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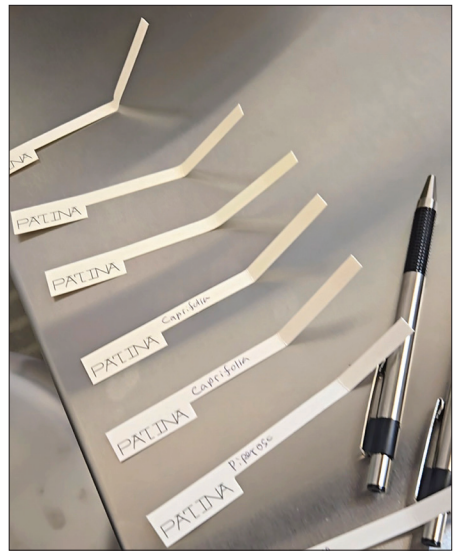
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What I Learned at the 2026 World Perfumery Congress

The industry is adapting amid a rise in tech, ingredient innovation and a market boom.

Attending the 2026 World Perfumery Congress (WPC) made one thing clear: fragrance is rapidly adopting computational science while still, fundamentally, an emotional art.

Across ingredient and fragrance houses and tech platforms, AI was everywhere. From systems mapping the sense of smell to early-stage tools capable of generating ingredients and even full fragrance structures, many in the industry are clearly looking to move toward a future where ingredients, formulations and their effects can be simulated before the first sniff.



Visiting Patina's booth at WPC. Founded by artist-perfumer Sean Raspet and engineer Laura Sisson, the company is building a machine-learning–driven platform called Sense1 that models how molecules interact with human olfactory receptors. Its goal is to replace today's language-based system of describing smells (like "floral" or "woody") with a biological "code of smell" that can precisely represent and predict scent at the molecular level.

Many perfumers I spoke with were open to AI as an augmentation tool, particularly around time-demanding rote work related to regulatory compliance and reformulations. But there was also a consistent undercurrent of concern: that in a category built on and centering memory, emotion and human connection, over-automation risks flattening the very creativity it is meant to enhance.

Equally notable was what wasn't being widely discussed. While ingredient supply chains are under intense scrutiny for sustainability and traceability, the environmental footprint of AI itself—compute intensity, energy use and disclosure standards—has yet to become part of the fragrance sustainability conversation in any meaningful way. Yet.

On the ingredient side, innovation remains highly dynamic. Co-extractions, encapsulation technologies and increasingly elegant natural materials are redefining the art and science of scent, even as global sourcing pressures and volatility continue to reshape supply chains. At the same time, new synthetic materials and biotech-derived molecules are expanding the creative palette rather than replacing it, suggesting a more hybrid future for perfumery.

Despite geopolitical uncertainty, shifting trade routes, and lingering concerns around tariffs and logistics, the overall tone at WPC was cautiously optimistic. The industry appears confident in its ability to adapt, but equally aware that resilience will depend on balancing technological acceleration with transparency, sustainability and the preservation of human creative authorship.

Editor's note: Keep an eye out for our full event report in the September print and digital editions, as well as our online platform and daily newsletters.





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Ingredients



Amberol Adds Clean Musk and Lasting Diffusion to Fragrances

Advanced Biotech

www.adv-bio.com

Amberol Synthetic (2119) delivers the smooth ambergris character perfumers rely on, with warm, musky and woody facets and a subtle sweet-amber nuance. Identical to Ambroxan, it functions as a long-lasting base note and fixative, helping extend wear while adding diffusion and a polished finish. In fine fragrance development, Amberol is a key building block for musk and woody accords, where it helps anchor top notes and bring clean, skin-like warmth to the heart.



Dihydro Anethole Adds Natural Body and Anise Complexity to Fruit Flavors

Symrise

https://www.symrise.com/scent-and-care/aroma-molecules/flavor-ingredients/#Dihydro-Anethole

Flavor ingredient dihydro anethole (FEMA# 2930, CAS# 104-45-0) imparts notes of mainly aniseed and licorice. Its spicy aroma also comprises nuances of fennel and tarragon. Sweet, coumarin-like notes face off against fresh eucalyptus notes. It helps to make many fruit flavors seem less candy-like and contributes significantly to the body of the flavor.

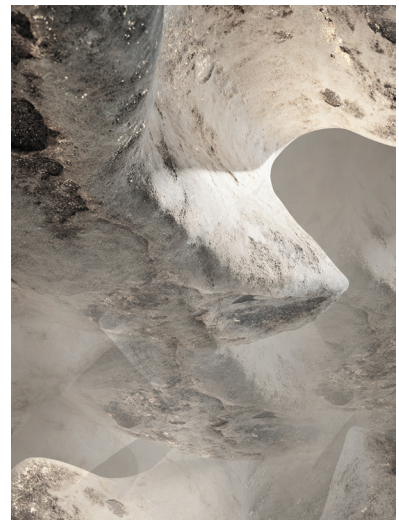


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Orcanox Brings Velvety Musk and Lasting Power to the Perfumer's Palette

Mane

https://www.mane.com/

A signature ingredient in the perfumer palette, Orcanox reveals a multi-faceted, powdery sensuality, weaving together musky, woody and delicate animalic nuances.

As a base note, it offers remarkable fixative power, extending the life of a fragrance while caressing the skin with an addictive, velvety softness. Its subtle muskiness conjures the pure comfort of freshly laundered linen – airy, cocooning and elegantly timeless.

Images courtesy of the manufacturers



Warm, Creamy, Unmistakably Vanilla

Axxence USA

www.axxence.com

Natural vanillin ex vanilla beans (FEMA 3107, CAS 121-33-5) delivers the unmistakable sweet, creamy character of cured vanilla beans. Warm vanilla notes with soft balsamic undertones enhance confectionery, dairy and baked flavors while adding smooth, creamy sweetness. EU and U.S. natural, kosher, vegetarian and non-GMO. Usage level: 0.05 ppm-200 ppm.

Boost Citrus Profiles with Isobionics' Natural Valencene 75 & 80

Isobionics

https://www.isobionics.com/global/en/product-finder/natural-valencene-75



Isobionics' Natural Valencene 75 and 80 are essential ingredients for your formulation needs. Natural Valencene 75 has a juicy orange note, almost ionone like, with a smooth taste. At 75% purity, it is a drop-in solution, suitable for applications like beverages, food, fragrances and personal care products. Natural Valencene 80 at 80% purity has a clean, juicy orange note with a warm, woody aroma, perfect for all your flavor and fragrance applications and specific applications like to improve the quality of orange and citrus oils.



Vanilla with a Warming Edge

Penta Fine Ingredients

https://www.pentafineingredients.com/

Natural vanillyl butyl ether (FEMA# 3796; CAS# 82654-98-6) from Penta Fine Ingredients offers a warm, sweet, and spicy vanilla profile with creamy and woody undertones, making it an effective impact note in both flavor and fragrance applications. In flavor systems, the ingredient delivers a rich vanilla character suited for bakery, confectionery, and dairy applications, with typical use levels ranging from 1–10 ppm and strong stability under standard processing conditions. It can also be used in no- and reduced-alcohol beverage flavors as a trigeminal warming modifier, where its clean, relatively short-lived warmth can help recreate a more authentic ethanol-like sensation.



Bergamot, Softened and Sophisticated

Agrumaria

https://www.linkedin.com/company/agrumaria/

Pleasant and elegant, slightly fruity, bergamot petitgrain is precious and delicate. Aromatic, floral, and uplifting, it captivates with its signature, gentle touch. Obtained through steam distillation of bergamot tree branches, it's an essence with an intense fresh and floral character. This is an essence with an intense fresh and floral character. Its superior tenacity compared to cold-pressed citrus expressions and its uplifting note can convey the freshness of bergamot deep into the heart of compositions, providing a delicate and lasting fresh effect.



Why Gamma-Decalactone Remains a Go-To for Soft Dairy Flavors, Tropical Notes & Much More

Avant Organics

www.avantorganics.com

gamma-Decalactone (FEMA# 2360) is a highly valued flavor ingredient known for its rich, creamy, sweet, coconut-like profile with soft peach and apricot nuances. Its smooth lactonic character brings warmth, roundness, and indulgence to flavor creations, making it especially suitable for dairy, fruit, bakery, beverage, and confectionery applications.

This ingredient is ideal for creating soft dairy notes, ripe stone fruit profiles, tropical accents, and rounded sweetness. It serves as a key character driver in peach, strawberry, mango, and apricot flavor profiles, while also adding creamy depth, juiciness, and full-bodied roundness to dairy, custard, caramel, dessert, and beverage products.

Avant Organics offers this material as EU natural, kosher and non-GMO. For a free sample please email info@avantorganics.com.

FROM ACCIDENTAL ENTRY TO CREATIVE MASTERY: A PERFUMER ON THE ART AND SCIENCE OF FRAGRANCE

Thomas Siedel, senior perfumer at Agilex Fragrances, reflects on his career.

In this Q&A, Thomas Siedel, senior perfumer at Agilex Fragrances, reflects on an unexpected entry into the fragrance industry, the intensity of his early training years, and how creative exploration and technical discipline continue to shape his approach to perfumery. From long days in the lab to breakthrough moments of creative evolution, he shares how the balance between artistry and science defines his work—and why "unexpected outcomes" often lead to his best fragrances.



"The not always knowing where a fragrance formula will evolve into continues to make the art of perfumery interesting," says Thomas Siedel, senior perfumer at Agilex Fragrances.

Courtesy of Agilex

What led you to the fragrance industry?

Siedel: I stumbled by accident onto the existence of the fragrance industry. I just started college when my father suggested I talk to a man he had just met about a summer job. It turns out this man was a perfumer and needed someone to help in his fragrance company for the summer. Long story short … it was my father's fault.

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

Siedel: I think the first breakthrough for me would be when I left the small company, I was trained at, to practice my art of perfumery at Quest International

It was my first exposure to how a big company functions and the different expectations that come with a bigger fragrance house.

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

Siedel: The biggest challenge in the beginning was the long workdays. I would start at 7 a.m. and many times still be there until after 11 p.m. My days consisted of not only training to become a perfumer but at the same time working in the lab, shipping, production and even sometimes in sales.

The passion and determination to be in a field where I can use my creativity and become a perfumer is what really kept me going. Thinking back on that now brings a smile to my face but I can also see where my understanding and appreciation for all aspects of the business comes from.

The balance between science and artistry in perfumery is an area I like to think my brain thrives in.

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

Siedel: With the years of experience I have now, most formulas turn out as I expect but I think more times

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than you think a fragrance formulation doesn't turn out exactly as expected. I don't see this as an issue but rather an opportunity. Some of my most successful creations started out as one idea but evolved into a totally different direction and an even better fragrance.

The not always knowing where a fragrance formula will evolve into continues to make the art of perfumery interesting.

How do you find the right balance between artistic expression and the technical limitations of perfume formulation?

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

The balance between science and artistry in perfumery is an area I like to think my brain thrives in. My degree in pharmacy helps keep my right side of the brain from running amuck and my right side of the brain pushes the scientific parts to think outside the box. While the right/left side dominance of the brain may be a myth, in perfumery there is a struggle between the two and I like to push the boundaries of both.

There are many skills you need to master before becoming a full perfumer. The basic knowledge of knowing the purpose, synergies and odor of all the ingredients you add to your creation is crucial to not only understanding the artistry side of perfumery but also understand the "technical" side of creations.



FROM MICROSCOPE TO MASTERPIECE: SHERI ZARCHY ON FINDING FRAGRANCE THROUGH SCIENCE, CHANCE AND PERSISTENCE

Senior analytical perfumer Sheri Zarchy's path into fragrance didn't follow a traditional line—it began in a lab running a scanning electron microscope, shifted through an unexpected industry layoff, and opened into a career built on smelling flowers in a greenhouse. Now at Agilex, she reflects on the wins, setbacks, and "Cinderella moments" that shaped her journey, from award recognition to emotionally transporting consumers through scent. Her story is a blend of analytical rigor, creative intuition, and hard-won perseverance in a field where science and emotion constantly intersect.



"Sometimes you fall in love with a fragrance you've created, but the world just isn't ready for it yet," says Sheri Zarchy, senior analytical perfumer at Agilex. "The key is to keep moving forward, refining, and believing in your work."

Courtesy of Agilex

What led you to the fragrance industry?

Zarchy: A series of unexpected events. I previously ran the scanning electron microscope at a paper company before the organization shut down its entire R&D facility. One of the divisions created molecules for the flavor and fragrance industry, and since we were all let go together, we helped each other look for new opportunities.

With my degree in horticulture, I landed an interview for a position analyzing flowers in the greenhouse at IFF. I truly had a job smelling flowers! That role became the stepping stone for the rest of my career.

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

Zarchy: There are a couple.

The first came just three months into my current position, when I had a big win—it felt like grabbing the gold ring on the merry-go-round.

Another was being nominated for a Fragrance Foundation Award ... I had never even been able to attend the awards at my previous roles, so this felt like a real Cinderella moment. Even though I didn't win, having that level of support meant a lot to me.

On a more personal note, I remember the first time someone smelled one of my creations and described a place they had been. To bring someone back to a memory with just a fragrance gave me chills.

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

Zarchy: It's honestly been an uphill challenge. Some days I feel like Sisyphus. I was once called "the best-kept secret" by a perfumer I worked with, and at times it felt like that was where they wanted to keep me.

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I've had to overcome a lot in my life, and my gratitude for being able to do something I love makes it all worth it.

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

Zarchy: I was working on a citrus fragrance, and the flash point kept going down the more I tried to fix it. It was incredibly frustrating. Eventually I got where I needed to be, but I clearly remember sitting at my desk with my fingers crossed while waiting for the machine to finish each trial.

How do you find the right balance between artistic expression and the technical limitations of perfume formulation?

Zarchy: I'm a self-proclaimed geek when it comes to this—I actually enjoy the challenge. Some days it feels like creating a masterpiece but going from a box of 128 crayons to the 8-color variety.

The passion always finds a way to overcome the limitations.

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

Zarchy: From a knowledge standpoint, having a solid analytical foundation has been incredibly helpful. It's given me a different understanding of materials than someone trained solely through olfaction. When I first started creating fragrances, I used to envision a chromatogram of the finished product (told you I was a geek).

As for skills—perseverance. Sometimes you fall in love with a fragrance you've created, but the world just isn't ready for it yet. The key is to keep moving forward, refining, and believing in your work.





One thousand ppm of 2-phenyl ethanol is an effective level in all the many different styles of beer flavor, distinctly softening the taste profile.



BY JOHN WRIGHT
johnwrightflavorist@gmail.com

Rose Meets Honey: Why 2-Phenyl Ethanol Is a Flavor Staple

From fermented to berry flavors, this material drives authenticity and complexity.

