The Sweet Smell of Success
Quality Control in Fragrance

Manufacturing scents for the fragrance and cosmetics industries requires stringent quality control and precision weighing of both raw materials and final products. Swiss fragrance supplier Luzi AG relies on the Excellence XS204 Analytical Balance to meet regulatory requirements and ensure the quality of its scented oils.

The Right Choice for Quality Control
Swiss company Luzi AG specializes in the manufacture, mixing and supply of fragrance oils for use in a wide range of cosmetic products by customers in over a hundred countries around the world. The oils are formulated from a wide range of both natural and synthetic raw materials, and the purity of each of these components is vital to guarantee the high quality end products for which Luzi is renowned. Accurate and reliable weighing, both of the raw materials and of the final product, is an essential part of the company’s rigorous quality assurance process and, for this, Luzi relies on the Excellence XS204 Analytical Balance.

Flexibility by Design
Analysts in Luzi’s quality control laboratory required a flexible system capable of weighing numerous samples, typically ranging from less than 10 mg to over 100 mg, as Bruno Bürgi, head of quality control, explains, “we use the XS204 Balance primarily for quantitative assessments of essential oils and other raw material purchases. We check the purity of these ingredients using gas chromatography and accurate weighing is an important factor in sample preparation for this technique. The balances we had before were not accurate enough for our requirements. They were top loading and quite inconvenient to use and did not respond or give results or respond as quickly as the METTLER TOLEDO instruments do.”
“The balance is also very important for checking final products as part of the quality assurance process to ensure that everything is working smoothly at production level. We can use the balance as many as 30 times a day using multiple operators so it is important that the balance is straightforward and user friendly. The interface is simple and intuitive and includes individually configurable statistical analysis which makes sample evaluation very easy.”

The Excellence XS204 Balance provides the accuracy (±1%) that Luzi requires without compromising on convenience. Dr. Bürgi and his team are particularly impressed by the unique SmartGrid weighing pan that significantly reduces the effects of air turbulence in the weighing chamber and dramatically shortens the time it takes for samples to stabilize before measurements are taken. This innovative feature means that they can measure samples very quickly without needing to close the draft shield. They also sometimes make use of the Ergo-Clip accessories, which compliment the weighing pan by securing the tare vessels during weighing. Dr. Bürgi added that, “the ErgoClip is important when we need to weigh small bottles. The door to the draft shield can be left open without forfeiting the balance’s stability and it makes working with many small samples faster and easier.”

**Fuss-Free Operation and Care**

Calibration is an especially important consideration for Luzi as the company is certified to ISO9001 standards. Dr. Bürgi explains that, “although there are no daily maintenance requirements and the system auto-calibrates, it must, like all our equipment, be recalibrated yearly by METTLER TOLEDO to the ISO17025 standard. METTLER TOLEDO was the only supplier of balances able to fulfill this requirement.” He added, “thanks to the rear-mounted weighing pan, the balance is very easy to keep clean and very reliable. I have worked with METTLER TOLEDO weighing systems for many years now and have always been very happy with them. The support team is always readily available and there for us if we need them.”
Reliable Starch Characterization
By DSC Analysis

Starch is a common ingredient found in food products such as rice, wheat, corn and potatoes. The most important process which occurs during baking or cooking is the gelation process, as with other processes such as bread baking, sauce thickening and cereal swelling. Therefore, it is important to be able to characterize starches and their gelation behavior in order to successfully adjust their cooking properties, digestibility and consistency.

Gelation is the scission of hydrogen bridge bonds in and between starch molecules which results in starch granules readily undergoing enzymatic hydrolysis and hydration. Before gelation occurs, the untreated starch is semi-crystalline. During chemical transition a new network is formed which has a higher volume. Starch is never dissolved in water as it always forms a suspension.

The best method to investigate such transitions is the dynamic differential scanning calorimetry (DSC). During the gelation process, heat is absorbed which results in an endothermic peak occurring between 50 °C and 80 °C in the DSC curve. Complete gelation can only be observed if more than 60% of water is present in the mixture. Then the transition enthalpy amounts to between 7 to 10 J/g depending on the origin of the starch. The transition temperature is also specific for the type of starch.

