Ammonium Bicarbonate (baking soda) – A leavening agent used during the baking process. It reacts with acids in batters to release carbon dioxide which expands during baking to increase the volume and leaven the mixture. Ammonium bicarbonate is one of the oldest “chemical” leaveners, originally made from ground deer antlers and used primarily in Northern European countries.

Annatto – Annatto is a natural coloring extracted from annatto seeds and originated in South and Central America. Annatto seeds offer a carotenoid-based yellow to reddish orange color and flavor in foods. In the 16th century, British cheese makers used annatto to give their cheeses a warm yellow hue. This yellow color is still preferred in many cheeses.

Ascorbic Acid (vitamin C) – Vitamin C is an essential nutrient and in food can function as an antioxidant, acting to control oxidation that leads to discoloration. Ascorbic acid is found naturally in orange, grapefruit and tomato juices, limes, potatoes, cabbage and many other fruits and vegetables. Vitamin C is often associated with the successful treatment of scurvy among 18th century British sailors who learned to stock limes on long ship voyages and thus, were nicknamed “limeys.”

Baking Powder (monocalcium phosphate, sodium acid pyrophosphate, sodium bicarbonate) – A leavening agent used in foods such as breads, cakes and pancakes causing them to rise and increase in volume. Unlike baking soda, which is a base, baking powder combines baking soda with an acid, such as monocalcium phosphate or sodium acid pyrophosphate. The leavening action of baking powder can be controlled through the selection of the acid (or combination of acids) used.

BHA and BHT – Butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT) are antioxidants. BHA and BHT keep fats from spoiling and becoming rancid by exposure to oxygen. Fats that become rancid have an off flavor.

Calcium Carbonate – A form of calcium used in fortified and enriched foods and used in vitamin/mineral supplements. Calcium carbonate also acts as a leavening agent in baked foods. Calcium carbonate is naturally present in seashells and limestone.

Canning – One of the five major methods of food preservation (other methods are: drying, salting, pickling and refrigerating/freezing). Invented by Nicholas Appert at the request of Napoleon Bonaparte, canning is the method of heating food in containers to a temperature that destroys enzymes and bacteria that can cause spoilage. On cooling, the containers form a vacuum seal which prevents micro-organisms from re-entering the container and spoiling the food.

Carrageenan – A natural gum extract from red seaweed (also known as Irish moss) used to thicken and stabilize foods by forming a gel. Carrageenan use can be traced to the Middle Ages when it was used to thicken dairy foods.

Citric Acid – A naturally occurring acid found in citrus fruits and other fruits and vegetables including oranges, lemons, apples, bananas, berries, carrots and tomatoes. Citric acid can also be made through fermentation and the human body produces citric acid as part of the energy metabolism cycle. In food, citric acid is noted for its tart or sour taste. It can act as an antioxidant to prevent discoloration and spoilage of foods, or to add an acidic or sour taste to foods.

Cornstarch – A dried powder made from the white starchy endosperm at the center of the corn kernel. Cornstarch is typically used to thicken sauces, puddings or pie fillings. It is considered a “self-limiting” ingredient when used in recipes, which means that if more than a small amount is used, the texture becomes unappetizing. Cornstarch contains no gluten.

Curing (salting) – This method of food preservation uses a combination of drying and salt to remove water from the food which inhibits the growth of microorganisms. Certain salts can provide different flavors and colors to foods. In the 1800s it was discovered that certain salt mixtures containing salt peter (a nitrate) gave meat a red, rather than grey color. In the 1920s microbiologists found that nitrates inhibit the growth of the harmful Clostridium botulinum organism. Bacon and corned beef are cured foods.

Dextrose – A simple sugar or monosaccharide (glucose). Dextrose is not as sweet as disaccharide sucrose – table sugar (glucose + fructose). Added to recipes, dextrose helps promote browning in baked foods, as well as contributes flavor. Food sources of dextrose may include corn, rice, and wheat. Glucose (dextrose) is also the primary sugar the body uses to transport carbohydrate sources of energy to all cells.

Disaccharide – Refers to a sugar containing two monosaccharides linked together. Examples are sucrose (table sugar) and lactose (milk sugar).

Disodium Phosphate – In food, disodium phosphate prevents oxidation by tying up trace metals such as iron, which can act as prooxidants. When used in macaroni-containing recipes, it shortens the cooking time by helping the macaroni to swell and cook thoroughly.

Drying – The oldest of the major food preservation methods, dates to 12,000 B.C. when food was dried in the hot sun. The Romans enjoyed dried fruits of all kinds. Drying preserves food by removing water so that spoilage organisms cannot grow. Foods can be dried in the hot sun or in the oven. The ancient Romans enjoyed dried fruits such as grapes and figs. Vegetables, nuts, lean meats and herbs can also be dried.

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Emulsifiers – Emulsifiers help oil-based and water-based ingredients mix, (e.g., oil and vinegar in salad dressing). Emulsifiers help stabilize the blend so that the fat and water do not separate. Mayonnaise is a blend (emulsion) of oil in water with the lecithin in egg yolk acting as the emulsifier. Lecithin, monoglycerides are common types of emulsifiers used to make food.

