



Inclusions & Mix-Ins in Frozen Desserts: Optimize Performance & Drive Sales

Liz Miller

Research & Development Manager



Comment from Scott Rankin

- Inclusions and variegates, as well. I think reviewing these drivers would be great, esp if there are new functionalities or pressures on these ingredients such as non-dairy, etc. To the degree that you are able, we would welcome content that relates any key functional features or new discoveries about inclusion engineering, if you will – moisture barriers, etc. or any guidance for the general use of inclusions such as storage temp, tempering for filling, etc.



Inclusions in Frozen Desserts

- Cookie Doughs
- Flakes & Barks
- Baked Items
- Confections & Sprinkles
- Variiegates
 - Water-Based
 - Fat-Based
 - Textured
- Coatings & Cone Sprays



Top Flavor Profiles (by Unit Sales)

Chocolate	491M	+2%
Vanilla	333M	+1.3%
Fruit	253M	-2.7%
Nuts	142M	-3.8%
Cookie	134M	+4.9%
Caramel	128M	+1.4%
Peanut Butter	104M	+2.5%
Cookie Dough	93M	-.6%
Mint	85M	-1.8%
Brownie	63M	-3.6%
Cake/Pie/Pastry	61M	-1%
Coffee	53M	-1.8%



Packaged Ice Cream by Flavor Segment



Ice cream with inclusions made up 65% of the ice cream category in 2023.

Ice Cream with Inclusions:

Cookie Dough, Cookies & Cream, Butter Pecan, etc.



Smooth ice cream flavors made up 35% of the ice cream category in 2023.

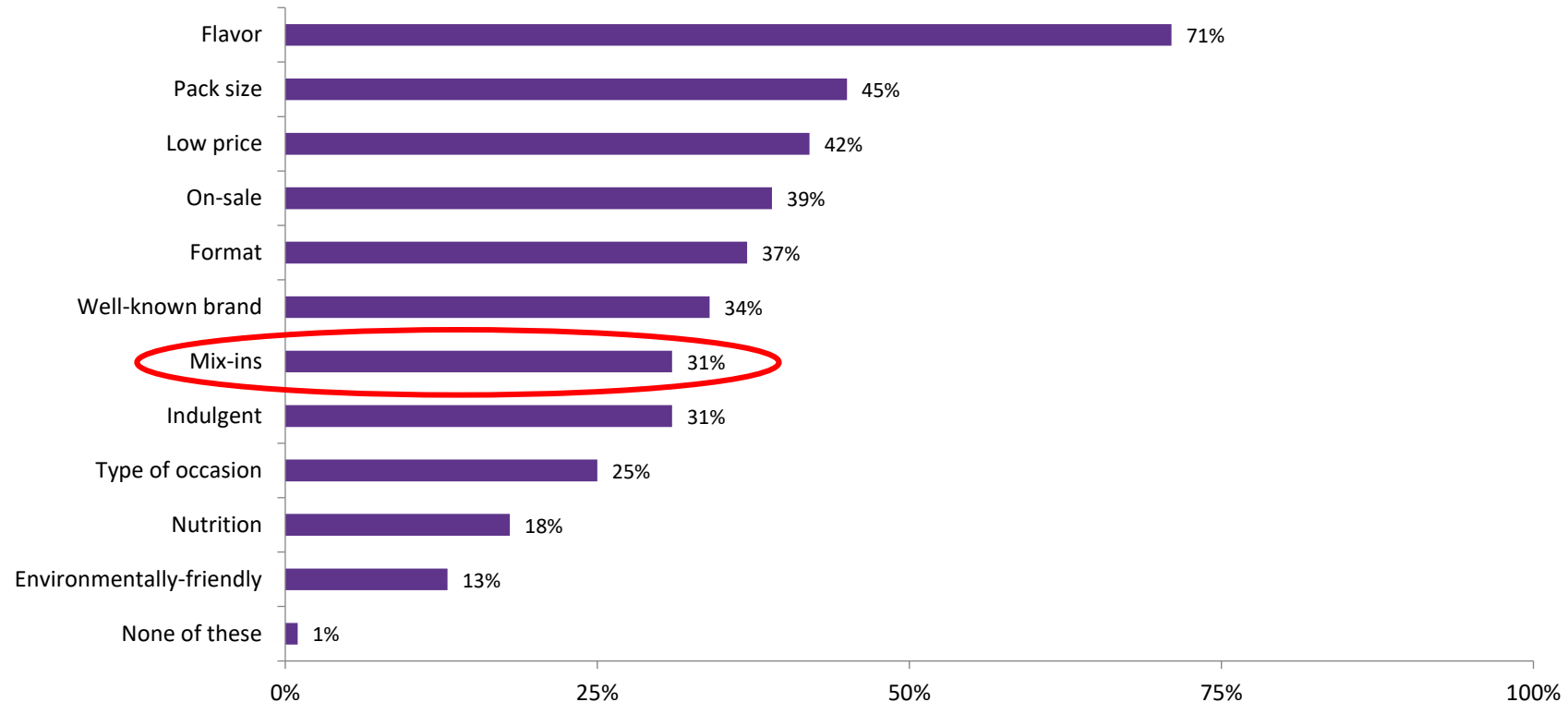
Smooth Ice Cream:

Plain Vanilla, Plain Chocolate, etc.



Important Attributes

Which of the following attributes are important to you when buying frozen treats from a retail store (eg grocery, convenience store)? Please select all that apply.



Why Add Inclusions?

- Inclusions have been an area of innovation in the category of late, with brands aiming to stand out via what they mix in
- Inclusions shouldn't replace inclusion-free bases but should act as an additional option for indulgence seekers



Flavor Trends with Inclusions

- Boldness
 - Bolder versions of familiar flavors (ex: triple chocolate) is the second highest flavor/ingredient style that encourages customers to try a dessert
 - By making small changes that elevate classic flavors, brands have an opportunity for big payoff



Flavor Trends with Inclusions

- Texture
 - As one of the five senses, touch plays an important role in perception and food experiences
 - Desserts that have a slight textural tweak can add interest without increasing risk
 - By ensuring a familiar element, consumers can try something new while being confident the product will deliver.
 - Ex: Brownie
 - Brownie Base, Brownie Batter Variegated, Baked Brownie



Flavor Trends with Inclusions

- Indulgence
 - Consumers have settled into new routines that continue to include indulgence
 - There is a trend of leaning into indulgence and specialty positioning
 - Ex: frozen treat launches that scored highest on the perception of 'tasty' all feature an upscaled riff of chocolate
 - Despite being a healthier generation, Gen Zs are often choosing indulgence over health



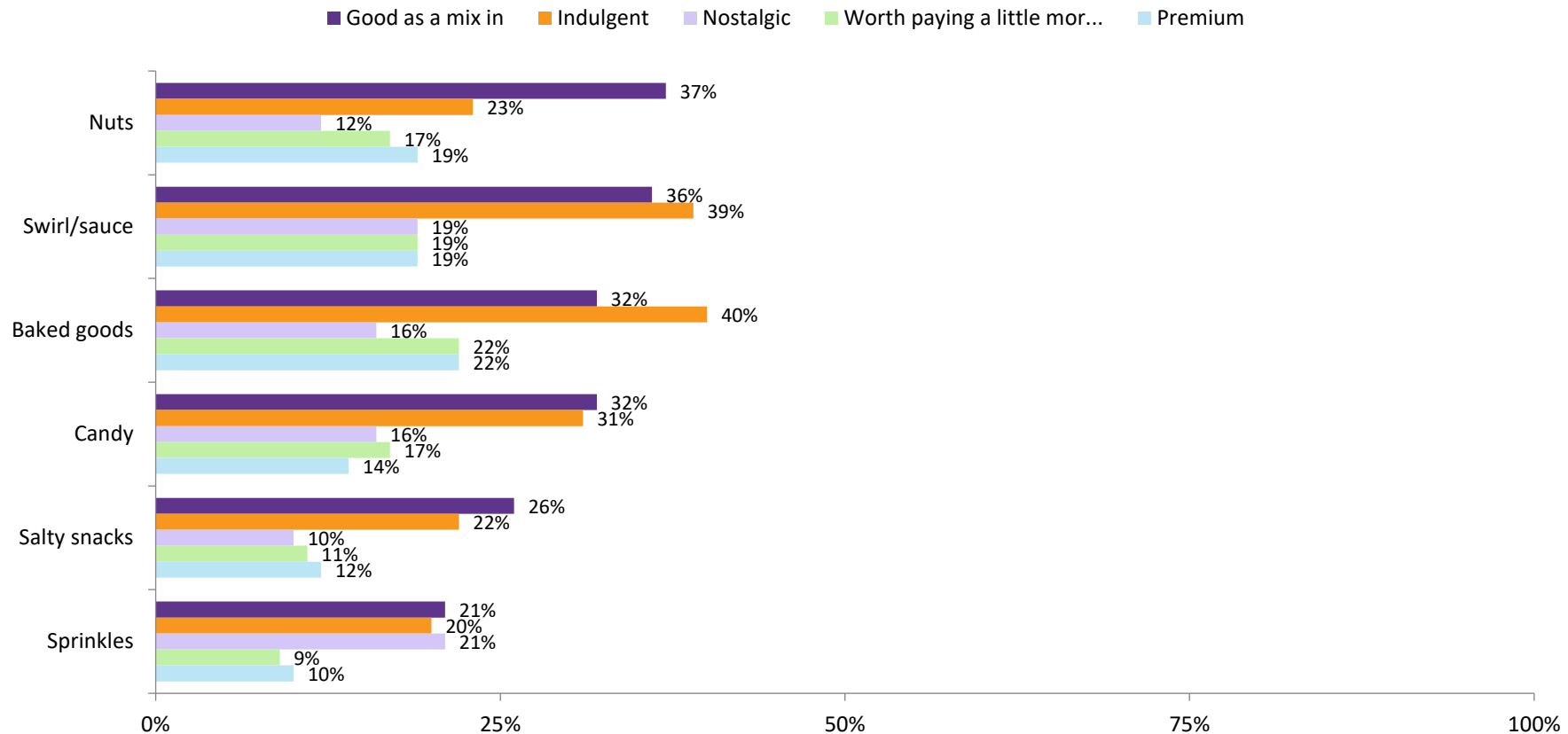
Types of Inclusions

- Within the category, inclusions/mix-ins can be categorized into six different sections
 - Nuts
 - Swirl/sauce
 - Baked goods
 - Candy
 - Salty snacks
 - Sprinkles



Attributes for Frozen Treat Inclusions

Which of the following attributes would you associate with each of the following frozen treat mix-ins or toppings? Please select all that apply per mix-in/topping.



Consumer Sentiments on Inclusions

- Mix-ins and toppings such as an added swirl/sauce are considered indulgent, but also can offer visual appeal
- Baked goods can enhance both an ice cream's flavor and texture
- Candy, sprinkles, and salty snacks are considered fun
- New dairy ice cream launches in the last five years are most often described as smooth, **chunky**, and **crunchy** in texture



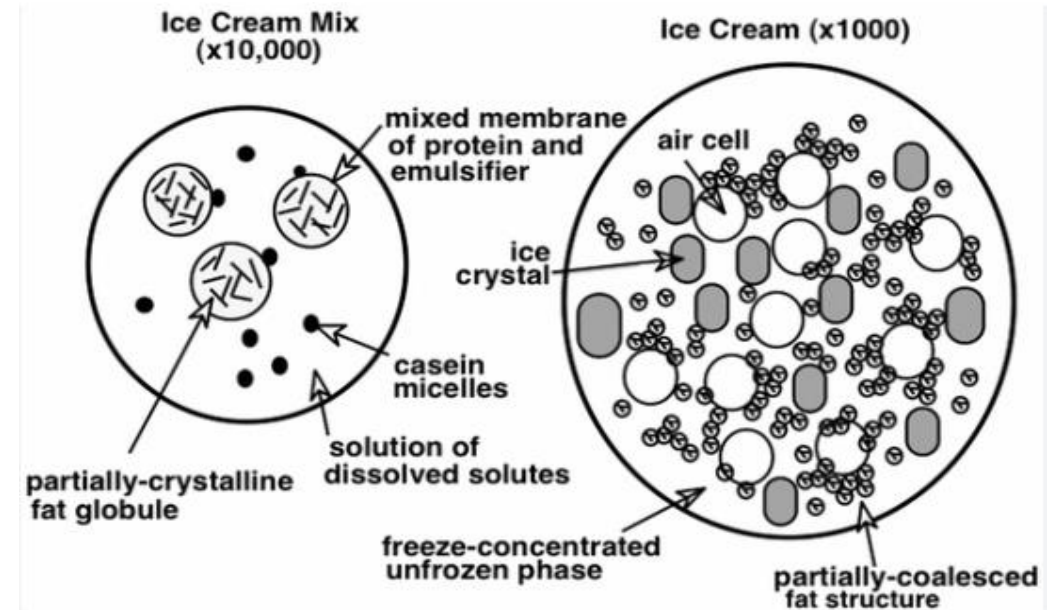
Flavourscape AI

- Mintel's proprietary data science model predicts a good chance of seeing one of these flavors emerge in the market within the new few years
 - Rhubarb
 - Pear
 - Rose (Flower)



Ice Cream is a Complex System!

- Oil-in-water Emulsion
- Air-in-water Suspension
- Ice-in-water Suspension
- Solution of dissolved solids
 - Freezing point depression
- Multi-component system
- Changing environment
 - Temperature changes throughout the chill chain



Inclusion Considerations

- Fat-based inclusions i.e. Chocolate chips, coatings
 - Waxy texture, lack of flavor
- Hygroscopic inclusions i.e. Toffee, fudges
 - Sticky product, loss of piece-identity
- Low water activity inclusions i.e. Puffed cereals, cookies
 - Loss of crisp texture
- Textual inclusions i.e. Fudges, chewy caramels
 - Chewy confections become hard
- Variegated inclusions i.e. Fat-based, water-based, textured
 - Sinking variegated, clogged nozzles



Fat-Based Inclusions

Examples: Flakes, barks & chocolate chips

Challenge: Waxy texture, lack of flavor

- Your mouth is cold when you eat ice cream!
 - Think: Butter from the refrigerator vs room temp



Optimized for frozen desserts:

- Lower melt point
- Increased flavor
- Increased sugar
 - Added benefit of sugar dissolving quickly on the tongue



Hygroscopic Inclusions

Examples: Toffee & fudges

Challenge: Sticky product, loss of piece-identity

Optimized for frozen desserts:

- Fat-coated
 - Create a barrier
- Chocolate-coated (confectionery-coat)
 - Create a delicious barrier
- Larger piece size



Low Water Activity Inclusions

Examples: Crisp rice, pretzels & cookies

Challenge: Loss of crisp texture

Optimized for frozen desserts:

- Fat-coat
- Chocolate-coat (confectionery-coat)
- Larger piece size



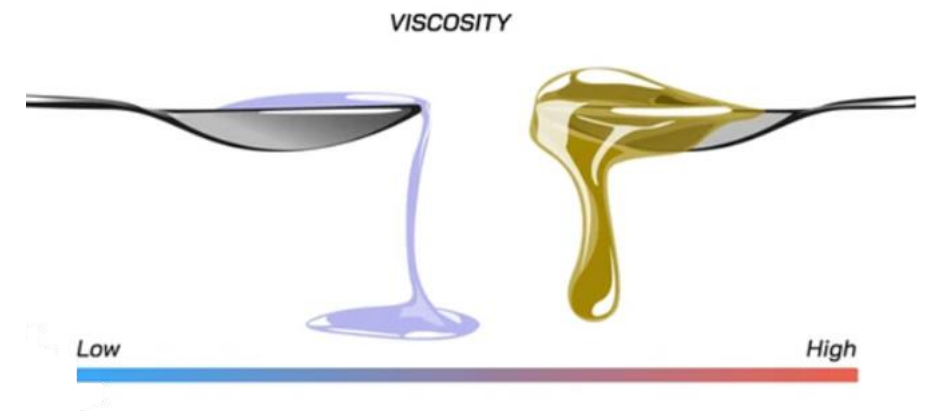
Textural Inclusions

Examples: Fudges & chewy caramels

Challenge: Chewy confections become hard

Optimized for frozen desserts:

- Increase fat content
- Lower melt point
- Add glycerin or invert



Variegate Inclusions

Examples: Water-based, fat-based, textured

Challenge: Variegates can sink, nozzles can clog

Recommendations:

- Keep base mix in mind
- Colder draw temperatures
- Temper to functional temperatures, colder is recommended
- Keep it dry!
 - Fat flush equipment prior to startup
- Keep fat-based variegates pumping during shutdowns



Handling Inclusions for Frozen Desserts

- Keep product cold!
- Avoid direct sunlight
- Avoid strong smelling flavors

- Fat-based items
 - Dairies are 'splashy'
 - Keep product dry



Key Takeaways

- Inclusions drive purchases
- Inclusions add value
- More complex flavors can be achieved by incorporating inclusions
- Inclusions perform best when optimized for frozen desserts



Without inclusions,
frozen desserts would be very 'vanilla'!

Questions?

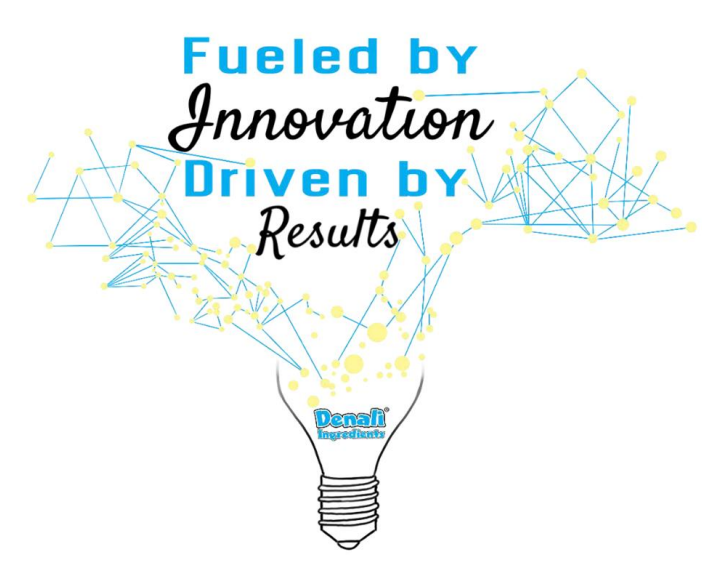


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<https://www.melskitchencafe.com/the-great-cookie-experiment-butter-temperature/>

<https://www.ebay.com/itm/133545928235>

<https://eatenlightened.com/products/dipped-dark-chocolate-almond>

<https://www.klondikebar.com/us/en/p/nuts-for-vanilla-and-classic-chocolate-cone.html/00075856000511>

<https://www.foodnetwork.com/recipes/food-network-kitchen/strawberry-crunch-ice-cream-cake-3364101>

<https://www.udfinc.com/ice-cream/udf-smores/>

<https://thetoffeehouse.com/milk-chocolate-bark/>

https://link.springer.com/chapter/10.1007/978-1-4614-6096-1_11

<https://www.shopify.com/stock-photos/photos/melting-chocolate-bar>

<https://www.shutterstock.com/search/viscosity>

<https://www.simplemost.com/new-ice-cream-cones-from-blue-bunny-have->

https://www.freepik.com/premium-photo/toffee-candies-with-melted-caramel-sauce-salt-isolated-white-background_12183042.htm

<https://www.amazon.com/Valrhona-CRUNCHY-PEARLS-VARIETY-PACK/dp/B08VRTC513>

https://bestlakesk.best/product_details/5220337.html

<https://blog.modernistpantry.com/advice/ice-cream-scoop-ability/>

