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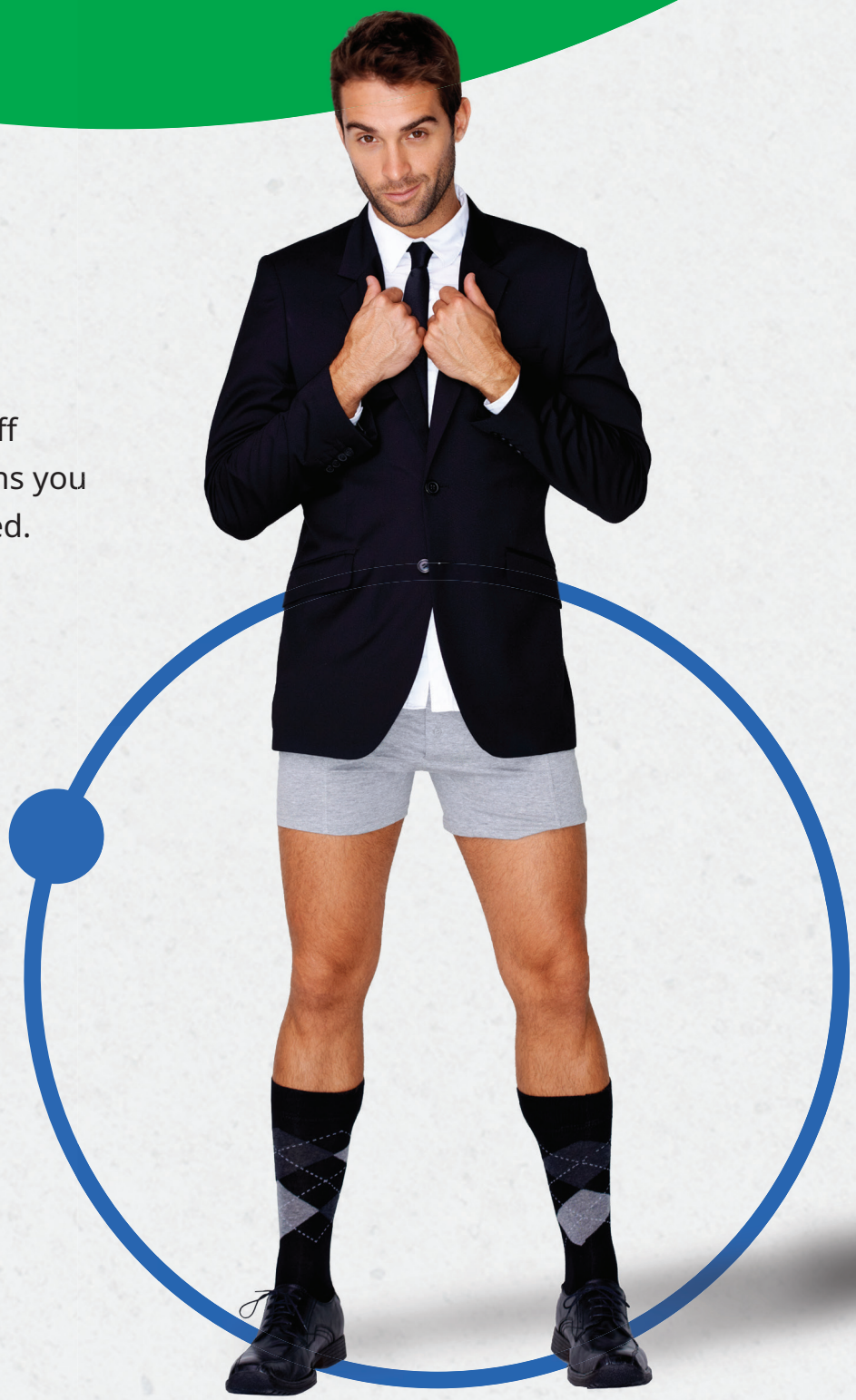
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Perfumer & Flavorist+ (ISSN 0272-2666) is published monthly by Allured Business Media - 336 Gunderson Drive, Suite D, Carol Stream, IL 60188-2403. Periodicals Postage paid at Carol Stream, IL and additional mailing offices.

POSTMASTER: Send address changes to PERFUMER & FLAVORIST+, Attn: Audience Development, 336 Gundersen Drive, Suite D, Carol Stream, IL 60188-2403. Give both the new and old addresses. Allow two months for change to become effective.

Subscriptions: Subscribe online at *www.PerfumerFlavorist.com*

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2027: The F&F Industry Hits the Road



For an industry increasingly shaped by technology, regulation, sustainability, new materials and changing consumer expectations, these gatherings remain more than calendar entries.

The flavor and fragrance industry is already looking ahead to a packed 2027, with a global calendar that spans technical meetings, ingredient showcases, fragrance gatherings and major trade events. From Anaheim and Miami to Paris, Barcelona, Grasse and beyond, the year will offer plenty of opportunities to reconnect, discover what's next and keep pace with a rapidly evolving industry.

- *Keep up with the latest events: https://www.perfumerflavorist.com/events/calendar*

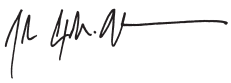
The action starts early. January brings the Society of Flavor Chemists West Coast Meeting in Anaheim, followed by Cosmoprof Miami. March adds the SFC/CSA/NAFFS Joint Meeting and FEMA's Spring Committee Meetings, while April brings in-cosmetics Global and RIFM InFo in Brussels. FEMA's Annual Leadership Conference follows in May.

For fragrance professionals, June is especially busy. SIMPPAR heads to Paris June 1–3, 2027, followed by the Barcelona Perfumery Congress and Grasse Perfume Week later in the month. On the flavor side, IFT FIRST takes over Chicago in July, bringing food and ingredient innovation into the broader F&F conversation.

And that's only the beginning. The calendar currently extends into October, with Cali SCC Suppliers' Day and FEMA's Fall Symposium on deck. Meanwhile, several dates remain to be announced, including the 2027 IFRA Global Fragrance Summit in Mumbai and The FlavourTalk Conference.

For an industry increasingly shaped by technology, regulation, sustainability, new materials and changing consumer expectations, these gatherings remain more than calendar entries. They are where ideas move from the lab to the marketplace, relationships are built and the next wave of flavor and fragrance innovation starts to take shape.

Bookmark the calendar, pack the passport and get ready: 2027 is already filling up.





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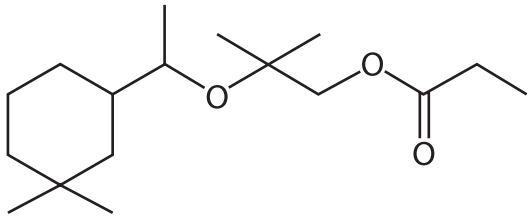


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Seatolide: Musky, Powdery Powerhouse with Ambrette Appeal

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Seatolide (1-propanol, 2-[1-(3,3-dimethyl-cyclohexyl) ethoxy]-2-methyl-, propanoate, CAS# 141773-73-1) from Hangzhou Grascent Co., Ltd. delivers a musky, powdery fragrance with ambrette and fruity facets. The organic ingredient is suitable for fine fragrance, beauty care, soap, laundry care and household applications, with a recommended use level of up to 10%.



A Fresh Boost for Juicy Citrus Flavors

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https://www.symrise.com/scent-and-care/aroma-molecules/flavor-ingredients/#Ethoxyethyl-Acetate-1

Ethoxyethyl acetate-1, Symrise's refreshing, fruity flavor ingredient provides a fine peely character. It contributes perfectly to the juiciness of orange beverages and citrus flavors. Ethoxyethyl acetate-1 acts as acetaldehyde precursor and increases ripe and juicy notes. It also enriches alcoholic drinks and adds freshness to fermented milk products like yogurt.

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Vayanol by Mane is a natural biotechnology molecule obtained via the fermentation of rice bran-derived ferulic acid. Delivering a warm, clove-like, smoky profile, it offers a rounder alternative to eugenol with vanilla and balsamic facets. This versatile ingredient effectively enhances ambery, gourmand, floral fragrances, as well as EU-natural flavor applications.



Fenugreek's Sweet-Savory Flavor Duality

Penta Fine Ingredients

https://pentafineingredients.com/catalog/06-08500

Natural fenugreek solid extract roasted (FEMA# 2485) is a savory-sweet sensory paradox long valued as a culinary spice and medicinal herb. Sweet maple syrup notes intertwine with savory facets of roasted spice and curry. A faint celery-green facet and coumarin-like hay dryness round out the sensory profile. It's therefore no surprise that it is strong in both savory and sweet flavor applications including curries, maple and spice blend systems. For fragrance applications, a more suitable alternative to the solid extract would be Penta's fenugreek absolute. It is well-positioned for savory-gourmand formulations offering spicy warmth and complexity to applications.

Images courtesy of the manufacturers



Thialdine Brings Roasted, Brothy Depth to Savory Flavors

Avant Organics

www.avantorganics.com

Thialdine (FEMA# 4018) is a flavor ingredient known for its roasted, brothy, meaty and savory profile with distinctive shrimp notes. Its rich character brings depth and complexity to savory flavor creations, supporting the development of hearty broth, roasted meat, and seafood-inspired profiles.

This ingredient is especially useful in flavor development for soups, broths, bouillon, sauces, gravies, instant noodles and savory snack seasonings. Its roasted and meaty notes complement cooked meat profiles, while its shrimp character adds dimension to seafood-style soups, sauces and seasoning blends. Thialdine also brings savory richness to flavor profiles for marinades and prepared meals.

Avant Organics offers this material as EU natural, kosher and non-GMO, in diluted form only.

• For a free sample please email info@avantorganics.com



Natural 4-Vinylguaiacol: Spicy Depth With Roasted Character

Axxence Aromatic

https://www.axxence.com/

Natural 4-vinylguaiacol (FEMA# 2675, CAS# 7786-61-0) delivers a distinctive spicy, clove-like character with warm phenolic and roasted nuances. ECHEMI Its expressive profile adds depth and complexity to flavor formulations, making it especially relevant for creating rich, aromatic experiences inspired by fermented, roasted, savory, and spice-forward applications with memorable character.



Neha Okhade on the Spark That Brings a Fragrance to Life

For perfumer Neha Okhade, great fragrance creation is about more than getting the notes right. It is about creating that immediate emotional connection that makes a consumer stop, remember and engage. In this profile, the Agilex Fragrances perfumer reflects on the creative breakthroughs, consumer insights and formulation challenges that have shaped her career, including the tiny addition of cardamom oil that transformed an otherwise complete sandalwood fragrance.



"Fragrance creation is an art!" says perfumer Neha Okhade. "I strongly believe fragrance is the face of every consumer product."

What led you to the fragrance industry?

Okhade: Fragrance creation is an art! I strongly believe fragrance is the face of every consumer product. It's the first point of contact between the product and a consumer in the consumer goods world, while in fine fragrances it acts as an accessory where it personifies the aura of a person.

Emotions play a key role in this dynamic industry. The fragrance industry has a very strong association with consumers all around the globe … [A]s a perfumer I can connect with consumers all around the globe, which attracted me to this marvelous industry.

I strongly believe the fragrance industry plays a key role in the consumer market. This amalgamation of creativity, emotions and science inspires me every single day. It's been almost 15 years that I have been part of this industry, and still the passion and drive to learn and smell something new still remains the same.

Can you share a defining moment or breakthrough in your career as a perfumer?

Okhade: In this digital age where everything is surfacing on the internet, social media plays a vital role in validating success and the happiness of almost everyone's life.

I came across a Reel on social media where an influencer was giving product reviews of some candles. As a perfumer it's always satisfying to see your products on the shelf, but that day I saw the review of my fragrance (candle) … followed by lots of positive feedback from customers in the comments. This was the first-of-a-kind moment where I saw direct reviews from the consumers and saw their excitement and happiness about my fragrance, which gave me tremendous satisfaction and joy! I was able to share the review with my friends and family. For a perfumer, the biggest feedback is experiencing the happiness of customers as they interact with the fragrance. Interactive feedback like these are always inspiring.

Along with this, one of the biggest breakthrough moments which I will always cherish is as a perfumer I was invited as a speaker at the World Perfumery Congress 2022. Representing Agilex and presenting my thoughts on "Effects of Fragrances on Emotional and Physical Well-Being of Consumers" in front of my very own fragrance fraternity will always remain the most proud and cherished moments for me as a perfumer!

What were some of the biggest challenges you faced when entering the perfume industry, and how did you overcome them?

Okhade: The biggest challenge I faced while entering the industry was connection with my consumers and developing fragrances as per market requirement. In the world of fragrances it is very important to understand the consumer trends and market expectations.

I was born and brought up in India. After moving to the United States, the biggest challenge I faced was

Image courtesy of Agilex

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to understand the market requirements. I studied lots of market trends, spent hours in shops smelling fragrances and understanding the U.S. market trends from consumer's olfactive preferences as well as how it's driven culturally.

I refined my perfumery skills to create more strong, convincing gourmand notes, which plays a key role in the U.S. fragrance industry. Today, I strongly believe I have the best of both worlds and in this era of globalization I am enjoying making fragrances as they are expected by our consumers.

Can you describe a time when a fragrance formulation didn't turn out as expected? How did you address the issue?

Okhade: It's a very common scenario faced by almost every perfumer of our industry. I believe the creative field never gives you a dull moment!

There were lots of times when I faced this challenge. One of the most vivid times … was when I was creating a sandalwood fragrance. During the creation process we made lots of trials … This fragrance turned out exactly the way we wanted; however, something was missing! Top, mid, base notes—everything was perfect—burn was good, but still something was missing.

Fragrance development managers (FDM) are a strong pillar of our industry. The FDM I was working with suggested the hook to the fragrance was missing. As per the FDM, the fragrance had everything but still it was not appealing. That first hook which will interact with the customer; that first impression with the consumer was not present.

In such a scenario, I knew I had to try some more experiments just to give that spark to the fragrance. I tried a touch of cardamom oil, and it did the magic. Suddenly, fragrance became more sparkling, more interactive—almost as if we have given life to the fragrance!

These small drops of magic creating major impressions still leave me amazed and still inspire me!

How do you find the right balance between artistic expression and the technical precision?

Okhade: This is a beautiful topic to go through. These are challenging times where, as a perfumer, we must maintain our creativity, yet we need to be compliant with the technical requirements. Sometimes it's challenging, but, as we say, nothing is constant and we are always evolving—and so is with our fragrance industry!

I must say, our R&D and innovation team is working rigorously to provide us the help required when fragrance needs to be technically sound along with creativity. We have a huge support from our parent company dsm-firmenich. We always collaborate with their technical expertise and try to bring the best of both worlds!

Regulatory requirements are becoming more strict every day; however, with the collaboration of our parent company we dive into innovations of new raw materials which help us to create compliant fragrances yet allows us to be more artistic at the same time.

As a perfumer, we have access to different tools which help us to utilize different technologies to create sustainable, environmentally friendly fragrances without interrupting the creative process.

Are there specific skills or knowledge areas you believe are crucial for a perfumer to master?

Okhade: As a perfumer it's very important to have a strong olfactive memory. Smelling is the key in this industry!

However, I believe along with olfactive expertise, connecting with your consumer culturally and emotionally is the key to creating winning fragrance! Fragrances and nostalgia are intertwined; consumers associate fragrances with nostalgia. Understanding consumer requirements not from strategic perspective but from their emotional and cultural perspective is very important.

For example, whenever I create a fall fragrance, I always think of crisp fall mornings, the fall foliage and that whole aura which the consumer is trying to capture in my fragrance. My vision while creating a fall fragrance at that point is to give an experience to consumers which they can correlate! I try to bring life to my fragrances by adding some memories from the past and sparkle of the dreams which my consumers want to relish in their future!



Using citronellyl acetate in butter, or any dairy flavor, may seem eccentric! Thankfully, eccentricity is central to our profession. Why not give it a try at 100 ppm?



BY JOHN WRIGHT
johnwrightflavorist@gmail.com

Citronellyl Acetate: Small Dose, Big Impact

Citronellyl acetate (3,7-dimethyl oct-6-en-1-yl acetate; FEMA# 2311; CAS# 150-84-5; COE# 202; DG Sante# 09.012) is far and away the most widely used citronellyl ester in flavors. It has an attractive combination of rose and fruity pear characters. It may not often feature directly in the spotlight, but it provides a great supporting role in many diverse flavors.

Note that the dose rates given throughout this article are the levels suggested for use in flavors intended to be dosed at 0.05% in ready-to-drink beverages or in a simple bouillon.

Enhancing Citrus Flavors

- **Citron:** Citronellyl acetate provides an important aspect of the middle section of citron flavors. One hundred ppm works well.
- **Grapefruit:** This raw material adds background complexity to all styles of grapefruit flavors at levels in the region of 20 ppm.
- **Kalamansi:** At 300 ppm, citronellyl acetate brings an attractive floral hint to kalamansi flavors.
- **Lemon:** Citronellyl acetate enhances the effects of neryl and geranyl acetates in lemon flavors. It works equally well in peely and juicy flavors. One hundred ppm is ideal.

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- **Lime:** A similar, 100 ppm, level is equally effective in lime flavors.
- **Mandarin:** At levels ranging from one to 200 ppm, citronellyl acetate adds a welcome floral note to mandarin flavors.
- **Orange, bitter:** Just a hint of citronellyl acetate, as little as 10 ppm, provides a useful complexity to the profile of bitter orange flavors.
- **Sudachi:** Sudachi flavors gain from 100 ppm of this ingredient, building the center of the profile.
- **Tangerine and clementine:** The ideal level of citronellyl acetate in tangerine is difficult to pinpoint. Twenty ppm works well, but higher levels are also very interesting.



The ideal level of citronellyl acetate in tangerine is difficult to pinpoint. Twenty ppm works well, but higher levels are also very interesting.

A Floral Boost for Berries

- **Blackberry:** Citronellyl acetate is very interesting in all berry flavors, the floral and berry notes forming an attractive contrast. Thirty ppm is a good level.
- **Blackcurrant:** Blackcurrant flavors are more aggressive, and 200 ppm is more appropriate.
- **Blueberry:** Blueberry flavors already have a vital floral note. Citronellyl acetate adds pleasant complexity at 100 ppm.
- **Loganberry:** This ingredient fits ideally into the profile of loganberry flavors. Levels vary, but 100 ppm works well.
- **Raspberry:** Citronellyl acetate rounds out the ionones in raspberry flavors, paving the way for a more substantial violet note. Fifty ppm is a good level in this flavor category.



Blueberry flavors already have a vital floral note. Citronellyl acetate adds pleasant complexity at 100 ppm.

- **Strawberry:** My preference in strawberry flavors is for more wild strawberry/jasmine notes. The ingredient blends in perfectly at 200 ppm.

Adding Depth Across the Fruit Basket

- **Apple:** Citronellyl acetate is very effective in apple flavors, adding depth and a hint of apple skin if it is used in conjunction with citronellyl formate. Five hundred ppm is not excessive.
- **Apricot and peach:** Apricot and peach flavors both gain complexity from citronellyl acetate. Levels in the region of 100 ppm work well in both flavor profiles.
- **Banana:** There is no shortage of bright ester notes in banana flavors. Citronellyl acetate rounds things out and deepens the profile. Thirty ppm is a good starting point.
- **Cherry:** With many cherry flavors high levels of benzaldehyde can be a little overwhelming. Citronellyl acetate, at levels as low as 40 ppm, helps soften the impact of benzaldehyde.
- **Grape, Concord:** Citronellyl acetate softens the harsher notes in Concord grape flavors, ideally at around 500 ppm.
- **Guava:** It is all too easy to make the center of guava flavors dominated by cinnamates. Two hundred ppm of citronellyl acetate is a welcome addition.
- **Lychee:** Lychee flavors are driven by rose notes and citronellol is the perfect choice. The parent alcohol is noticeably enhanced by addition of 500 ppm of citronellyl acetate.

From top: Images by Valeri Vatel; Iosinstantes at Adobe Stock

- **Papaya:** Citronellyl acetate makes an interesting contribution to papaya flavors. Ideal levels of addition range from 100-200 ppm.
- **Passionfruit:** Passionfruit flavors gain impact from a number of bright, fruity ethyl esters. Citronellyl acetate rounds out the fruity notes at around 100 ppm.
- **Pear:** Pear flavors can be quite delicate and my suggested level of addition for citronellyl acetate of 1,000 ppm may seem excessive. In reality it fits in well and adds a hint of pear skin.
- **Soursop:** Citronellyl acetate adds subtle complexity and realism to soursop flavors at levels of addition as low as 30 ppm.

Other Flavors: From Beer to Vanilla

- **Beer:** Floral notes in beer flavors should only be in the background. This raw material works well at around 10 ppm, enhancing the effect of 2-phenylethyl acetate.
- **Butter:** Using citronellyl acetate in butter, or any dairy flavor, may seem eccentric! Thankfully, eccentricity is central to our profession. Why not give it a try at 100 ppm?
- **Chrysanthemum:** Chrysanthemum flavors are an interesting challenge. One hundred ppm of citronellyl acetate builds out the floral note very effectively.
- **Cream soda:** Cream soda flavors are attractive, but often way too simple. A rose note is helpful and citronellyl acetate helps to build that note out from being simply citronellol or geraniol. Three hundred ppm is effective.
- **Elderflower:** Elderflowers are a particular favorite of mine, derived from happy memories of family homemade elderflower wine. Hotrienol is central, boosted by secondary floral notes, including citronellyl acetate at around one hundred ppm.
- **Ginger:** Adding something interesting, with a positive impact on ginger flavors leaves us with a fairly limited list of ingredients. Citronellyl acetate is effective at 500 ppm.
- **Honey:** The floral center of honey flavors will depend on the type of honey that is targeted. Luckily, 500 ppm of this ingredient is helpful in most types.
- **Rose:** Citronellyl acetate is clearly very much at home in rose flavors, working well in combination with citronellol and other citronellyl esters. The level is very much a question of creative choice, but 200 ppm is a starting point.
- **Tea:** Tea flavors are an interesting challenge. Citronellyl acetate is not helpful in green tea flavors, but it does round out other tea profiles. One hundred ppm is ideal in black tea flavors, and 50 ppm is better in red tea flavors.
- **Vanilla bean:** The list of suggested ingredients for vanilla bean flavors is worryingly long. Citronellyl acetate joins the list at a suggested level of 30 ppm.



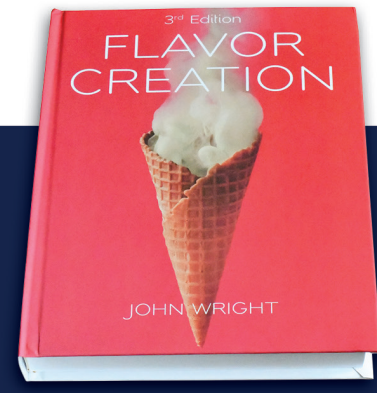
The list of suggested ingredients for vanilla bean flavors is worryingly long. Citronellyl acetate joins the list at a suggested level of 30 ppm.

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Better-Tasting Savory Systems: Salt, Smoke, Umami & Spice Technologies for Next-Gen Flavor (Re)Formulation



Daesang's Dsavory UH is targeted at a wide range of applications, including bakery and snacks, sauces and seasonings, plant-based foods, soups and bouillons.

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From smoky grill notes and roasted meat character to deeper umami and off-note masking, a new wave of savory ingredients is giving formulators more ways to build complexity and authenticity.

Across yeast-based flavors, taste modulators, high-impact sulfur compounds, natural smoke systems and spicy flavor materials, these solutions target some of today's key formulation challenges, including sodium and sugar reduction, plant-protein taste and clean-label positioning.

Together, they highlight how increasingly precise flavor technologies are helping developers layer savory impact rather than simply replace individual ingredients.



SY101 is vegan, allergen-free, salt-free and certified halal and kosher, supporting formulation flexibility across meat products, snacks, sauces, cheeses and plant-based alternatives.

Smoked, Cheesy and Roasted Yeast Flavors for Savory Applications and Clean-Label Taste Building

Biospringer by Lesaffre has introduced Springer Signature SY101, a smoked yeast-based ingredient designed to deliver combined umami and smoky notes for clean-label food applications. Produced from autolyzed yeast via fermentation and then subjected to a controlled traditional smoking process, the ingredient is intended to replicate the flavor impact of grilling, roasting and barbecuing while maintaining a natural positioning.

SY101 is vegan, allergen-free, salt-free and certified halal and kosher, supporting formulation flexibility across meat products, snacks, sauces, cheeses and plant-based alternatives. It is currently available in the Europe, Middle East, and Africa (EMEA) region, with application support provided through Biospringer's EMEA Culinary Center and global formulation network to assist manufacturers in product development and reformulation.

Biospringer's wider Springer Signature range is a collection of yeast-based ingredients produced through fermentation, designed to deliver defined savory flavor profiles for food applications. The portfolio is structured into targeted flavor families, including CH101/20 PW, which provides cheesy notes for use across classical savory and dairy-related applications; SM101/30 PW, which delivers smoked meat notes suitable for traditional meat and savory systems; and BR102/18 PW D, a yeast extract designed to contribute brown, roasted, and meaty flavor characteristics.

Across the range, the ingredients are intended for use in a wide variety of applications including processed meats, meat analogues, sauces, snacks, biscuits, dairy products and flavored beverages, offering consistent flavor delivery and flexibility for formulation.

Umami Gets a Tech Upgrade: New Tools for Deeper Savory Flavor

Targeting Umami and Roasted Meaty Complexity

Daesang's Dsavory UH is a savory flavor ingredient designed to enhance upfront umami impact while improving overall taste balance in reduced-sodium formulations.

Positioned for clean-label use and typically declared simply as "natural flavor," Dsavory UH delivers a layered savory profile that enriches mouthfeel and extends flavor depth. The system is designed to restore perceived saltiness even in formulations containing less than 2% sodium, helping maintain taste satisfaction in reformulated products.

The ingredient is targeted at a wide range of applications, including bakery and snacks, sauces and seasonings, plant-based foods, soups and bouillons. By reinforcing umami and improving flavor continuity, it enables manufacturers to reduce sodium without sacrificing richness, fullness, or overall taste intensity.