If identical starch-water ratios are prepared in hermetically sealed aluminum pans, then the different types of starch can be distinguished from each other by peak temperature and transition enthalpy. Therefore, it is possible to identify unknown types of starch. The whole process can be easily automatized by using a METTLER TOLEDO DSC with sample changer and STAR® software to evaluate the result curves accurately.

www.mt.com/ta

The figures shows typical DSC curves for different types of starch.
One Click™ Water Determination
Beta-Tested by Demanding Users

When Takasago in Singapore enquired about a replacement for their old Karl Fischer titrator, they were delighted to be offered the opportunity to beta test one of the new C30 Coulometric Karl Fischer Titrators from METTLER TOLEDO.

Improved Security
The Takasago flavorings plant is one of two factories that this global company has in Singapore producing high quality seasoning powders and flavors which are supplied to a wide range of customers within the food and beverage industries. The water content of many of the products made by Takasago, as well as the raw materials which they consist of, is extremely important as these will affect downstream operations if not within specifications.

The lab manager, Ms. See Mai Chan, was looking for a replacement for their existing Karl Fischer titrator in an attempt to speed up processing, ensure complete accuracy and hopefully save on the reagents used whilst ensuring a cleaner process in terms of sample/waste handling. The new C30 Coulometric Karl Fischer Titrator and a Stromboli Automated Oven Sample Changer were provided by the sales specialist for the trial to streamline the analyses.

Trying is Believing
Ms. Chan added that, “with the new Solvent Manager in the titration system, our operators are never exposed to the reagents which greatly improves safety in the lab greatly. In addition, with the Stromboli Oven Sample Changer, we can simply heat the samples and analyze the transferred moisture in the titration cell. There is no need to transfer samples to the titration vessels. No mess and no waste.”

Lab assistant, Ms. Ernest Ong, was also very impressed with the new features of the C30X in addition to the labour saving consistency of the Stromboli.

Increased Simplicity
Ernest Ong said, “I love the new ‘One Click’ function. I can easily convert all my regular analyses and manual operations to an instant start with the ‘One Click’ hotkeys on my own home screen.”

“All the staff like the bright, clear touchscreen and find the menu system incredibly easy to learn and use”. Ernest went on to say that, “the great benefit is that new staff members learn how to operate the system in hardly any time at all. Alternatively, if we have less technical users, we only need to instruct them how to load the sample and which ‘One Click’ button to press.”
“The Oven Sample Changer really helped me to free up time to do other important things. All I have to do is load the samples and touch the ‘One Click’ button to start the analysis. In addition, we are experiencing a far higher consistency and accuracy of results since the elimination of sample side reactions with the Karl Fischer reagents.”

This beta test by Takasago was a fantastic endorsement of the new Karl Fischer line from METTLER TOLEDO and of mutual benefit to both companies. Takasago plans to replace their old instrument in the very near future.

- www.mt.com/one-click-titration
- www.mt.com/karl-fischer
Two in One
Density and Refractive Meter

One of the worldwide leaders in the flavor and fragrance design industry focuses on continuing to produce premier flavors and fragrances as well as developing new materials and technologies. They decided to replace their old system with METTLER TOLEDO’s DR45 Density and Refractive Meter to keep pace with customer requirements.

Keeping Up-to-Date is Crucial
As business continues to grow, so does the need for state-of-the-art systems in the field of density and refractive index testing. Using older manual systems was no longer efficient and a need was recognized for automated systems with up-to-date features. Whilst attending a training seminar, our customer learned of the exceptional products offered by METTLER TOLEDO and was convinced that a METTLER TOLEDO superior solution would support their long-term needs.

METTLER TOLEDO Has it All
A METTLER TOLEDO sales representative offered a DR45 Combined Density and Refractive Index Meter with an additional SC-30 Sample Changer and LiQC Data Management Software. The customer was most impressed by the convenience and efficiency of the DR45 which enables them to test for both parameters with a single instrument. In addition, the seamless integration of the SC-30 Sample Changer provided ease-of-use, accuracy and efficiency due to its automated system. This new equipment allows our customer to increase measurement speed, simplify procedures and increase the accuracy of results.

The LiQC Data Management Software enables them to obtain results and track records in full compliance with the regulatory protocols they need to adhere to. In addition, they will be able to fully link to the LIMS data management system, which is the next step in the upgrade process.