2-Phenyl ethanol, better known as phenyl ethyl alcohol (FEMA# 2858, CAS# 60-12-8 , DG SANTE# 02.019), is found widely in nature, notably in beer, rose, plum, beer, coffee, ham, honey, malt, plum, brandy, rum, whisky, soy sauce, vanilla, tequila, blackberry, raspberry, tomato and green ea.

It is of most interest in fermented flavors, especially beer, spirits, wine and bread. Also very useful in many brown flavors. The profile is a combination of rose and honey and it has a noticeable taste effect in many 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.

Fermented Flavors

- **Beer:** One thousand ppm is an effective level in all the many different styles of beer flavor, distinctly softening the taste profile.
- **Brandy:** The same one thousand ppm level also works well in brandy and cognac flavors.

Image by Ketut Subiyanto at Adobe Stock

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- **Bread:** More moderate levels, in the region of 500 ppm, are ideal in bread flavors, softening the edge of the yeasty notes.
- **Rum:** All types of rum flavors are helped by moderate levels of 2-phenyl ethanol. Unexpectedly, 500 ppm is ideal for light rum flavors, but 200 ppm is more effective in dark rum flavors.
- **Soy sauce:** The fermented note in soy sauce flavors should be noticeable, but not dominant. 2-Phenyl ethanol at 200 ppm is a useful part of the fermented complex.
- **Whisky:** The fusel note in authentic whisky flavors is tempered by the addition of around one thousand ppm of this ingredient.
- **Wine:** All wine flavors benefit from 2-phenyl ethanol, similar levels work in red and white wines, in the region of 500 ppm.
- **Yeast:** 2-Phenyl ethanol is a key ingredient in yeast flavors. Five thousand ppm is just a start.

Floral Flavors

- **Chrysanthemum:** Many floral flavors can be helped by 2-phenyl ethanol. One hundred ppm is only a moderate addition, but it adds depth and taste effects to realistic chrysanthemum flavors.
- **Elderflower:** 2-Phenyl ethanol is also not central to elderflower flavors. Nevertheless, additions from 100-200 ppm add interest and depth.
- **Hibiscus:** Hibiscus flavors are attractive and complex; 2-phenyl ethanol is a useful component at 300 ppm.
- **Honey:** The dominant floral note in honey flavors may vary, but 2-phenyl ethanol adds to all profiles at around 1,000 ppm. It works particularly well in conjunction with ethyl phenyl acetate and 2-phenyl acetic acid.



Hibiscus flavors are attractive and complex; 2-phenyl ethanol is a useful component at 300 ppm.



Image by Ana at Adobe Stock

- **Kewra:** Kewra flavors are all too readily on the harsh side. One thousand ppm of 2-phenyl ethanol helps to soften the profile.
- **Magnolia:** 2-Phenyl ethanol is at home in magnolia flavors even more than in rose flavors. Levels vary considerably, ranging up to 20,000 ppm.
- **Rose:** Rose flavors are an obvious application. Eight thousand ppm of this ingredient lends perfectly with citronellol.

Brown Flavors

- **Brown sugar:** 2-Phenyl ethanol is a good background note in brown sugar and molasses flavors. Two hundred ppm is a reasonable starting point.
- **Chocolate and cocoa:** Levels of 2-phenyl ethanol in brown flavors tend to be moderate. In cocoa flavors around 400 ppm is ideal, with proportionately lower levels in different types of chocolate flavors.
- **Coffee:** Coffee profiles vary, especially depending on the level of roast. Five hundred to 1,000 ppm of this raw material covers all the bases.
- **Licorice:** Five hundred ppm also works well in licorice flavors, softening the taste profile.



Relatively high levels of 2-phenyl ethanol are central to realistic acai flavors. Four thousand ppm is typical.



Coffee profiles vary, especially depending on the level of roast. Five hundred to 1,000 ppm of 2-phenyl ethanol covers all the bases.

- **Malt:** Malt and malted milk flavors both benefit from a modest addition, around 200 ppm.

Berry Flavors

- **Blackberry and raspberry:** Blackberry and raspberry flavors are both softened by 200 ppm of 2-phenyl ethanol.
- **Blackcurrant:** Slightly higher levels, in the region of 300 ppm, are more applicable to both realistic and buchu driven blackcurrant flavors.
- **Blueberry:** All styles of blueberry flavors, traditional and realistic, are given added depth by 200 ppm of this raw material.
- **Cloudberry:** Cloudberry flavors stand out amongst berry flavors because 2-phenyl ethanol plays a key role. One thousand five hundred ppm is only a starting point.
- **Strawberry:** Three hundred ppm of 2-phenyl ethanol adds subtle depth and enhances the lingering taste characteristics of strawberry flavors.

Other Fruit Flavors: Acai to Mango

- **Acai :** Relatively high levels of 2-phenyl ethanol are central to realistic acai flavors. Four thousand ppm is typical.
- **Cherry:** Fifty ppm just adds a little extra complexity and authenticity to all types of cherry flavors.
- **Concord grape:** Concord grape flavors can be too simplistic. 2-Phenyl ethanol adds complexity to the anthranilates at 500 ppm.

From top: Images by deagreez; zigres at Adobe Stock

- **Fig:** One hundred ppm of 2-phenyl ethanol has a similar effect in fig flavors as cherry flavors.
- **Longan:** 2-Phenyl ethanol is also central to longan flavors. Two thousand ppm is a good starting point.
- **Mango:** This raw material forms an effective counterbalance to the harsh mango skin notes at 200 ppm.

Nut Flavors

- **Almond, hazelnut and walnut:** With one notable exception, 2-phenyl ethanol plays a modest background role in nut flavors. Thirty ppm is a typical level of addition.
- **Cashew nut:** The exception is cashew nut flavors are the exception. Levels of this ingredient up to 5,000 ppm are typical.



One thousand ppm of 2-phenyl ethanol rounds out olive flavors and adds authenticity.

Other Flavors

- **Asparagus:** The most realistic level of addition of 2-phenyl ethanol to asparagus flavors is 400 ppm.
- **Coconut:** Two hundred ppm of this ingredient is ideal in coconut flavors, particularly profiles with a fresh coconut aspect.
- **Cream soda:** Cream soda flavors need a little added complexity. One thousand ppm of 2-phenyl ethanol is a good option.
- **Ham and pork:** 2-Phenyl ethanol in general does not feature much in meat flavors. Ham and pork flavors are an exception. Four hundred ppm works well.
- **Olive:** One thousand ppm of this raw material rounds out olive flavors and adds authenticity.
- **Peppermint:** The objective with most peppermint flavor projects is to push cheap cornmint oils in the direction of real peppermint. Ten ppm of 2-phenyl ethanol is a very modest addition, but it is helpful.
- **Tea:** 2-Phenyl ethanol works in all the many styles of tea flavors. Levels can vary, but not dramatically. Five hundred ppm is a good starting point.
- **Tomato:** This raw material adds an interesting note to all tomato flavors, but it works particularly well in sun dried tomato flavors at around 500 ppm.

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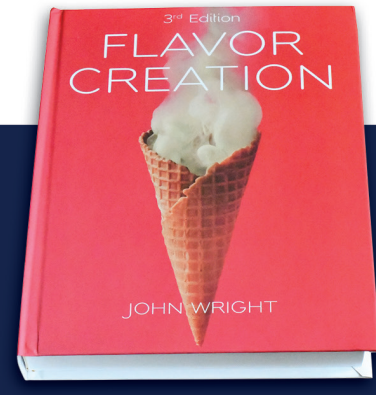


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Canned cocktails are just one manifestation of the shakeup reinventing RTD beverage alcohol.



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From Spritz to Sizzle: Flavor-Forward Innovation Reshapes the RTD Alcohol Boom

Flavor-forward innovation is shaping the RTD landscape, spanning spritzes, tea cocktails, nostalgic hard sodas, elevated RTS formats, tequila drinks, and next-gen beer and flavored malt beverages.

The ready-to-drink (RTD) category has become one of the most dynamic flavor innovation platforms in beverage alcohol. As this report shows, growth is being driven less by base spirits or format and more by bold, expressive flavor systems spanning spritzes, tea infusions, nostalgic sodas and tequila-led cocktails.

For flavor and beverage product developers, flexibility is now foundational. Successful RTD concepts increasingly rely on modular flavor architectures that can flex across ABV levels, carbonation styles and positioning, from indulgent nostalgia to functional "better-for-you" cues. At the same time, consumer appetite for novelty is accelerating iteration cycles, pushing developers to balance speed-to-market with distinctiveness and sensory depth.

What emerges is a category where flavor is the primary differentiator—and where the most successful innovations will be those that translate emotion, occasion and cultural relevance into scalable, ready-to-drink formats. -Editor

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Spirit-Based and Wine-Based Ready-To-Drink Fuel Alcohol Sales

The global ready-to-drink (RTD) and high-strength premixes market is expected to be valued at $24.1 billion in 2026. It is projected to reach $ 32.8 billion by 2033, with a CAGR of 4.5%, according to Persistence Market Research[a]. NielsenIQ's data[b] shows spirits-based RTDs increased by 30% in dollars and now account for 28% of total spirits volume in off-premise channels.

Wine-based RTDs increased by 14%, while malt-based RTDs declined. For the 52 weeks ending December 27, 2025, dollar sales of wine-based cocktails surged 30% to $1.2 billion in off-premise channels, including grocery, drug, mass merchandise, dollar, convenience, and liquor stores, according to NielsenIQ[c]. The Distilled Spirits Council of the United States[d] reported that premixed cocktails, including spirits-based RTDs, reached $3.8 billion in 2025. Flavor-forward innovation is shaping the RTD landscape, spanning spritzes, tea cocktails, nostalgic hard sodas, elevated Ready-To-Serve (RTS) formats, tequila drinks, and next-gen beer and flavored malt beverages (FMBs).

Flavor Freedom: How RTDs Are Redefining Beverage Innovation and Consumer Demand

Like other food and beverage categories, flavor is a significant purchase driver and source of innovation.

Mintel notes, "Unlike beer and wine, which have limited flexibility, RTDs, often made with neutral spirits/bases, offer greater versatility to fully explore bold and unique flavor profiles. These beverages don't need to mimic traditional cocktails, giving brands the freedom to experiment and innovate with new and exciting flavors."

Likewise, Mitch Madoff of Keychain states, "RTD cocktails' variety of flavor options and on-the-go convenience align with younger consumers who are seeking flavorful, lower-sugar, lower-carb options that match their functional and better-for-you preferences."

Trending flavors include berry, citrus, mango, passion fruit and peach. Brands are reimagining classic cocktails by swapping in alternative bases such as cognac, gin, and wine, and non-carbonated formulas.

Spritz Surge: Low-ABV RTDs Lean Into Citrus, Fruit, and Effortless Refreshment

Refreshing and low-ABV Spritz RTD drinks are on trend. This season, brands are introducing a variety of citrus and fruit-forward flavors.

For example, Fabrizia Spirits launched a new 7% ABV spirits-based Spritz Cocktail Variety Pack, featuring Blood Orange Spritz, Blueberry Spritz, and Limoncello Spritz. All the beverages are crafted with sparkling Italian wine and soda water. The Blood Orange Spritz features Fabrizia Blood Orange Liqueur, while Blueberry Spritz highlights Fabrizia Blueberry Liqueur and Limoncello Spritz contains the brand's all-natural Limoncello.

Italian spirits company Campari Group has launched the Aperol Spritz To Go, a canned RTD lower-ABV version of its bottled Aperol Spritz. In the United Kingdom, Gordon's added Pink Gin Spritz and Tropical Passionfruit Spritz, each combining Gordon's gin with a sparkling mixer "for a light, refreshing serve that pours perfectly over ice."

In the Netherlands, De Kuyper Royal Distillers launched a Peachtree Spritz RTD, which combines peach liqueur with sparkling water, Prosecco, and lime at an ABV of 4.5%. Additionally, the brand expanded its portfolio of RTD cocktails with 200 ml single-serve cans in Amaretto Sour, Espresso Martini and Passionfruit Martini.



Dre and Snoop's latest collab is a collection of non-carbonated Hard Iced Tea and Lemonade in four varieties: Iced Tea, Iced Tea & Lemonade, Peach Iced Tea, and Pink Lemonade. The canned cocktails are made with brewed tea, fruit flavors, and the brand's signature Still G.I.N.; courtesy of Dr. Dre and Snoop Dogg.

Image courtesy of Dre and Snoops

[a] *https://www.openpr.com/news/4517108/rtd-high-strength-premixes-market-us-24-1-bn-to-us-32-8-bn*

[b] *https://nielseniq.com/global/en/insights/report/2025/the-fourth-category-a-mid-year-update-on-beverage-alcohol/*

[c] *https://www.marketwatchmag.com/rtds-in-the-wine-space/*

[d] *https://distilledspirits.org/news/distilled-spirits-council-annual-economic-briefing-2025/*

Tea Time, Reinvented: Vodka, Gin and Celebrity RTDs Drive the Next Wave of Infused Innovation

From vodka to gin-based, tea-infused RTDs are gaining momentum. Sun Cruiser debuted a White Tea + Vodka RTD line, containing 100 calories and 1 g of sugar per serving. The non-carbonated, low-calorie beverage is available in Berry Hibiscus, Blackberry, Passionfruit and Peach flavors.

Boston Tea Party joins Night Shift's RTD vodka-based range in four flavors: Lemon, Mango, Peach, and Raspberry. At 4.5% ABV, Boston Tea Party is lightly carbonated and gluten-free.

Holla Spirits refreshed its RTD Crush cocktail lineup and introduced Grapefruit, a new Crush flavor. The brand also introduced CrushTea, "a first-of-its-kind canned cocktail innovation," that blends its popular Orange Crush flavor with tea. Holla's vodkas are seven-times distilled, gluten-free, non-GMO, and vegan, and feature a custom-molded Italian eco-beverage cork made from plant-based materials.

Dre and Snoop's latest collab is a non-carbonated, 5.9% ABV Hard Iced Tea and Lemonade canned cocktails line made with brewed tea, fruit flavors, and Still G.I.N. There are four varieties: Iced Tea, Iced Tea & Lemonade, Peach Iced Tea, and Pink Lemonade.



The RTD canned wine-based Dirty Shirley is a nostalgic nod to the iconic Shirley Temple. It is fruit-forward, featuring cherry, pomegranate, and hints of lime with light carbonation; courtesy of DrinkTempted.

Sip of the Past: Nostalgia Drives the Next Wave of Hard Sodas and RTD Innovation

Nostalgia-inspired vodka-based hard sodas are launching throwback fruit flavors. Inspired by the iconic 1990s SunnyD commercial "Purple Stuff," SunnyD Vodka Seltzer unveiled Purple, a limited-time RTD vodka seltzer. The 4.5% ABV beverage delivers a nostalgic blend of berry and grape.

American model Sommer Ray released Tempted, a spiked Shirley Temple brand. Tempted Dirty Shirley "offers a distinctly adult upgrade to the iconic soda mocktail." Lightly carbonated, it features cherry, pomegranate, and hints of lime at 7% ABV and is available on Gopuff.

In Canada, Dandurand Wine & Spirits and Popsicle collaborated on the Popsicle Vodka Soda. Inspired by the nostalgic popsicle flavors, the drinks come in Cherry, Grape and Orange varieties at 4.5% ABV.

Following Fresca Mixed, Fresca soda added Fresca Hard to its portfolio. The flavored malt beverage at 4.6% ABV is offered in Grapefruit Citrus, Pineapple Citrus, Peach Citrus and Watermelon Citrus flavors. Each 12 oz can contains 99 calories.

Crooked Pop is a new hard soda entrant, formulated with USDA-certified Organic Super Dry Alcohol (OSA), a proprietary fermentation method derived from ancient grains including quinoa, amaranth, millet and cassava. The 80 calorie RTD is available in Blackberry, Cherry Lime, and Orange Cream flavors with no artificial colors or sweeteners.

The Little Sun Calimocho Duo is "a brand-new drink inspired by a 100-year-old classic" of combining equal parts wine with soda. Calimocho Classic blends California red wine and classic cola, while Calimocho Blanco pairs white wine with lemon-lime soda.

Cocktails Go Big: RTS Formats Expand Into Elevated, Multi-Serve Occasions

RTS cocktails are expanding with higher ABV bottled formats and multi-serve options offering convenience, elevated flavors, and versatility across occasions. Hennessy debuted the Hennessy Henny Cocktails series at 18-22% ABV in 375 ml glass bottles that can be served over ice or used as the base for a customized drink.

The cocktails come in three flavors: Henny Berry, Henny Iced Tea, and Henny Rito. The Henny Berry is a cognac-based mojito-inspired beverage, featuring

Image courtesy of DrinkTempted



The Hennessy Henny Cocktails series features Henny Berry, Henny Iced Tea and Henny Rito, all modern takes on classic cocktails showcasing Hennessy Very Special cognac; courtesy of Hennessy.

blackberry and blackcurrant with a twist of lime. Henny Iced Tea contains "crisp black tea, bright citrus notes, and the signature soft vanilla and spice character of Hennessy Very Special cognac." Henny Rito is a twist on a classic Margarita, featuring "bright natural flavors of lime with the round citrusy and toasted notes of Hennessy Very Special cognac."

Rancho La Gloria expanded its range with three agave wine-based cocktails: Cosmopolitan, Espresso Martini, and Lemon Drop, sold in 750 ml bottles, at 17% ABV.

European brand Punch Club, known for its RTD cocktails, non-alcoholic mocktails, and functional zero-sugar drinks, launched in the U.S. with nationwide distribution through Total Wine & More. Punch Club offers multiple formats for different consumption occasions, including 250 ml RTD single-serve cocktails, 500 ml RTS bottled cocktails, and 3L bag-in-box cocktails for events. The brand's RTS portfolio includes a variety of spirit-based cocktail flavors, such as Aviation, Cosmopolitan, Negroni and Whiskey Sour.

Margarita Momentum: Tequila Innovation Spans Spicy, Fruity and Zero-Proof Frontiers

Margarita-inspired cocktails, fruity and spicy profiles, and zero-proof alternatives are leading innovation in tequila-based beverages. Mission Craft Cocktails added the Tamarind Margarita to its range. It is formulated with premium tequila, handmade orange liquor with lime, tamarind, agave nectar, watermelon, and chili. Through its partnership with Feeding America, the One Bottle = One Meal program turns every bottle purchased into a meal for someone in need.

On The Rocks launched two new products: On The Rocks Passion Fruit Margarita, a limited-edition RTS, and On The Rocks Sparkling Watermelon Margarita, a permanent canned cocktail. Both are crafted with Hornitos Blanco Tequila, and the Sparkling Watermelon Margarita contains house-made triple sec and cane sugar. In the UK, Whitebox partnered with Selfridges to launch an exclusive Spicy Mango Margarita. Described as "fricy" (fruity + spicy), the 19.5% ABV RTD combines tequila, lime, chili, and mango.

Inspired by a margarita, Recess introduced a Zero-Proof Margarita Mini Party Pack featuring their classic Lime flavor with three new expressions: Spicy, Strawberry, and Watermelon. These 0% ABV mocktails are infused with adaptogens, guayusa, and L-theanine "to help drinkers unwind." Similarly, Ritual Zero Proof entered the RTD category with three canned non-alcoholic cocktails, including a Margarita, G&T, and Spritz.



Tamarind Margarita is the newest flavor to join Mission Craft Cocktails' range. It is crafted with premium tequila, handmade orange liquor with lime, tamarind, agave nectar, watermelon, and chili; courtesy of Mission Craft Cocktails.

From top: Image courtesy of Hennessy; Mission Craft Cocktails

Flavor Under Pressure: Beer and FMB Innovation Leans Into Bold, Experimental Taste Profiles

The market is saturated with brands, and consumers' relationship with alcohol is evolving. The total beer/flavored malt beverages/hard cider/hard seltzer has declined by 3.7% for the 52 weeks ending January 3, 2026, according to NielsenIQ[e]. However, brewers are experimenting with a wide spectrum of flavors, from botanical and fruity to sweet and gourmand. According to Innova Market Insights[f], 45% of consumers cite that taste experience influences their purchases, and flavor remains central to beer innovation. Peach is the top flavor, followed by vanilla, mango, orange, and pineapple in beer and cider launches.

For example, Modelo introduced Modelo Chelada Suprema, two RTD Cheladas that mix Mexican beer with blended fruit flavors, featuring an 8% ABV formula. Modelo Chelada Suprema Mangonada contains mango and chamoy, while the Modelo Chelada Suprema Tropical features guava and pineapple.

Pabst Blue Ribbon and Grillo's Pickles have joined forces on a limited-edition PBR x Grillo's Pickle Beer, at 4.7% ABV. The flavor is "bright and tangy, which balances the maltiness of PBR's classic lager."

[e]*https://www.bevindustry.com/articles/98127-2026-beer-market-report-moderate-outlook-for-us-beer-market*

[f]*https://www.innovamarketinsights.com/trends/beer-trends-in-the-us-and-canada/*

Junior's Restaurant and Other Half Brewing[AM11] teamed up on a four-style limited-edition dessert-inspired beer line. The Black and White Cream Ale (4.8% ABV) is brewed with cacao nibs and vanilla, echoing the flavors of the iconic NYC black-and-white cookie. Egg Cream Milk Stout (6% ABV) is brewed with Fox's U-Bet syrup to mimic Junior's classic egg cream. Key Lime Cheesecake Sour IPA (6.5% ABV) combines fresh lime with graham crackers, milk sugar, and oats. Inspired by Junior's classic Strawberry Cheesecake, the Strawberry Dream Imperial IPA (8.5% ABV) is a hazy strawberry Oat Cream IPA.

FMBs continue to tap into fruity and tropical directions. For the summer, Captain Morgan introduced the Sliced Colada Style Drink Variety Pack. The lineup highlights Piña Colada flavors, including classic Mango, Passionfruit, Piña Colada, and Strawberry. Chillitas is a new RTD at 8.1% ABV, described as "the authentic fruit cart experience, canned and ready to pour." The drinks are inspired by the salt and spice of a Chelada with a "fruit-forward upgrade." It comes in four flavors, including Chilli Mango, Pica Pina, Sandia Loca and Wild Paloma.

The Boston Beer Company released Lytt Electric Coolers, a novelty line of six RTDs packaged in a patent-pending lightbulb-shaped resealable plastic container that glows in the dark. At 15% ABV, the malt range consists of Blue Raspberry, Grape, Long Island Iced Tea, Peach Mango, Strawberry Rita, and Tropical Punch.



Brooklyn establishments Junior's Restaurant and Other Half Brewing collaborate on four limited-edition dessert-inspired beers: Black and White Cream Ale, Egg Cream Milk Stout, Key Lime Cheesecake Sour IPA, and Strawberry Dream Imperial IPA; courtesy of Junior's Cheesecake.

Final Sips: Convenience, Flavor and Occasion Drive Cross-Category Innovation

To meet consumers' demand for convenience, versatility, affordability, and experiences, the RTD landscape is innovating across segments, with spirit and wine-based cocktails driving alcohol growth. Flavor experimentation fuels innovation as brands lean into spritzes, tea-infused beverages, nostalgic soda-inspired profiles, elevated RTS offerings, margarita tequila-based and zero-proof alternatives, and flavorful beers and FMBs. Watch as existing brands and new entrants develop sophisticated RTD cocktails across spirits, wine and malt bases, featuring diverse flavor profiles, low-ABV formulas and non-carbonated formats.

Image courtesy of Junior's Cheesecake

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Beyond the Buzz:
How Sensory Advancement Is Redefining the Low/No Alcohol Revolution

The future belongs to brands that can demonstrate value to consumers that complex flavor is the experience, not an afterthought.



Image by Lomb at Adobe Stock

Notably, 41% of Gen Z and 40% of millennial non-drinkers say they feel comfortable in social situations without alcohol while others are drinking; this sentiment is also shared by 48% of Gen X and 66% of baby boomer abstainers.

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BY JUSTIN SOLOMON, Marketing Director, Alcoholic Beverages, ADM



The growing desire for holistic, healthy lifestyles is a primary driver prompting consumers across generations to choose low or no alcohol beverage options. Societal norms have shifted, allowing a reframing that doesn't pit abstinence against indulgence, but supports flexible consumption. Consumers are most likely to factor in whether they need to drive, the occasion, who they're with, where they are and the time of day when deciding whether—and what—to drink. Celebrations like weddings or parties, casual gatherings with friends and romantic dinners are events most commonly associated with alcohol[a]. However, 41% of Gen Z and 40% of millennial non-drinkers say they feel comfortable in social situations without alcohol while others are drinking; this sentiment is also shared by 48% of Gen X and 66% of baby boomer abstainers.

The nuance in consumer choices and preferences is considerable, particularly when comparing adults who might have had more experience with alcohol and younger adults who may be starting out at low or no alcohol consumption. Each group will have different taste, experience and value expectations from the beverages they select. Notably, millennial (75%) and Gen Z abstainers (73%) are significantly more aware of no-ABV adult beverages than baby boomer (64%) and Gen X (63%) abstainers, and Gen Z are more likely than any other generation to have tried them. One in three Gen Z abstainers are generally satisfied with the taste and quality of most non-alcoholic (NA) beverages, while 25% wish the options they can find tasted better or came in more interesting flavors.

Category Evolution from Compromise to Distinction

The non-alcoholic beverage category has come a long way, with pronounced improvements in taste, mouthfeel and flavor sophistication in current offerings. NA beer continues to dominate the space, with 66% of 2025 total value retail selling price (RSP), followed by non-alcoholic spirits at 29%, ready-to-drink (RTD) non-alcoholic cocktails at 3% and non-alcoholic wine at 2%[b]. Non-alcoholic spirits show significant potential, with 45% annual value growth in 2025 versus 2024. NA RTD cocktails with are another growing segment, with a 34% increase in total value year-over-year.

[a]Datassential, Sip 2026: Generational Drinking Habits

[b]Euromonitor, Alcoholic Drinks Market Share, 2026; *https://www.euromonitor.com/world-market-for-alcoholic-drinks/report*



Gen Z abstainers are especially drawn to no-ABV mixed drinks and mocktails.

From top: Courtesy of ADM; Image by Lustre Art Group at Adobe Stock

Some of the persistent challenges in low and no alcohol product development include replicating an authentic alcohol "burn" or warming sensation and a full-bodied mouthfeel. Yet true success lies in the holistic beverage experience, creating the desirable taste, aroma, texture and finish—not one-note mimicry.

With the noted success of bar-crafted mocktails, and continual advancement in the sensory experience of non-alcoholic spirits at scale, it's possible that in-home mixology will eventually trend up. This is evident as baby boomer (43%) and Gen X (42%) drinkers increasingly prefer the casual, comfortable nature of entertaining at home. That being said, more than one-third of millennial drinkers buy alcohol weekly to enjoy at home, and Gen Z drinkers are making more intentional purchases, increasingly buying alcohol specifically for entertaining at home. Low or no alcohol options can support a welcoming environment for all while also providing an opportunity for zebra striping behavior, where one alternates between alcoholic and non-alcoholic beverages.



Nearly half (46%) of Gen Z abstainers have tried no-ABV adult beverages at least once, the highest of any generation. Given this level of awareness, it's understandable that many Gen Z non-drinkers expect a variety of interesting non-alcoholic options across both retail and foodservice venues.

When relaxing or socializing at home, mixed drinks are among the top three beverages consumers are most likely to choose: first for Gen Z, second for millennials and Gen X, and third for baby boomers. Interestingly, Gen Z also ranks cocktails in their top three options, while the other generations favor beer or hard cider and wine. Likewise, Gen Z abstainers are especially drawn to no-ABV mixed drinks and mocktails.

Consumer Expectations Have Shifted Beyond Sobriety

Nearly half (46%) of Gen Z abstainers have tried no-ABV adult beverages at least once, the highest of any generation. Given this level of awareness, it's understandable that many Gen Z non-drinkers expect a variety of interesting non-alcoholic options across both retail and foodservice venues.

Millennials are another key market for low and no alcohol beverages, as 38% have already tried no-ABV offerings. Non-drinking millennials typically trust grocery and liquor stores will carry a compelling selection of non-alcoholic beverages.

In fact, the beverage segment is saturated with options for consumers who are abstaining from alcohol. Beyond direct alcohol alternatives like no-ABV beer or hard cider, wine, spirits and RTD mocktails, there is a vast array of carbonated soft drinks (CSDs), flavored waters, energy drinks, juices and functional beverages claiming to offer support for mood, digestion and more. Outside of traditional non-alcoholic beverages, "calming" drinks are enjoyed at bars and pubs by 31% of Gen Z and 23% of millennial abstainers.

It is well-known that consumers are quick to abandon products that don't deliver on the sensory experience, especially items at a higher price point. Thus, it's imperative that product developers work to narrow any gaps in value or sensory experience of low and no alcohol beverage offerings. They're not only competing with alcohol, but all other types of beverages.

Flavor and Ingredient Selection for Different Palates—and Occasions

The more well-rounded and robust the low or no alcohol drinking experience becomes, the better a product will succeed at meeting the consumer's specific need state. Flavor is so important for delivering against this occasion—it's the primary reason to believe. And what takes off in the bar/mocktail space might soon perform well in the RTD segment. Specifically, unique ingredient selection and sophisticated flavor layering

Image by Matt Benzero at Adobe Stock



For the non-alcoholic space, more unique citrus varieties like bitter orange, yuzu and calamansi deliver an element of the unexpected.

create intrigue and add premiumization to the low and no alcohol category. Flavorists and beverage developers should watch the following to leverage in their R&D.

Citrus Renaissance

Bright citrus profiles always play well in beverages. For the non-alcoholic space, more unique citrus varieties like bitter orange, yuzu and calamansi deliver an element of the unexpected. Strawberry with citrus is another way to add complexity and interest to RTD mocktails or mixed drinks.

Bitter, Botanical, Herbal

Bitterness is one of the five core tastes that adds balance and depth to the sensory experience. Its rising popularity in beverages is notable with the prevalence of herbal and botanical notes, such as hops, sorghum, juniper, eucalyptus, elderflower and rosemary.

Savory & Vegetal

Garden flavors with a hint of sweetness are having a moment, although they're currently more accessible at bars than in retail. Bell peppers, carrots, beets, celery and tomato play well in mocktails made with no-ABV spirits like tequila, mezcal and gin, where savory, earthy elements are balanced by heat, sweetness, smokiness or citrus notes.

Tea, Coffee, Matcha

Café culture is crossing over into other beverage segments, with complex coffee and tea flavors leading the way. Matcha is particularly appealing, from its umami notes and vibrant green color to its functional support for sustained energy.

Fruity, Nostalgic, Dessert-Inspired

These decadent beverages often feature creamy textures and rich flavors like the coffee-infused dirty banana, charred pineapple upside-down cake, tart lemon drop, minty grasshopper and chocolatey peanut butter cup.

Fermented & Functional

The blending of flavor and perceived wellness benefits has launched fermented and functional beverages to the forefront of consumer interests. Shrub elixirs use a base syrup of fruit, sugar and vinegar topped with sparkling water for a refreshing taste experience.



Matcha is particularly appealing, from its umami notes and vibrant green color to its functional support for sustained energy.

From top: Image by pavel siamionov; VikaNorm at Adobe Stock

Additionally, mushroom-based NA spirits and RTD mocktails claim to boost energy, enhance cognitive focus or support relaxation.

Next Up: Global-Inspired Flavors

A new wave of flavor expression will lift regional heroes to the global stage, including kiwi, tamarind and hojicha, a Japanese tea of mature, roasted leaves with a smoky, nutty flavor and low caffeine content. Next-generation citrus profiles will bring ingredient and flavor innovation opportunities to low- and no-alcohol beverage R&D. This includes sudachi, which has green herbal notes and a more savory profile than yuzu; finger lime, a bright and floral Australian citrus; and pomelo, which delivers grapefruit flavor with a less bitter profile.



Decadent beverages often feature creamy textures and rich flavors like the coffee-infused dirty banana, charred pineapple upside-down cake, tart lemon drop (pictured), minty grasshopper and chocolatey peanut butter cup.

Accelerating Growth Through Holistic Sensory Satisfaction

The low and no alcohol segment presents an exciting opportunity to define a new sensory standard in beverages. The goal is not to copy alcohol, it's to capture consumer engagement before they opt out of the category altogether. Because the choices go beyond alcohol or non-alcoholic beverages; consumers can always have water, CSDs, energy drinks, sports drinks, "calming" beverages, etc.

And while some consumers might be seeking a no-ABV experience with alcohol-like replication, there are others who are open to an entirely new sensory experience. Innovation must extend beyond well-established non-alcoholic beer into the growing wine, spirits and RTD formats. The future belongs to brands that can demonstrate value to consumers that complex flavor is the experience, not an afterthought.



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THE NEW RULES OF FLAVOR IN LOW- AND NO-ALCOHOL DRINKS

RTD and spirits-style applications are being reinvented with layered, contemporary profiles.

BY ROBERT URQUHART, Senior Beverage Technologist at Lionel Hitchen



Rather than simply replicating traditional alcoholic drinks, flavor development is increasingly focused on creating layered, contemporary profiles that deliver complexity, refreshment and sensory depth without relying on alcohol itself.

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Innovation in low- and no-alcohol flavor systems for ready-to-drink (RTD) formats and spirits-style applications is accelerating as manufacturers respond to demand for more sophisticated, adult-oriented beverage experiences. Rather than simply replicating traditional alcoholic drinks, flavor development is increasingly focused on creating layered, contemporary profiles that deliver complexity, refreshment and sensory depth without relying on alcohol itself.

For flavor houses and ingredient suppliers, the opportunity lies in developing technically robust flavor systems capable of delivering authenticity, stability and strong sensory performance across a wide range of applications. This includes low- and no-alcohol RTDs, cocktail-inspired serves, mixers and spirits-style beverages where flavor must compensate for the functional and sensory properties normally provided by ethanol.



Cocktail-inspired flavor cues such as spritz, paloma (pictured), mule and margarita remain highly relevant because they provide familiarity while reinforcing premium positioning.

Evolving Consumer Expectations: Sophistication Sells

Consumers are becoming more selective about flavor quality and increasingly expect low- and no-alcohol beverages to deliver the same level of sophistication associated with premium adult drinks. Refreshment remains important, but there is growing demand for flavor profiles that feel more refined, balanced and occasion-led.

This has driven interest in botanical, herbal and globally inspired flavor directions that create a more elevated sensory experience. Citrus variants such as yuzu, blood orange and calamansi continue to gain traction alongside floral and herbal notes including elderflower, hibiscus, lavender and mint. At the same time, cocktail-inspired flavor cues such as spritz, paloma, mule and margarita remain highly relevant because they provide familiarity while reinforcing premium positioning.

The move toward moderation is also influencing flavor design. Consumers increasingly favor cleaner, less overtly sweet profiles with more nuanced acidity, bitterness and aromatic complexity. As a result, flavor systems are being developed with greater emphasis on balance, mouthfeel and flavor progression rather than high-impact sweetness alone.

Technical Challenges in Low- and No-Alcohol Formulation: Rebuilding Spirit-Like Sensory Depth

One of the most significant formulation challenges in low- and no-alcohol applications is replacing the sensory contribution of ethanol. Alcohol affects aroma release, flavor persistence, warmth and overall mouthfeel, so flavors must work harder to recreate body, structure and a more rounded sensory profile in its absence.

This has increased focus on flavor modulation strategies that can enhance warmth, improve flavor longevity and create a more spirit-like sensory effect without introducing harshness or imbalance. Managing bitterness, acidity and sweetness perception is equally important, particularly in products positioned as more premium or adult-oriented.

At the same time, formulation teams must work within the practical constraints of carrier and solvent regulations, including understanding the legal limits for propylene glycol and ethanol in the finished product. This creates a dosage challenge, as flavor systems must

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deliver the intended sensory impact while remaining compliant with permitted use levels.



Alcohol affects aroma release, flavor persistence, warmth and overall mouthfeel, so flavors must work harder to recreate body, structure and a more rounded sensory profile in its absence.

Innovation in Flavor Direction: Building Complex, Spirits-Inspired Profiles

Current innovation is centered on flavor profiles that combine refreshment with complexity and versatility. Botanical and aromatic profiles remain highly relevant, particularly when layered with citrus, spice or tea-inspired notes to create greater depth and sophistication.

Fruit profiles are also evolving beyond traditional sweet variants toward sharper, more textured and globally influenced flavor directions. Tropical and exotic notes such as pineapple, tamarind and guava are increasingly paired with herbs, florals and bitter elements to create more contemporary adult flavor combinations.

Another important area of development is the creation of flavors specifically designed for spirits-style applications. Rather than directly replicating alcoholic products, these focus on recreating sensory cues associated with premium serves, including warmth, aromatic lift, dryness and lingering flavor character. This allows manufacturers to create low- and no-alcohol beverages with a more authentic and elevated drinking experience.



Tropical and exotic notes such as pineapple, tamarind and guava are increasingly paired with herbs, florals and bitter elements to create more contemporary adult flavor combinations.

Strategic Opportunities for Flavor Suppliers: Performance Meets Flexibility

For flavor and ingredient companies, the strongest opportunities lie in developing adaptable flavor profiles that deliver both consumer relevance and technical functionality. Manufacturers are increasingly seeking solutions that offer strong flavor performance, formulation flexibility and processing stability across multiple RTD and spirits-style applications.

There is particularly strong demand for flavor systems that support premium positioning while also addressing practical formulation requirements such as sugar reduction, flavor persistence, clarity and shelf stability. Botanical complexity, cocktail-inspired profiles and globally influenced flavor combinations are expected to remain key areas of innovation.

As the category continues to evolve, successful flavor development will depend not only on creating distinctive taste profiles, but also on delivering technically resilient solutions capable of supporting the next generation of sophisticated low- and no-alcohol beverages.

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Editor's Notebook:
The Flavor & Fragrance Ingredients Seen at SIMPPAR and FlavourTalk 2026

From unique citrus to woody notes and beyond, recent events featured ingredients for every occasion.



SIMPPAR transformed the heart of Grasse into an open-air celebration of perfumery ingredients, welcoming fragrance professionals from around the world to explore new naturals, captives and technological advances against the backdrop of the industry's historic capital.

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From London to the sun-drenched streets of Grasse, 2026's leading raw material exhibitions offered a preview of where flavor and fragrance creation is heading next. Together, the events brought suppliers, flavorists, perfumers and product developers face-to-face with the ingredients shaping tomorrow's formulations—from novel natural extracts and refined woody materials to precision-crafted aroma chemicals and specialty fractions.

At **FlavourTalk**, more than 50 exhibitors showcased the latest flavor building blocks and innovation platforms designed to support emerging consumer trends and inspire the next generation of food and beverage creations.

Two months later, **SIMPPAR** transformed the heart of Grasse into an open-air celebration of perfumery ingredients. The latest edition took place May 26–27, 2026, marking only the second time the fragrance raw materials exhibition has been held in the world-renowned perfume capital.

Building on the momentum of the record-setting 2025 event in Paris, which attracted more than 4,000 entries and nearly 350 perfumers, the show adopted an immersive destination format centered around Grasse's rich perfumery heritage.

Held on the Cours Honoré Cresp opposite the Palais des Congrès, SIMPPAR expanded its exhibition footprint with 115 individual exhibitor tents—15 more than in 2024—accommodating a growing international roster of suppliers and fragrance industry stakeholders. The event followed a strong 2025 edition that featured 128 exhibitors from 24 countries.

Beyond the exhibition floor, attendees participated in networking events including the traditional SIMPPAR cocktail reception and a closing garden party hosted by the City of Grasse. The destination experience was further enhanced through guided tours organized by the Grasse Tourist Office, offering visitors access to local rose fields, perfume crop cultivation sites and the International Perfume Museum, highlighting the region's deep connection to fragrance creation and raw material production.



Held on the Cours Honoré Cresp opposite the Palais des Congrès, SIMPPAR expanded its exhibition footprint with 115 individual exhibitor tents—15 more than in 2024—accommodating a growing international roster of suppliers and fragrance industry stakeholders. The event followed a strong 2025 edition that featured 128 exhibitors from 24 countries.

New, Notable & Standout Ingredients from SIMPPAR & FlavourTalk 2026

The following collection highlights some of the most notable flavor and fragrance ingredients presented at these events, revealing how suppliers are balancing authenticity, sustainability, technical performance and sensory creativity in an increasingly competitive marketplace.

- *SIMPPAR 2026: The Ingredients Shaping Fragrance's Next Chapter*
- *From Piña Colada to Electric Daisy: The New Faces of Gourmand Scents and Flavors*
- *From Sacred Cypress to Barrel-Aged Oak: Woody Ingredients Branch Out Across Flavor and Fragrance*
- *Citrus Unleashed: The Zesty Ingredients Driving Flavor Innovation*

NOTE: Ingredient availability and regulatory status may vary by region. Not all materials featured in this roundup are commercially available in every market. Readers should consult respective suppliers to confirm regional availability, approved uses and any applicable regulatory restrictions before formulation or commercialization.

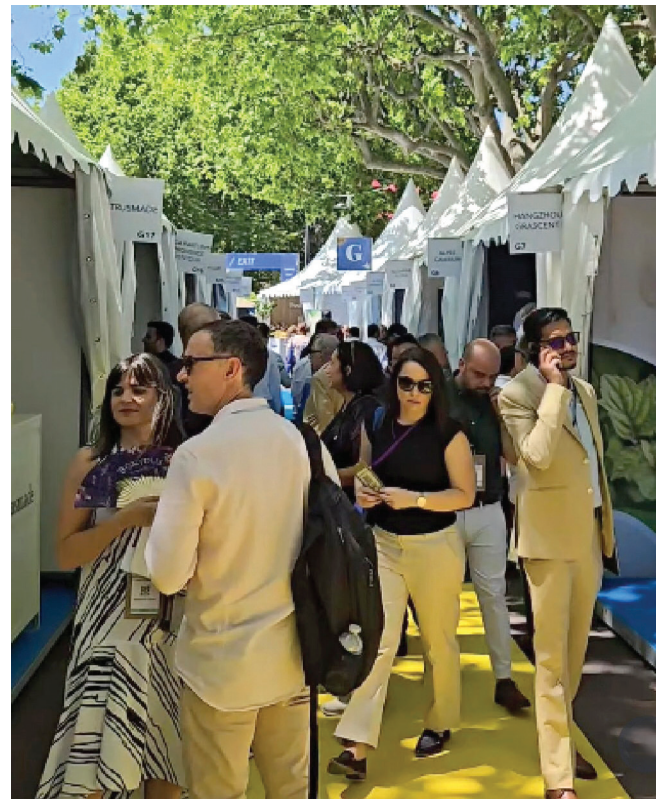
Image by Allured Business Media

SIMPPAR 2026: The Ingredients Shaping Fragrance's Next Chapter

Fruity captives, next-generation musks, essential oil blends and more stole the show in the south of France.

SIMPPAR 2026 transformed the streets of Grasse into a showcase for the future of fragrance ingredients[a], bringing together suppliers, perfumers and raw material innovators for two days of discovery in the world's perfume capital. From sustainable naturals and low-carbon aroma chemicals to next-generation musks, fruity captives and botanicals refined through advanced extraction technologies, this year's launches reflected the industry's dual focus on olfactive differentiation and responsible innovation. Here, we highlight some of the standout ingredients and technologies unveiled at the exhibition, offering a glimpse into the materials poised to influence fragrance creation in the years ahead.

[a]*NOTE: Ingredient availability and regulatory status may vary by region. Not all materials featured in this roundup are commercially available in every market. Readers should consult respective suppliers to confirm regional availability, approved uses and any applicable regulatory restrictions before formulation or commercialization.*



SIMPPAR 2026 served as a platform for new and notable fragrance materials.



IFF's Luminide can amplify floralcy, round out spicy notes and smooth woody or amber blends into more refined, enveloping creations. Perfumers describe the material as radiant yet intimate, offering a graceful scent evolution and strong substantivity lasting more than seven days.

Creamy Musk and Lasting Radiance to Modern Fragrance Design

IFF's Luminide is a versatile musk ingredient that delivers a clean, powdery softness paired with warm sweetness and a creamy, skin-like elegance. With balanced impact across the top, heart and base of a fragrance, it adds both lift and longevity while enhancing texture and volume throughout a composition.