Daesang Corporation's Dsavory LH, meanwhile, is a flavor system designed to deliver sustained umami impact and enhanced depth across a wide range of applications.

Dsavory LH is positioned to provide a lingering savory backbone in formulations such as sauces, soups, bouillons, snacks, seasonings and plant-based foods. Beyond its umami reinforcement, the ingredient is designed to extend flavor continuity over time, improving overall taste roundness and persistence.

Image by cottonbro studio at Adobe Stock

A key feature of Dsavory LH is its ability to support fermented and cheese-like flavor development in dairy-free and botanical-based systems. This makes it particularly relevant for plant-based innovation, where it can help bridge flavor gaps and add complexity in applications that typically lack traditional dairy fermentation notes.

Finally, Daesang Corporation's Dsavory MH is a savory flavor system designed to deliver rich, roasted and meaty flavor complexity that closely mirrors the sensory effects of cooking. Built for applications such as ready meals, snacks, seasonings, processed meats and plant-based foods, it provides deep umami and authentic grilled taste while enhancing overall savory intensity.

A key functional aspect of Dsavory MH is its ability to accelerate Maillard reaction pathways and promote the formation of key aroma compounds associated with roasted and meaty notes, helping formulators recreate cooked flavor profiles more efficiently in processed systems.



Daesang's Dsavory UH is targeted at a wide range of applications, including bakery and snacks, sauces and seasonings, plant-based foods, soups and bouillons. By reinforcing umami and improving flavor continuity, it enables manufacturers to reduce sodium without sacrificing richness, fullness, or overall taste intensity.

Targeting Off-Notes in Plant Proteins While Enhancing Umami and Meaty Taste

CJ Bio's TasteNrich Inno Masker is targeting a persistent challenge in plant-based formulation: masking bitter, bean-like and other off-notes while maintaining a fuller, more meat-like flavor profile.

The taste-modulation system is designed to selectively reduce undesirable sensory attributes associated with soy and other plant proteins while enhancing umami perception and savory, meaty characteristics. According to CJ Bio, the approach can also reduce the need for additional savory flavoring components, potentially simplifying formulations and supporting cost optimization.

At FlavourTalk 2026, CJ Bio demonstrated Inno Masker 02 in a high-protein plant-based beverage. The ingredient reduced stringy sensory notes in the application and produced a more balanced, rounded taste profile, highlighting its potential for beverages as well as plant-based meat and other protein-forward products.

The technology reflects the growing focus on taste modulation as plant-based formulators work to address inherent protein off-notes without simply layering additional flavors onto the finished product.

Salt Reduction Platforms Enhancing Salt Perception and Umami Depth

Besmoke has introduced Saltex, a natural flavoring system designed to deliver a salty taste while enabling up to 55% sodium reduction across wet and dry food applications. The system is formulated without potassium chloride, targeting a common challenge in sodium-reduction formulations: the bitterness and off-notes associated with some salt replacers.

Saltex works through interactions with salt taste receptors while combining umami, acidity and aroma to support perceived saltiness and overall flavor balance. Developed through sensory testing and application trials, the sodium-free flavoring system is designed for use in snacks, bakery, meat products, brines, sauces, seasonings and coatings.

The system is used at a reported 0.08-0.12% and is positioned as flavor-neutral across applications. Saltex is available in sea salt and flavoring formats and is vegan, halal and kosher certified.

Elsewhere, CJ Bio is expanding its TasteNrich portfolio with UF and LF solutions designed to strengthen salt perception and umami intensity while supporting sodium reduction in savory formulations.

The UF series is positioned for clean, direct flavor enhancement. TasteNrich UF01 delivers medium umami and salty impact with minimal astringency, while UF02 provides stronger umami and salt perception for vegetable-based flavor systems.

Image by David Harvey at Adobe Stock

The LF series is designed to provide longer-lasting savory depth. LF01 combines medium umami and salt perception with enhanced sweetness and roasted/toasted notes, while LF02 further emphasizes meaty and roasted flavor characteristics.

Together, the solutions target formulation challenges around sodium reduction and flavor retention, giving developers different routes to maintain savory intensity and complexity as sodium levels are lowered.

Umami Amplified: Solutions for Layered Savory Enhancement

Besmoke and CJ Bio are highlighting taste-enhancement systems designed to build umami and savory intensity while helping formulators manage salt and sugar reduction.



Despite its low-use levels, Riverside Aromatics' EU natural sulfurol provides a remarkably authentic profile featuring creamy sweetness, roasted hazelnut nuances and subtle animalic undertones that enhance depth and realism in meat, broth, snack and savory flavor systems.

Image by Valeria Boltneva at Adobe Stock

Besmoke's PureMami uses enzymatic processing informed by research into the relationship between smoke volatiles and taste perception. The system is designed to amplify umami, kokumi and overall savory impact, while helping mask bitterness and enhance perceived sweetness. Positioned as having a neutral taste impact, PureMami can be used in snacks, soups, sauces, seasonings, meat and plant-based products and bakery applications.

The portfolio includes PureMami Two for broad flavor enhancement, Koku for umami-kokumi richness and Sweet for sugar-reduction applications. The Mai variants, available in beef, bacon and chicken profiles, are designed as plant-based meat precursors that develop savory characteristics during heating. Formats include maltodextrin-based systems.

Meanwhile, CJ Bio's TasteNrich B5 is a natural umami ingredient targeting savory, roasted and toasted profiles, combining medium umami intensity with complementary salt perception. The company says the ingredient builds progressively in the mouth, becoming noticeable at about 10 seconds and continuing to develop for roughly 30 seconds, creating a layered taste effect.

Both approaches reflect growing interest in taste modulation as a tool for maintaining flavor intensity as formulators reduce sodium and sugar, rather than relying solely on direct replacement.

The Tiny Molecule Behind Big Roasted-Meat Impact

Riverside Aromatics' EU natural sulfurol (4-methyl-5-thiazoleethanol; FEMA# 3204) is a powerful natural flavor ingredient that delivers the unmistakable aroma of roasted meats, cooked beef juices and savory culinary richness.

Despite its low-use levels, it provides a remarkably authentic profile featuring creamy sweetness, roasted hazelnut nuances and subtle animalic undertones that enhance depth and realism in meat, broth, snack and savory flavor systems.

For formulators seeking to build convincing cooked, grilled or roasted notes, sulfurol remains one of the industry's most effective sulfur-containing impact ingredients.

From Chili Heat to Sulfur Depth: A Dual Study in Spice and Umami

At Advanced Biotech's presentation at FlavourTalk 2026, a curated palette of ingredients showcased both the extremes of spice intensity and the foundations of savory-umami depth.

The spice-driven group spanned a broad sensory arc, beginning with sage oleoresin's aromatic, green herbal character and extending through guajillo oleoresin natural's mild red chili warmth and black pepper oleoresin natural's fresh, pungent spiciness, before culminating in ghost pepper oleoresin natural's smoky, roasted heat. Together, they demonstrated how layered chili and herb profiles can deliver both balance and escalating intensity across applications.

A second group shifted into savory and umami territory, where diallyl trisulfide 5% OS natural introduced garlic, onion and sulfurous depth, while 1-octen-3-yl acetate natural contributed an earthy, mushroom-like nuance. Valeraldehyde natural completed the set with a darker, more complex profile featuring bread, berry, cocoa and wine-like facets.

Even at low dosages, the materials illustrated how savory and fermentation-like notes can significantly deepen flavor architecture, reinforcing the growing role of umami complexity in modern formulation design.

Adding Pungent, Peppery Spice to Flavor and Fragrance

Millipore Sigma's dihydrogalangal acetate (FG grade, ≥95% assay) is a flavor and fragrance ingredient with a pungent, spicy organoleptic profile. It is used in flavor formulations where warm, peppery-spice character is required, contributing impact and lift in both savory and fragrance applications.

The material is compliant with EU regulations (EU 1334/2008 and 178/2002) and FDA 21 CFR 117 requirements, and is classified as Quality Segment 300. It contains no known allergens and is suitable for use in food flavor systems and fragrance compositions where a clean, spicy tonal modifier is desired.



Advanced Biotech's guajillo oleoresin natural features a mild red chili warmth.

Savory Impact at Trace Levels

Natural methional from Xiamen Bestally Biotechnology boasts a taste description at 0.01-5.00 ppm of musty tomato, vegetative, mold-ripened cheeses, onion and beef broth. This ingredient can be used in potato and cooked meat/onion flavors in sauces at 12 ppm, in bakery and frozen foods at 5 ppm and dairy and drinks at 2 ppm.

Bacon Dithiazine: Instant Crispy Bacon Authenticity

Riverside Aromatics' bacon dithiazine natural (FEMA# 4017) is a high-impact savory ingredient that delivers the unmistakable aroma and flavor of sizzling, crispy bacon fresh from the pan. Characterized by intensely meaty, smoky notes alongside roasted, burnt and crunchy bacon nuances, it provides high authenticity in savory flavor systems.

Used at low levels, this powerful sulfur-containing compound helps create realistic cooked meat profiles, enhancing everything from snacks and seasonings to plant-based meats, sauces and ready meals with rich, indulgent bacon character.

Safe Smoke: Expanding Smoke and Grill Ingredients with Clean-Label Systems

Besmoke is expanding its smoke flavor technology across industrial smoking, grill flavor systems and filtered smoke

Image by Marcos at Adobe Stock

ingredients, offering formulators multiple ways to build smoky, roasted and open-fire profiles across food applications.

At the production end, SmokeCreate uses large-scale natural-draft smoking chambers, each with a 15-ton capacity, to continuously smoke powders, liquids, pastes, salts, oils and other food ingredient formats. The company says the system has processed more than 1 million kg of food ingredients to date. Wood options include apple, beech, cherry, hickory, mesquite, oak, maple and spruce, providing sensory profiles from sweet and mild to robust and savory.

For formulations seeking an open-fire effect without traditional cooking, Smoax Fire & Flame comprises dry powder grill flavor systems designed to recreate barbecue, rotisserie and chargrill characteristics at low inclusion levels. The range covers profiles including Asian street, grill, hibachi, jerk, PortuGrill, rotis, Sardinia, sear and tandoor for use in meat, poultry, fish, sauces, coatings, seasonings, cheese and bakery.

Meanwhile, PureSmoke applies Besmoke's PureTech filtration technology to smoked ingredients, with the company reporting removal of more than 95% of polycyclic aromatic hydrocarbons (PAHs) and reduced tar content while retaining smoke flavor. The resulting ingredients are available as oils, salts, pastes, yeast, spices and dehydrated formats, with the same range of wood smoke profiles spanning meat, fish, poultry, sauces, seasonings, dairy, bakery and plant-based applications.



Riverside Aromatics' bacon dithiazine natural (FEMA# 4017) is a high-impact savory ingredient that delivers the unmistakable aroma and flavor of sizzling, crispy bacon fresh from the pan.

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Consumers have an appetite for bites with big impact, from dense bean bowls and dumplings to sliders, skewers and empanadas.

Image by Valeria Boltneva at Pexels

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Flavor Maxxing: Making Better-for-You Foods More Craveable

BY KAT CROZIER, Senior Marketing Manager, Flavors, ADM

Today's consumers want more from every eating occasion. This "maxxing" mindset means they're seeking foods that deliver more in every bite, including higher protein, more fiber, lower sodium and cleaner labels, without compromising on indulgence and satisfaction.

These desires are reinforced by broader lifestyle trends that are reshaping the modern food landscape, such as the persistent focus on health and wellness, GLP-1-driven eating behaviors and socially conscious eating. As consumer expectations continue to evolve, culinary innovations are optimizing across multiple priorities.

Reformulation Prompts Flavor Innovation

Changing regulatory guidelines and heightened consumer awareness of food and beverage labels have accelerated the need for brands to reformulate products with less sodium, increased nutritional value and simplified ingredient lists.

According to ADM research, 65% of U.S. consumers prefer that brands reformulate existing products to align with better-for-you positioning[a]. However, taste remains the leading factor in purchasing decisions. Formulators must therefore add, adjust or substitute ingredients without sacrificing the flavor, texture and quality consumers have come to expect of their favorite products.

The technical challenges of reformulation can affect functionality as well as the sensory experience of the final product. For instance, sodium not only influences perceived saltiness, but it also affects overall flavor impact, from balancing sweetness to bringing out herbal notes. Sodium also helps regulate moisture content in formulation, which can significantly impact product texture and shelf life.

Flavor modulation can help bridge these gaps, creating savory and umami profiles in low-sodium applications, masking off-notes from functional ingredients and rebuilding mouthfeel perception in low-fat formulations. Some flavor modulation technologies that use natural raw materials may be listed on product labels as "natural flavor," which can support clean label objectives.

[a]ADM Outside Voice, Reformulation Research, U.S., 2026



Image by Esra Afşar at Pexels

Flavorists and food scientists are exploring emerging ingredients, inventive techniques, bold flavor expressions and impactful culinary cues to make better-for-you products feel less like a compromise and more like an upgrade.

Beyond these foundational approaches, savory flavor systems and culinary techniques provide opportunities for product developers to maintain craveability while meeting consumers' evolving health and clean label expectations. Flavorists and food scientists are exploring emerging ingredients, inventive techniques, bold flavor expressions and impactful culinary cues to make better-for-you products feel less like a compromise and more like an upgrade.

Snackification Flourishes with Savory Flavors

One area where this dynamic is particularly apparent is snacking. Consumers are increasingly approaching snacking with an anytime, anywhere mentality, blurring traditional dayparts and redefining what constitutes a meal. Led by Gen Z, they are gravitating toward protein-rich, grab-and-go options, including sweet and dairy snacks, meat and meat alternative offerings[b].

This shift is also being reinforced by consumers taking anti-obesity medications (AOMs), like GLP-1 receptor agonists, for whom nutrient density can be an important consideration. Many GLP-1 users prefer snacks with

[b]ADM Outside Voice, Snacking Research Report, 2026

added protein, prebiotic fiber, probiotics, postbiotics and omega-3s in convenient, portion-controlled formats.

As eating becomes more flexible and personalized, opportunities are emerging across protein-rich dairy snacks, meat-based offerings, wholesome, plant-forward and hybrid products. Consumers have an appetite for bites with big impact, from dense bean bowls and dumplings to sliders, skewers and empanadas[c]. Across these formats, bold flavor can help make nutrient-dense, convenient foods feel satisfying rather than restrictive.

The street food scene offers a glimpse into how brands can deliver this combination of convenience, nutrition and craveability. Spice bags, for example, are a cross-cultural, savory mix of crispy chicken bits, peppers, onions, garlic, ginger, chili and spicy seasoning over hot fries. This format is fast-casual, shareable and features full-scale flavor with recognizable ingredients, showing how culinary inspiration can elevate everyday eating occasions into memorable experiences.



Flavor profiles that are trending in the savory space include oceanic and savory greens such as seaweed snacks, nori dust and herb-dulse emulsion, a sauce that combines herbal brightness with deep umami and saline notes, which align with the latest evolution of conscientious eating.

Culinary Flavors Point to Premiumization

As consumers look for foods that offer more, the sensory experience becomes crucial for demonstrating value. Developing and reformulating better-for-you foods that consumers want to buy requires balancing multiple objectives. Formulators consider incorporating wholesome nutrition for satiety, simplifying ingredient lists and reducing sodium or sugar content for cleaner labels, and using high-quality ingredients and flavor modulation technologies to provide the taste, texture and overall sensory experience consumers expect.

While consumers remain value-conscious, many are willing to pay more for products that exhibit a clear benefit, such as superior taste, functional nutrition, premium ingredients or a more enjoyable eating experience. The key is demonstrating this quality and added value—and flavor is one way to get there.

Unique tastes and global flavors draw attention to premium offerings and bring excitement to familiar concepts. Some specific flavor profiles that are trending in the savory space include:

- Oceanic and savory greens such as seaweed snacks, nori dust and herb-dulse emulsion, a sauce that combines herbal brightness with deep umami and saline notes, which align with the latest evolution of conscientious eating.
- Green foods made with colors from natural sources can also reinforce consumers' preconceived health perceptions.
- Dairy flavors that communicate richness and freshness, including clotted cream, compound butter, crème fraiche and Hokkaido milk, also deliver on consumers' hunger for indulgence.
- Chef-inspired flavor cues like slow-roasted, toasted, caramelized, poached, smoked, braised, grilled and char-broiled, which evoke a depth of flavor and signal a satisfying eating experience.
- Fermented and pickled flavors that add complexity with umami and kokumi notes, like fermented black beans, pickled shiitake mushroom and cultured butter.

Eating Occasions are Both Functional and Emotional

Consumers' eating decisions are often framed as either functional or emotional; however, in practice, the two are increasingly intertwined. Satisfying hunger and meeting nutritional needs can overlap with a desire for indulgence or escapism, and optimization goals are easier to reach when enjoyment is part of the equation.

For product developers, this creates an opportunity to move beyond the idea that healthier products need to be less satisfying. As consumers "maxx" their approach to nutrition, convenience and wellness, they will demand products that deliver on multiple fronts at once. Flavor innovation will be critical to meeting that expectation, helping create foods that support wellness goals while providing the rich, craveable sensory experiences consumers seek.

[c]ADM Outside Voice, Global Culinary Trends Outlook, 2026

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Beyond Smoke: Engineering the Next Generation of Fire-Cooked Flavor

Recreating the complexity and sensory cues of smoke flavors impacts everything from snacks to soups to meat alternatives, sauces and beyond.



IFF argues that the next wave of innovation will move beyond replicating smoke itself toward recreating the broader sensory experience of food cooked over fire.

Image by Nestor at Adobe Stock

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As regulatory change reshapes the use of smoke flavorings in Europe[a], flavor developers are confronting a larger challenge: how to recreate the complexity consumers associate with smoking, grilling and cooking over an open fire. In this report, via discussions with industry experts, we explore the shift from one-dimensional smoke replacement toward layered sensory systems that combine smoke, char, roasted, savory and other culinary cues. We also examine how advances in flavor technology, application science and ingredient platforms are giving formulators new tools to balance authenticity, regulatory requirements, clean-label expectations, processing performance and cost.



"Traditional smoking and grilling create hundreds of flavor compounds through wood combustion, fat drippings, Maillard reactions, and thermal processing," says Kerry's Mendes. "Reproducing that complexity consistently across different food systems requires balancing smoke character, roasted notes, char, savory depth, and aroma while maintaining processing efficiency and product consistency."

Rebuilding the Fire-Cooked Experience

As Europe moves away from smoke flavoring primary products, flavor developers face a challenge that goes well beyond one-for-one replacement.

"The biggest challenge is that authentic fire-cooked taste is far more complex than simply adding smoke," says Marco Mendes, VP/GM, smoke and grill, Kerry Red Arrow. "Traditional smoking and grilling create hundreds of flavor compounds through wood combustion, fat drippings, Maillard reactions, and thermal processing. Reproducing that complexity consistently across different food systems requires balancing smoke character, roasted notes, char, savory depth, and aroma while maintaining processing efficiency and product consistency."

Mendes adds, "Additionally, modern food manufacturers need solutions that perform reliably across diverse applications and processing conditions. Kerry's Red Arrow solution offers a broad range of smoke flavors, smoke type flavors, grill flavors, smoked ingredients, fire-inspired flavors like fatty drippings, and customized blending capabilities that integrate seamlessly into production processes. The challenge that producers face is not simply delivering smoke intensity, but rather authentic complexity that recreates the full sensory experience of cooking with or over fire in a scalable, repeatable, desirable, and commercially viable way."



"We see customers increasingly moving from a regulatory discussion toward a business discussion: how do we preserve product desirability and brand equity while adapting to a changing regulatory landscape?" says Guillaume Fiches, category manager culinary Europe, IFF.

Perfumer & Flavorist+ also spoke with Guillaume Fiches, category manager culinary Europe, and Carmen Frye, head of EAME regulatory affairs, both IFF, who discussed the sensory, regulatory and formulation complexities of recreating smoke's role in foods—from grilled and roasted cues to mouthfeel and lingering character—and why the next generation of solutions may be designed around the broader experience of food cooked over fire.

[a] *https://food.ec.europa.eu/food-safety/food-improvement-agents/flavourings/smoke-flavouring-renewals-existing_en*

From top: Image by Daniel Munar at Pexels; Courtesy of IFF

The biggest misconception, the IFF team points out, is that the EU's decision is simply a regulatory issue. In reality, it represents a broader product transformation challenge. Manufacturers are rethinking how to maintain authenticity, meet consumer expectations and differentiate products in a post-condensate market.

While compliance is often the initial focus, companies quickly encounter a broader set of questions. Will consumers notice a difference? How extensive will reformulation need to be? What impact will changes have on costs? Can existing product positioning and claims be maintained? And how can formulations remain flexible as regulatory requirements continue to evolve?

Another layer of complexity is the fact that transition timelines vary across food categories. The July 2026 deadline affected categories including soups, sauces, snacks and ready meals, while processed meats and certain cheese applications have transition periods extending to 2029. As a result, different categories are approaching reformulation at different speeds and with different priorities.



IFF has found that consumers often respond to more than smoke itself. The sensory cues associated with smoke can evoke grilling, roasting, craftsmanship, indulgence and authentic food preparation.



"Manufacturers are increasingly looking for solutions that not only address today's regulatory requirements but also provide flexibility as consumer expectations and regulatory frameworks continue to evolve," says Carmen Frye, head of EAME regulatory affairs, IFF.

This means the shift is unlikely to be a one-time reformulation exercise. Instead, it marks the beginning of a multi-year transformation that will unfold category by category across the European market.

"We see customers increasingly moving from a regulatory discussion toward a business discussion: how do we preserve product desirability and brand equity while adapting to a changing regulatory landscape?" says Fiches.

Frye adds, "At the same time, manufacturers must navigate a number of regulatory considerations as they transition away from smoke flavoring primary products. The challenge is not only finding the right sensory solution, but also ensuring that reformulated products continue to meet labeling, claims and market-specific requirements. Companies are therefore evaluating how best to combine technical performance, consumer acceptance and regulatory compliance within their broader product portfolio strategy. Additional complexity arises from the practical implementation of the transition measures, particularly for complex and compound foods and for businesses operating globally across multiple markets. Manufacturers are increasingly looking for solutions that not only address today's regulatory requirements but also provide flexibility as consumer expectations and regulatory frameworks continue to evolve."

From top: Courtesy of IFF; Image by Enes Beydilli at Pexels

Why Smoke Is So Hard to Replace

Because smoke condensates contribute much more than aroma—mouthfeel, lingering character and overall flavor architecture—the recreation of smoke flavors is highly complex.

When consumers describe a product as "smoky," IFF argues, they are actually experiencing a layered sensory architecture built over time.

The sensory architecture is often thought of as a flavor pyramid, with each layer playing a distinct role. Top notes deliver the immediate smoky impact when a product is first smelled or tasted, while mid notes build the grilled, roasted and charred cues associated with cooking over fire. Base notes add depth, mouthfeel and the lingering character consumers associate with traditionally smoked foods.

Smoke condensates naturally contribute to all three layers at once, the IFF team explains, creating a multidimensional profile that evolves throughout consumption. Recreating that architecture with alternative technologies is therefore considerably more complex than simply reproducing a smoky note.

Another challenge is the diversity of smoke preferences across Europe. Consumer expectations can range from woody and phenolic profiles in some markets to sweeter brown-smoke, caramelized or even vanilla-like nuances in others. As a result, there is no single "European smoke profile" to replicate, IFF notes.

The company's sensory work has shown that some of the most difficult characteristics to recreate consistently are the overall impact and intensity of the smoke, authentic grilled and roasted cooking cues, continuity of flavor throughout consumption, the balance between smoke, savory and umami notes, and the lingering finish associated with traditional smoking processes.

Perhaps most importantly, IFF found that consumers often respond to more than smoke itself. The sensory cues associated with smoke can evoke grilling, roasting, craftsmanship, indulgence and authentic food preparation. This insight has fundamentally influenced the company's approach. Rather than attempting to rebuild smoke note by note, the group focuses on recreating the broader sensory experience of food cooked over fire.

Designing Flavor for the Finished Product

"Today's formulators must deliver authentic smoke taste while navigating increasingly complex regulatory and labeling requirements," says Kerry's Mendes. "This has accelerated interest in holistic solutions that provide the sensory benefits of smoke while supporting cleaner ingredient declarations and future regulatory compliance."



Application plays a critical role in determining the right smoke-free flavor approach, IFF explains. Recreating a smoke profile in a soup, for example, requires a very different strategy than developing one for a potato chip.

He continues, "One strategy is leveraging a broader range of smoked ingredients such as onion, garlic, salt, sugars, and vinegar. These ingredients provide an authentic smoke character while helping manufacturers meet clean-label objectives. The industry is also moving toward more targeted smoke technologies that allow manufacturers to deliver the desired culinary experience with greater formulation flexibility and transparency."

Mendes adds, "In addition, modern smoked ingredients are produced using carefully controlled smoking and processing technologies that can achieve very low levels of polycyclic aromatic hydrocarbons (PAHs), helping manufacturers meet both regulatory expectations and consumer demands for safe, high-quality products. By combining authentic smoke character, ingredient simplicity, and controlled contaminant profiles, smoked ingredients provide a compelling option for

Image by Alexey Demidov at Pexels

brands seeking both culinary authenticity and regulatory confidence."

IFF's flavor solutions include extracts, reaction flavors and individual flavor molecules. The question is: How does one determine the optimal balance among these components for different applications such as meat, sauces, snacks and plant-based products?

There is no universal smoke-free solution because consumers do not eat flavor systems, the IFF team explains. They eat products. "Our starting point is always the finished eating experience and the product matrix in which the flavor must perform."

Application plays a critical role in determining the right smoke-free flavor approach, IFF explains. Recreating a smoke profile in a soup, for example, requires a very different strategy than developing one for a potato chip. In soups and sauces, smoke must integrate into a complex savory background, withstand thermal processing and deliver a balanced, lingering character.



"Plant-based proteins and meat alternatives remain among the most technically demanding applications in the industry," says Kerry's Mendes.

In snacks, according to IFF, consumers often expect an immediate flavor impact, strong delivery and stability within the seasoning system. In meat and cheese applications, smoke needs to complement protein, fat, salt and umami while maintaining the authenticity associated with traditional smoking.

"Dry formats must deliver immediate flavor impact and aroma release," says Kerry's Mendes, "whereby sauces and ready meals require stability throughout processing and throughout their shelf life. Consumers increasingly expect authentic fire-inspired taste experiences, making it critical to combine innovative smoke flavor solutions, grill flavors, and supporting flavor components to reliably and affordably replicate the iconic flavor."

For plant-based products, IFF notes, the challenge can extend beyond smokiness to building convincing grilled, roasted and cooked notes while managing plant-derived off-notes.

"Plant-based proteins and meat alternatives remain among the most technically demanding applications in the industry," says Kerry's Mendes. "Manufacturers must recreate the sensory cues of traditional barbecue without the natural flavor development that occurs during meat cooking. Manufacturers need to recreate authentic smoke, grill, and roasted flavor while simultaneously masking off notes, which requires the use of highly customized flavor systems."

Once the sensory target and application requirements are established, IFF builds the flavor architecture using the most appropriate technologies from our toolbox. Natural extracts can provide authenticity, complexity and regional character, while reaction flavors help create roasted, grilled and charred cooking cues. Individual flavor molecules offer precision, consistency and sensory impact, while modulation technologies can enhance balance, depth and flavor continuity. Delivery technologies can further help optimize performance through processing and throughout shelf life.

"The optimal solution is rarely built from a single technology," the company notes. "It is usually a carefully designed combination of multiple approaches working together to recreate the desired eating experience."

The company pairs analytical chemistry, sensory science, culinary expertise, reaction chemistry, natural ingredients, application science and processing knowledge "to understand not only what smoke is, but what role it plays in the finished product."

The ultimate goal, the company argues, "is to recreate the complete experience consumers associate with food cooked over fire."

For Kerry's Mendes, building a smoke profile requires a balance among smoke intensity, wood character, roasted notes, char, sweetness and savory depth to avoid a one-dimensional "liquid smoke" effect.

"The key," he says, "is to think of smoke as part of a complete sensory architecture rather than a standalone note. Kerry works directly with customers by first defining

Image by Ella Olsson at Pexels

the desired culinary outcome and then layering multiple taste dimensions to create depth and authenticity."

Mendes continues, "Factors such as wood species, smoke generation technology, processing conditions, and application type all influence the final profile. For example, hickory contributes a strong smoke intensity usually sought after with bacon, applewood can provide subtle sweetness, while mesquite adds earthy and robust notes. Roasted, savory, caramelized, and charred attributes are then balanced to create a multidimensional profile that mimics real fire cooking rather than delivering a singular smoky note."

Finally, he says, "Kerry uses a structured sensory framework and descriptor system to identify smoky, ashy, creosote, green wood, charcoal, savory grill and other attributes. This enables us to collaborate with customers and systematically fine-tune taste profiles to build authentic, differentiated solutions, while eliminating undesirable elements like ash and processing contaminants."

Which Trade-Offs Matter Most?

Many companies are trying to achieve clean-label positioning while maintaining authentic smoke character. It takes skill to navigate the trade-offs among label declaration, flavor performance, cost and processing stability during formulation.

"One of the biggest myths in reformulation is that manufacturers can simultaneously optimize clean label, flavor performance, cost and processing stability without compromise," IFF notes. "In reality, every project involves trade-offs. The key question is not whether trade-offs exist, but which ones matter most to consumers and to the brand."

Depending on the application and broader business objectives, manufacturers may prioritize a range of factors, from clean-label ambitions and authentic fire-cooked character to cost optimization, processing robustness, shelf-life stability and speed to market.

IFF explains, "The most successful projects begin by defining the desired sensory outcome and market positioning before selecting a flavor solution. Once those priorities are clear, the appropriate balance of technologies can be tailored to the application. From our experience, smoke-free solutions can often achieve comparable cost and stability outcomes. The real challenge is not replacing an ingredient. It is protecting the consumer experience that made the product successful in the first place."

Fiches concludes, "The most successful reformulations are not driven by ingredient replacement alone. They are driven by a clear understanding of what consumers value most in the final eating experience and how that aligns with the brand's positioning."

Smoke's Next Wave: Engineering the Fire-Cooked Experience

Looking beyond the current EU legislation, there are questions as to whether the shift away from smoke condensates will accelerate broader innovation in reaction flavors, biotechnology and natural flavor generation, reshaping the next generation of smoky flavor technologies.

"The first wave of innovation focused on business continuity," IFF explains, "helping customers maintain sensory performance while adapting to changing regulatory requirements. The second wave is now underway and is focused on sensory optimization. The industry is moving beyond simple replacement toward more sophisticated solutions that deliver improved grilling cues, stronger roasted character, greater flavor depth and better application-specific performance."

Looking ahead, the company says, "The third wave will be even more transformative. Rather than focusing on



"[W]e expect the industry to move from generic smoke replacement toward highly tailored fire-cooked flavor architectures designed for specific products, markets and consumer expectations," says IFF.

Image by Adamov at Adobe Stock

smoke itself, innovation will increasingly focus on recreating the complete experience of food cooked over fire."

According to the company, this evolution is being enabled by the convergence of multiple R&D capabilities. Natural ingredients are providing new botanical extracts, fractions and flavor building blocks, while reaction chemistry continues to unlock increasingly authentic grilled, roasted and charred notes. At the same time, bioscience and fermentation technologies are opening new pathways to flavor ingredients and sensory complexity. Culinary expertise helps translate real-world cooking experiences into relevant flavor targets, while sensory science and analytical capabilities are deepening the understanding of how consumers perceive smoke and fire-cooked foods. Processing R&D and delivery technologies further help ensure these solutions perform consistently across applications and manufacturing environments.

"As these capabilities continue to evolve, we expect the industry to move from generic smoke replacement toward highly tailored fire-cooked flavor architectures designed for specific products, markets and consumer expectations," IFF says. "The future opportunity is therefore much bigger than smoke replacement."

Furthermore, the company explains, "Consumers are not looking for smoke as an ingredient. They are looking for the authentic sensory cues associated with grilling, roasting, charring and culinary craftsmanship. The companies that succeed will not be those that best replace smoke. They will be the ones that best recreate the complete fire-cooked experience consumers love."

Fiches notes, "As these capabilities continue to evolve, we expect the industry to move from generic smoke replacement toward highly tailored fire-cooked flavor architectures designed for specific products, markets and consumer expectations. The future opportunity is bigger than smoke replacement. Consumers are seeking authentic culinary and fire-cooked experiences, and the next generation of flavor technologies will increasingly be designed around those experiences rather than around smoke alone. The companies that succeed will not be those that best replace smoke. They will be the ones that best recreate the complete fire-cooked experience consumers love."

Building the Fire-Cooked Flavor of the Future

"The future will be driven by technologies that offer greater precision, flexibility and customization," says Kerry's Mendes. "Next-generation smoke technologies are enabling manufacturers to move beyond traditional "liquid smoke" concepts toward more sophisticated sensory systems that combine taste, color, preservation, yield enhancement, and processing benefits in a single platform."

He adds, "We also expect growing adoption of modular ingredient systems that allow formulators to build taste profiles using various combinations of condensed smoke, grill flavors, smoked ingredients and browning technologies. These solutions provide manufacturers with the ability to tailor authenticity, intensity, labeling, and cost targets for specific applications."

Mendes continues, "At the same time, growing interest in distinct grilling and open-fire cooking techniques, from Santa Maria grilling, Argentinian open-fire cooking, Korean BBQ or authentic street food cooked over open fire, is creating new flavor inspiration and shaping consumer expectations around authentic fire-cooked experiences."

Finally, he says, "Ultimately, the brands that succeed will be those that innovate and deliver true fire-cooked experiences on an industrial scale while meeting evolving consumer expectations around authenticity, transparency, sustainability, safety, and ingredient simplicity."




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Givaudan has expanded its fragrance precursor portfolio with Scentaurus Aquamelon, a new oxygen-activated technology the company says is the first fragrance precursor developed specifically for hair care.

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FRAGRANCE TECH GETS SMARTER, LONGER-LASTING AND MORE FLEXIBLE

From triggered fragrance release and precision naturals to new woody captives and alcohol-free formats, the latest fragrance technologies are expanding how perfumers can build performance, sensory character and sustainability into formulations. Givaudan, IFF, CPL Aromas and Iberchem are tackling different formulation challenges, but together the innovations point to a fragrance landscape where delivery systems, ingredient engineering and format are becoming as important as the scent itself.

Two Precursors, One Push for Longer-Lasting Freshness

Givaudan is expanding its Scentaurus portfolio with two technologies designed to extend fragrance performance: PolyDoux, a biodegradable precursor delivering fruity raspberry and powdery vanilla, and Scentaurus Aquamelon, an oxygen-activated precursor developed specifically for hair care. Together, the launches highlight how triggered fragrance delivery is giving perfumers new tools to build longer-lasting scent into personal and fabric care products.

A Biodegradable Precursor for Long-Lasting Freshness

Givaudan has expanded its Scentaurus fragrance precursor portfolio with PolyDoux, a biodegradable molecule designed to extend fragrance performance in personal and fabric care applications.

The low-odor precursor is designed to remain stable in formulations before being activated by environmental triggers such as oxygen or humidity, gradually releasing fragrance over several days. PolyDoux delivers fruity raspberry and soft powdery vanilla notes, adding a fruity-gourmand dimension to precursor-based fragrance systems.

Engineered for demanding, high-pH and surfactant-rich formulations, PolyDoux is targeted at applications including hair care, fabric conditioners and detergents. In fabric care, Givaudan says the technology can help sustain fragrance through repeated washing and into the dry and wardrobe stages, addressing a key challenge for more volatile fruity notes.

The launch also highlights the growing role of fragrance precursors as performance tools, rather than simply fragrance ingredients. By controlling when and how odorants are released, the technology gives perfumers another way to build longer-lasting fragrance signatures into rinse-off and fabric care products.

PolyDoux was developed using Givaudan's FiveCarbon Path and Safe-by-Design approach and is biodegradable according to OECD guidelines. The company says the molecule supports its goal of developing a fully biodegradable fragrance palette by 2030, while addressing demand for enhanced fragrance longevity and environmental considerations.



PolyDoux delivers fruity raspberry and soft powdery vanilla notes, adding a fruity-gourmand dimension to precursor-based fragrance systems. Engineered for demanding, high-pH and surfactant-rich formulations, PolyDoux is targeted at applications including hair care, fabric conditioners and detergents.

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Giving Hair Care Fragrance Staying Power

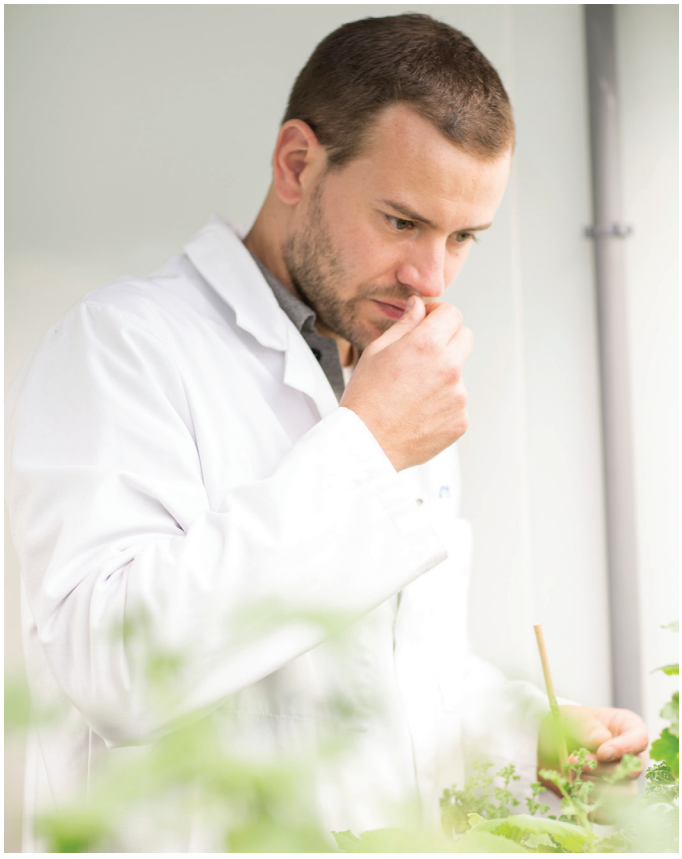
Givaudan has expanded its fragrance precursor portfolio with Scentaurus Aquamelon, a new oxygen-activated technology the company says is the first fragrance precursor developed specifically for hair care. Designed to meet growing demand for longer-lasting scent performance, the ingredient gradually releases a watery green melon, floral muguet, green fruity and orange blossom accord when exposed to oxygen, delivering freshness that extends for several days after use.

The launch highlights the increasing importance of fragrance delivery technologies that enhance deposition and prolong scent in rinse-off products, giving perfumers new opportunities to create fresh, clean fragrance signatures in shampoos and other hair care formulations. Although developed for personal care, Givaudan says the precursor also performs strongly in fabric care applications, broadening its potential across fragrance categories.