Our customer was very pleased with excellent technical and sales support provided before, during and after their initial contact with METTLER TOLEDO. They were provided with targeted solutions and quality products which contributed to the success of their experience. The end result is that our customer has the best possible return-on-investment, as well as speeding up and generally improving their entire testing process.

www.mt.com/sc1-sc30
www.mt.com/densimetro-refractometro
Fragrances play a major role in home care products, such as detergents, to keep laundry smelling fresh and clean. The Moisture Analyzer HR83-P from METTLER TOLEDO is frequently used within development and production as a reliable quality control analysis on a day-to-day-basis. The HR83-P combines time savings with high user friendliness.

**Perfumery Business Meets Analytical Competence**
Among METTLER TOLEDO’s customers are a variety of companies that produce fragrances for the world’s leading manufacturers of perfumes, beauty products and household consumer goods. The end user has very high expectations of the home care products they purchase. The fragrances of products, such as detergents, fabric softeners and air fresheners are expected to last, whilst simultaneously covering or removing odor. Consequently, the development and production of fragrances depend highly on professional QC methods including moisture analysis.

**Professional Moisture Analysis is Key for the Perfect Scent**
In the quality control laboratory, moisture analysis, e.g. of a perfumed detergent, is a routine measurement regularly performed on the METTLER TOLEDO Halogen Moisture Analyzer HR83-P. Usually, 3g are weighed into the sample pan, the switch-off criterion 3 and a temperature of 115 °C are set and the measurement can be started. The result is obtained in less than 20 minutes. The laboratory operators highly appreciate the HR83-P’s ease of use, the possibility of assigning sample ID’s and 40 freely available methods for different types of products.

Furthermore, they benefit from the AutoMet feature which saves considerable time for new method development, especially when matching reference values, e.g. deriving from predecessor models LJ/LP16 or the drying oven. Satisfied lab technicians and lab managers report that they can really benefit from the HR83-P’s fast operation and drying procedure which saves a considerable amount of process time per working day combined with a fast investment pay-back.

[www.mt.com/moisture](http://www.mt.com/moisture)
New Products and Technologies
From METTLER TOLEDO

METTLER TOLEDO delivers powerful solutions that simplify work in laboratories around the world. Combining our state-of-the-art technologies with our applicative competence, we have a strong value proposition to make: accurate results and productivity second to none.

Weighing Solutions and Analytical Instruments

New ErgoClips & Stands
Available from 2009
We are proud to announce the expansion of our ErgoClips portfolio! The ErgoClip small flask, used for enhanced weighing directly into the 10ml volumetric flask, is now also available for analytical XS/XP balances. Please visit our website for ErgoClip filter holder to improve manual filter weighing process and new ErgoClip stands to prevent damage to ErgoClips and keep the bench space tidy.

New Range of Laboratory Conductivity Sensors
Easier Handling and More Precision
The entire range of laboratory conductivity sensors is replaced by the second generation of InLab® conductivity sensors. The robust sensors have a newly developed open tip design. Therefore, sample carryover is reduced to an absolute minimum. Cleaning and rinsing becomes easier. The linearity over the whole measuring range is maximized and the response time is shortened. All kinds of samples can be measured easily, including pure water.

Manual Multi-channel Pipetting
Increase productivity with the new Pipet-Lite Adjustable Spacer – the world’s only manual multi-channel pipette with adjustable spacing. Ideal for routine work in genomic, proteomic, tissue culture and cell culture applications, this pipette can easily alter the format spacing from 24-well to 96-well. Just a twist is all that’s required to change spacing!

New Range of Laboratory Conductivity Sensors
Easier Handling and More Precision
The entire range of laboratory conductivity sensors is replaced by the second generation of InLab® conductivity sensors. The robust sensors have a newly developed open tip design. Therefore, sample carryover is reduced to an absolute minimum. Cleaning and rinsing becomes easier. The linearity over the whole measuring range is maximized and the response time is shortened. All kinds of samples can be measured easily, including pure water.

LabX Balance Software Version 1.5
New: Inbuilt Job Templates and GWP® Support!
In this new version of LabX balance software, 25 ready-to-use job templates are integrated. It is even easier to get up and running with applications such as Moisture Content Determination, Filter Weighing, Standard Solutions, Density Determination and many more! Using the full on screen user guidance, on both balance and PC, LabX balance 1.5 also helps you work according to GWP® guidelines, making lab work easier and more efficient.

Metttler-Toledo AG
Laboratory Division
Im Langacher
CH-8606 Greifensee, Switzerland

Your METTLER TOLEDO contact: