



Guidelines

to pH-telemetry testing



Toothfriendly Labeling

The Toothfriendly logo is a registered trademark which may be used only on confectionery products which have been shown to be toothfriendly, i.e. non-cariogenic and non-erosive, in a standardized pH-telemetry test. The testing requirement guarantees that the Toothfriendly logo appears only on products of consistent high quality in terms of dental safety.

The Toothfriendly label is governed by Toothfriendly International, a non-profit association with seat in Basel, Switzerland. Members of the association are dental professionals, institutions in dental and public health as well as manufacturers of confectionery and oral health products.

Manufacturers who wish to use the Toothfriendly logo on the label and in the advertising of their toothfriendly products, must have:

1. Tested their product(s) for "toothfriendliness" at one of the accredited test centers, and
2. Concluded a license agreement with Toothfriendly International for use of the Toothfriendly trademark on the label and in the advertising.

How to proceed?

As a first step, kindly submit product information and/or recipe to Toothfriendly International. A pre-screening of the recipe is done free of charge to avoid unnecessary testing cost.

After the initial approval of Toothfriendly International, contact the test center of your choice for quotation of testing price.

After confirming the offer, send 50g-100g product samples to the test laboratory.

If a range of products with different flavors is to be evaluated, one product must be tested in at least four different volunteers and each additional flavor variety in at least two different volunteers.

Exceptions to this general requirement for testing may be made for products, which are substantially equivalent, with regard to the fermentability and acidity of their ingredients, to an already tested product of the same manufacturer.

The test center will issue a test report generally within 8 weeks from receipt of samples.

The testing cost will be invoiced by the test center.

For more information, contact:

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What is pH-telemetry testing?

The "toothfriendly" properties of foods and other products are determined by standardized *in vivo* pH-telemetry tests conducted by accredited test facilities (see last page).

A product is considered "toothfriendly" if it lacks a significant cariogenic and erosive potential in healthy people under usual conditions of use (*in vivo*).

Evaluation of cariogenic potential

The cariogenic potential of a product is evaluated by measuring plaque-pH *in vivo* during and for thirty minutes after consumption of the product using an in-dwelling pH electrode. Using this method, the product is tested in at least four healthy volunteers two of which have a 3-4 day old plaque and two of which have a 5-7 day old plaque on the electrode which is mounted in a removable, restorative dental device, is surrounded by human enamel, and is facing the sound interdental surface of an adjacent, natural tooth.

The plaque pH curve of a test product is the result of at least two measured pH-values per minute. A product is considered to lack a significant cariogenic potential if it does not depress the pH of the interdental plaque below 5.7 by bacterial fermentation, neither during consumption nor during a period of 30 minutes following consumption. The pH curve must clearly show the time of consumption of the test product and the 30-minute period following consumption.



The proper functioning of the plaque-pH-measuring equipment and the plaque metabolism must be checked in each test by rinsing with 10 ml sucrose solution (10%) or by the consumption of a sugar-containing analogue of the test product. This positive control must depress plaque pH to values below 5.

Evaluation of erosive potential

Products suspected of having an erosive potential on dental hard tissue by virtue of their acidic components must be tested as follows. An aqueous solution of the product is made (1 g/15 ml distilled water) and its pH is measured. If the pH-value is below 5.7 or if it is impossible to make an aqueous solution of the product, the following *in vivo* test must be performed.

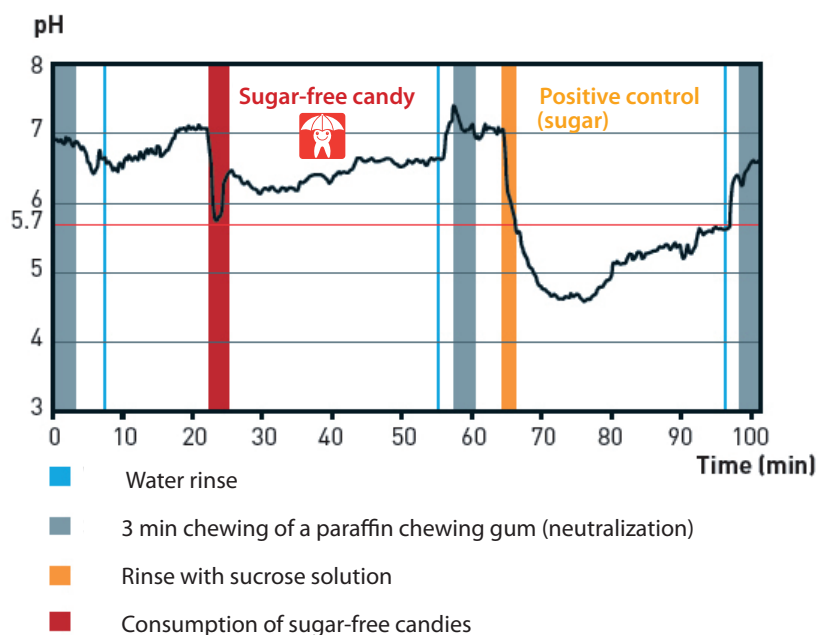
Parallel or in addition to the measurement of interdental plaque pH, the pH of oral fluid is recorded during and for at least 15 minutes after consumption of the product using a clean (i.e., plaque-free) electrode. This electrode must either be placed on the buccal surface of either the maxillary canine or first premolar, or it is facing an interproximal space (i.e., is identical with the electrode used for plaque-pH measurement).

For the *in vivo* test, each product must be tested in at least two volunteers. The results of the measurements must be adequately documented.

A product is regarded as not presenting a significant erosive potential if the interdental plaque pH does not fall below 5.7, and the acid exposure of the plaque-free electrode does not exceed 40 mmol H+ x min, established by calculating the area under the curve [acid concentration (in micromols H+) x time (in minutes)]. (This value is equivalent to the exposure to a solution of pH 5 for 4 minutes).

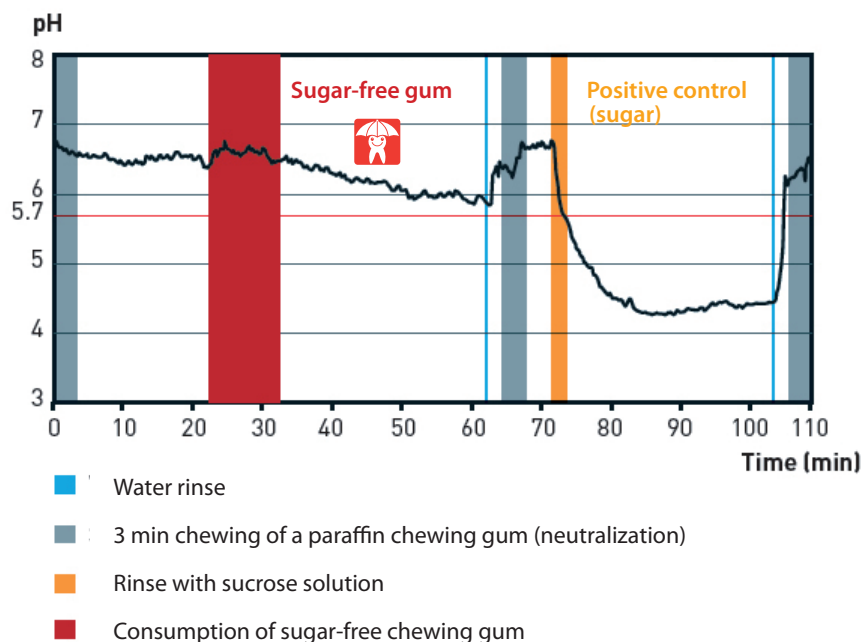
Test product 1.

Volunteer is eating a handful of sugar-free jellies (circa. 4 minutes). Before, during, and for 30 minutes after, the pH of the plaque is measured. If the product does not depress the plaque-pH below 5.7, it is considered "toothfriendly".



Test product 2.

Volunteer is chewing a sugar-free chewing gum (circa. 10 minutes). Before, during, and for 30 minutes after, the pH level of the plaque is measured. If the product does not depress the plaque-pH below 5.7, it is considered "toothfriendly".



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Accredited Test Laboratories

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