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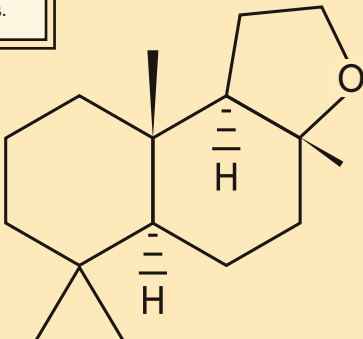
WOODY AMBERS

Warm, intense, and even searing, woody ambers guarantee depth and tenacity. We explore this family of compounds which, following the scent trail laid down by Ambrox, emanate from research into ambergris.

By Olivier R.P. David

NATURALLY DEAR

Ambrox is around 500 euros per kilo, whereas one kilo of natural ambergris can cost tens of thousands of euros.



BOIS D'ARGENT

Brand	Christian Dior
Launch	2004

Iris as it's never been seen before, atop a dry cedar, tickled by incense and invigorated by the minerality of Ambrox which, in excess, ensures phenomenal diffusion. All this aristocratic propriety is warmed with a hint of comforting vanilla.



NOT A PERFUME

Brand	Juliette Has a Gun
Launch	2010

Beyond the single-ingredient concept (here, Cetalox), in reality this *non-perfume* provides the molecule with a coating of musks, Hedione and Iso E Super, giving it the classic structure of a truly modern composition.



INVICTUS

Brand	Paco Rabanne
Launch	2013

Under a wave of marine freshness and a few watery and salty fruits, there's a whole army of strong woody ambers (Operanide and Amber Xtreme) which hammer out their virility with a monster sillage.



BLAMAGE

Brand	Nasomatto
Launch	2014

Alessandro Gualtieri explodes the classic oriental with an intentionally dangerous dose of Ambrocenide. In a very 'niche' aesthetic, woody ambers stand alongside a handful of fruity citruses, creamy white flowers and vanillic sandalwood, all cloaked in Ambrox.



AMBROX...

The question of what gives ambergris its fragrance remained a mystery for some time. Secreted by sperm whales, *Physeter macrocephalus*, and collected on the sea shore, ambergris gives off a complex amber scent that is mineral, woody and salty, with floral and musky aspects and hints of tobacco and incense. Research into this substance began in the 1940s, led by chemist Leopold Ruzicka from the University of Zurich. The Firmenich company funded his research and gave him

10 kilos of the highest quality ambergris – a real treasure! Ruzicka sought the help of Edgar Lederer, who was a specialist in chemical analysis with France's national scientific research body, the CNRS. In 1946, they successfully purified and analysed the principal molecule in ambergris, which they named ambrein. However, this waxy substance is not at all volatile and therefore has no aroma. In subsequent years, they found several odorous substances: ambrinol and ambrinal, among others. These substances, which constitute no more than 0.3% of ambergris, are

produced through oxidation of ambrein.

Max Stoll, head of research at Firmenich, noted that the substances detected by Ruzicka and Lederer were similar to those found in clary sage and cistus labdanum.

He decided to carry out experimental chemical reactions on the main molecule found in clary sage: sclareol. With his

assistant, Max Hinder, he identified a number of molecules, including one with a powerful amber scent, which they named Ambrox. They filed for a patent in 1949 and the structure of the molecule was published in a scientific journal in 1950. Ambrox was then produced by Firmenich as an artificial substance. However, in 1977, Braja D. Mookherjee, head of research at IFF, discovered that a particular isomer of the molecule, namely (-)-Ambrox, is present in ambergris, meaning it is in fact a natural substance. In the early 1980s, Firmenich's patents entered the public domain. Other companies could therefore begin marketing Ambrox under different names: Ambermor (IFF), Ambrofix (Givaudan), Ambroxan (Kao), Ambroxide (Symrise), and Orcanox (Mane). Faced with pressure on supplies of clary sage essential oil, Firmenich developed a simpler and more profitable synthesis method which used raw materials sourced from petrochemistry.

... AND ITS SIBLINGS

Meanwhile, research continued into other synthetic molecules with woody, amber-like notes, building a family of compounds with a wide range of structures and scents.

