

The Language of Salt

Mapping the sensorial effects of salt to restore the full taste experience in reduced-salt products

There are three main phases in the taste of salt, explains Sophie Davodeau, Givaudan's global head of sensory:

1. **Initial impact**, comprising the first salty impression, or mineral "bite," which eventually slows down and makes room for
2. **Body and mouthfeel**, in which odors become dominant before fading into
3. **Aftertaste**, which for salt is described as both clean and lingering.

These phases, which describe both qualitative and temporal facets, combine to form what the company calls the Salt Curve, a complete map of the impact of salt in a food throughout the consumption process.^a

Such understanding is crucial, says Davodeau, when formulating reduced-salt flavor solutions. "When you reduce salt, everything is going to be impacted: what happens at the initial impact, body and mouthfeel, and lingering." And, she adds, "when you reduce the salt from a soup or a ready meal product, the impact is going to be different. Our experience is that the taste will be changed, the mouthfeel will be changed, and the aromatics will be changed. The complete flavor profile has to be rebalanced with taste solutions. Whatever descriptors you have [in the three phases of salt taste], most of them are going to be impacted at different levels. And so the work for flavor creation is to find proper flavor and taste solutions that will be able to tackle each of these elements in order to restore the entire experience for the consumer."

An accurate accounting of each complex facet of salt's impact in foods required an expansion of Givaudan's Sense It sensory language.^b "It is now well understood in the food industry that salt is a very efficient and complex taste enhancer that goes beyond just making food taste salty," says Laith Wahbi, global product manager, savory. "Salt has a range of taste effects over time, which we have named the Salt Curve." Davodeau notes that the flavor creation and application staff has long been aware of this range, but only now has it been clearly defined both with descriptors and effects over time. The company teamed with sensory scientists and flavor creation and application staff to record their perceptions of salt over time through various phases. "With our sensory testing, we could measure what the flavor creation and application



people felt and what they were using as a concept in order to make better flavors," says Davodeau.

The full Sense It language includes more than 350 descriptors—covering aroma, taste and mouthfeel—a number of which are unique to salt. "For salt ... we had a limited amount of descriptors to describe what was happening," says Davodeau. "Our flavor creation and application [teams] actually used words that we didn't have a sensory reference for. Those are the additional descriptors that compose Sense It Salt."

She adds, "We are using these [terms] on a daily basis to measure the performance of our TasteSolutions in order to restore the full experience when our customers try to reduce the salt in their products while also maintaining a good taste for the consumers. We're using Salt Curve and Sense It Salt first to measure what's happening in a product when you remove the salt to [maximize] the performance of our flavors and to make sure we have all the ingredients to impact all those issues, and second to look at whether or not our solutions have an impact in maintaining a great taste in a product."

"Reducing salt is no longer a trend, it is a game-changer where nutritional quality and 'healthiness' is a key factor in product development," says Wahbi. And so, the insights gathered by the sensory scientists and flavor teams will impact formulations for soups, sauces, snacks, ready meals, bakery goods and cereals.

"We're always looking to get more knowledge in various applications in which you have salt," says Davodeau. "We're getting the knowledge of what's happening when you lower the salt, and we work with our flavor creation [staff] so that they tailor taste solutions for each application. There is quite a bit of back-and-forth work with them, where we measure where they are and guide them in providing the best solution based on the application. It's very application-dependent."

"More and more of our customers are looking to reduce the salt in their products, and one of their requests is: 'We want to maintain the taste,'" Davodeau continues. This, she says, is important both from a sensory perception standpoint, but also from a consumer perception and preference point of view. "Sometimes if customers reduce salt they don't mind if their products change a little bit—as long as they maintain consumer liking and acceptance for the product."

^aSalt Curve is a trademark of Givaudan.

^bSense It and TasteSolutions are trademarks of Givaudan.