Particularly effective in white floral, fruity and muguet accords, Luminide can amplify floralcy, round out spicy notes and smooth woody or amber blends into more refined, enveloping creations. Perfumers describe the material as radiant yet intimate, offering a graceful scent evolution and strong substantivity lasting more than seven days.

From top: Image by Allured Business Media; Алекс Ренко at Adobe Stock

Compatible with ingredients such as IFF's Ambermor, Iso E Super and Ylanganate, the renewable, vegan-suitable ingredient is designed for broad formulation flexibility at use levels up to 3%. (Launched in 2024, Ylanganate, delivers solar white floral notes that enhance fruity, sweet and vanillic accords while offering strong performance, low-use levels, biodegradability and a natural-feeling profile without discoloration risk.)

Delta-Cadinene for Herbal Fougere Depth

O'Laughlin's delta-cadinene, a terpene with a distinctly woody, herbal profile edged by thyme-like aromatics and an earthy sophistication that reads as both dry and slightly resinous.

At ultra-trace levels up to 1%, the material is designed as a structural modifier rather than a dominant note, extending warmth, reinforcing aromatic fougères and adding subtle naturalistic depth without tipping accords into heaviness.

With its green-woody tension, delta-cadinene offers perfumers a tool for refining herbal freshness, grounding citrus-aromatic openings and giving modern fougères a quieter, more textural complexity. It sits particularly well in compositions seeking a bridge between classic aromatic masculines and more contemporary, naturalistic woods.

delta-Cadinene emerges here less as a headline note and more as a background architect, quietly shaping structure, diffusion, and dryness in finely tuned compositions.



With its green-woody tension, O'Laughlin's delta-cadinene offers perfumers a tool for refining herbal freshness, grounding citrus-aromatic openings and giving modern fougères a quieter, more textural complexity.

From top: Image by Narsil; Goffkein at Adobe Stock



Ventós' cardamom oil blend delivers a warm, spicy and cineolic profile, bringing depth and brightness to both savory flavor systems and aromatic fragrance compositions.

Low-Carbon Aroma Chemistry

At SIMPPAR 2026 in Grasse, Lanxess highlighted its portfolio of high-purity, nature-identical aroma ingredients spanning floral, fruity, spicy, woody and earthy olfactive profiles, reinforcing the continued importance of versatile building blocks for fragrance, personal care and flavor applications.

The company also showcased its Scopeblue range, which combines traditional aroma chemistry with reduced-carbon and sustainably sourced feedstocks, reflecting growing industry demand for ingredients that support sustainability goals without sacrificing performance.

With ISCC PLUS certification and significant carbon-footprint reductions compared with conventional alternatives, the portfolio demonstrates how suppliers are increasingly aligning fragrance innovation with traceability, regulatory expectations and environmental stewardship.

Herbal Powerhouse: Functional Oil Blends of Cardamom, Cypress, Lavender and *Schinus*

Ventós is expanding its natural oil blend portfolio with a quartet of aromatic ingredients designed to deliver consistency, performance and sensory depth across flavor and fragrance applications.

The new range includes cardamom oil blend, cypress oil blend, spike lavender oil blend and *Schinus* CO_2 blend—each formulated to capture the characteristic profile of its botanical source while offering standardized quality for industrial use.

The cardamom oil blend delivers a warm, spicy and cineolic profile, bringing depth and brightness to both savory flavor systems and aromatic fragrance compositions. Cypress oil blend leans into a sweet, balsamic and woody-spicy character, widely valued in fine fragrance, personal care and wellness formulations for its grounding, forest-like nuance.

Spike lavender oil blend introduces an agrestic, herbaceous and floral-fresh profile, offering a more rugged aromatic interpretation of lavender suited to fougère structures, functional fragrances and herbal flavor directions. Meanwhile, *Schinus* CO_2 blend contributes a warm, spicy green note with a modern extraction profile, supporting complexity in both natural fragrance accords and savory applications.

Together, the four blends reflect Ventós' continued focus on delivering nature-identical consistency in botanicals that are often subject to variability. By standardizing key aromatic materials, the company aims to give flavorists and perfumers more reliable building blocks while preserving the distinctive sensory signatures of each plant.

The result is a toolkit of herbal, woody and spicy profiles that extends from bright top notes to deeper aromatic bases—supporting a wide range of applications across food, beverage, fragrance and personal care innovation.

Expanding the Naturals Palette

At SIMPPAR 2026, LMR Naturals by IFF unveiled four new additions to its LMR Hearts collection, underscoring the company's continued investment in high-value natural ingredients that combine sustainable sourcing with advanced extraction science. The new ingredients—Lavandin Heart France, Armoise Heart Morocco, Ylang Heart Madagascar and Geranium Heart Egypt—have been developed through long-term agricultural partnerships and refined using molecular distillation and fractionation technologies at LMR's Grasse facility to deliver more focused, differentiated olfactive profiles.



LMR Naturals by IFF's tonka bean CO_2 absolute is a sustainably produced natural ingredient extracted using renewable and recycled supercritical CO_2 at the company's Aubrac, France facility.



At Domaine des Naturels LMR, R&D experts research new natural species, variety breeding, cultivation methods and production techniques.

The launches reflect a broader industry shift toward naturals that offer both authenticity and precision. Lavandin Heart France amplifies gourmand coumarinic facets, Armoise Heart Morocco delivers a fresher and more diffusive profile, Ylang Heart Madagascar emphasizes creamy, solar nuances, and Geranium Heart Egypt highlights a distinctive fruity-lychee character while minimizing traditional minty notes. Together, the ingredients demonstrate how fractionation technologies are enabling suppliers to isolate and elevate the most desirable sensory characteristics of natural raw materials while maintaining traceability and sustainability credentials.

The introductions build on a series of recent LMR innovations, including tonka bean CO_2 absolute, osmanthus absolute fruity China and the Pulpextract passion fruit and raspberry ingredients, all of which align with growing consumer demand for fruity, gourmand and nature-inspired fragrance experiences.

(The tonka bean CO_2 absolute, a sustainably produced natural ingredient extracted using renewable and recycled supercritical CO_2 at the company's Aubrac, France facility, is designed for fine fragrance and consumer care applications. The ingredient delivers a rich gourmand profile featuring roasted almond, sun-dried hay, brown sugar and cocoa facets while offering a 34% lower cradle-to-gate carbon footprint than traditional tonka

Images courtesy of IFF/LMR

absolute. The low-temperature extraction process preserves delicate aromatic molecules, eliminates petrochemical solvent residues and improves both olfactive fidelity and environmental performance, reflecting growing demand for traceable, high-impact naturals that combine sustainability with sensory richness.)

The launches also coincide with IFF's continued expansion of its naturals ecosystem, including the inauguration of the Domaine des Naturals LMR experimental field in Grasse, reinforcing the company's long-term strategy of integrating agronomy, sourcing, extraction and perfumery expertise to secure the future supply and performance of natural fragrance ingredients.



Indesso has developed a green patchouli absolute positioned as a more complete expression of Indonesian patchouli, shaped by extraction practices designed to retain broader olfactory complexity.

Deep, Woody, Authentic: A New Take on Patchouli from Indonesia

Indesso has developed a green patchouli absolute positioned as a more complete expression of Indonesian patchouli, shaped by extraction practices designed to retain broader olfactory complexity.

Rather than focusing on a single dominant facet, the material is described as delivering a deeper, more holistic patchouli profile with pronounced woody character and added structural depth. This places it within fragrance architectures where patchouli is used not just as a base note, but as a functional backbone for diffusion, longevity, and warmth.

The profile is particularly aligned with scent styles popular in Middle Eastern fragrance construction, where richness, projection, and long-lasting woody-earthy foundations are key design parameters. By moving beyond more commoditized patchouli fractions, the material is positioned as a way to restore complexity and differentiation in a category often reduced to standardized earthy-woody notes.

IFRA-Compliant Spicy Depth with Eugenol-Rich Warmth

Payan Bertrand's cinnamon leaf oil, low BAP (CAS# 8015-91-6; FEMA# 2292) is a versatile, IFRA-compliant spicy ingredient delivering a powerful eugenol-driven profile with clove-like warmth, dry woody undertones and exceptional longevity. Sourced from Ceylon (*Cinnamomum zeylanicum*) and steam distilled at origin, it provides a brighter spicy top note while maintaining a rich musky drydown that enhances both lift and depth across fragrance and flavor systems, within IFRA 51 usage guidelines.

Recommended as a heart-to-base note in oriental, woody and gourmand accords, it blends particularly well with sticky fruit nuances such as plum, as well as rose, resins and warm spicy frameworks. In flavor applications, it is suitable for spicy profiles and tobacco-style compositions, where it delivers sustained aromatic impact, rounded heat and a naturally deep, enduring spice character.



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Citrus Unleashed: The Zesty Ingredients Driving Flavor Innovation

Bergamot blends, yuzu, sinensal, cold-pressed Key lime and much more.



From juicy notes to cola-enhancing effects to fresh impacts in scents, citrus ingredients deliver a wide array of effects.

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From fresh-squeezed orange fractions and precision-fermented citrus molecules to next-generation yuzu extracts and ultra-concentrated lime oils, citrus innovation is entering a new era. Presented at FlavourTalk and SIMPPAR, this year's standout ingredients (so far) showcased

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how suppliers are reimagining one of flavor's most enduring categories through advanced extraction technologies, biotechnology, concentration techniques and global citrus varietals. The result is a vibrant palette of materials that deliver greater authenticity, consistency, sustainability and sensory impact—helping formulators create brighter beverages, more expressive confections and increasingly sophisticated citrus experiences across food and drink.



Bergamot oil blend Ventós delivers a floral, fruity and sweet-fresh profile characteristic of the prized citrus, making i suitable for fine fragrance, personal care and flavor applications seeking a sophisticated citrus top note.

A Citrus Trio for Consistency: Ventós Expands Its Portfolio with Bergamot, Lemon and Orange Oil Blends

Ventós is spotlighting a trio of citrus oil blends designed to deliver the bright, authentic character of Mediterranean citrus with the consistency and reliability demanded by modern flavor and fragrance development.

The collection includes bergamot oil blend Ventós, lemon oil blend Ventós and orange oil Spain blend Ventós, each crafted to capture the signature sensory profile of its source fruit while offering standardized performance across applications.

The bergamot oil blend delivers a floral, fruity and sweet-fresh profile characteristic of the prized citrus, making it suitable for fine fragrance, personal care and flavor applications seeking a sophisticated citrus top note. The lemon oil blend emphasizes fresh, juicy and intensely citric characteristics, while the orange oil Spain blend offers a sweet, juicy citrus profile with the vibrant character associated with Spanish oranges.

By offering citrus oils in blended formats, Ventós aims to provide formulators with greater consistency amid the natural variability that can affect essential oil production. The ingredients can be used to build freshness in fragrances, add brightness to flavor systems and support the development of citrus-forward consumer products across food, beverage, beauty and home care categories.

Unlocking New Lime Dimensions with Alpha-Farnesene 95

BASF's Isobionics natural alpha-farnesene 95 (FLAVIS# 01.040 and FEMA# 3839) is a fermentation-derived ingredient produced using biotechnology and offering exceptionally high purity at more than 95%.

Developed under the Isobionics brand, the ingredient is positioned as a key building block for lime oil applications, completing a broader natural flavor system that includes other sesquiterpene-based ingredients for citrus modulation. The material is produced from renewable resources via fermentation, ensuring consistent availability independent of agricultural variability such as weather or harvest conditions.

Sensory-wise, Isobionics natural alpha-farnesene 95 presents a vegetal, celery-like top note evolving into sappy, stemmy nuances with fruit skin facets. In taste applications at low dosage, it delivers a complex profile combining sappy freshness, light floral tones, waxy apple/pear skin character, and subtle citrus and white floral nuances—making it a versatile modifier for lime oils, beverages, confectionery and broader citrus-fruit systems.

According to BASF, it forms part of a "one-stop shop" lime solution alongside other Isobionics ingredients such as beta-bisabolene, *trans*-alpha-bergamotene, and beta-caryophyllene, reinforcing the company's strategy to offer a comprehensive palette for citrus innovation through precision fermentation.

Three Paths to Yuzu: Traditional, Distilled and Microwave-Extracted Citrus Innovation

Seikodo Ishida Co., Ltd. leverages a trio of extraction technologies designed to capture different facets of yuzu's aroma profile for flavor and fragrance applications.

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The portfolio begins with yuzu oil TS (extract), a solvent-extracted oil derived from yuzu peel that delivers a rich, long-lasting aroma and flavor profile. The extract benefits from naturally occurring antioxidants, including tocopherols and β-carotene, which contribute to enhanced oxidative stability. Production is highly concentrated, requiring approximately one metric ton of yuzu fruit and 200 kilograms of peel to yield just one kilogram of oil.

For applications requiring a brighter citrus impact, yuzu oil distilled is produced through traditional steam distillation of fresh yuzu peel. The process emphasizes the fruit's sparkling top notes and fresh citrus character. Produced in Kochi Prefecture—Japan's leading yuzu-growing region—the oil is available at commercial scale from one of the country's largest yuzu distillers.

Completing the range is yuzu oil microwave, a solvent-free extraction produced using rapid microwave heating under reduced pressure. The low-temperature process helps preserve highly volatile aroma compounds that can be lost during conventional extraction methods, resulting in an oil with exceptional freshness and a profile closer to the aroma of freshly peeled yuzu. The technology also generates aromatic distilled water alongside the essential oil.

Beyond yuzu, the producer offers a broader collection of Japanese citrus oils, including sudachi (*Citrus sudachi*), kabosu (*Citrus sphaerocarpa*), aoyuzu (*Citrus junos*), hyuganatsu (*Citrus tamurana*) and naoshichi (*Citrus takuma-sudachi*), reflecting growing international interest in Japan's distinctive native citrus palette.



Seikodo Ishida Co., Ltd.'s yuzu oil TS (extract) is a solvent-extracted oil derived from yuzu peel that delivers a rich, long-lasting aroma and flavor profile.

Sinensal: The Essence of Fresh-Squeezed Orange Intensified

Misitano & Stracuzzi's sinensal is a highly concentrated orange fraction obtained from cold-pressed orange oil using advanced high-performance separation technology. Delivering an intensely orangey, juicy and naturally sweet profile with subtle metallic facets, it closely replicates the aroma of freshly cut orange fruit while providing exceptional aromatic impact at low use levels.

Recommended for use at levels of 5-20 ppm, sinensal is ideally suited for citrus flavor formulations and beverages, where it enhances authenticity, freshness and top-note brightness.

Three Distinct Lime Profiles for Confectionery, Beverages and Beyond

Frey & Lau offers a range of lime oil profiles tailored to different flavor applications, each differentiated by extraction method, concentration, and sensory direction.

Lime oil, type Key lime is a cold-pressed, 4-fold oil produced using gentle vacuum rectification to reduce the terpene fraction, resulting in a more refined and expressive citrus impact. The profile is bright, zesty, smooth and slightly creamy, with a taste profile described as peely, juicy, sweet and green. It is well



Frey & Lau's lime oil, type Key lime, is bright, zesty, smooth and slightly creamy, with a taste profile described as peely, juicy, sweet and green.

From top: Image by kapinon; Brent Hofacker at Adobe Stock

suited to desserts, fruit gums, confectionery and baked goods, where it brings a balanced sweet-citrus lift and a rounded, mouthwatering freshness.

Lime oil, type Tahiti, is also cold-pressed and 4-fold. This variant leans into a fresher, sharper citrus character. It delivers a peely, juicy, tart profile that works particularly well in confectionery and alcoholic beverage applications. It also performs well in desserts and sorbets, where it contributes a clean, refreshing citrus brightness.

Lime oil, type Peru, is distilled and 3-fold, offering a distinctly different direction from the cold-pressed oils. Its profile is more earthy, woody and peely, with a cola-like citrus nuance. It is especially effective in soft drinks, cola-style beverages and confectionery applications where a deeper, more savory citrus backbone is desired.



Dutch Essentials' natural calamansi flavor, inspired by the Philippine citrus hybrid of mandarin and kumquat, delivers a bold combination of tart, zesty and lightly sweet notes, paired with a pronounced floral aroma and bright acidity.

Bringing Bright Citrus Complexity with Yuzu and Calamansi Flavors

Dutch Essentials recently highlighted two distinctive citrus ingredients that tap into growing demand for globally inspired flavor experiences. Its natural yuzu flavor captures the vibrant character of the prized East Asian citrus, delivering an aromatic fusion of lemon, grapefruit and mandarin notes accented by tartness, subtle bitterness and delicate floral, perfume-like nuances.

Complementing the offering is the company's natural calamansi flavor, inspired by the Philippine citrus hybrid of mandarin and kumquat. The ingredient delivers a bold combination of tart, zesty and lightly sweet notes, paired with a pronounced floral aroma and bright acidity.

Citrus, Rewritten: A New Aldehydic Builder for Fruit and Savory Systems

BASF has introduced Isobionics natural beta-sinensal 20, described by the company as the first sinensal single isomer produced via advanced fermentation technology, marking a new step in precision citrus aroma building.

Positioned as a highly versatile aroma ingredient, beta-sinensal 20 delivers an aldehydic citrus profile reminiscent of tangerine and mandarin peel, layered with unexpected marine and algae nuances. At usage levels of 0.1-10.0 ppm, it also contributes subtle metallic facets in taste applications, offering formulators a powerful tool for enhancing freshness and diffusion across both aroma and flavor systems.

Unlike conventional sinensal materials derived from orange oil extraction, this fermentation-based approach removes dependency on citrus oil sourcing, significantly broadening formulation flexibility. The ingredient is designed to enhance juiciness and freshness across a wide range of fruit profiles—from mango and berry through to citrus systems—while also showing strong performance in savory applications including fish, meat, and tomato-based flavors. It can additionally intensify and refine orange oil character itself, improving overall organoleptic impact.

Leafy, Orange, Fruity Aroma Modifier

Millipore Sigma's methyl N,N-dimethylanthranilate (CAS# 10072-05-6, FG grade, ≥95% assay) is an aroma chemical used in flavour and fragrance applications to deliver leafy, orange and fruity tonal effects. It is identified by FEMA# 4169 and FLAVIS# 09.648, with a molecular weight of 179.22 and empirical formula $C_{10}H_{13}NO_2$.

The material is compliant with EU regulations (EU 1334/2008 and 178/2002) and FDA 21 CFR 117, and is classified in Quality Segment 300. It contains no known allergens and is used as a functional modifier in formulations requiring fresh citrus-fruit and green aromatic facets.

Yuzu Extract Delivers Citrus Lift with Green Freshness

Austria Juice's Yuzu Extract, presented at FlavourTalk 2026, delivers a bright and expressive citrus profile

Image by fkruger at Adobe Stock

defined by mandarin-like freshness, green nuances and a subtle floral edge. At a usage level of 0.2%, it contributed a clean, zesty impression in beverage applications, enhancing both freshness and complexity in finished drinks. The extract showcases a refined balance of juicy citrus character and natural green vibrancy, making it well suited for innovative beverage concepts seeking authentic yuzu impact.

Fermentation-Derived Nootkatone Delivers Citrus Precision for Flavor and Fragrance

At FlavourTalk 2026, Lallemand spotlighted nootkatone, a high-purity aroma ingredient produced through precision fermentation that brings the distinctive citrus, grapefruit and woody character of the naturally occurring compound to flavor and fragrance formulations. Traditionally sourced from grapefruit peel, nootkatone is valued for its refreshing aroma and slightly bitter taste profile, making it a versatile ingredient for food, beverage, personal care, home care and fine fragrance applications.

Available in both 98% purity crystal form and an 85% liquid format, Lallemand's nootkatone is designed to provide consistent sensory performance, year-round availability and reliable quality without the supply constraints associated with agricultural sourcing.

Produced via fermentation rather than extraction, the ingredient offers a sustainable, contaminant-free alternative that helps formulators create natural flavor and fragrance experiences with enhanced supply security, reproducibility and cost efficiency. The result is a versatile citrus-forward ingredient that can elevate products ranging from luxury perfumes to household cleaners while meeting growing demand for sustainably sourced aroma materials.

From Sicilian Lemon to Solar Twist

During FlavourTalk 2026, Citrofood presented a wide range of citrus products, including WONF lemon oil 20x with woody and sweet notes, cold-pressed winter Sicilian lemon oil with a fresh and intense aroma powered by high concentrations of sought-after aromatic compounds, and lime oil with citrus freshness and bright notes.

The company's mandarin oil offerings included yellow mandarin oil "Solar Twist" with a typical round note and mandarin oil 5x with juicy, fresh, sweet and intense notes. Its bitter orange oil, meanwhile, had delicate bitter floral notes.

Citrofood's green bergamot oil featured green and citrusy impressions, while its green mandarin oil was juicy, bright and herbaceous. Finally, a WONF orange oil 40x, featuring a high concentration of orange oil, imparted a rich flavor profile.



At FlavourTalk 2026, Lallemand spotlighted nootkatone, a high-purity aroma ingredient produced through precision fermentation that brings the distinctive citrus, grapefruit and woody character of the naturally occurring compound to flavor and fragrance formulations.

Citrus in Concentrate: Ultra-Low-Dose Oils with Maximum Impact

A trio of Lionel Hitchens' high-vacuum distilled citrus oils showcases how high concentration reshapes flavor impact at ultra-low usage levels. Pomelo oil 2-fold, derived from cold-pressed pomelo peel oil, delivers a crisp citrus profile with pronounced peely and zesty character at just 0.01% dosage.

HiPer blood orange oil, further concentrated through physical processes, pushes intensity even further—bringing fruity, juicy, fresh and sweet-zesty brightness at only 0.002%. Completing the set, lime distilled concentrate introduces a sharper, greener citrus dimension, combining peely lift, cola-like nuances, and juicy sharpness at 0.005%.

Image by nikkimeel at Adobe Stock

Versatility in Nootkatone

De Monchy Aromatics' nootkatone EU natural (ex-biotransformation) is derived from valencene sourced from orange and offers a highly versatile citrus profile with broad application across fruity and fresh formulations. Its sensory reach spans from raspberry-like nuances to crisp cucumber facets, alongside classic grapefruit character, making it a multifunctional building block for modern flavor creation. Available in a range of grades, it provides flexibility for different intensity and application needs while maintaining a clean, natural citrus signature.



Lionel Hitchens' lime distilled concentrate introduces a sharp, green citrus dimension, combining peely lift, cola-like nuances and juicy sharpness at 0.005%.

Lemon Keys from a Growing Döhler

At FlavourTalk 2026, Döhler presented lemon keys with herbal, fruity and sweet effects in carbonated soft drinks, cookies and hard-boiled candy. Across applications, the materials variously offered refreshing, fruity and sweet contributions.

The presentation came amid an expansion for the company. In April 2026, Döhler and Treatt announced a recommended cash acquisition under which Döhler will acquire the entire issued and to be issued share capital of Treatt that it does not already own for 305 pence per share in cash, valuing the company at approximately £183 million. The offer represented a premium of around 48% to recent trading levels and will be implemented primarily through a court-sanctioned scheme of arrangement under Part 26 of the U.K. Companies Act, with a previously announced final dividend of 3 pence per share remaining payable separately.



At FlavourTalk 2026, Döhler presented lemon keys with herbal, fruity and sweet effects in carbonated soft drinks, cookies and hard-boiled candy.

Döhler, which has a long-standing commercial relationship with Treatt as both supplier and customer, said the transaction reflects strong industrial logic, combining complementary portfolios, geographic reach and innovation capabilities to form a larger global ingredients platform. It further argued that private ownership would better support Treatt's long-term growth strategy by enabling greater investment flexibility, deeper integration opportunities, and access to Döhler's scale and distribution network amid ongoing sector and macroeconomic uncertainty.



From top: Image by chas53; leungchopan at Adobe Stock

From Sacred Cypress to Barrel-Aged Oak: **Woody Ingredients Branch Out Across Flavor and Fragrance**

From Japanese hinoki oil to elevated cedarwood, ingredients are bringing depth to flavors and fragrances.



This roundup highlights the latest woody flavor and fragrance materials, showcasing how nature-inspired notes are being refined, concentrated and reimagined for modern formulations.

NOTE: Ingredient availability and regulatory status may vary by region. Not all materials featured in this roundup are commercially available in every market. Readers should consult respective suppliers to confirm regional availability, approved uses and any applicable regulatory restrictions before formulation or commercialization.

Woody ingredients are evolving; from the forest-fresh tranquility of Japanese hinoki and precision-refined cedarwood fractions to oak-derived materials that recreate the depth of years of barrel aging, suppliers are finding new ways to deliver authenticity, sophistication and sensory richness.

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This roundup highlights the latest woody flavor and fragrance materials, showcasing how nature-inspired notes are being refined, concentrated and reimagined for modern formulations.



Derived from the wood of Japanese cypress (Chamaecyparis obtusa), Seikodo Ishida Co., Ltd.'s hinoki oil is a distinctive natural ingredient that combines a fresh coniferous character with warm woody depth and strong sustainability credentials.

Hinoki Oil: Japan's Sacred Cypress Brings Forest Freshness to Fragrance

Derived from the wood of Japanese cypress (*Chamaecyparis obtusa*), Seikodo Ishida Co., Ltd.'s hinoki oil is a distinctive natural ingredient that combines a fresh coniferous character with warm woody depth and strong sustainability credentials. Steam-distilled from trees grown in Japan's renowned Mie Prefecture, the oil is sourced from forests with a centuries-long cultivation tradition and increasing adoption of FSC-certified forestry practices.

The composition is dominated by α-pinene (37%) and supported by significant levels of δ-cadinene (16%), α-cadinol (11%), cyclo-γ-cadinene (8%), muurolol (6%) and γ-cadinene (6%), creating a profile that balances bright pine-like freshness with dry woody, balsamic and subtly earthy undertones. Smaller amounts of limonene, terpineol, nerolidol and terpinyl acetate add complexity and softness.

Beyond its olfactive appeal, hinoki oil is valued in Japan for its perceived antibacterial, deodorizing, insect-repellent and relaxing properties, making it a popular ingredient in home fragrance, wellness, personal care and functional scent applications.

The ingredient also reflects a broader effort to increase the value of Japanese forestry resources by utilizing wood not only as a construction material but also as a high-value fragrance raw material. As demand grows for authentic nature-inspired scents, hinoki offers perfumers a uniquely Japanese woody note that evokes the atmosphere of traditional temples, forest bathing experiences and freshly cut cypress wood.



Derived from Quercus alba, Destilla's low-alcohol oakwood extract delivers the rich complexity associated with barrel aging, combining dried wood notes with smooth vanilla, raisin-like sweetness and subtle savory-soy undertones.

Oakwood Extract: Barrel-Aged Depth Without the Wait

Derived from *Quercus alba*, Destilla's low-alcohol oakwood extract delivers the rich complexity associated with barrel aging, combining dried wood notes with smooth vanilla, raisin-like sweetness and subtle savory-soy undertones.

Driven by naturally occurring tannins and aromatic compounds such as 2,6-dimethoxyphenol, the extract adds warmth, depth and maturation character to flavor systems.

Ideal for beverages and savory applications, it provides an efficient way to introduce premium aged, woody nuances and layered complexity without extended processing or aging times.

From top: Image by Andrius; Evgeny Karandaev at Adobe Stock

Refined Woods: Elevated Cedarwood Materials

Berjé offers a refined approach to classic North American cedarwood through its cedarwood oil deluxe USA, a steam-distilled and fractionated oil produced in partnership with Texarome. Derived from *Juniperus virginiana*, the material is engineered to shift cedarwood away from its sharper, smoky facets toward a smoother, more polished olfactive profile.

Through targeted distillation, key sesquiterpene fractions are enhanced, softening rough edges while amplifying a velvety, heart-of-wood character. The result is a more rounded interpretation of cedarwood—earthy, balsamic and cleanly structured—positioned for use across masculine fragrances, woody accords and base note construction where diffusion and smoothness are critical.

Alongside the deluxe oil, Texarome also produces cedrenol pure (ex: *Juniperus virginiana*), a related cedar fraction offering a mellow, rounded scent profile in contrast to cedrene-dominant materials. Cedrenol is valued in perfumery as a natural fixative, strengthening base notes while adding subtle woody continuity without the smokier, more aggressive facets often associated with traditional cedarwood oils.

In addition, Berjé 's Cedar Cremosa (*Juniperus virginiana*) is produced via continuous distillation for a smooth, diffusive woody character with creamy nuances, softness, depth and balance. The material is recommended for woody accords requiring warmth, creaminess and a smooth cedarwood profile.



Berjé offers a refined approach to classic North American cedarwood through its cedarwood oil deluxe USA, derived from Juniperus virginiana. (Species depicted for illustration only.)



Payan Bertrand's oakwood chips resinoid is particularly well suited for alcoholic beverage profiles such as whisky and rum, while also enhancing barbecue sauces, brown sauces, dark chocolate and caramel applications.

From top: Image by Gerry; RasaBasa at Adobe Stock

Barrel-Aged Character with Oakwood Chips Resinoid

Payan Bertrand's oakwood chips resinoid is a powerful ingredient designed to bring authentic barrel-aged depth to a wide range of flavor applications. Characterized by woody, dry and intensely aromatic notes, the resinoid captures the rich sensory qualities associated with oak maturation.