Some claimed to be comparable to Ambrox, like Amberketal by Givaudan (also offered by Firmenich under the name Z11) , Cachalox by Firmenich, and Grisalva by IFF. Others, referred to as woody ambers, offered dry and intense woody facets. These products could be synthesized from inexpensive raw materials found in cedar or pine. Those derived from cedrene gave rise to a whole host of dry, woody notes, such as Cedramber, the powerful Ambrocenide (Dragoco, now Symrise)

and Ambrostar (Symrise). Longifolene, a compound present in a pine from the Himalayas (*Pinus roxburghii*), has a long lineage of tenacious woody notes, including Ambermax (Givaudan) and Symroxane (Dragoco). Research into macrocyclic and polycyclic musks uncovered yet more woody surprises, such as Trimofix (IFF) and Okoumal (Givaudan). Cashmeran (IFF), which is derived from a forerunner of the musks, is the platypus of perfumery, with musky,

woody, ambery, mineral and earthy notes, alongside fruity, balsamic and even vanilla notes. IFF uses Cashmeran as a source material to make other woody amber molecules, including Amber Xtreme – notable for its strength and tenacity – and Operanide, as well as Ambertonic and Sinfonide, with their musky facets. Lastly, Iso E Super (IFF, see *Nez #3*) should also be mentioned because of its hybrid structure between Ambrox and an ionone.



WHAT PERFUMERS SAY

Cécile Zarokian (Independent) "Ambrox is dry, woody, ambery, evoking cedar with a smoky note of ash and wood fires, and also a facet that is closer to resin, and incense.

Ambrinol diffuses remarkably well and is perceptible from the very top of the head notes. It is like an infusion of ambergris and amplifies other amber notes. Piconia offers fruity, camphorous notes, with a slight suggestion of patchouli, similar to Cashmeran. Karanal is extremely strong and reminiscent of newspaper, like Timberol, giving density to a composition. Ambrocenide and Amber Xtreme give the same effects with even lower doses, and add sillage while also aerating the composition."

Fabrice Pellegrin (Firmenich) "Ambrox is a highly complex, deep, tenacious and diffusive note. It is both clean, its musky side evoking detergent, and dirty, with a delicate, mellow animality.

Cachalox, part of the same domain, slips into rounder and softer notes. Among the woody ambers there is tension, resonance, power and memorability."

Maurice Roucel (Symrise) "Ambrocenide is the Viagra of woody base notes in masculine fragrances."

OUCH!

Woody ambers have phenomenal strength, a very low detection threshold, along with a penetrating quality and boundless longevity – these molecules evaporate extremely slowly. Because of their hydrophobic structure, they also have excellent staying power on fabric. Perception varies depending on the molecules and the dosage, from ambiently warm and rounded to assertively potent and harsh. In excess, they can have a searing effect, like spikes piercing through the perfume and boring into the sinuses. Hence the expression "spiky woods" appearing on specialist blogs.

AN AMBER FOREST

1949	1966	1969	1973	1977	1978	1986	1989	1992	1997	2001	2010	2012
(-)-Ambrox (Firmenich) A	Cedramber (IFF) A-S-W	Cashmeran (IFF) M-W Piconia (IFF) S-W	Iso E Super (IFF) A-W	Ambrinol (Firmenich) A	Timberol (Dragoco ⁽²⁾), alias Norlimbanol (Firmenich) et Karmawood (IFF) S-W	Spirambrene (Roure ⁽³⁾) A-W	Okoumal (Givaudan) S-M	Superambrox (Firmenich) A	Ambrocenide (Dragoco ⁽²⁾) S	Amber Xtreme (IFF) S Trisamber (IFF) B	Ambrostar (Symrise) S	Sinfonide (IFF) A-M-W Ambertonic (IFF) A-M-W
1953	1967	1972	1974	1983	1987	1991	1995	2000	2003	2005	2011	2014
Z11 (Firmenich), alias Amberketal (Givaudan) A	Trimofix (IFF), alias Fixamber A-M-W	Vertofix (IFF), alias Lixetone (Quest) S	Boisambrene (Henkel Inc. ⁽¹⁾), alias Amberwood F (Symrise) W	Limbanol (Firmenich) S-W	Karanal (Unilever) S	Ysamber K (Dragoco ⁽²⁾) A-W	Belambre (Givaudan) A-W	Symroxane (Dragoco ⁽²⁾) W	Operanide (IFF) A-M-W	Ambermax (Givaudan) A-W	Ambramone (Mane) A	Lorennox (Mane) A

A: amber / S: "spiky woods" / M: animal / W: woody

(1) Henkel Inc., now Kao Co. (2) Dragoco, now Symrise. (3) Roure, now Givaudan.