With consumers increasingly expecting hair care products to deliver all-day—and even multi-day—freshness, Scentaurus Aquamelon underscores the industry's move beyond traditional fragrance ingredients toward smart delivery systems that release scent when triggered by everyday environmental conditions.

"Consumer research across multiple markets reveals a consistent demand for more fragrance performance in hair care and it is no longer measured at rinse-off and drying but throughout the entire day," said Jeremy Compton, global head of science and technology, fragrances. "With Scentaurus Aquamelon, we are addressing these global needs, aligning with local fragrance preferences, and fully supporting Givaudan's 2030 strategy to grow our presence and capabilities across regional markets."

"Our extensive research program inspired by natural mechanisms and guided by our Givaudan perfumers, led to this breakthrough, capturing fresh, green scents within a precursor structure," said Agnes Bombrun, head of ingredients research, fragrance S&T. "This multifaceted material and easy-to-work nature allows perfumers to create distinctive signatures, while the freshness released over time delivers exceptional sensory experiences for hair, beauty and fabric care formulations."



Bernard Blerot, VP R&D naturals at IFF, says that the new Hearts demonstrate how sourcing and scientific stewardship can refine naturals to provide greater purity and olfactive focus.

Refining Naturals With Four New Olfactive "Hearts"

IFF recently added to its LMR Hearts collection, spotlighting its latest advances in sustainable natural ingredients and extraction technologies. The newest materials are designed to deliver more focused olfactive profiles while preserving the integrity of the original natural material. Developed through long-term sourcing partnerships, sustainable agricultural programs and precision molecular distillation and fractionation at LMR's Grasse facility, the four new ingredients include Lavandin Heart France, Armoise Heart Morocco, Ylang Heart Madagascar and Geranium Heart Egypt.

Each ingredient has been tailored for a distinct sensory signature. Lavandin Heart France features a stronger coumarin profile for a more gourmand effect, while Armoise Heart Morocco offers increased thujone content for fresher diffusion. Ylang Heart Madagascar delivers a creamy, solar "extra grade" profile, and Geranium Heart Egypt emphasizes fruity lychee nuances without traditional minty facets.

According to Bertrand de Préville, general manager of LMR, responsible innovation remains central to the company's strategy, combining natural expertise with scientific capabilities to support perfumers and scale sustainable growth globally. Bernard Blerot, VP R&D Naturals at IFF, added that the new Hearts demonstrate how sourcing and scientific stewardship can refine naturals to provide greater purity and olfactive focus.

The launches build on several recent natural

Image courtesy of IFF

ingredient introductions from LMR Naturals, including Tonka Bean CO_2 Absolute produced using renewable supercritical CO_2 extraction at the company's Aumont-Aubrac facility in France, Osmanthus Absolute Fruity China and the Pulpextract Passion Fruit and Raspberry ingredients developed exclusively for IFF perfumers.

IFF said the new developments respond to continued consumer demand for fruity and gourmand fragrance profiles, categories that remain a significant segment within women's fragrance. The company has continued investing in natural raw materials and integrated extraction technologies for more than 25 years through the LMR platform.

The company will also reinforce its naturals strategy later this month with the inauguration of Domaine des Naturals LMR in Grasse, an experimental field dedicated to raw materials research and innovation. The site is intended to support future development across cultivation, harvesting and extraction while strengthening IFF's vertically integrated naturals ecosystem.

LMR Naturals operates a fully integrated platform combining sourcing partnerships, agronomy-led sustainability programs and in-house extraction technologies including molecular distillation, fractionation and CO_2 extraction. By controlling these processes internally, the company aims to develop traceable, sustainable and high-performance natural ingredients tailored to perfumers' creative needs.

Two New Captives Added to the Woody Palette

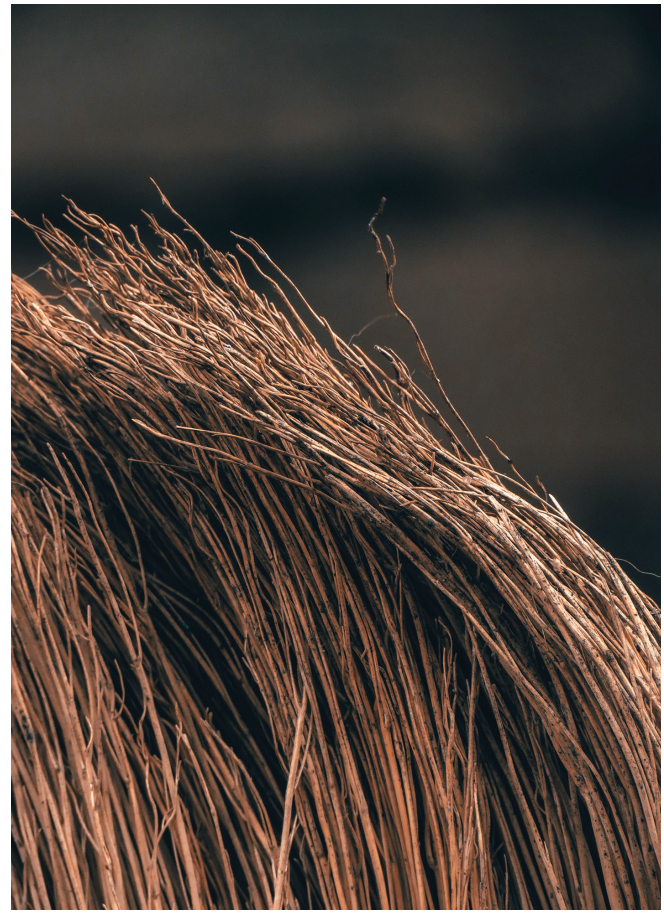
CPL Aromas has introduced two captive ingredients, Cypralene and Vetiwood, giving its perfumers new tools for building contemporary woody compositions.

Cypralene brings a dry, textured woody character with distinctive depth. CPL Aromas describes the material as offering clarity and structure with a modern edge, while allowing perfumers to introduce contrast and richness without overwhelming a composition. Its versatility is positioned for use across fragrance categories, particularly where a clean, contemporary woody signature is desired.

Vetiwood takes a different route through the woody family, pairing vetiver-like freshness with woody depth and smooth diffusion. Notably, the material has an upcycled origin, making its sourcing story part of the ingredient's positioning alongside its olfactive profile.

Taking Fine Fragrance Beyond Alcohol

Iberchem is taking aim at one of fine fragrance's biggest formulation conventions: alcohol. Its new



Vetiwood takes a different route through the woody family, pairing vetiver-like freshness with woody depth and smooth diffusion.

NovaSilk technology is a concentrated, alcohol-free fragrance system designed to be diluted in water, opening a route to fine fragrance formats without ethanol as the solvent.

The technology comes in two formats. NovaSilk uses a macroemulsion to create an opaque, silky system with a slightly opalescent finish on skin, while NovaSilk Clear uses a transparent microemulsion for a lighter, fresh and hydrating sensory profile. The distinction gives formulators two different aesthetic and sensorial directions for water-based fragrance applications.

Beyond the consumer experience, the technology changes the logistics equation: because the fragrance is supplied in concentrated form and diluted with water, Iberchem says the approach eliminates alcohol from both production and transportation, with potential implications for storage and supply-chain footprint.

NovaSilk points to a broader evolution in alcohol-free fragrance—one in which the format itself becomes part of the fragrance experience, from milky and pearlescent to clear and water-light.

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Downy's Boutique Botanicals includes Citrea, built around clementine, neroli and white musk.

Image courtesy of Downy

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Laundry Fragrance's Next Act: From 'Fresh' to Fine Fragrance

From sensitive-skin detergents with light fragrance to fine-fragrance-inspired scent boosters, recent launches point to a more nuanced olfactive landscape for fabric care.

Laundry fragrance is moving beyond the familiar territory of "fresh" and "clean." Recent activity from Tide, Downy and Kind Laundry points to a category embracing more sophisticated scent profiles, premium fragrance cues, botanical storytelling and longer-lasting scent experiences.

The shift is happening at both ends of the market. Tide is introducing fragrance into its Free & Gentle portfolio, traditionally associated with fragrance-free sensitive care. Meanwhile, Downy is bringing fine-fragrance language and perfumer-led storytelling into laundry, while Kind Laundry is targeting premium garment care with fine-fragrance-inspired scent boosters.

For fragrance developers, the result is a broader brief: create scents that signal cleanliness and deliver personality, emotion and a sense of luxury on fabric.



Tide's Fresh & Gentle detergent with Coastal Oasis Scent represents one of the more notable changes in the category.

Fragrance-Free Shifts to Fragrance-Light

Tide's Fresh & Gentle detergent with Coastal Oasis Scent represents one of the more notable changes in the category. The product brings a light fragrance to the Free & Gentle line, with a composition featuring pear, peach, jasmine, lily, linen and amber. Tide says its research found that more than 80% of sensitive-skin consumers who buy free detergents want more scent in their laundry routines.

The launch suggests that the old equation of sensitive = fragrance-free may be giving way to a more nuanced proposition: sensitive care can still have a sensory dimension.

For perfumers, that creates demand for fragrances that are perceptible but restrained. Transparent florals, soft musks, delicate fruits, sheer woods and light amber effects can provide character without creating the heavy diffusion associated with some traditional laundry fragrances.

Image courtesy of Tide

Laundry Borrows from Fine Fragrance

Downy is taking the premiumization of laundry a step further with its Fine Fragrance House. The brand is emphasizing perfumers, layered compositions and emotional fragrance experiences, while its Unstopables Unlimited and Boutique Botanicals collections give consumers multiple distinct scent profiles to choose from.

Boutique Botanicals includes Citrea, built around clementine, neroli and white musk; Peonia, combining peony and azalea with peppercorn; and Folia, featuring basil, bergamot and eucalyptus.

The significance is less about any individual ingredient than the way the fragrances are presented. Rather than simply communicating "long-lasting freshness," the collection gives consumers identifiable olfactive personalities.

Downy is also extending the experience beyond the product itself. Its 2026 Fine Fragrance House activations invited consumers into immersive scent experiences designed to demonstrate the fragrance-development process and the stories behind the scents.

Botanical Profiles Add Specificity

The Boutique Botanicals launch also reflects a broader shift in how nature is being used in laundry fragrance.



Kind Laundry is approaching the category from the premium garment-care side with scent boosters designed to deliver longer-lasting fragrance on clothing.

Instead of relying on generic botanical or "fresh" language, the collection names specific ingredients and combinations: clementine and neroli, peony and azalea, basil and bergamot, eucalyptus and white musk.

This gives consumers a more concrete olfactive story and gives developers greater room to create differentiation.

For fragrance houses, the implication is an expanded botanical palette. Citrus, herbs, tea, aromatic greens, stems, transparent florals and soft woods can all contribute to a more sophisticated interpretation of freshness.

Longer-Lasting Scent Becomes an Experience

Kind Laundry is approaching the category from the premium garment-care side with scent boosters designed to deliver longer-lasting fragrance on clothing. The company describes its fragrances as fine-fragrance-inspired and says its products use microcapsule technology to retain fragrance in fabric and release it through movement.

That creates another important development opportunity. Instead of evaluating fragrance only immediately after washing, developers can consider the scent journey across multiple stages: wash → dry → wardrobe → wear → movement.

A fragrance can therefore be designed around different moments of release and perception.

From One Laundry Scent to a Fragrance Wardrobe

The proliferation of premium scent options also suggests a move toward choice.

Downy's multiple collections give consumers the ability to select among different fragrance personalities rather than relying on one household signature.

That opens possibilities around fragrances for different moods, seasons, garments or occasions. It also creates a stronger connection with personal fragrance, where consumers already expect to have multiple scents in rotation.

The distinction between "my laundry smells good" and "this is the fragrance I chose for my clothes" is subtle but commercially meaningful.

Takeaways for Perfumers & Fragrance Development Teams

Several directions emerge from these launches:

Image courtesy of Kind Laundry

- **Softer sensory profiles:** Sensitive-care products could drive demand for fragrances with presence but lower perceived intensity.
- **More recognizable olfactive identities:** Botanical, citrus, floral, green and musky combinations can provide differentiation beyond generic clean accords.
- **Fine-fragrance architecture:** More briefs may call for compositions with greater complexity, contrast and evolution.
- **Fabric-specific performance:** Developers will need to think about how fragrance behaves through washing, drying, storage and wear.
- **Controlled release:** Encapsulation and other technologies can create opportunities for fragrance to emerge or reactivate through movement.
- **Portfolio thinking:** Premium laundry collections can be developed as scent families rather than individual fragrances. p·f+



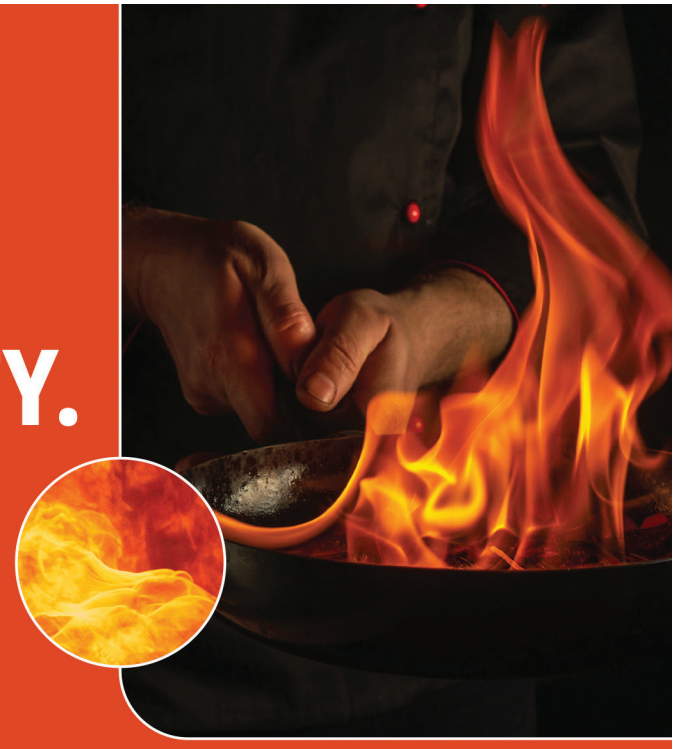
Tide's Fresh & Gentle detergent with Coastal Oasis Scent represents one of the more notable changes in the category. The product brings a light fragrance to the Free & Gentle line, with a composition featuring pear, peach, jasmine, lily, linen and amber.