The ingredient is particularly well suited for alcoholic beverage profiles such as whisky and rum, while also enhancing barbecue sauces, brown sauces, dark chocolate and caramel applications. Additionally, it offers formulators an effective way to impart sophisticated alcoholic-style nuances and aged complexity in products that require the perception of spirits without the presence of alcohol.

From Piña Colada to Electric Daisy: **The New Faces of Gourmand Scents and Flavors**

Effects that expand the boundaries of flavor and fragrance creation.

NOTE: Ingredient availability and regulatory status may vary by region. Not all materials featured in this roundup are commercially available in every market. Readers should consult respective suppliers to confirm regional availability, approved uses and any applicable regulatory restrictions before formulation or commercialization.

Gourmand continues to evolve far beyond vanilla and caramel. Across the flavor and fragrance sectors, suppliers are introducing a new generation of materials that blend indulgence with complexity, drawing inspiration from tropical cocktails, roasted seeds, specialty teas, exotic spices, creamy florals and even tingling botanicals.

This roundup highlights some of the most intriguing ingredients gaining attention—from Robertet's piña colada-inspired coconut extract and roasted sesame CO_2 extract to cocoa aldehydes that bring structure and realism to chocolate accords. Alongside these comfort-driven notes, suppliers are exploring sensory contrast through ingredients such as Sichuan pepper oil and spilanthol-rich *bunga mas*, delivering cooling, numbing and stimulating effects that expand the boundaries of flavor and fragrance creation.



Robertet's Colada Extract is a highly versatile ingredient that translates the sensory richness of coconut into a refined olfactive profile—shredded coconut, creamy and toasted nuances, juicy fruit facets, and a subtle pineapple flesh note evoking a natural piña colada impression.

Image by Ivan Trizlic at Adobe Stock

Colada in a Drop: Robertet Bottles Tropical Indulgence

Robertet's Colada Extract is developed using a hybrid process that combines coconut

bioconversion with supercritical CO_2 extraction, yielding a clear, soluble natural extract derived from *Cocos nucifera* sourced in the Philippines.

The result is a highly versatile ingredient that translates the sensory richness of coconut into a refined olfactive profile—shredded coconut, creamy and toasted nuances, juicy fruit facets, and a subtle pineapple flesh note evoking a natural piña colada impression. Designed for fragrance applications, it offers both gourmand indulgence and technical flexibility in modern formulations.

Cocoa Aldehyde for Gourmand Constructions

O'Laughlin's cocoa aldehyde (synonyms: coco hexenal, chcolactone) brings a more structural, less sugary take on chocolate accords. The material opens on bitter cocoa and dark chocolate facets, unfolding into nutty-green nuances with soft honeyed backnotes that add lift rather than weight.

Designed for low-dose impact (0.01-0.050%), it functions as a precision modifier in gourmand compositions, tightening cocoa realism while adding aromatic contrast. Perfumers can deploy it to sharpen chocolate accords, extend vanilla constructions, or introduce a subtle green-bitter tension alongside nutty notes.

Positioned less as a sweet note and more as an architectural cocoa accent, it offers creators a way to move gourmand fragrances toward depth, texture, and controlled bitterness without losing comfort.

Roasted Sesame, Reinvented

Robertet's sesame roasted CO_2 extract is derived from roasted seeds of *Sesamum indicum* sourced in India. This ingredient captures a deep, savory-gourmand profile defined by cereal and peanut nuances layered with toasted, caramelized, popcorn-like and cocoa facets, finishing with a subtle salty edge.

Tea, Tranquility and Tingle

At Origin Oils, a trio of natural materials demonstrates a broad sensory spectrum spanning calm, depth, and stimulation. Its green tea absolute offers a fresh, green, leafy profile with light bitterness, soft floral undertones, and a clean, calming finish, rounded by a gentle astringency—well suited to wellness beverages and fine fragrance applications.

In contrast, the black tea absolute moves into a warmer, more fermented territory, delivering earthy



O'Laughlin's cocoa aldehyde (synonyms: coco hexenal, chcolactone) can be deployed by perfumers to sharpen chocolate accords, extend vanilla constructions, or introduce a subtle green-bitter tension alongside nutty notes.

richness, subtle smoke and mild tannic depth, making it particularly relevant for cosmetics, creams, serums, and soaps.

Completing the set, Sichuan pepper essential oil introduces a bright citrus lift layered with spicy warmth and a distinctive mild numbing effect, finishing clean and energetically—delivering high aromatic impact even at low dosage levels.

Clean and Intense Profiles for Confectionery and Oral Care

Among the mint profiles offered by Frey & Lau is a *Mentha arvensis* oil (rectified), which offers a cool, balanced and clean mint character with a fresh, gently cooling profile. The oil is designed for applications where clarity and smoothness are key, making it particularly well suited to confectionery and oral care formats that require a refined, non-overpowering mint freshness.

Alongside this, the company's Indian peppermint oil (rectified) delivers a more intense cooling effect, with a bright, herbal-sweet and powerfully minty profile. This variant is tailored for impact-driven applications such as

Image by Grafvision at Adobe Stock

gum, sweets, and chocolate, where a stronger burst of freshness and lingering cooling sensation is desired.

Nutmeg, Refined: Removing Regulatory Roadblocks from a Historic Spice Oil

Indesso is bringing a modern twist to one of the world's oldest and most prized botanicals with its refined, terpeneless nutmeg oil. Derived from Indonesian-grown *Myristica fragrans*, the ingredient delivers the warm, sweet-spicy, woody character formulators expect from nutmeg while addressing increasingly stringent global regulatory requirements.

The company's safrole and methyl eugenol-free (SMEF) grade is designed to retain nutmeg's authentic aromatic profile while removing naturally occurring compounds that can face usage restrictions in markets such as the European Union and China. The result is a more versatile ingredient that offers greater formulation flexibility for flavor and fragrance applications without sacrificing sensory performance.

Produced through advanced distillation and selective fractionation, the oil preserves the characteristic warmth and complexity of Indonesian nutmeg while meeting strict quality and safety standards. Indesso says the process enables the removal of trace compounds such as safrole and methyl eugenol while maintaining batch-to-batch consistency through in-house analytical validation.

Sourced from Indonesia—the world's largest producer of nutmeg oil and home to the historic Banda Islands where the spice originated—the ingredient combines botanical heritage with modern compliance demands.



Sichuan pepper essential oil introduces a bright citrus lift layered with spicy warmth and a distinctive mild numbing effect, finishing clean and energetically—delivering high aromatic impact even at low dosage levels.



Indesso is bringing a modern twist to one of the world's oldest and most prized botanicals with its refined, terpeneless nutmeg oil.

Creamy Floral-Gourmand Complexity with Exotic Fruit Nuance

Payan Bertrand's ylang oil fractions (farnesene; CAS# 83863-30-3; FEMA# 3119) offers a richly layered flavor profile that combines classic ylang floralcy with fatty, sweet and slightly sugary nuances. The material unfolds with banana-like fruit tones supported by subtle spicy eugenol facets and a woody, chestnut-like depth, evolving into a creamy chestnut and chestnut cream character that enhances its gourmand appeal.

Well suited for desserts, yellow fruit profiles, raspberry flavors, chestnut applications and cocktails, the ingredient brings both lift and indulgent roundness, making it a versatile tool for adding exotic floral-fruity complexity and smooth, creamy texture across sweet goods and beverage formulations.

From top: Image by dashu83; Narsil at Adobe Stock

Spilanthol from Bunga Mas: A Functional Bioactive for Oral Care and Cosmetics

In Indonesia, Indesso and partner farmers cultivate bunga mas (acmella or electric daisy), a botanical source of spilanthol that is increasingly being explored as a functional ingredient for oral care and personal care formulation.

Rather than being positioned as a novelty botanical, spilanthol is of interest primarily for its defined bioactivity profile. As a bioactive alkylamide, it produces a characteristic tingling and mild numbing sensation and has been documented in studies for anaesthetic, analgesic, anti-inflammatory, antimicrobial and salivation-stimulating effects. These properties are particularly relevant for oral care formats such as mouthwashes, tooth gels and gum care products, where sensory relief and functional efficacy are both formulation targets.



Payan Bertrand's ylang oil fractions (farnesene; CAS# 83863-30-3; FEMA# 3119) unfolds with banana-like fruit tones supported by subtle spicy eugenol facets and a woody, chestnut-like depth, evolving into a creamy chestnut and chestnut cream character that enhances its gourmand appeal.



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For flavorists and product developers working across milk, cheese, yogurt and plant-based alternatives, navigating this landscape requires balancing strict functional demands with a non-negotiable prerequisite: taste remains the primary driver of consumer purchase decisions.

Image by Luis at Adobe Stock

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Formulating the Future of Dairy: 4 Essential Mandates for Product Developers and Flavorists

PLUS: New Dairy Flavor (and Fragrance) Tools.

According to the IFF Dairy Trends Report 2026[a], dairy products have become complex, multifunctional vehicles for targeted nutrition, emotional wellness and eco-ethical transparency. For flavorists and product developers working across milk, cheese, yogurt and plant-based alternatives, navigating this landscape requires balancing strict functional demands with a non-negotiable prerequisite: taste remains the primary driver of consumer purchase decisions.

Data-driven highlights from the report provide a clear operational blueprint for immediate product development. Let's dig into the data.

Target 1: GLP-1 and Compact-Nutrition Demographic

The rapid rise of weight-loss medications like GLP-1 analogs is structurally reshaping eating behaviors, opening up a high-value category for dairy innovation. Consumers on these treatments experience significant appetite suppression, muscle volume loss and gastrointestinal sensitivities, driving a critical need for low-volume, nutrient-dense foods.

In the United States, households using GLP-1 medications consume yogurt at nearly three times the average rate, favoring formats that provide rapid satiety without physical heaviness.



In the United States, households using GLP-1 medications consume yogurt at nearly three times the average rate, favoring formats that provide rapid satiety without physical heaviness.

[a]*https://www.iff.com/media/news/2026-dairy-trends-report/*

Image by ChayTee at Adobe Stock

FROM FAT NOTES TO FULL CREAMINESS: NEW DAIRY FLAVOR (AND FRAGRANCE) TOOLS*

**NOTE: Ingredient availability and regulatory status may vary by region. Not all materials featured in this roundup are commercially available in every market. Readers should consult respective suppliers to confirm regional availability, approved uses and any applicable regulatory restrictions before formulation or commercialization.*



HaseMilk is engineered to mimic both the external and internal flavor characteristics naturally present in milk fat. The result, according to T Hasegawa, is a more authentic whole-milk sensory profile capable of performing across both dairy and non-dairy applications.

Targeting Dairy-Free's Biggest Weak Spot

As dairy-free formulators continue chasing the holy grail of authentic milk taste and texture, T. Hasegawa USA is betting its latest innovation can close the sensory gap once and for all.

The California-based flavor house has unveiled HaseMilk, a powdered flavor technology designed to replicate the creamy flavor, aroma and mouthfeel of real milk—without using any dairy ingredients. The launch positions the company squarely at the intersection of plant-based demand, protein fortification and clean-label formulation, where off-notes and texture challenges remain persistent pain points for developers.

Unlike traditional dairy replacers focused primarily on sweetness or creaminess, HaseMilk is engineered to mimic both the external and internal flavor characteristics naturally present in milk fat. The result, according to the company, is a more authentic whole-milk sensory profile capable of performing across both dairy and non-dairy applications.

The launch comes as manufacturers face mounting pressure to improve dairy-free eating experiences. Roughly two-thirds of the global population experiences some level of lactose malabsorption, per data cited by the company, while U.S. dairy-alternative usage has climbed to 56%, up from 40% in 2020. At the same time, consumers continue to criticize many plant-based products for thin texture, chalkiness and lingering off-notes—particularly in high-protein systems.

HaseMilk is aimed directly at those formulation hurdles. The ingredient is designed to mask undesirable notes in challenging applications including protein beverages, functional nutrition products, coffee drinks, frozen desserts, sauces and powdered beverage mixes, while enhancing creaminess and overall flavor roundness in both sweet and savory systems.

For developers navigating volatile dairy pricing and supply constraints, the dry-format system may also offer operational advantages. T. Hasegawa says the technology can support cost optimization and formulation flexibility while eliminating allergen and dairy-labeling concerns.

Image by Pixel-Shot at Adobe Stock

"Taste and texture remain one of the biggest barriers to adoption in the dairy alternatives category," said Mark Webster. "HaseMilk gives manufacturers more flexibility to enhance dairy flavor, improve overall taste performance, and support reduced-dairy formulations without sacrificing the experience consumers expect."

The ingredient platform was developed through T. Hasegawa's "Bridge to Tokyo" initiative, which integrates R&D capabilities between the company's Japanese headquarters and its U.S. operations in California. HaseMilk is launching in fresh whole milk, whole milk powder and skim milk powder flavor types.

The company says the system meets FDA natural flavor guidelines and is vegan, dairy-free, non-allergen, kosher, non-GMO and Prop 65 compliant—credentials increasingly expected in next-generation flavor systems targeting mainstream food and beverage reformulation.

Fruity Lift Meets Creamy Depth

4-Heptanone natural (FEMA# 2546; CAS 123-19-3) from Penta Fine Ingredients delivers a distinctive profile combining fruity brightness with creamy, slightly cheesy undertones and herbal facets. Its versatility makes it well-suited for dairy, fruit and savory flavor systems.

In perfumery, its volatile, slightly waxy character imparts a subtle freshness, adding lift and realism to green, fruity and lactonic accords, while enhancing the naturalness of a composition without dominating the blend.

Creamy, Butter and Green-Fat Notes

Millipore Sigma's 2-hexylpyridine (CAS# 1129-69-7, FEMA# 4948) delivers fatty, green nuances used to add lift and savory depth in flavor systems. Meanwhile, its decanedioic acid (CAS# 111-20-6, FEMA# 4943) provides dairy-like, fatty tonal effects that support creamy and milkfat character in formulations.

Millipore Sigma's δ-hexadecalactone (CAS# 7370-44-7,FEMA# 4673) contributes rich butter, fatty and waxy notes, reinforcing creamy mouthfeel and dairy authenticity. Together, these ingredients function as structural modifiers for dairy, butter, and fatty profiles, supporting rounded, realistic richness in savory and creamy applications.



Millipore Sigma's δ-hexadecalactone (CAS# 7370-44-7,FEMA# 4673) contributes rich butter, fatty and waxy notes, reinforcing creamy mouthfeel and dairy authenticity.

Image by Towfiqu barbhuiya at Pexels

R&D pipelines must prioritize fortified drinks, mini-portions and functional snacking profiles. Formulas must deliver complete, high-quality proteins and digestive comfort in highly concentrated, low-viscosity bases that are easy to consume.



A recent McKinsey report suggests protein is rapidly becoming the dairy category's primary growth driver in both the United States and Western Europe. Nearly nine in 10 U.S. dairy executives identified protein as the most influential consumer demand trend.

Target 2: Nutrition and Mood

Today, healthy dairy concepts encompass emotional balance, mood modification and sleep health, in addition to nutrition.

Globally, 14% of recent dairy and alternative-dairy launches are fortified with vitamins and minerals, per the IFF report, while 8% feature added protein. Spoonable yogurts are leading this push: 20% feature high/added protein claims, 12% incorporate active probiotics,and 11% are vitamin/mineral fortified.

A recent McKinsey report[b] suggests protein is rapidly becoming the dairy category's primary growth driver in both the United States and Western Europe. Nearly nine in 10 U.S. dairy executives identified protein as the most influential consumer demand trend, significantly outpacing convenience, premiumization and plant-based alternatives (read on for more on these). The market data supports that view: Western Europe's high-protein dairy segment achieved a 17% CAGR from 2019-2024, while U.S. per-capita cottage cheese consumption—a key high-protein dairy product—grew at a 6.2% CAGR between 2020 and 2025.

The trend reflects broader consumer demand for high-protein, functional foods with simple ingredient lists. As a result, dairy companies increasingly see protein as a long-term strategic growth platform. Across both regions, manufacturers are investing in new production capacity, reformulating products and shifting portfolios toward protein-rich offerings, including dairy ingredients, ready-to-drink beverages, cottage cheese and functional snack formats. The message from industry leaders is clear: protein is evolving into a central pillar of dairy innovation and investment strategy.

Meanwhile, next-generation dairy bases are actively incorporating non-pharmaceutical botanical adaptogens, magnesium, melatonin, L-theanine and GABA to promote calm and cognitive clarity. Flavorists will be tasked with masking the inherent bitterness, metallic tones and off-notes of these active elements while maintaining clean, label-friendly profiles.

[b]*https://www.mckinsey.com/industries/agriculture/our-insights/the-dairy-industrys-2026-playbook-protect-margins-pursue-growth*



A recent McKinsey report suggests protein is rapidly becoming the dairy category's primary growth driver in both the United States and Western Europe. Nearly nine in 10 U.S. dairy executives identified protein as the most influential consumer demand trend.

Target 3: Indulgence and Function via Dessert-Inspired Texture

The traditional boundary separating pure indulgence from clinical health has collapsed. Consumers are leveraging dairy for moments of mental relief, requiring developers to match functional ingredients with high-sensory, dessert-style formats.

From top: Images by Art_Photo; Madele at Adobe Stock

In the United States, per the IFF report, the introduction of rich, complex, dessert-inspired flavors like cinnamon roll, red velvet and coffee caramel successfully reversed a five-year decline in spoonable yogurt sales.

Texture is being used as a primary tool for consumer surprise and satisfaction. Formulators need to focus on multi-layered, interactive formats such as triple-layer pots combining mousse, fruit gels and crunchy toppings, or products that physically transform texturally upon stirring.

Target 4: Hybrid Performance and Regenerative Resilience

Environmental realities are forcing the industry to look past passive sustainability toward measurable, regenerative agriculture metrics. This operational shift directly impacts sourcing and raw material transparency.

Shoppers are actively reducing their environmental footprints, with 30% of Gen Z cheese consumers specifically seeking out sustainably produced items and 54% of French cheese buyers willing to pay a premium to support fair farmer equity, per IFF.

Formulators must therefore optimize alternative protein streams, such as upcycling whey side-streams into high-value functional proteins. Furthermore, space is widening for hybrid dairy platforms that seamlessly blend plant and animal proteins (e.g., plant-dairy cheddar hybrids) to maximize eco-efficiency while retaining familiar dairy textures and melting behaviors.

Dairy's Next Design Logic: Protein, Wellness, Indulgence and Regeneration

Dairy is now operating as a multifunctional platform where nutrition, emotional wellness, indulgence and sustainability converge, with taste still as the decisive purchase driver.



Shoppers are actively reducing their environmental footprints, with 30% of Gen Z cheese consumers specifically seeking out sustainably produced items.

For product developers and flavorists, the implication is a shift toward integrated design: compact, high-protein, nutrient-dense formats tailored to GLP-1 consumers; expansion of protein-led portfolios enriched with vitamins, probiotics, and emerging mood and sleep actives that require advanced flavor masking and clean-label strategies; and continued blending of indulgence with function through dessert-inspired profiles and layered, texturally dynamic formats that restore sensory pleasure to health-focused products.

At the same time, sustainability expectations are moving toward regenerative sourcing and hybrid dairy-plant systems, increasing the importance of upcycled streams and transparent ingredient strategies.

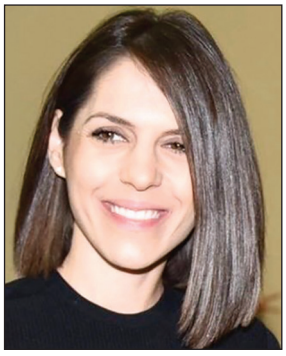
The next step for R&D teams is to align formulation pipelines around these four axes—protein density, functional wellness delivery, sensory indulgence and regenerative efficiency—while investing in flavor systems and texture technologies that allow complex active ingredients to be delivered without compromising taste, familiarity or consumer enjoyment.



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The sweet, balsamic elements of natural vanillin ex vanilla beans would complement all vanilla profiles, from creamy French vanilla to beany vanilla Madagascar type, while it would provide additional complexity to variety of brown flavors, like caramel and chocolate.



BY MARIA PALASSAROU
Flavorist, Givaudan

From Vanillin to Pyrazines: A Deep Dive into Natural Aroma Ingredients Shaping Modern Flavor Design

Sulfurous, tropical, nutty, roasted, floral and other tonalities.

Organoleptic Evaluation Panelists

- **Andrea Albertino, Ph.D.,** Senior Flavorist, Esarom
- **Trevor Groome,** Consultant Flavorist – Director, Orchid Aromatech Ltd
- **Bimal Karmakar, Ph.D.,** Principal Flavorist, Givaudan
- **Britta Nobis,** Senior Flavorist, Silesia
- **Maria Palassarou, Ph.D.,** Flavorist, Givaudan
- **Ján Peťka, Ph.D.,** Head of Flavor Development, Austria Juice
- **Michele Pezzotta,** Flavorist, Silesia Flavors
- **Aine Walsh,** Principal Flavorist, Keurig Dr Pepper

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In this month's column we evaluate ingredients from Axxence, a privately held company founded in 1986, with its headquarters in Emmerich, Germany. Axxence is a manufacturer and supplier of natural flavor ingredients to the global flavor and fragrance industry. Since 2021, the company has been majority-owned by the Capiton Group of Berlin. In 2024, Axxence strengthened its position as a global leader in natural aroma chemicals by partnering with Natural Advantage, expanding the portfolio to more than 475 products and reinforcing the company's presence in North American and international markets, while supporting innovation and sustainability.

Natural vanillin ex vanilla beans

FEMA# 3107, CAS# 121-33-5

- **Odor Descriptors @ 10%:** Vanilla, sweet, powdery, beany, balsamic, tonka, creamy notes, phenolic, woody.
- **Taste Descriptors @ 20 ppm:** Vanilla, sweet, powdery, beany, balsamic, phenolic, slight woody, creamy, custard nuance, brown sugar notes.
- **Possible Applications:** Its sweet, balsamic elements would complement all vanilla profiles, from creamy French vanilla to beany vanilla Madagascar type, while it would provide additional complexity to variety of brown flavors, like caramel and chocolate. The creamy, custard attributes would make it a great addition to various sweet dairy tonalities, like ice cream, whereas its phenolic, woody character would also complement spicy profiles, like cinnamon. Key ingredient for variety of fruit tonalities providing subtle sweetness, from stone fruits, like peach and cherry, orchard fruits, like red apple profiles, to berries, like raspberry and strawberry.

Natural vanillyl ethyl ether

FEMA# 3815, CAS# 13184-86-6

- **Odor Descriptors @ 20%:** Phenolic, alcoholic, rummy, woody, smoky, spicy, clove, vanilla notes, earthy, musty, nutty, honey nuance.
- **Taste Descriptors @ 5 ppm:** Phenolic, alcoholic, rummy, warming sensation, slight burning, woody, smoky, vanilla notes, cocoa, honey nuance, exotic, horseradish notes.
- **Possible Applications:** Its dominant phenolic character would complement variety of alcohol tonalities, from cask aged spirits, like rum and whiskey, to wine and beer. Its warming, slight burning attribute could make it key ingredient for alcohol free drink profiles, while it would provide additional complexity on taste and sensation to spices flavors, like ginger. Moreover, it could complement savory tonalities as a hot sensate, like in chili and pepper profiles. The phenolic woody elements would make it a great addition to vanilla profiles bourbon type, as well as on smoke flavors.

Natural rose oxide

FEMA# 3236, CAS# 16409-43-1

- **Ingredient Specification:** cis- and *trans*-isomers at 69:31 ratio.
- **Odor Descriptors @ 1%:** Floral, rose, geranium notes, green, herbal, tropical, spicy, metallic, slight burnt, citrus nuance, tea notes.
- **Taste Descriptors @ 3 ppm:** Floral, rose, geranium notes, green, herbal, tropical, mango taste, spicy, slight burnt, citrus, tea like, metallic, hop notes.
- **Possible applications:** Its dominant floral character would make it ideal addition to rose and geranium flavor profiles, whereas in combination with its green aspect, it would complement variety of tropical fruit tonalities, like lychee, guava, and mango. Its green, herbal elements would provide complexity to tea flavors, like early grey, as well as beer profiles due to its additional characteristic hop-like note.

Natural 5-methyl-2-hepten-4-one 1% TA

FEMA# 3761, CAS# 81925-81-7

- **Odor Descriptors @ 1%:** Nutty, hazelnut, roasted, pungent, sweet, brown notes, rhubarb, earthy, musty, slight burnt, peanut shell, tonka nuance, coffee notes.



Natural 5-methyl-2-epten-4-one 1% TA's roasted aspect would complement variety of brown flavors, like chocolate, cocoa and coffee.

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- **Taste Descriptors @ 3 ppm:** Nutty, hazelnut, sweet, rhubarb, pungent, roasted, brown, chocolate notes, cocoa, coffee, burnt rubbery.
- **Possible Applications:** Its characteristic sweet, nutty attributes make it the key ingredient for hazelnut and praline profiles, apart from variety of nuts tonalities. Its additional roasted aspect would complement variety of brown flavors, like chocolate, cocoa and coffee, whereas it could also provide complexity to savory profiles, like roast beef. The sweet, slight tonka element could make it also a great addition to rhubarb flavors, providing the characteristic rhubarb tart note.

Natural pyrazines 20

FEMA# 3272, 3273, 3281, 3271, CAS# 123-32-0, 108-50-9, 13925-00-3, 5910-89-4

- **Ingredient Specification:** Mixture of 2,5-dimethyl pyrazine, 2,6-dimethyl pyrazine, 2,3-dimethyl pyrazine and 2-ethyl pyrazine.
- **Odor Descriptors @ 0.1%:** Nutty, roasted, musty, earthy, pungent, cocoa, bready, cereal notes, dried fruit nuance, coffee, slight burnt, meaty.
- **Taste Descriptors @ 2 ppm:** Nutty, roasted, musty, earthy, cocoa, cereal notes, dried fruit nuance, fermented, slight burnt, woody, coffee, meaty.
- **Possible Applications:** Its dominant roasted character would provide complexity to variety of nuts profiles, like peanuts, as well as brown flavors, like chocolate, cocoa and coffee. It could furthermore make it a great addition to savory roasted meat profiles. Its bready, cereal elements would complement majority of bakery flavor tonalities, from grains to biscuits, whereas its fermented aspect could make it a great addition to dried fruits flavors, like dates and prunes, as well as ripe fruit profiles.

Natural 3-(methylthio) hexyl acetate

FEMA# 3789, CAS# 51755-85-2

- **Odor Descriptors @ 100%:** Tropical, sulfurous, green, pungent, spicy, alliaceous, mustard, vegetable, tomato notes, slight cheesy, floral nuance.
- **Taste Descriptors @ 1 ppm:** Tropical, sulfurous, alliaceous, green, vegetable, earthy, fermented, ripe, slight mustard, cheesy, slight metallic passion fruit notes.
- **Possible Applications:** Its intense tropical sulfurous character would complement a variety of exotic fruit tonalities, like passion fruit, durian, dragon fruit, and lychee, while it could also provide complexity to sulfur, spicy citrus profiles, like grapefruit and yuzu. Its floral green nuance might make it also a great addition to rose and geranium profiles. The characteristic alliaceous note would make it a great fit to savory tonalities for bulb vegetables, like onion and garlic, whereas its spicy aspect would complement mustard flavors. The green, earthy, slight metallic element would also benefit vegetable profiles, like tomato and potato.



Natural 3-(methylthio) hexyl acetate's characteristic alliaceous note would make it a great fit to savory tonalities for bulb vegetables, like onion.

Natural ethyl 3-(methylthio) propionate

FEMA# 3343, CAS# 13327-56-5

- **Odor Descriptors @ 100%:** Tropical, sulfurous, pineapple notes, alliaceous, fruity, estery, ripe, fermented, metallic, slight rubbery, tomato, canned fruit notes.
- **Taste Descriptors @ 3 ppm:** Tropical, pineapple notes, estery, ripe, sweet, sulfurous, metallic, canned fruit taste, slight vegetable, tomato, rummy, hop nuance.
- **Possible Applications:** Its characteristic tropical, estery aspects would provide complexity to various exotic fruit tonalities, like pineapple, whereas the sweet, fermented element could complement canned fruit profiles. The green hop nuance might make it a great addition to beer flavor profiles, while its slight rubbery plastic aspect might benefit spirits profiles, like rum. The sulfur,

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green, alliaceous elements would also complement various savory vegetable tonalities, like spring onions, chives and tomato.

Natural 4-mercapto-4-methyl-2-pentanone 1% TA

FEMA# 3997, CAS# 19872-52-7

- **Odor Descriptors @ 0.001%:** Sulfurous, catty, blackcurrant notes, tropical, green, metallic, alliaceous, burnt plastic, meaty.
- **Taste Descriptors @ 1 ppb:** Sulfurous, catty, blackcurrant, dark berries, tropical, meaty, alliaceous, slight burnt, hop nuance, white wine notes.
- **Possible Applications:** Its intense sulfurous, catty character would provide depth and complexity to variety of berries tonalities, especially blackcurrant, tropical fruit profiles, like passion fruit and mango, as well as sulfur citrus, like grapefruit. The dark berries fruit aspect would complement grape flavor profiles, as also wine tonalities. Moreover, its alliaceous and meaty notes might make it a great addition to various savory tonalities, like onion and chicken meat profiles.



Natural 4-mercapto-4-methyl-2-pentanone 1% TA's intense sulfurous, catty character would provide depth and complexity to variety of berries tonalities, especially blackcurrant, tropical fruit profiles, like passion fruit.



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