

QUALITY CONTROL IN A **Chocolate / Cocoa Plant**

Introduction to the Market



Quality Control in a Chocolate / Cocoa Plant

Cocoa is a commodity used as an ingredient in many food products as well as in chocolate manufacturing. Variations in the raw materials and processing steps creates cocoa and chocolate of varying properties. Quality is a key driver in the cocoa processing and chocolate manufacturing industries, both as payment criteria as well as final product quality control.

Fast, accurate analysis is critical for both cocoa processors and chocolate manufacturers to optimize their process and insure quality. Optimizing the process will save the plant time and money and provide very rapid payback. Near Infrared (NIR) analysis is a proven technique designed to provide fast, accurate, and reliable results for the cocoa industry.

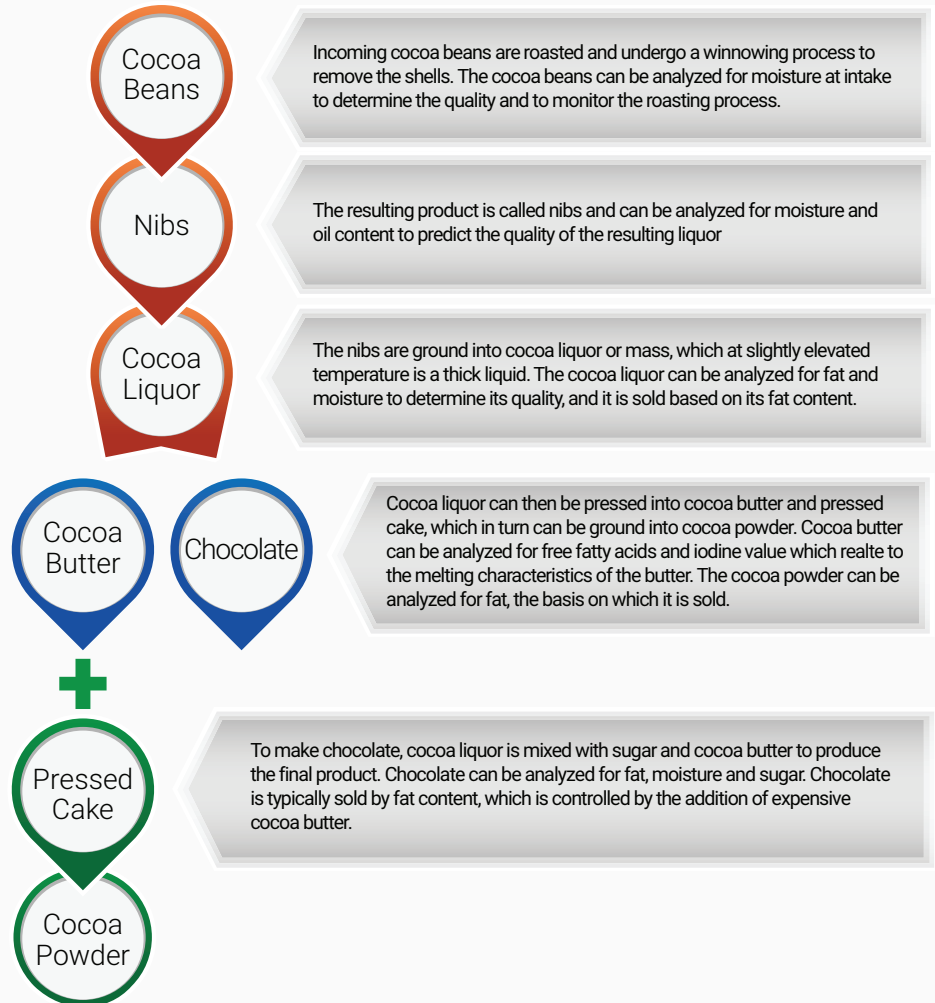


Process Control in a Cocoa Processing Plant

There are multiple points in the cocoa processing and chocolate manufacturing procedures where accurate and timely analytical values can help control the process, saving money and improving quality. In addition, intermediate products in the process are sold based on quality parameters such as fat content, and real time analysis of these samples can help optimize the yield of high quality product.



Cocoa Process



Value Proposition

Cocoa processing requires consistent control and management of expensive fat across all areas of the process. Cocoa liquor is frequently sold on the basis of fat content, and processing the liquor involves maximizing the production of expensive fat while producing cocoa powder to specification.

Typical cocoa powder is sold as containing 10 - 12% cocoa butter. When cocoa butter prices are high, as they are in 2014 at over \$7,000 / ton, there is a large financial benefit to a complete press of the liquor to remove the maximum amount of cocoa butter, selling 10% cocoa powder. Accurate analysis of these products and tight control of the process will yield more expensive cocoa butter and in-spec cocoa powder.

In Chocolate processing, the quality of the ingredients can be evaluated before mixing to reduce re-work and rejected batches. The chocolate itself can be analyzed for sugar and fat to precisely control the quality of the final product and maximize the use of expensive cocoa butter.



Unity Solutions to this Industry



Chocolate / Cocoa Plant Solutions

Unity Scientific offers a variety of ready-to-use solutions tailored to the chocolate / cocoa plant industry. All of our chocolate / cocoa analyzer packages start with the SpectraStar XL analyzer, an advanced, high performance at-line scanning monochromator. All SpectraStar XL models come standard with the following features:

- TRUE NIR™ Spectrometer for ultra-performance
- Advanced TRUE NIR detector and electronics for low noise and high repeatability
- 17" high resolution touch screen for intuitive, easy operation
- Fast Windows®7 computer with Solid State Drive for reliability and speed
- Sealed case for reliable operation at-line
- 5 W 10,000 hr lamp
- Unity Check Cell for daily performance validation



Robust and Ready to Use for At-Line or Lab Use

The Unity Chocolate Analyzer is robust enough to be used both at-line or in the lab. The system features a long life lamp and no air filter or fan, providing for very low cost of ownership. The built in computer is fully networkable and LIMS compatible, allowing for plant management to immediately access results. The Chocolate Analyzer is a valuable tool to control every step in the chocolate manufacturing process, from incoming ingredients to final product verification.

Unity Chocolate / Cocoa Analyzers are based on the SpectraStar Analyzer, featuring a sealed analyzer case and touch screen operation ready for at-line process control in Chocolate / Cocoa plants. The Chocolate / Cocoa analyzer packages are offered in the following configuration:

The **Chocolate Analyzer package** includes the following:

- SpectraStar 1400 XL (1400 nm - 2500 nm) with built in 17" touch screen, prediction software, multi-cup adapter, US-RTIR-0016 adapter ring, Unity check cell, Unity R99 standard.
- 5 Ring cups US-ISIH-0007 for the analysis of powders
- Large cup US-LGOP-0001 for analysis of cocoa beans
- Small cup US-SRCP-0025 for analysis of powders and cocoa butter
- Gold Reflector US-TSTD-0005 for analysis of cocoa butter and liquor
- Unity Chocolate Calibration package for cocoa, chocolate and ingredients



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