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Image courtesy of Tide

GRASSE'S FRAGRANCE LEGACY GETS A MODERN MAKEOVER



For centuries, Grasse has been associated with flowers, fragrance and the craft of perfumery. In 2026, however, the French city's relevance to the industry is extending well beyond heritage.

Image by AXP Photography at Pexels

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From perfumer training and botanical research to natural ingredient development and large-scale fragrance creation, a new wave of investment is reinforcing Grasse, France's position as a global hub for fragrance.

For centuries, Grasse has been associated with flowers, fragrance and the craft of perfumery. In 2026, however, the French city's relevance to the industry is extending well beyond heritage. A series of investments and initiatives from Givaudan, Symrise, Mane and IFF is putting new emphasis on the region's talent, agricultural resources, natural ingredients and creative infrastructure.

The activity suggests that Grasse is being used as a platform for developing what comes next.

A tradition of training perfumers

The connection between Grasse and perfumery is perhaps most clearly illustrated by the Givaudan Perfumery School, which is celebrating its 80th anniversary in 2026.

Founded in Grasse in 1946 by Jean Carles, the school has trained generations of perfumers, with 28 graduates inducted into its Hall of Fame. Its four-year curriculum begins with an intensive study of fragrance raw materials, including the memorization of approximately 500 ingredients, before students work with plants and flowers in the school's garden and translate their scents into laboratory formulations.

The program reflects the broader evolution taking place in Grasse. Traditional sensory training remains central, but it now sits alongside scientific knowledge, international experience and technology. Students participate in internships and ingredient-focused trips, while Givaudan has expanded the school's global perspective through its Singapore campus.

The result is a model that connects the physical experience of fragrance materials with modern formulation and global perfumery.

Naturals bring the supply chain closer to home

That relationship between place, plants and perfumery is also driving investment in natural ingredients.

In September, Symrise inaugurated a new Lautier 1795 production site in the Grasse region, bringing together sourcing, natural raw material transformation and fragrance expertise. The move follows Symrise's acquisition of French premium naturals specialist Floral Concept, headquartered in Saint-Cézaire-sur-Siagne in the Pays de Grasse.

Floral Concept specializes in premium botanical extracts, including jasmine, rose, orange blossom, ambrette and blackcurrant. Combined with the heritage and capabilities of Maison Lautier 1795, the business is becoming part of a dedicated Symrise Naturals cluster in the region.

The strategy brings together several parts of the natural ingredients value chain, from relationships with growers and sourcing through extraction, transformation and fragrance creation. Symrise has also pointed to technologies designed to improve traceability, consistency and the efficient transformation of natural raw materials.

The timing reflects the changing role of naturals in fine fragrance. Botanical materials are increasingly being valued not simply as traditional raw materials, but for their differentiation, traceability, sourcing stories and potential to provide distinctive olfactive profiles.



In September, Symrise inaugurated a new Lautier 1795 production site in the Grasse region, bringing together sourcing, natural raw material transformation and fragrance expertise. From left: Camille Quintin, supply chain director; Michael Friede, president Scent & Care; Ricardo Omori, president global fragrance; Dr. Jean-Yves Parisot, CEO; Jérôme Viaud, mayor of Grasse; and Sophie Villeval, vice mayor Grasse.

Mane invests in fragrance creation

Grasse's role is not limited to ingredients. Mane is also expanding its creative and technical infrastructure in the region.

In September, Mane laid the foundation stone for a €45 million Fragrance Design Centre at its headquarters in Le Bar-sur-Loup. The 8,900-square-meter facility is scheduled to open in 2028 and will bring together approximately 250 employees involved in fragrance creation, evaluation and development.

The center will combine perfumers, evaluators, scientific experts, development teams and technical staff under one roof, with the goal of facilitating collaboration across creative and technical disciplines.

The investment also reconnects Mane's future with its origins. The company traces its history in the region to Victor Mane, who more than 150 years ago transformed locally cultivated flowers and plants into perfumery raw materials. Today, that local foundation sits within a global business with 54 R&D centers and 31 manufacturing sites across 41 countries.

In other words, the Grasse region is serving both ends of the equation: the agricultural and natural-material heritage that helped establish its fragrance identity, and the sophisticated creative and technical infrastructure required to develop fragrances for global markets.

The garden becomes an R&D platform

Agriculture itself is also becoming a more active part of fragrance R&D.

Earlier this year, Mane launched an experimental garden at the historic La Rose St Jean site in Grasse in partnership with perfume plant grower Sébastien Rodriguez. The project focuses on preserving regional perfume crops such as rose, jasmine and tuberose while investigating new fragrance materials and agricultural approaches.

The garden will function as a living research laboratory, where Mane scientists and agronomists can study plant genetics, aromatic molecule

Image courtesy of Mane

development and the effects of soil and climate on fragrance quality. The site will also be used to evaluate new perfume plant hybrids developed with scientific institutions.

Sustainability is another component. Mane plans to trial regenerative agricultural practices focused on soil health, biodiversity and crop resilience, while also testing extraction approaches including its redesigned enfleurage process and a mobile laboratory capable of extracting aromatic compounds directly from freshly harvested plants.

This makes the garden more than a preservation project. It connects cultivation, agricultural research, extraction and fragrance development.

Putting naturals in the field

IFF's LMR Naturals operation is taking a similar approach.

In May, LMR Naturals by IFF inaugurated Domaine des Naturels LMR, a 1.8-hectare experimental field in Grasse. The site is designed as an R&D platform where natural ingredients can be studied from cultivation through extraction and fragrance development.

The field brings agronomy, extraction and perfumery into a continuous development loop. Plant varieties and cultivation methods can be tested under real-world conditions, while perfumers and scientists can evaluate the resulting materials.

The project also has a conservation dimension. Jasmine, rose, iris and tuberose are being cultivated alongside olive trees using terraced farming, organic practices and biodiversity-support systems. IFF also plans to use the site for education through a future LMR Naturals Academy for customers, partners and perfumers.

The initiative demonstrates how the definition of a fragrance R&D facility is expanding. Instead of keeping agriculture, extraction and formulation in separate stages, companies are increasingly bringing those disciplines into closer proximity.



In September, Mane laid the foundation stone for a €45 million Fragrance Design Centre at its headquarters in Le Bar-sur-Loup. Pictured is an architect's rendering of the new facility.



Mane launched an experimental garden at the historic La Rose St Jean site in Grasse in partnership with perfume plant grower Sébastien Rodriguez.

Images courtesy of Symrise



By integrating agronomy, extraction and fragrance development in one continuous loop, IFF/LMR perfumers and scientists can test plant varieties, refine cultivation methods, and evaluate bio-based inputs under real-world conditions.

From raw material to refined olfactive profile

IFF's broader LMR activity further illustrates the region's role in developing more sophisticated natural ingredients.

At SIMPPAR 2026, IFF introduced four additions to its LMR Hearts collection: Lavandin Heart France, Armoise Heart Morocco, Ylang Heart Madagascar and Geranium Heart Egypt. The ingredients were developed through sourcing partnerships, sustainable agricultural programs and molecular distillation and fractionation at LMR's Grasse facility.

Each material is designed around a more focused olfactive profile. Lavandin Heart France emphasizes coumarin for a more gourmand effect; Armoise Heart Morocco offers increased thujone for fresher diffusion; Ylang Heart Madagascar provides a creamy, solar profile; and Geranium Heart Egypt emphasizes fruity lychee nuances without traditional minty facets.

The developments illustrate another characteristic of contemporary Grasse: natural materials are not simply being preserved in their traditional forms. They are being studied, fractionated, extracted and refined to give perfumers more precise creative tools.

A hub built around the full fragrance ecosystem

Taken together, these developments point to a broader shift in what makes Grasse strategically important.

The region offers something difficult to replicate through a single laboratory or manufacturing site: a concentration of fragrance history, specialized talent, botanical knowledge, growers, natural raw materials, extraction expertise, perfumers and R&D infrastructure.

The modern fragrance industry is increasingly concerned with questions that begin well before a perfumer puts a material on a blotter: Where did the plant come from? How was it cultivated? Can the supply be traced? How might climate affect its quality? Can extraction make better use of the crop? Can a natural material be refined to offer a more specific olfactive effect? And how can the resulting knowledge be passed to the next generation of fragrance professionals?

Grasse is becoming a place where many of those questions can be addressed within the same ecosystem.

Image courtesy of IFF/LMR

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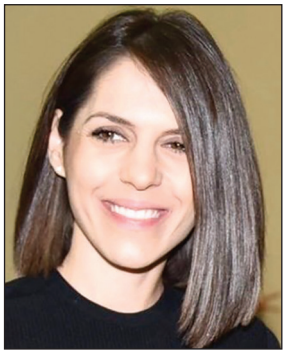
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Natural valencene 75's dominant sweet, juicy and woody elements would complement most of the citrus tonalities, especially the aldehydic species, like orange, grapefruit, mandarin and tangerine, providing authenticity and complexity to citrus flavors.



BY MARIA PALASSAROU
Flavorist, Givaudan

Eight Naturals, From Citrus to Savory

Organoleptic Evaluation Panelists

- **Andrea Albertino, Ph.D.,** Senior Flavorist, Esarom
- **Kavita Bhatnagar, Ph.D.,** CEO, Kanegrade Flavors & Ingredients
- **John Forbes,** Consultant, Ceressence Consultancy
- **Trevor Groome,** Consultant Flavorist – Director, Orchid Aromatech Ltd
- **Bimal Karmakar, Ph.D.,** Principal Flavorist, Givaudan
- **Jack Nicol,** Flavorist, IFF
- **Britta Nobis,** Senior Flavorist, Silesia
- **Maria Palassarou, Ph.D.,** Flavorist, Givaudan
- **Ján Peťka, Ph.D.,** Head of Flavor Development, Austria Juice
- **Aine Walsh,** Principal Flavorist, Keurig Dr Pepper

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In this month's column we evaluate ingredients from Isobionics, a brand of BASF. The Isobionics range of products are produced by an innovative and precise cutting-edge fermentation process, offering an extensive range of high purity, natural flavor and fragrance ingredients for the food, beverage and personal care industries.



Natural germacrene D 85's fresh, green, fatty elements would provide complexity to melon and cucumber profiles.

Natural valencene 75

EU and U.S. natural with 75% purity, pesticide-free, kosher and halal certified; FEMA# 4838, CAS# 4630-07-03

- **Odor Descriptors @ 100%:** Orange peel aroma, fresh, juicy, sweet impression, woody, floral, powdery, dry, aldehydic, slight soapy, pulpy, pithy, over-ripe fruit notes.
- **Taste Descriptors @ 5 ppm:** Orange juice taste, candy orange, fresh, fruity, pithy, pulpy, floral violet notes, woody, powdery, aldehydic, mouthfeel sensation.
- **Possible Applications:** Its dominant sweet, juicy and woody elements would complement most of the citrus tonalities, especially the aldehydic species, like orange, grapefruit, mandarin and tangerine, providing authenticity and complexity to citrus flavors. Moreover, the sweet pulpy character would make it a great addition to tropical fruits flavors, like mango and papaya.

Natural nootkatone 70

EU and U.S. natural with 70% purity, pesticide-free, kosher and halal certified; FEMA# 4941, CAS# 4674-50-4

- **Odor Descriptors @ 100%:** Woody, spicy, grapefruit peel aroma, juicy, rubbery, oily, metallic, waxy, slight sulfur, rhubarb note, cedar aroma, incense nuances, perfumed.
- **Taste Descriptors @ 3 ppm:** Woody, spicy, peppery, grapefruit peel, juicy, rubbery, petroleum turpentine notes, slight sulfur, waxy, metallic, labdanum nuances.
- **Possible Applications:** Its intense woody peely attributes, essential key aroma notes for grapefruit profiles, would provide authenticity to other citrus tonalities as well, like bitter orange, yuzu and pomelo. Its woody spicy elements would also make it a great addition to tobacco flavors and tea profiles, like black tea. Moreover, the citrus peel, juicy character might complement sweet tropical fruits profiles, like guava and mangosteen.

Natural *trans*-alpha-bergamotene 80

EU and U.S. natural with 80% purity, pesticide-free, kosher and halal certified; FEMA# 4960, CAS# 13474-59-4

- **Odor Descriptors @ 100%:** Waxy, oily, green, unripe fruit aroma, woody, piney, citrus lime notes, lemon peel, fatty, soapy, earthy, herbal, sandalwood notes, linseed character.
- **Taste Descriptors @ 10 ppm:** Woody, waxy, fatty, earthy, herbal fennel, floral coriander, vegetable taste, terpenic, pithy, citrus lime, tropical mango notes.
- **Possible Applications:** Its intense waxy and woody elements would complement various citrus tonalities, like lemon, lime, blood orange, mandarin, tangerine and bergamot, providing the sesquiterpene and back-end citrus complexity. Its green, unripe fruit character would make it a great addition to tropical flavors like mango, whereas its earthy aspect might complement tropical passion fruit profiles. The herbal, vegetable note in combination with its woody character might provide complexity to herbal tea profiles and spice blends.

Natural germacrene D 85

EU and U.S. natural with 85% purity, pesticide-free, kosher and halal certified; FEMA# 4974, CAS# 23986-74-5

- **Odor Descriptors @ 100%:** Green, leafy, fatty, cucumber, melon aroma, vegetable, herbal, basil, parsley notes, woody, spicy, earthy, metallic, floral, exotic nuances.

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- **Taste Descriptors @ 5 ppm:** Green, grassy, fresh, melon, cucumber notes, herbal, aldehydic, soapy, fatty, woody, spicy, earthy, floral, tropical mango taste, bitter, metallic mushroom notes.
- **Possible Applications:** Its dominant green, leafy character would complement orchard fruits profiles, like apple and pear for the fruit skin impression, whereas in combination with the slight metallic notes, it would benefit tropical fruits flavors, like mango and lychee. The fresh, green, fatty elements would provide complexity to melon and cucumber profiles, while its additional woody spicy character would complement variety of citrus tonalities, like lime, lemon, orange, grapefruit, bergamot, and green mandarin enhancing the sesquiterpene notes. The floral, woody, earthy aspects might provide authenticity to tobacco flavors and tea profiles, like black tea. Moreover, the intense herbal basil type notes could make it a great addition to savory vegetable and soup profiles.



Natural alpha-Bisabolene 98's herbal character would make it a great addition to root vegetable profiles, like carrot and beetroot.

Natural alpha-farnesene 95

EU and U.S. natural with 95% purity, pesticide-free, kosher and halal certified; FEMA# 3839, CAS# 502-61-4

- **Odor Descriptors @ 100%:** Woody, green, fresh, piney, terpenic, vegetable aroma, lovage, celery notes, parsley, earthy, floral, tropical, hay, hop nuances.
- **Taste Descriptors @ 5 ppm:** Green, fresh, fruit skin impression, earthy, herbal, vegetable, celery notes, citrus, terpenic, rubbery, tropical, floral, metallic, slight sulfur.
- **Possible Applications:** Its fresh, green elements would complement orchard fruit profiles, like apple and pear, whereas the characteristic fruit skin impression would make it a great addition to stone fruits, like peach, as well as tropical profiles, like mango. The woody, terpenic, piney aspects would provide sesquiterpene complexity to citrus tonalities, like lemon and lime, whereas its additional herbal, hay notes would fit well on beer profiles enhancing the hop top notes.

Natural alpha-bisabolene 98

EU and U.S. natural with 98% purity, pesticide-free, kosher and halal certified; FEMA# 5067, CAS# 17627-44-0

- **Odor Descriptors @ 100%:** Woody, spicy, balsamic, earthy, soapy, waxy, ketonic, fruit skin impression, creamy, milky, coconut, piney, citrus, lime notes, floral, resinous, slight mushroom metallic.
- **Taste Descriptors @ 5 ppm:** Soapy, waxy, coconut, creamy, ketonic, fruit skin impression, green, herbal, rosemary notes, citrus lime, woody, balsamic, earthy, mushroom metallic notes.
- **Possible Applications:** Its intense waxy, ketonic elements would complement dairy tonalities, like milk and cream, as well as coconut flavor profiles. Its woody, earthy, piney notes would provide authenticity to variety of citrus tonalities, like lime, lemon, bergamot, yuzu and kumquat, whereas in combination with its herbal character, it would make it a great addition to root vegetable profiles, like carrot and beetroot. Moreover, the characteristic fruit skin aspect, would fit well in stone fruit profiles, like peach and apricot, as well as tropical mango flavors.

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Natural beta-bisabolene 90

EU and U.S. natural with 90% purity, pesticide-free, kosher and halal certified; FEMA# 4940, CAS# 495-61-4

- **Odor Descriptors @ 100%:** Woody, citrus, piney, green, leafy, earthy, waxy, fruity, tropical mango, pineapple aroma, goosberry notes, lychee.
- **Taste Descriptors @ 5 ppm:** Woody, earthy, citrus lime, slight rubbery, green, herbal, waxy, tropical mango, lychee notes, metallic.
- **Possible Applications:** Its green, waxy, slight rubbery elements would complement various tropical fruit profiles, like mango and lychee. The woody, earthy, piney notes would provide back-end complexity to citrus tonalities, like lemon, lime, as well as bergamot. The characteristic green, earthy aspects would make it a great addition to botanical favor profiles, like herbal teas.

Natural beta-sinensal 20

EU and U.S. natural with 20% purity on beta-farnesene, pesticide-free, kosher and halal certified; FEMA# 5088, CAS# 3779-62-2, 60066-88-8

- **Odor Descriptors @ 1%:** Metallic, aldehydic, fatty, waxy, juicy, pithy, woody, marine, seaweed, citrus undertones, animalic note.
- **Taste Descriptors @ 1 ppm:** Metallic, aldehydic, fatty, waxy, pithy, juicy, woody, herbal, green, marine, seaweed notes.



Natural beta-sinensal 20's marine note would make it a great addition to savory tonalities, like fish and meat profiles.

- **Possible Applications:** Its juicy, pithy, aldehydic elements would provide authenticity and complexity to various citrus profiles, like orange, mandarin, tangerine, grapefruit and yuzu. The intense green, metallic character would complement herbal and vegetable profiles, like unripe tomato, whereas the marine note would make it a great addition to savory tonalities, like fish and meat profiles.



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Statement of Ownership, Management and Circulation
(Act of August 12, 1970); Section 3685, Title 39, United States Code)

1. *Publication title:* Perfumer & Flavorist+
2. *Publication number:* 444110
3. *Filing date:* September 09/21/2026
4. *Issue frequency:* Monthly
5. *Number of issues published annually:* 12
6. *Annual subscription price:* Free
7. *Complete mailing address of known office of publication:* 336 Gundersen Drive, Suite D, Carol Stream, IL 60188-2403
8. *Complete mailing address of headquarters or general business offices of publishers:* Same as above
9. *Publisher:* Allured Business Media, 336 Gundersen Drive, Ste D, Carol Stream, IL 60188-2403. *Editor:* Jeb Gleason Allured, 336 Gundersen Drive, Ste D, Carol Stream, IL 60188-2403. *Managing Editor:* Emmanuel Henderson, 336 Gundersen Drive, Ste D, Carol Stream, IL 60188-2403.
10. *Owner:* Allured Business Media, 336 Gundersen Drive, Suite D, Carol Stream, IL 60188-2403; Janet Ludwig, George Fox, Jeb Gleason-Allured
11. *Known bondholders, mortgages and other security holders owning or holding 1 percent or more of the total amount of bonds, mortgages or other securities:* None
12. *Tax Status (For completion by nonprofit organizations authorized to mail at special rates). The purpose, function and nonprofit status of this organization and the exempt status for federal income tax purposes:* Not applicable
13. *Publication title:* Perfumer & Flavorist+ *Magazine*
14. *Issue date for circulation data below:* 10/01/2026

15. Extent and nature of circulation	Average number of copies each issue during preceding 12 months	Number of copies of single issue published nearest to filing date
a. *Total number of copies (net press run)*	1,113	1,005
b. *Paid and/or Requested circulation*		
1. *Mailed outside county*	960	878
2. *Mailed inside county*	0	0
3. *Distribution outside the mail*	41	37
4. *Distribution by other classes mailed through the USPS*	0	0
c. *Total paid and/or requested distribution*	1,001	915
d. *Nonrequested distribution*		
1. *Outside county*	0	0
2. *Inside county*	0	0
3. *Distribution by other classes mailed through the USPS*	0	0
4. *Distribution outside the mail*	71	0
e. *Total nonrequested distribution*	71	0
f. *Total distribution*	1,072	915
g. *Copies not distributed*	45	90
h. *Total*	1,117	1,005
i. *Percent paid and/or requested circulation*	93.38%	100.00%
16. *Electronic Copies*		
a. *Paid Electronic Copies*	11,585	11,853
b. *Total Paid Print Copies + Paid Electronic Copies*	12,586	12,768
c. *Total Print Distribution + Paid Electronic Copies*	12,657	12,768
d. *Percent Paid*	99.44%	100%

17. *Publication of Statement of Ownership: Will be printed in the November 2026 issue of this publication.*
18. *Signature and title of editor, publisher, business manager or owner:* Samantha Attebery, Audience Development Manager
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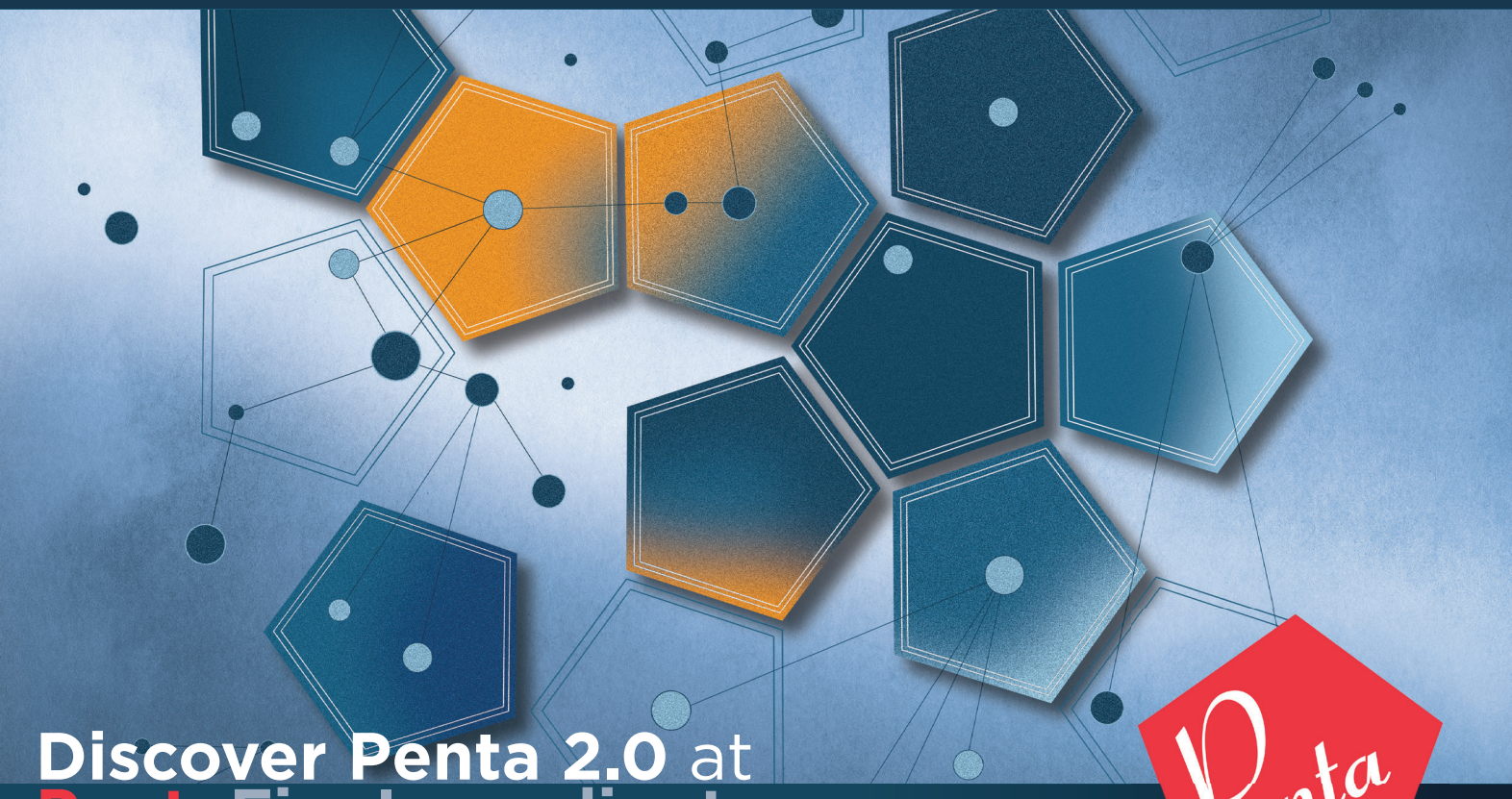
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