Fermentation – The conversion of sugars in foods into carbon dioxide and alcohol by yeast or bacteria. Familiar fermented foods include wine, beer and yogurt. Fermentation creates strong flavors in foods, and extends the use of foods that historically would spoil relatively soon after harvest. Fermented cabbage is also known as sauerkraut or kimchi.

Folic Acid – Folic acid is an essential nutrient and one of the B vitamins. It is also called folate and folacin and is found naturally in many foods including nuts and leafy green vegetables. Folic acid was a nutrient of concern in the U.S. diet, especially among women who may become pregnant. Folic acid fortification of enriched grains is required by the Food and Drug Administration (21CFR Parts 136, 137, 139).

Freezing – One of the major methods of food preservation (other methods include: canning, drying, salting, pickling and refrigerating). Freezing stops both food decay and the growth of microorganisms and slows the foods’ natural enzymatic activity. In 1924 Clarence Birdseye, invented a “quick freezing” method to freeze foods quickly. Quick freezing produces smaller, less texture-damaging ice crystals.

High-Fructose Corn Syrup – A corn-based sweetener used in foods and beverages. High-fructose corn syrup, while chemically very similar to sucrose (table sugar), is sweeter and is better at holding moisture in baked goods so they keep a fresher taste and better texture longer.

Hydrolyzed Soy Protein – Made by breaking down the protein in soybeans into smaller pieces. These smaller pieces are very flavorful and are used as flavor enhancers in many foods.

Malic Acid – A naturally occurring acid found in a wide variety of fruits (e.g., apples,) and vegetables (e.g., tomatoes) that imparts a pleasant tart taste. Malic acid derived its name from the Latin name for apple, *malum*. The ‘acid of apples’ was first isolated from apples in the 18th century.

Maltitol – Maltitol is one of several sugar alcohols used as lower-calorie sweeteners in a variety of foods. It’s made from the disaccharide maltose which is present in starch. When blended into a food such as Hunt’s Snack Pack puddings, maltitol provides sweetness and helps to add a smooth texture.

Maltodextrin – Maltodextrins are easily digestible carbohydrates made by breaking down starches into smaller pieces. Usually derived from vegetable starches (e.g., corn, potato), maltodextrins work as a thickener which helps the texture of some recipes (e.g., Chef Boyardee® pasta products).

Modified Food Starch – A starch may be modified so it works better and more easily in preparing foods. The starch may be from corn, wheat, potato, rice or tapioca. It’s used to help thicken sauces, gravies, pie fillings and some frozen foods. In the U.S., most modified food starches are made from corn.

Monocalcium Phosphate (baking powder) – The acid leavening agent in baking powder, which also includes a base (such as sodium bicarbonate). When combined with liquid and heat this acid-base combination releases carbon dioxide. Monocalcium phosphate in baking powder helps foods such as breads, cakes and pancakes rise and increase in volume.

Monoglycerides and Diglycerides – Function primarily as emulsifiers in foods. Emulsifiers help mix and prevent separation of oil and water that usually do not mix together well.

Monosodium Glutamate (MSG) – A flavor enhancer that adds a fifth taste, called “umami” was originally isolated from seaweed in the 1900s. It was first used to provide a meaty flavor to vegetables. Glutamate is a naturally occurring amino acid found primarily in high protein foods such as meat and fish, as well as mushrooms and tomatoes.

Oils – Refers to fats that are liquid at room temperature. Oils in recipes are selected based on their function (how high is the cooking temperature); flavor (mild or strong); versatility (work well in a number of recipes); and fat profile (ratio of unsaturated to saturated fats).

Palm Oil – A commonly used food oil around the world, obtained from the fruit of the oil palm tree. Its high oleic fatty acid content (46%) makes it more stable than other vegetable oils in high heat cooking, such as frying. Some margarines may contain palm oil.

Pasteurization – A heat process that inactivates some but not all microorganisms in food. To pasteurize milk, it is heated to about 163°F and held there for 15 seconds. The home cook does not have the equipment needed to pasteurize eggs. Pasteurization of eggs requires a delicate balance between heating the egg sufficiently to kill bacteria without cooking the egg protein.

Pickling (brining) – A method of preserving food in acid. Vinegar is often used because its acidity (low pH) helps control the growth of harmful bacteria. As early as 1000 B.C. vinegar was used to preserve onions, walnuts, fruits and vegetables in the Middle East. Brining (similar to pickling) uses a salt solution to draw the water out of the food to encourage fermentation.

Potassium Sorbate – Sorbic acid was originally distilled from the fruit of the rowan shrub (mountain ash) in the mid-1800s. Sorbic acid and its salts (potassium sorbate) are useful preservatives that inhibit microbes, particularly mold in foods such as breads and cheeses.

Preservatives – Refers to a group of compounds that prevent growth of bacteria, yeast and mold. They also prevent browning of fruits and vegetables caused by enzymes and prevent oxidation.

