

IMPORTANT FOOD ADDITIVES TYPE OF E

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Abstract. This article describes the most relevant type E food additives in the world, their classification.

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Food additives are substances that are added to foods for technological purposes. In Europe, food additives are labeled with a numeric code preceded by the letter E. The E code means that the additive has passed the appropriate safety assessment procedure and is approved for use in the European Union.

By origin, food additives can be divided into natural and artificial:

1. natural additives are substances isolated from food, for example, agar-agar (E 406, $(C_{12}H_{18}O_9)_n$) and carrageenan (E 407) are obtained from seaweed, pectin (E 440) from fruits, etc.;

2. synthetic additives, which are of two types:

- Synthesized substances also found in natural foods, such as the antioxidant ascorbic acid (E 300) or the preservatives sorbic acid (E 200) and benzoic acid (E 210);

- artificial substances that have no natural analogues, such as the antioxidant butylhydroxyanisole (E 320) or food azo dyes.

Food additives are used, for example, to better preserve foods (preservatives), to give them the desired consistency (stabilizers, gelling agents, emulsifiers, thickeners), to make them more attractive in color (food colours), etc.

According to their main functions, food additives are divided into groups. Belonging to the main group does not exclude the presence of other functions in additives.

The most commonly used groups of food additives in food are as follows: food colorings (E 100–E 199), preservatives (E 200–E 299), antioxidants (E 300–E 399), emulsifiers, stabilizers (E 400–E 499).

In addition to those listed, additional groups are used, such as acidity regulators, flour improvers, anti-caking agents, odor and taste enhancers, glazing agents, sweeteners, thickeners, gelling agents, packaging gases, etc.

The use of food additives in a product is permitted if, according to the available scientific data, its use does not pose a danger to the health of the consumer, it is technologically justified and does not mislead the consumer.

Before a food additive is allowed to be used in the European Union, its safety for human health is assessed by the European Food Safety Authority. Food additives are evaluated for toxicity, carcinogenicity, mutagenicity, and other indicators. Based on a toxicological examination, if necessary, an acceptable daily dose is determined, indicating the amount of a substance per kilogram of body weight that a person can consume daily throughout life without harm to health.

When evaluating the safety of food supplements, one also considers how much a consumer is likely to consume during the day. For this purpose, recommended limits and maximum daily amounts of products containing this additive are calculated for food additives. EFSA considers the use of a food supplement safe only when the daily amount of the supplement obtained from all foods is less than the maximum recommended amount of the food supplement.

For example, the acceptable daily intake of the sweetener aspartame (E 951) is 0–40 mg per kilogram of body weight. This means that a person with a body weight of 60 kg can consume up to 2400 mg of aspartame every day ($40 \text{ mg / kg} \times 60 \text{ kg} = 2400 \text{ mg}$) throughout life without harm to health. If aspartame is added, for example, to soft drinks at a maximum permitted dose of 600 mg/l, then a person with a body weight of 60 kg can drink 4 liters of aspartame soft drink during the day. For a child weighing 20 kg, a safe daily dose of aspartame is 800

mg ($40 \text{ mg} / \text{kg} \times 20 \text{ kg} = 800 \text{ mg}$), according to which he can drink 1.3 liters of the above drink during the day without harm to health.

At the same time, it must be borne in mind that the safe amount for consumption refers to all food during the day.

This means that if a child drinks 1.3 liters of a soft drink per day with the maximum permitted content of aspartame, then he should no longer receive this substance from any other sources, such as certain sugar-free products, vitamin preparations, table sweeteners, etc.. On the other hand, foods and beverages generally do not contain food additives in the maximum permitted amounts. In addition, a single excess of the permissible daily dose does not yet pose a health hazard, problems can begin when the allowable daily dose is exceeded for a long time.

If a sweetener is added to a food product, this must be indicated on the label.

The use of food additives in the product must be justified. This means that food additives in a product can only be used when improving the properties or maintaining the nutritional properties of the product cannot be achieved by other technological methods. For example, high-fat foods require the use of antioxidants to protect them from rancidity, color and taste changes, and loss of nutritional value.

One of the most common antioxidants is ascorbic acid E 300 (vitamin C).

Nutritional supplements should not be confused with dietary supplements. The difference between them is that food additives are added to food during production or preparation, and this is done for technological purposes, while biologically active additives are used to supplement food, these additives are primarily a concentrated source of nutrients. Dietary supplements are, for example, various kinds of vitamins and preparations containing mineral nutrients.

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