



Human Nutrition & Health

Encapsulated
Product Fact Sheets





balchem[®]
HUMAN NUTRITION & HEALTH

Encapsulates BakeShure[®], ConfecShure[®], MeatShure[®]

Balchem encapsulates technology delivers the benefits of extended shelf life, optimized texture, consistent flavor, production efficiency and much more.

Products

- Leavening Systems
- Acids for Sour Dough Flavoring
- Acids for pH Control
- Acids for Starter Culture Replacement
- Preservatives for Mold Control
- Salt for Improved Texture
- Sugar

Innovations

- Allergen free
- Options available that don't necessitate Bio Engineered labeling
- Water soluble coatings
- Lipid Coatings
- Label friendly options

Certifications

- FSCC Food Safety Certified
- SQF Food Safety Certified
- RSPO MB
- Halal
- Kosher



Encapsulation Technology

Our line of encapsulated products deliver tangible improvements in finished product quality and shelf life by effectively controlling undesirable chemical interactions in food. Manufacturers using our technology realize economic benefits in the form of optimized formulations, improved processing and increased product yield.

Experience

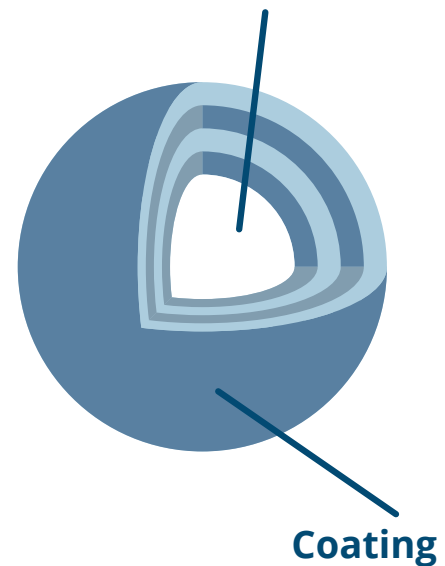
Balchem has four decades of experience in the design, manufacture and application of controlled-release ingredients. We offer a wide range of easy-to-use ingredients for a variety of product lines, including:

- Bakery
- Meat
- Confectionery
- Nutritional Products

Consistency

Consistency is a distinguishing characteristic of Balchem products. High quality and lot-to-lot uniformity are the reasons that Balchem ingredients exhibit reliable functionality in finished products.

Active Ingredient



Coating

CONTROL • PROTECT • DELIVER

Protects core ingredients from the inside out

Quality & Service

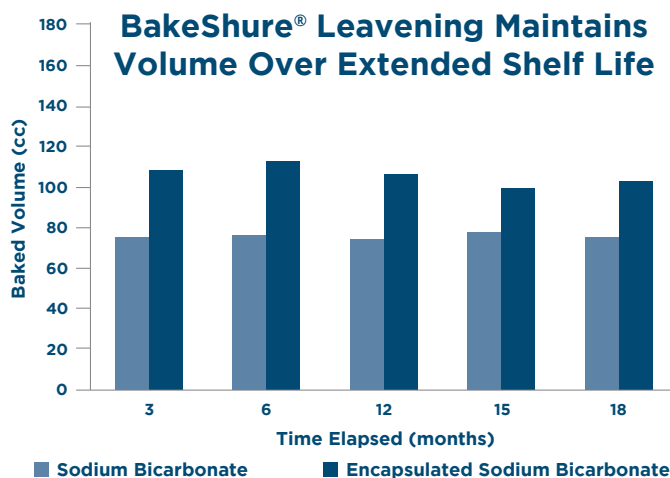
In addition to the superior quality our products offer, we provide attentive customer service, highly trained account representation and an experienced technical service team supporting your business from concept through commercialization.



BakeShure[®] Leavening

Encapsulated Leavening Systems

BakeShure[®] encapsulated leavening provides full control of the reaction between sodium bicarbonate and the acidic components within dough and batter, improving baked product yield and appearance. Encapsulation extends the viability of frozen dough and increases flexibility in the production of fresh and refrigerated bakery products.



Controls

- Product appearance
- Release of chemical leavening
- Outgassing in finished product packaging

Protects

- Against unwanted interactions
- Leavening performance throughout shelf life
- From freeze thaw abuse

Delivers

- Superior finished product volume
- Improved production flexibility
- New product opportunities
- Extended product shelf life



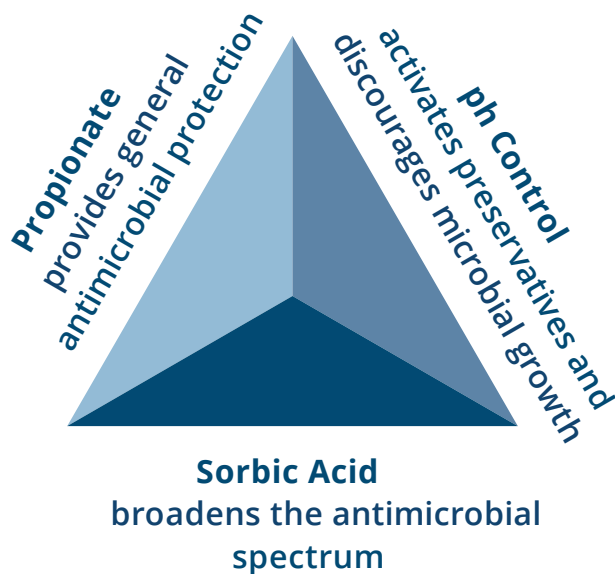


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Preservation for Yeast-Leavened Products

Optimize pH and Preservation Synergy

Encapsulated ingredients are an effective way to maximize the mold-free shelf life and quality of baked goods. Balchem proprietary controlled release technology minimizes the unwanted side-effects of highly reactive food acids and preservatives during the baking process. With BakeShure[®] preservation technology you can optimize production capabilities, prevent the degradation of protein, improve yeast activity, boost product consistency, extend shelf life, and launch new products previously thought impossible.



Controls

- pH development
- Growth of spoilage organisms
- Development cost with 'drop-in' formulation

Protects

- Vitality of yeast from acidic ingredients
- Degradation of gluten protein
- Finished product volume

Delivers

- Extended shelf life of products
- Maximized preservation synergy
- Improved product appearance

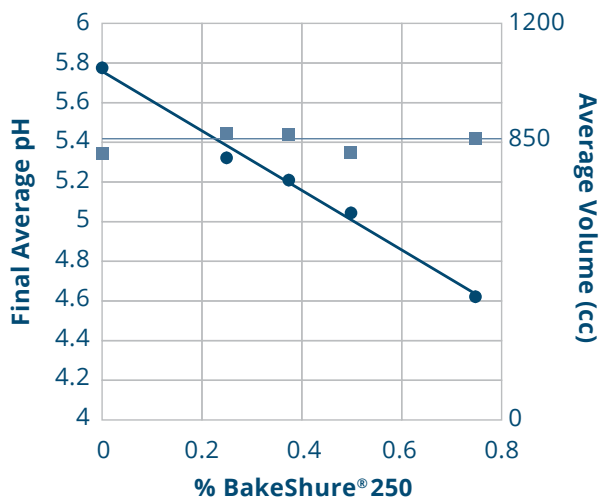


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Preservation for Yeast-Leavened Products

The Answer to Mold Control

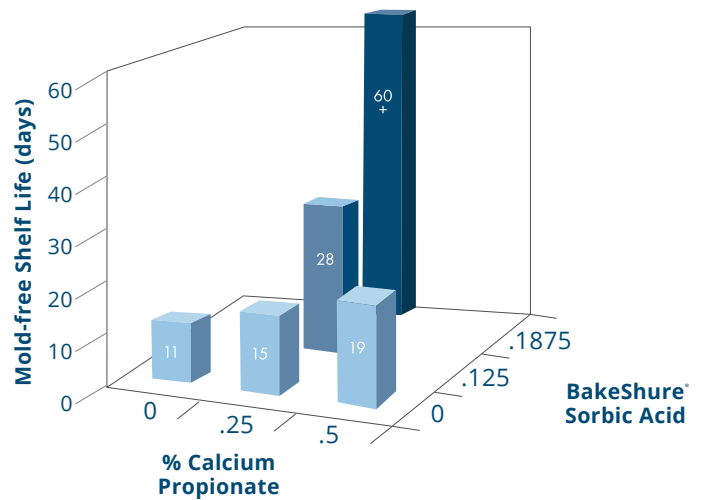
Pan Bread



Finished product volume is unaffected

pH control is easily and predictably achieved

Flatbread



Addition of BakeShure® ingredients significantly improves product shelf life

Preservation for Tortillas & Flat Breads

Encapsulated Acidulants

Balchem best in class encapsulation technology is specifically engineered to deliver tortillas and flatbreads that exhibit improved finished product appearance and eating characteristics while delivering the desired shelf life. This line of BakeShure[®] encapsulated acidulants is designed to delay release of the active components while optimizing performance during the production process.



Controls

- Finished product appearance
- pH development

Protects

- Product quality
- Preservative functionality
- Leavening performance

Delivers

- Larger tortillas and greater stack height
- More tender tortillas with improved opacity
- Increased tortilla production
- Targeted shelf life

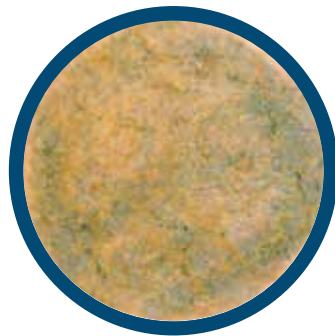


Preservation for Tortillas & Flat Breads

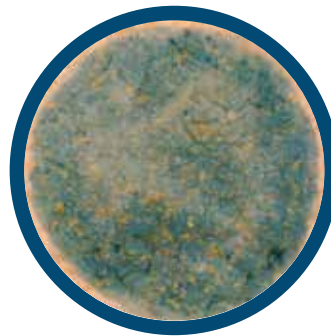
Encapsulated Acidulants

Acid Dispersion

Tortillas were treated with a bromocresol purple dye where the blue area indicates a neutral pH and the yellow shows acid dispersion. BakeShure[®] FT uniformly distributes throughout the tortilla resulting in an even pH drop improving overall shelf life.

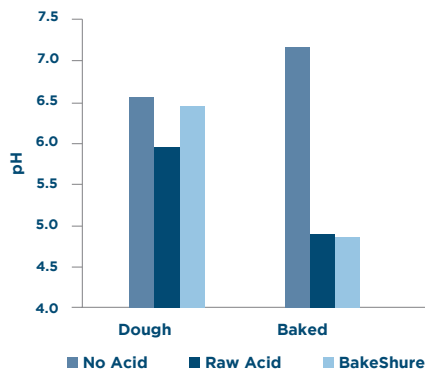


BakeShure[®] FT



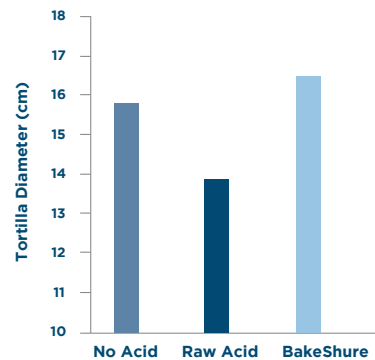
Raw Fumaric Acid

Control pH Development in Tortillas



Tortillas made with BakeShure[®] FT maintain pH in the dough protecting leaving performance and increasing opacity.

Impact on Tortilla Diameter



Produce larger tortillas using BakeShure[®] FT.

BakeShure[®] Sours

High Quality Sourdough & Rye Bread

BakeShure[®] Sours make it possible to produce specialty sourdough flavored bread by delivering superior sourdough flavor. Balchem proprietary microencapsulation technology allows manufacturers to easily create new sourdough formulas using our 'drop-in' technology. Since BakeShure[®] Sours do not release until the final stages of baking, formulators using this technology see improved color, greater loaf volume and better finished product appearance all while simplifying the production process.