Pyridoxine Hydrochloride (vitamin B6) – One of the B complex vitamins used in the body to metabolize protein. Protein rich foods such as meat, fish, and poultry and fruits such as bananas and watermelon and fortified cereals are sources of vitamin B6.
Rennin (rennet) – An enzyme that is used to curdle milk to make cheese and custard. Historically, rennet is believed to have been discovered when raw milk, stored in a bag made from the stomach of a young goat or cow, formed curds which could be saved for later use. Most rennet used today comes through the fermentation of specially selected microorganisms.

Salt (sodium chloride) – Common table salt is a compound containing the ion sodium bound to the ion chloride. Table salt is available either with or without the essential nutrient iodine added. Table salt is obtained primarily from salt mines. Sea salt is made from the evaporation of seawater, and typically contains less than 2% of trace minerals. Salt can function as a seasoning or as a preservative.

Sequestrants – Sequestrants tie up trace metals (e.g., iron and copper) making them unavailable for other reactions (typically oxidative) that may have undesirable effects on the flavor or appearance of the food.

Silicon Dioxide – An anticaking agent, this ingredient absorbs moisture so that foods and ingredients flow easily. It is often used in dry powders to prevent clumping or caking.

Sodium Alginate – This ingredient is a gum obtained from selected varieties of brown seaweed. Sodium alginate is useful for gelling, thickening, stabilizing and for its film-forming properties.

Sodium Bicarbonate (baking soda) – It produces carbon dioxide gas when combined with water and heated above about 122° F. The major use of sodium bicarbonate is in baked foods such as pancakes, muffins and cakes. It is used in effervescent over-the-counter preparations and is sometimes used medically to reduce stomach acidity.

Sodium Benzoate – Benzoic acid is found naturally in cranberries and prunes. However, in its natural form it does not dissolve well in water. Sodium benzoate prevents growth of almost all microorganisms (yeast, bacteria and fungi) and is frequently used in acidic foods such as fruit juice drinks, soft drinks and jams.

Sodium Phosphate – An antimicrobial, leavening agent, stabilizer, emulsifier and buffer. See Disodium Phosphate.

Sodium Stearoyl Lactylate Powder (emulsifier) – Often used in prepared puddings and toppings to make a smoother, more uniform food. When used in breads it helps strengthen the dough so the loaf volume developed when the bread rises is maintained.

Soybean Oil – Oil obtained from soybeans. Soybean oil is used in cooking because of its relatively high smoke point (the temperature at which the fat in a food breaks into glycerol and free fatty acids). Soy oil consists primarily of unsaturated fatty acids, and is considered by some to have almost no taste.

Soy Lecithin – An emulsifier made from soybeans. Lecithin is responsible for the “no stick” performance of PAM because it helps produce an even, thin spray coating of oil in the pan. In Chef Boyardee® foods this ingredient helps keep the sauce ingredients blended.

Soy Protein Isolate – A natural source of vegetable protein, this ingredient is sometimes used to increase the protein level of foods, improve the texture, or to act as an emulsifier. Its purpose in a few of the Healthy Choice® soups is to enhance the soup’s texture.

Stabilizing Agents – A category of food additives that stabilize and thicken foods by combining with water to add viscosity and to form gels. Gravies, pie fillings, jellies, puddings and salad dressings are some of the foods that typically contain stabilizers. Some common ingredients that act as stabilizers include tapioca, corn starch, gum arabic, carrageenan, pectin, amylose, hydrolyzed vegetable proteins and gelatin. Pectin is a traditional stabilizer used to make jams and jellies. Apples and citrus peel are sources of pectin.

Starches – Starches are complex carbohydrates found in grains (corn, rice, wheat) or potatoes. Starches from these foods can be used to thicken and stabilize recipes. For example, baked fruit pies often need a small amount of flour to keep the juices from running over when the pie is baked.

Sugar – Common table sugar (sucrose) is composed of two sugar molecules, fructose bound to glucose. Sugar typically comes from sugar beets or sugar cane. Sugar adds flavor and texture to many foods. In cooking and baking, sugar affects the gluten structure of flour; contributes to the golden color because it caramelizes at high baking temperatures; and is the source of food for the yeast in bread dough.

Thickeners – A category of food ingredients that includes gums, starches, dextrins, proteins and other compounds that stabilize and thicken foods by combining with water to add viscosity and form gels. Flour is often used to thicken gravies and sauces.

Tocopherols – A form of Vitamin E, tocopherols prevent the fats from becoming rancid and protect the flavor of the food. Food sources of Vitamin E include wheat germ, vegetable oils, seeds and nuts. Tocopherols are sometimes used to protect the flavors of the oils or butter used in Orville Redenbacher's® popcorn.

Whey – Whey is the liquid that is left after milk is curdled for cheese making and the curds are removed. Whey contains lactose (milk sugar), fat, protein, minerals and other minor constituents.

Whey Protein – Whey protein is the protein remaining after the curds are removed during cheese making. It provides protein and flavor when combined with other foods or ingredients.

Yeasts – Microorganisms that leaven and ferment foods and beverages to contribute flavor and texture. This group of microorganisms is used in fermenting some foods (i.e. wine) and in leavening other foods (i.e. breads).

Selected references: