materials derived from endangered species and aim to avoid those derived from species in decline.

Synthetic fragrance ingredients are often chemically identical to components of a natural ingredient. For example, vanillin (vanilla extract), limonene (lemon oil), linalool (lavender oil) and alpha pinene (pine oil).





Did you know?

You can only smell what reaches the nose in the air that you breathe. If you smell some perfume on your wrist, you are not smelling what's on it, but what is no longer on it.

- ❖ Perfume comes from the Latin "per fumum", which literally means "through smoke".
- ❖ Molecules leave your skin in a gaseous state, are carried into your nose in the air that you breathe and are picked up by receptors in the nasal passage which then send an electrical stimulus to the brain through the olfactory nerves.
- ❖ People can distinguish 10,000 smells.⁴ Dogs' noses are up to 10,000 times more sensitive than ours – they can distinguish a hundred million.
- ❖ Your brain doesn't interpret each of your senses separately but offers you a truly multi-sensory experience. For example, colour can influence smell – if something is coloured pink, you are more likely to recognise it as rose-scented than if it was coloured blue.⁵
- ❖ Taste is enhanced by smell, as anyone who has ever had a bad cold will know. Our taste buds can only recognise five tastes – sweet, salty, sour, bitter and a savoury taste, known as umami. It's our sense of smell that adds all the variety.⁶

In a taste test where people are blindfolded and pinch their noses shut, it is possible to take a bite of potato and think it was apple.

- ❖ The effect of fragrance on mood is complex and individual but it is measurable. At Sloan-Kettering hospital in New York, researchers found that a vanilla aroma helped patients undergoing an MRI scan to relax and so reduced the chances of them becoming anxious and not completing the procedure.⁷
- ❖ In Greek and Roman times, liquid perfumes were usually made by mixing crushed petals or herbs into oils, like almond oil or olive oil, making a fragrance that was quite heavy. It was a Persian physician and philosopher around 1,000AD known as Avicenna who first developed the distillation method of extracting essential oils from plants which is still used today. His rose water had a more delicate scent which became very popular.



On the scent

Imagine burying your face in a warm, fluffy, freshly laundered towel. Would you be disappointed if you didn't smell anything at all?

Such is the power of fragrance that most of us consider it an essential characteristic of the consumer products that we buy. Would you choose a shampoo that has no smell at all? And when you have finished cleaning the house – would you want the air to smell no different, or would you prefer it to have a fresh, clean smell?

Our consumers overwhelmingly tell us they like things to smell nice when they have finished cleaning them, whether it's your hair you've just washed, or the towels, or the floor that has just been mopped. In fact, that clean smell is part of what helps us identify things as clean.

The question is, how does 'clean' smell? And how strong or subtle do you like that fresh, clean smell to be? That rather depends on who you are, where you are and even what mood you're in...

Unilever's products sell in over 200 countries, so we know that what smells nice and clean in one part of the world could very well smell bad in another. What are your preferences? Take a tour...

 Canada
wild orchid
& vanilla
Snuggle



Europe
herbal
Cif

 USA
waterlily
& fresh mint
Dove Go Fresh



Morocco 
lavender
Omo Matic



Brazil 
passionfruit
Lux Shower



Chile 
aloe vera
Omo Multiacción





Switzerland
deep sea mint

Axe Shock



Russia
grapes & rose petals

Timotei



China
lotus

Omo



Japan
cucumber
& green tea

Dove Aqua Moisture



Egypt
orange peel

Lux Awaken Spa



India
medicated

Lifebuoy



South Africa
summer dew

Sunlight



Australia
lavender
& oriental
blossom

Surf Small & Mighty



From fresh idea to fragranced product



A fresh idea

Getting the fragrance right in our products is both an art and a science. Our own fragrance experts understand both our brands and the world of fragrance but the key thing to understand is what will please you, our consumers. So how do we do it?



Formulation

We develop the fragrances for our brands by working in very close partnership with three of the leading fragrance houses in the world and a few top fragrance consultants. In this way we are able to make sure we tap into the best and the latest technology and the newest fragrance ingredients, whether it's for Axe deodorants or Omo laundry detergent.

As mentioned before, it can take dozens of ingredients to get a fragrance smelling just right in a deodorant, or a shampoo. But it only takes a very small amount of fragrance to get our products smelling as our consumers want them to, compared with the levels found in a fine perfume you might dab on your wrist.

It is our aim to minimise the environmental footprint of our products by using only what is absolutely necessary to achieve the desired quality and performance. That's part of our commitment to Vitality.

We are also increasingly using new technologies to help us do more with less. For example, encapsulation technology allows us to control when the fragrance is released, so that less fragrance will last longer.

Encapsulating freshness

Most of us expect our laundry to smell fresh and clean when it has just been washed. But what about two or four or six days later? Will those towels in the cupboard still smell fresh? And how about that shirt that you want to wear today?

Our consumers consistently ask us for freshness that lasts for several days and even weeks after the wash. Achieving that lasting freshness is quite a challenge for our formulators and fragrance house partners, because it means managing the speed with which the fragrance is released from the item.

We do this partly by choosing fragrance ingredients that are more substantive – that is, they release the fragrance into the air more slowly by their nature. We also use a technique called encapsulation, which holds the fragrance in the product and on the item until a trigger – which can be water, or daylight, or heat or friction – releases it.



Fragrance concentration

The fragrance concentration levels in Unilever products typically range from 0.2% up to 1.5%...



BASIL

UNILEVER PRODUCTS

0.1%

0.2%–1.5%



Ingredients

The fragrance ingredients we use are selected from an approved list of both natural and synthetic ingredients. Our safety and environmental standards are often tighter than the fragrance industry norms and than regulations require.

We are aware that a few people appear to be sensitive to certain fragrance ingredients, even though they have been internationally assessed to be safe. European legislation has identified a list of 26 such ingredients. Our approach is to design products to deliver the fragrance quality and performance the vast majority of our consumers demand, and to make sure we inform those few people who are sensitive when these specific ingredients are used, via product labels and our customer Carelines. Especially for those people, we do also offer many of our products in 'Sensitive' ranges.

Our safety and environmental assurance system

We want all our consumers to be confident that our products are safe. We have a separate Safety and Environmental Assurance Centre (SEAC) that ensures that safety and environmental decisions are made independently of commercial considerations.

SEAC plays a continuous role in assessing product safety from the first product idea through to a final rigorous pre-market assessment and post-launch monitoring.

It uses internationally recognised methods and standards to impartially assess the safety of our ingredients and products. We also require our fragrance house partners to apply our standards.

To know more about our safety assessment procedures, please see the Unilever booklet, Consumer Confidence in Chemicals.⁸

...which is similar to the typical essential oil yield in many naturally occurring products such as basil and orange peel.

...and much lower than the maximum concentration used in fine fragrances products such as eau de parfum and perfume.



ORANGE PEEL

DRIED BLACK PEPPER

EAU DE COLOGNE

DRIED CLOVES

EAU DE PARFUM

PERFUME

2%

3%

2%–5%

15%

10%–30%

20%–40%



Packaging and labelling

One of the last steps in developing a fragranced product is getting the packaging and the label right.

The label is a really important source of information for the consumer because it is what you see when you are trying to choose a product off the shelf.

People want labels to tell them what they need to know about the product, in a clear and easy to read way. Too much information and the label becomes cluttered and hard to read; too little, and you might be left uncertain about whether to choose the product or how to use it.

In Europe, the regulations require that product labels list all ingredients in descending order of weight in the product and list all fragrance ingredients collectively as 'parfum'. However, the 26 fragrance ingredients mentioned earlier as linked more frequently than others to allergic reactions have to be listed on the label whenever their concentration is above a certain level in order to help those few people with known sensitivities to avoid these products.

Other countries, including Latin America, Turkey and some African countries apply the same labelling standards for fragrance ingredients.

In any case, Unilever's policy is to make sure this information about fragrance ingredients is always available via the Careline number on the label.

The design of the packaging and the label is also important, not just because an attractive package can help sell the product, but also because it is a very effective shorthand way to tell you more about the product.

With fragranced products, it's especially important that we make sure the product container and the label complement the actual fragrance of the product because, as we know, colour and other visual cues can affect our perception of what something smells like.

Most people will see a yellow bottle of household bleach, for example, and very quickly surmise that it is lemon or citrus fragranced. If you were looking for a fresh, invigorating shower gel, it would be a lot harder to find it if it was in, say a black and white bottle with a geometrical design.



Unilever in the fragrance industry

As a major user of fragrances, we play an active role in the industry. We are closely involved in the International Fragrance Association (IFRA) and are represented on the board of the Research Institute for Fragrance Materials (RIFM), which is an industry association dedicated to generating, evaluating and distributing scientific data on the safety assessment of fragrance raw materials. In this way we work very closely with others to continually review the safety of fragrances and their ingredients.

Within Unilever, we have dedicated, expert fragrance managers working with each brand and our fragrance house partners. We also have a Global Fragrance Centre, which acts as a central expertise and co-ordination hub to ensure that best practices and the most up-to-date knowledge are systematically applied throughout the business.

Raising standards

We are committed to continually monitoring and contributing to advancing understanding of ingredient and product safety whilst applying the principles of Precaution and Substitution. This has resulted in us taking a leading position in specific cases in recent years:

Musks

Musks provide characteristic and long-lasting fragrance notes that are generally perceived as pleasurable. Musks are also valued by perfumers because of their ability to enhance other elements of a fragrance. Natural musks, derived from animal sources, have not been used by the fragrance industry for

a number of years and are not permitted in Unilever products. The fragrance industry has therefore developed a range of synthetic musks as alternatives.

Nitromusks and polycyclic musks belong to this class of ingredients. As science and technology progresses, making new and improved testing methods possible, so we continually review our risk assessments. Because of concerns about environmental safety margins in the early 1990s, we began replacing nitromusks worldwide and now no longer use these ingredients in any products.

Similarly, a mid-1990s environmental risk assessment of polycyclic musks (PCMs) indicated that European safety margins were actually quite small under specific conditions (for example, where sewage was discharged untreated into the environment). There were also concerns about bioaccumulation. As a result, Unilever, along with the European detergents industry, began reducing the use of PCMs in high-volume European products. This voluntary reduction has lowered environmental concentrations and improved safety margins. We are now further reducing the use of PCMs in all Unilever products worldwide, and are committed to minimising their use.

Phthalates

Scientific research has shown that some types of phthalates are safe and some hazardous. The only phthalate we allow to be used in our fragrances is diethyl phthalate (DEP) which is used because it helps to dissolve other fragrance ingredients. Our own scientific risk assessments show that DEP is safe to use and this is confirmed

by regulatory authorities and experts around the world. While solvents are often essential to get fragrances to mix properly in our products, we are challenging our fragrance suppliers to work without solvents wherever possible.

Geranyl Nitrile

Another regular risk review in 2006 identified that there was some question about the safety margins associated with the use of a common fragrance ingredient, geranyl nitrile (GN). Unilever found an alternative ingredient that we could substitute for GN and moved quickly to remove GN from all our products, as a precaution, by the middle of 2007 – well before the voluntary industry deadline set by industry organisation IFRA (International Fragrance Association).

To find out more, please see:
www.unilever.com
www.ifraorg.org
www.rifm.org

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