

Quick and easy testing for a Finnish Confectionary

Fazer Group, one of the largest Finnish food corporations, was started in 1891 by Karl Fazer, the son of Swiss furriers who decided to become a confectioner. The now famous blue and gold wrapper covering Fazer™ milk chocolate first appeared in 1922. Today, the company employs 10,000 people in Finland, Sweden, Denmark, Norway, the UK, and Russia with three factories in Finland. Chocolate is manufactured in Vantaa, sugar confections in Lappeenranta, and gum and pastilles in Karikkila.

In 1993, Fazer acquired the Chymos factory in Lappeenranta which used to manufacture jam, liqueur, and baby food. With 12 production lines and about 300 people, they produce candies over three shifts. At

busy times of the year, Easter and Christmas, they may run up to five production shifts. For the Easter holiday, they make special pastel colored candies and begin their preparation in December of the previous year. Preparation for the Christmas holidays begins in August when they determine how the package design will be changed for the holiday season. Development for a new candy takes one and a half years primarily because their standard procedures, require that they must periodically check a candy's freshness up to its intended expiration date. In addition, when various types of candies are packaged together, the moisture balance of each candy is monitored relative to the others in the mix. New products are usually introduced at the beginning of the year, in the spring, or in the autumn.

Inside the factory, they maintain a large room containing liquid flavorings and colors. To use, these concentrated liquids are diluted with either alcohol or water. Also on site is a separate room where reference samples are labeled and held. The factory designates a one year “best before” date and assigns that expiration date to each package. Reference samples are retained for 14 months and routinely checked for freshness usually by doing a taste test.

The laboratory at Fazer in Lappeenranta has had a Thermo Scientific™ Gallery™ discrete analyzer for the past year in response to their desire for a quicker analysis method.

The lab receives samples that usually arrive in a batch of 50, an average of five samples per week. They test final production products, such as hard candies, licorice, marmalade, and syrups for research purposes and measure glucose, fructose, sucrose, and maltose. Sometimes they also measure the raw materials; however quality control is done by the production team. All the tests are completed during normal business hours by the three people in the lab.

Prior to obtaining the Gallery instrument, they used HPLC or manual techniques to complete their analysis. The HPLC instrument used to be switched on all the time because it was problematic to turn it on and off. In addition, sucrose and glucose would elute on the same peak and could not be separated. It would take up to one week to ensure that the results were correct.

In contrast, the enzymatic tests used with the Gallery analyzer provided them with good results. They validated the glucose, fructose, and sucrose methods in accordance with a Eurofins protocol and are pleased with their accuracy.

Jaana Pajulahti-Kiurú, Laboratory Technician, explained that they use a simple sample preparation technique that consists of diluting one gram of sample in one liter of water. Samples are measured with the analyzer and a dry weight is reported and calibrated using Thermo Scientific™ system reagent kits. Maltose is reported by measuring maltose plus glucose together, then subtracting total glucose. When the instrument first arrived, training was complete in two days. One day was actually enough to master the routine methods; however the second day was needed to focus on developing the maltose measurement process.



Reference samples.

“We switched because it is so easy-to-use and quick.”

—Pia Virtanen
Quality Manager, Fazer Group



Jaana Pajulahti-Kiurú, Laboratory Technician.

“The Gallery analyzer has reduced our stress level. We can put samples in the analyzer and walk away where we used to be tied to a measurement timing every ten minutes.

—Jaana Pajulahti-Kiurú
Laboratory Technician, Fazer Group

At the Fazer sugar confections factory in Lappeenranta, many types of hard and soft chewy candies are made. Usually production samples and occasionally raw materials are examined to determine the levels of glucose, sucrose, fructose, and maltose for research purposes. Using the Gallery analyzer to perform the required enzymatic tests has made their analysis processes quick and easy.

Table 1. Result report.

Test	Result (mg/L)	Dilution	Response
D-Glucose L	42.71	1:1	0.391
D-Glucose L	42.66	1:1	0.390
D-Fructose L	2.46	1:1	0.095
D-Fructose L	2.19	1:1	0.093
Total Glucose 2	227.96	1:5	0.358
Total Glucose 2	227.49	1:5	0.357
Total Glucose L	218.23	1:5	0.359
Total Glucose L	217.78	1:5	0.358
Maltose + Glucose	303.50	1:5	0.227
Maltose + Glucose	305.20	1:5	0.228
Sucrose L	332.72		
Maltose 1	87		

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