



# Preservatives

Technology is the use of individual hurdles to target microorganisms, establishing barriers such as temperature (heating/cooling), pH control, water activity, packaging and atmospheric control. The combined synergy of these hurdles, along with antimicrobial ingredients can be used to control microbial growth and create food products with the highest level of eating qualities.

Univar represents an extensive portfolio of ingredients from the leading global suppliers, offering customers more options to achieve a successful reformulation. Our sales team and food specialists work directly with customers to share application experience that reduces the time necessary in developing new products.

*Fresh Ideas Start Here.™*



Questions? Contact us!  
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# Preservatives

Preservative selection is based upon the pH of the food product first, then the application. Sorbates, benzoates and propionates are often used in combination with each other or with an organic acid to improve efficacy.

Preservative	Common form	Antimicrobial activity	pH range	pKa <sup>1</sup>	Use level	Food application
<b>Benzoates</b> Benzoic acid	Sodium benzoate, benzoic acid (powder, granular)	Yeast, molds, select bacteria	2.5 - 4.5	4.18	Regulated	Dry / carbonated beverages, syrups, sauces, fruit-based jams & jellies, fruit based fillings, salad dressings, fresh salads, confections, snack foods, pickles, olives & relish, moist pet foods, seasoning mixes, frozen desserts
<b>Sorbates</b> Sorbic acid	Potassium sorbate, sorbic acid (granular, liquid)	Yeast, molds, lactic bacteria	up to 6.5	4.75	Regulated	Cakes, tortillas, bakery products, beverages, cheesecakes, confections, pie crust, dried fruits, fillings, icings, desserts, jams & jellies, margarine, pickles, olives, fresh-packed salads, syrups, dairy products, sauces, spreads & dips, pet foods, seasoning mixes
<b>Propionates</b> Propionic acid	Sodium and calcium powder	Molds, some gram negative bacteria, rope in bread	5.0 - 6.5	4.87	Regulated	Foods at higher pH, yeast-leavened baked goods, cake mixes, pie crust, processed cheese, snack foods, tortillas
Nitrites	Sodium nitrite powder	Bacteria	up to 6.0	3.29	Regulated	Cured meats (bacon, corned beef, luncheon, sausage, ham) further processed cured poultry
Sulfites	Sulfur dioxide, sulfite, bisulfite, metabisulfite salts	Bacteria, yeast, molds	up to 4.0	1.89	Regulated	Beverages, wines, sausages, shrimp, pickles, vegetable processing, shellfish, dried fruit
Organic acids	Acetic, lactic, citric, fumaric, propionic, malic, sodium acid sulfate	Bacteria, yeast, molds	<5.5	3.0 - 5.0	GMP	Dairy products, cheese, yeast-leavened bread, gravies, sauces, bakery products, jellies & jams, tortillas, confections
UPGRADE™	Cultured dairy whey (natural antimicrobial)	Molds, yeast	>6.0	3.0 - 5.0	GMP	Bread, rolls, muffins, Kosher-Pareve bakery products
Nisin	Nisaplin (natural antimicrobial)	Gram positive bacteria	2.5 - 6.0	NA	Regulated	Dairy products, processed cheese, canned foods, meat and fish, liquid eggs, dressings & sauces, noodles
Lactates	Sodium & potassium salts	Listeria	<6.5	NA	Regulated / GMP	Frankfurters, hams, sausages, turkey bologna, chicken & fish products
SHIELD® FL	Liquid propionate & sorbic acid	Molds, yeast, bacteria	4.9 - 5.2	4.87	Regulated	Wheat flour tortillas or bakery products leavened with baking powder
SHIELD® CA	Liquid calcium propionate	Molds, rope	4.8 - 5.3	4.87	Regulated	Food, processed food grains and bakery products
SHIELD® CT	Liquid propionate and methyl and propyl	Molds, yeast, bacteria	4.3 - 4.7	4.87	Regulated	Corn tortillas manufactured with masa flour
INNOVAFRESH™	Encapsulated fumaric acid	Molds	<5.5	3.0 - 5.0	GMP	Bakery products and tortillas

pKa = pH at which 50% of the acid is in the dissociated form. Acids are more effective antimicrobial agents in the undissociated form.



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