Controls

- Product appearance
- Release of sourdough flavor
- Development cost with 'drop-in' formulation



Protects

- Yeast activity
- Integrity of gluten protein
- Dough consistency

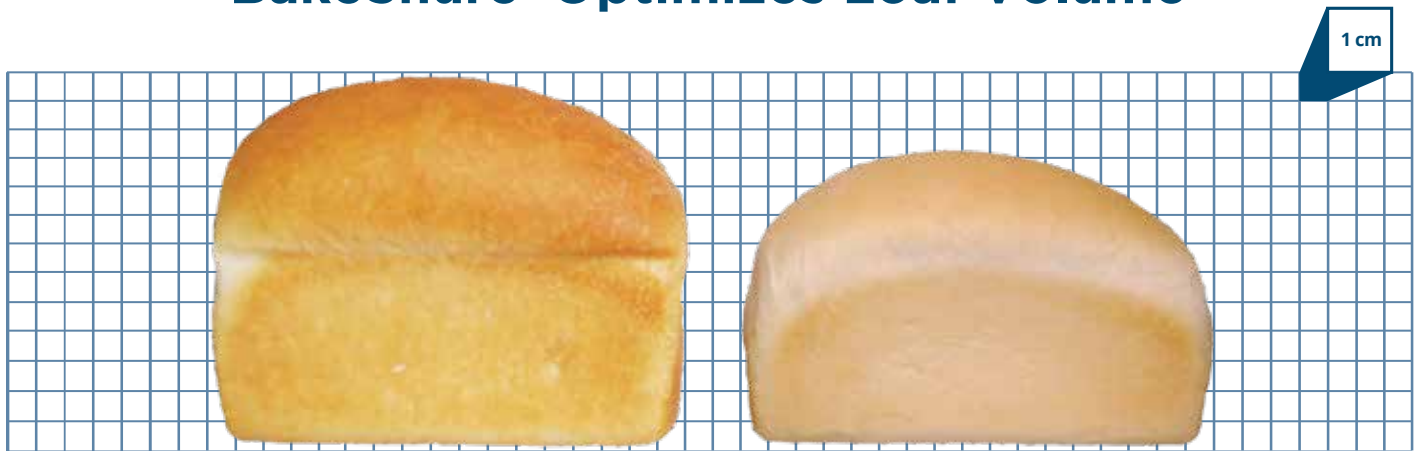


Delivers

- Superior finished products
- Consistent product volume
- Classic sourdough flavor profiles at lower cost

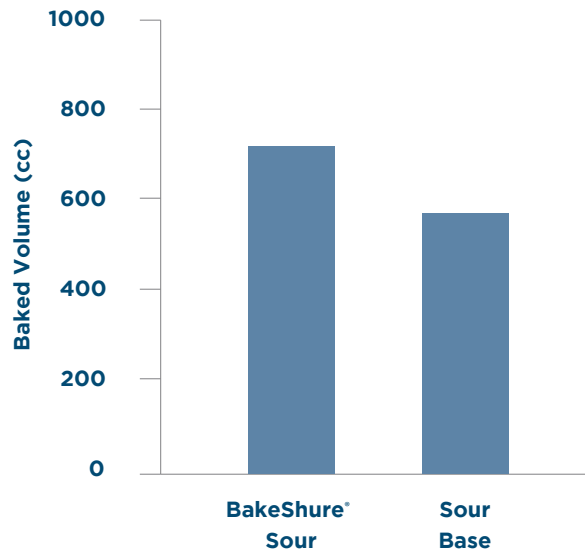
BakeShure[®] Sours

BakeShure[®] Optimizes Loaf Volume



Using BakeShure[®] Sours at 1.25% (Baker's Percent) improves finished product loaf volume and overall product appearance.

BakeShure[®] Bake Volume Comparison



BakeShure[®] Clean

BakeShure[®] Complete Advantage

The BakeShure[®] Clean line of products are ideally suited for bakers whose customers demand a clean label. BakeShure[®] Complete Advantage is a reduced sodium baking powder and is a healthier choice compared to traditional baking powders. It is suitable for use in all chemically leavened bakery applications including: fresh baked, frozen, refrigerated and freezer-to-oven products.



Products

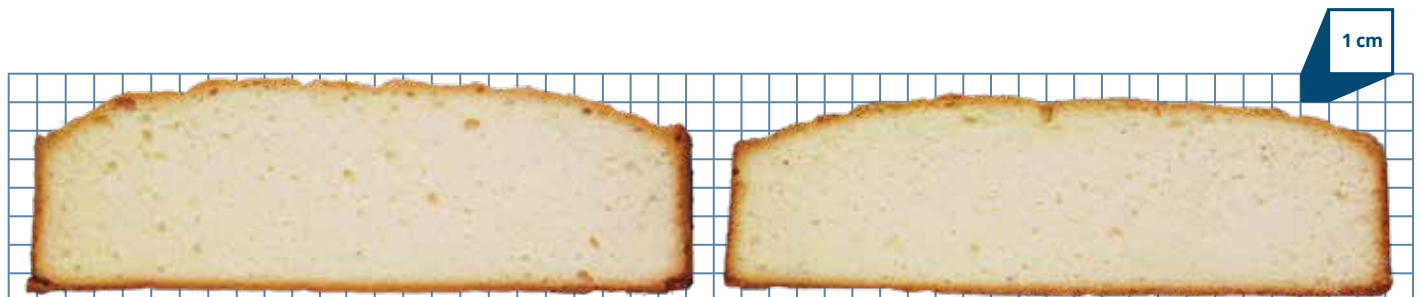
- 1:1 Replacement for baking powder
- Drop-in to new and existing formulations



Healthier for Baking

- Formulated without aluminum-containing ingredients

BakeShure[®] Complete Advantage Provides Similar Leavening Performance as Baking Powder



Baking Powder

BakeShure[®] Complete

BakeShure[®] Complete Advantage replaces traditional baking powder and reduces sodium levels without impacting finished product volume or texture.

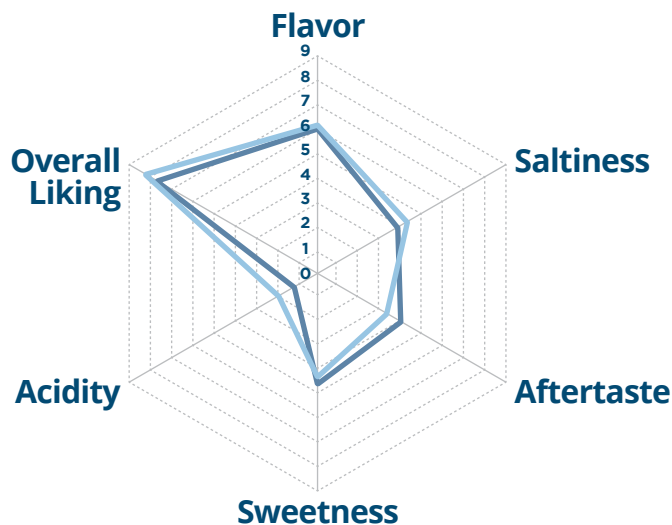
Sodium Reduction in Food

Direct Reduction of Sodium with C-Salt

Choline chloride has been known for decades as an effective, generally recognized as safe (GRAS) salt substitute. However, its characteristic hygroscopicity has ruled it out as a truly viable solution for reduced sodium food product development, until now.

Moisture uptake and clumping are problems of the past with Balchem C-Salt, a choline chloride-based salt replacer with significantly improved flow characteristics. This new functionality of choline chloride makes it usable in blends of dry bakery ingredients and savory seasonings.

Strong Sensory Appeal



— 1/3 Reduced Sodium with C-Salt
— Full Sodium Control

Features & Benefits

- A novel choline chloride-based salt replacer
- Molecular synergy with sodium chloride, for taste enhancement
- Usable in a broad range of applications
- Improve salt flavor impact in reduced sodium formulations
- 1:1 “drop-in” replacement for sodium chloride
- Reduction of sodium chloride up to 50%
- Thermostable

Key product attributes are not affected by sodium reduction with C-Salt.

MeatShure[®] Salt

Encapsulated Salt

Salt (sodium chloride) is commonly used as a functional ingredient in processed meats, as a flavoring in seasonings, and as a means of preservation.

MeatShure[®] encapsulated salt helps control bind, syneresis, protein extraction and delays the onset of oxidative rancidity during shelf life.

The use of MeatShure[®] encapsulates helps to optimize high speed forming operations by preventing salt-soluble proteins from accumulating on equipment. This reduces patty adhesion and malformation, reduces cleaning delays all while increasing process yield.



Controls

- Release & solubilization of active ingredients
- Undesirable reactions
- Product texture

Protects

- Integrity of muscle proteins
- Color & texture of meat
- Consistency during processing

Delivers

- Superior finished products
- Improved production flexibility
- Greater efficiency, better yield
- Consistent flavor
- Improved product texture
- Freeze-thaw stability

Function In Application	Substrate	Feature & Benefits	Applications
Direct Acidification	Citric Acid Lactic Acid Glucono-Delta-Lactone (GDL) Sodium Diacetate Vinegar Flavored Powder	<ul style="list-style-type: none">• Prevents proteins denaturation• Improves texture & eating quality of processed meat• Reduces thermal processing time & energy requirements• Eliminates need for starter cultures• Reliable pH control in every batch• Provides acidic flavor profile, characteristic of fermented meat	Pepperoni Summer Sausage Snacks Sticks Pork Rolls Salami Chorizo Meatballs
	Pre-seasoning	Sodium Chloride	<ul style="list-style-type: none">• Maintains moist, crumbly texture & prevents chewiness• Prevents stickiness & adhesion to equipment caused by protein extraction• Improves oxidative stability of fat
Meat Restructuring	Calcium Lactate	<ul style="list-style-type: none">• Prevents premature gelation of alginate• Increases process flexibility• Manipulates final product texture• Consistent portion size• Add value to lower cost cuts of meat	Formed Meats



MeatShure[®] Acidulants

Acidulants

MeatShure[®] encapsulated acidulants are used to control pH, develop acidic flavor profiles and increase process efficiency in ready-to-eat meat products. MeatShure[®] acids can be used as an alternative to traditional fermentation methods, allowing the acid to be directly mixed into the meat emulsion without negatively impacting the meat proteins or breaking the emulsion itself.

The encapsulated acidulants are subsequently released from the coating by the combined effects of heat and moisture lowering pH and delivering desired flavor profiles.



Controls

- pH development
- Undesirable reactions
- Purge

Protects

- Integrity of muscle proteins
- Color & texture of meat
- Consistency during processing
- Meat emulsion formation

Delivers

- Superior finished products
- Reliable pH drop for microbial control
- Improved production flexibility
- Greater efficiency, better yield
- Improved product texture
- Consistent flavor & texture throughout shelf life

Function In Application

Substrate

Citric Acid
Lactic Acid
Glucono-Delta-Lactone (GDL)
Sodium Diacetate
Vinegar Flavored Powder

Direct
Acidification

Feature & Benefits

- Prevents proteins denaturation
- Improves texture & eating quality of processed meat
- Reduces thermal processing time & energy requirements
- Eliminates need for starter cultures
- Reliable pH control in every batch
- Provides acidic flavor profile, characteristic of fermented meat

Applications

Pepperoni
Summer Sausage
Snacks Sticks
Pork Rolls
Salami
Chorizo
Meatballs

Pre-seasoning

Sodium Chloride

- Maintains moist, crumbly texture & prevents chewiness
- Prevents stickiness & adhesion to equipment caused by protein extraction
- Improves oxidative stability of fat

Meatloaf
Pizza Crumbles
Meatballs
Hamburguer
Spice Rubs

Meat
Restructuring

Calcium Lactate

- Prevents premature gelation of alginate
- Increases process flexibility
- Manipulates final product texture
- Consistent portion size
- Add value to lower cost cuts of meat

Formed
Meats



ConfecShure[®] Sours

Balchem specializes in the development and delivery of encapsulated solutions to top confectionery manufacturers. We provide a unique blend of technical expertise and problem-solving support, enabling you to achieve your goals.

ConfecShure[®] encapsulated ingredients let you control the release of acid or sugar using our proprietary microencapsulation technology. We protect ingredients from degradation and pre-reaction, strategically delivering them for optimum performance.



Controls

- Undesired reactions
- Dusting during processing



Protects

- Against sugar inversion
- From hygroscopicity and clumping



Delivers

- Prolonged shelf life
- High-impact sour flavor
- Extended flavor release
- Consistent finished product

Functionality Guide

Function In Application	ConfecShure® Ingredients	Feature & Benefits	Applications
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Sour Delivery

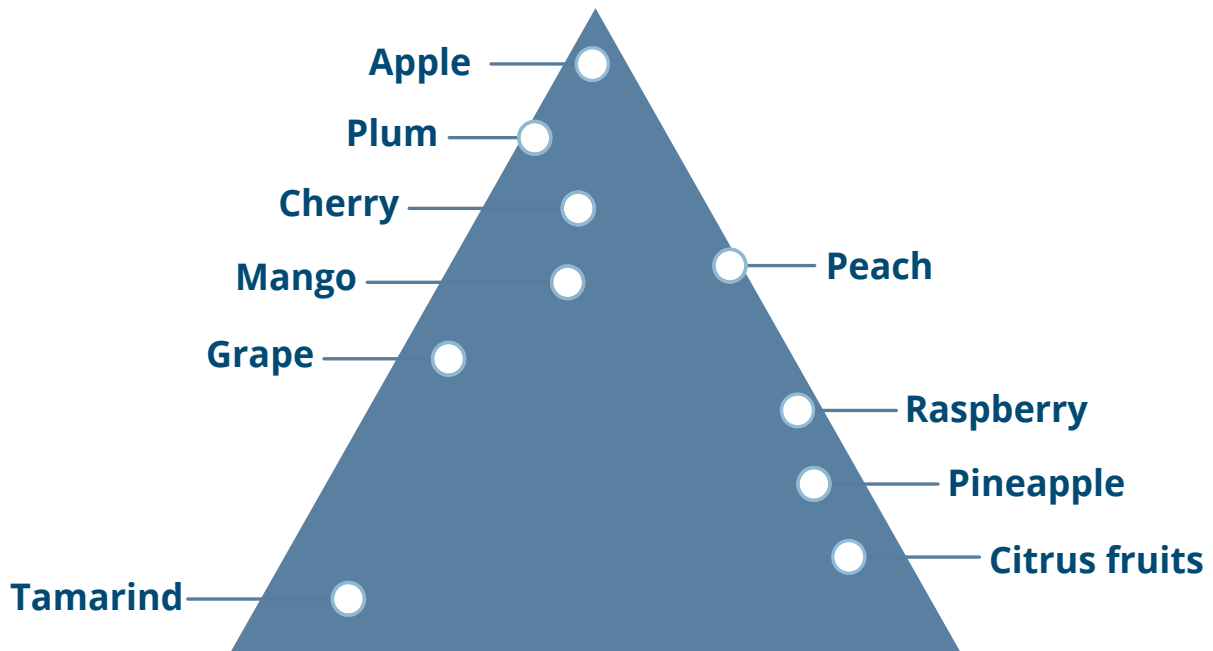
Malic Acid
Citric Acid
Tartaric Acid
Adipic Acid
Fumaric Acid

- Enhancement of other flavoring ingredients and masking of undesirable flavor notes
- Flavor balance and flavor extension
- Protects against negative ingredient interactions, hygroscopicity and clumping
- Delivers intense sour flavor
- Prevents sugar inversion during storage

Sanded Sour Candies, Fruit Candies, Mints, Bubble and Chewing Gums

Fruity, persistent, rounded

MALIC



TARTARIC
Hard, dry

CITRIC
Bright, refreshing



To get started, scan the QR code or visit:
[balchem.com/human-nutrition-health](https://www.balchem.com/human-nutrition-health)

Come grow with us so that we can solve today
to shape a better tomorrow – together.

To find the right product for your application, contact us today.



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