Results to ‘Dye’ for in the Palm of Your Hand

Dosing powdered dyes manually can compromise operator safety and cause airborne contamination. A leading hair colorant producer is achieving reproducible results with a hand-held powder-dispensing device designed to improve operator safety and eliminate clean-up time.

A hair color manufacturer’s shade palette depends on the precise formulation of ingredients, including dyes, present in their recipes. For accuracy and repeatability, components must be dosed with pristine accuracy.

Handling aggressive chemicals
A world leading hair color producer tests colors repeatedly. Operators use spatulas to weigh-in powdered dyes on balances placed in specially designed safety cabinets. Such fine powders can easily become airborne, presenting inhalation and cross contamination risks.

Therefore, R&D and production divisions wanted to minimize the time spent managing spills and trying to prevent airborne contamination. They were also keen to establish a method for tracking the addition of ingredients in order to ensure that no component gets missed as this would require reworking the entire batch of dye.

Assessing the weighing process
Essentially, operators weighed-in each powdered component until the formulation was complete. Components were weighed at every step to ensure the 2% tolerance limit of each individual component was not exceeded. Operators checked the totals on the formulation printouts before dissolving and mixing the compounds to create the desired shade.

Evaluation of the company’s needs, using the support of METTLER TOLEDO’s Good
Powder Dispensing

Sample Container
Flexible system for connecting typical sample containers to the dosing head.

Dosing Head
Precise dosing of free-flowing substances, with RFID chip for traceable records.
Typical target dose > 0.5 mg.

Weighing Practice (GWP®), identified an XP precision balance as the perfect match for their process accuracy requirements. The balance also has the built-in SmartTrac dosing guide, which provides a visual aid to help operators dose each component to target. A printer and laboratory software fulfilled their demands for traceability and process security.

Safe, accurate manual dosing
Despite using the correct balance, the problems surrounding the critical dosing step and the risk of contamination was not solved. For this, a complete new solution had to be designed; a handheld powder dispenser. The Handheld Powder Dispenser (HPD) repeatedly doses small amounts of powdered substances while minimizing spillage risks and airborne contamination.

Today, the HPD brings convenience, safety and ease-of-use to the company’s manual powder dispensing work. As sample containers can be easily connected to the dosing head, accurate dosing is now achieved without spills, improving safety and eliminating clean-up time. A separate dosing head is used for each dye, so there is no risk of cross contamination and the powdered dyes always remain enclosed to provide a higher level of operator safety. As it is handheld, HPD is also particularly convenient for use in the company’s safety cabinet, which also houses their new balance. With this new solution from METTLER TOLEDO, the company can easily achieve the shine and colors their customers desire.

Text: Julia Schenk
Analytical Weighing Product Manager

www.mt.com/quantos-hpd-starter-kit
Pipette Ergonomics
Because Pipetting Shouldn’t Hurt

The ergonomic aspects of pipetting are easily overlooked, particularly among younger and less-experienced users. But not only is pipetting a forceful activity, it is repetitive and injuries caused by strain and overuse accumulate over time.

Pipettes are integral to many laboratory workflows and assays, so it makes sense to pay close attention to their design and features. These can significantly affect a pipette’s performance and the level of strain they put on the users’ hands and arms.

In addition to delivering consistent accuracy and precision, a pipette’s ergonomics are essential to minimize fatigue. It can significantly affect performance, the repeatability of experiments and the researcher’s risk of RSI.

No aspect of pipetting exerts more force on a user’s hand than tip ejection, which is why METTLER TOLEDO’s Rainin LTS™ LiteTouch™ tip ejection system is so unique. LTS reduces tip ejection force by up to 80% and is available on all Rainin XLS+ single and multichannel pipettes.

Typical pipettes have cone-shaped shaft ends that rely on friction to hold the tips firmly and create an airtight seal. The problem: However much force you use to get the tips on, at least as much force is required to eject them and most of this force is exerted by your thumb.

LTS dramatically reduces the amount of force required to load and eject tips. A tiny seal inside the base of the tip slides easily over the shaft, creating a firm, airtight fit. LTS shafts also have cylindrical ends (not cone-shaped) that rest solidly inside the tip and eject with minimal force.

What is LTS?

Typical universal-fit shaft/tip

LTS shaft/tip

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Good Pipetting Technique Poster
Reduce common pipetting errors and improve the accuracy of your pipetting experiments.

Order a copy today

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www.mt.com/RaininLTS

Text: Noah Saederup
Rainin Product Manager

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35% Recycled / 30% PCW / FSC Certified / Acid Free
Switzerland-based Victorinox must uphold its reputation with every “Original Swiss Army Knife” they produce. METTLER TOLEDO moisture analyzers play a critical role in ensuring that incoming goods, such as plastic granulate, contain the correct moisture content and help Victorinox create durable, high-performing knives.

Karl Eisener founded Victorinox in 1884 and it has been delivering knives to the Swiss Army since 1891. Throughout its 130-year history, the company has remained true to Swiss values for manufacturing precision and product excellence, crafting just over 100,000 Swiss Army knives, multi-tools and kitchen/home-use knives each year.

Critical moisture content
Victorinox carefully tests each and every batch of plastic granulate they receive to ensure moisture content accuracy. More than 15 tons of raw materials are stored at once and up to 1,000 kg batches are dried daily. This front-line quality control also includes tests for color and thermal properties. If an incoming load of granulate does not pass the quality control tests, it is withheld from production.

Secondary testing occurs when a customer order is received. At the point of order, granulate is sampled from the dryer and tested again. If moisture is off or if, in other words, the plastic contains too much moisture to achieve the required density and hardness, the granules go back to the dryer. If moisture content and other quality specifications are met, then the granule batch is fed automatically into the injection molding machines that produce Victorinox knife handles with their characteristic cross and shield logo.

Easy-to-use equipment
Victorinox works with six different plastics, each with its own drying method for moisture analysis. METTLER TOLEDO moisture analyzers have been the key to fast heating and precise temperature control to ensure unsurpassed precision and highly reliable moisture content results.

Additionally, the analyzers used by Victorinox are easy to program with individu-
al drying protocols. This is essential, as a single person prepares samples, changes tooling and manages seven injection-molding machines per shift. Pre-programmed drying-method shortcuts are easily identified by the material number.

**Ensuring product quality**
Since deciding on METTLER TOLEDO moisture analyzers, Victorinox has been able to guarantee material moisture content so that, if there’s a problem with injection molding, moisture content is already eliminated as the potential cause. With this improvement, Victorinox has been able to cut down on the number of discarded batches and speed up production by as much as 10%. This pleases Peter Anderhub, Victorinox’s injection molding team leader, “Our goal is to ensure that the material is of the highest quality before going into the injection molder. METTLER TOLEDO’s moisture analyzers help us to reach our target.”

Text: Claas Boeger
Moisture Analyzer Product Manager

▶ www.mt.com/moisture
Redefine the Kilogram
Using a Watt Balance

International kilogram prototype mass comparisons indicate a yearly drift in measurements. METTLER TOLEDO has worked in collaboration with METAS to develop a microgram load cell as part of the Watt balance experiment. The aim is to establish a more precise, unchanging kilogram definition based on a physical constant of nature.

The kilogram is the last unit of the International System of Units still based on an artifact. The international prototype of the kilogram, or IPK, is a cylinder of platinum-iridium alloy machined in 1878. However, mass comparisons with the IPK have indicated a mean drift in the official measurement of about 0.5 µg/year.

All modern mass measurements are directly related to the IPK. The relative uncertainty of each measurement is declared according to a test weight comparison carried out on the same apparatus with the IPK. As such, IPK measurement stability is critical. To improve the measurement's stability and ensure it weighs the same irrespective of geography, scientists have been working on a new kilogram definition based on a physical constant of nature.

An innovative weighing method
A project to measure the kilogram based on a physical constant of nature has been running for the last 17 years at the Swiss Federal Office of Metrology (METAS). The developed method involves using a Magnetic Force Restoration (MFR) balance, which compares the weight of a test mass very precisely with the force created by a current in a magnetic field. The name ‘Watt balance’ comes from the fact that the weight of the test mass is derived from the comparison of electrical and mechanical power in the experiment.

The experiment is split into two measurement phases. The first static, or weighing, phase uses an MFR mass comparator. The aim of this phase is to compare the force created by the current in a suspended coil in a magnetic field against an addition of a mass to the balance. In the subsequent dynamic phase, voltage is introduced by vertically moving the same
coil in the same magnetic field. The voltage is thus measured by relating it to the speed of the moving coil. Phase comparison gives rise to an equation that relates electrical power to mechanical power and eventually, it is hoped, to a new 1 kg standard.

\[ G(B, \ell) = \frac{mg}{I} = \frac{U}{V} \Rightarrow U \cdot I = m \cdot g \cdot v \]

A Monobloc® load cell at the core of the Watt balance
To measure the static weighing phase, a METTLER TOLEDO team has created a Monobloc load cell capable of weighing this new constant at a startling resolution below 1ug. This measures the minute forces required to accurately explore this method.

METTLER TOLEDO’s project manager, Daniel Reber stated, “The new load cell is a key part of the METAS experiment. With it, the load cell team is confident to enable METAS in their efforts to redefine the kg.”
Anne is a Laboratory Manager whose lab performs a wide variety of analyses, mostly for quality control purposes. Recently, Anne was tasked with finding a way to automate these analyses, optimize operators’ time and ensure traceability and compliance with the rising regulations.

Anne concluded that the key needs were related to integration, either of instruments, systems, or reports, and automation of analyses, workflows, and data. She decided to adopt LabX in her laboratory to address these challenges.

Today, her instruments are connected, methods started with just one click and lab journals replaced with a secure database.
Smooth, error-free workflow
On the instrument, step by step guidance directs the operator. All work is ensured to be in accordance with internal SOPs.

Full data management
All information is automatically stored in a secure database to ensure traceability. See, store or print results in a customized report at any time.

Tailored set up
Develop and implement SOP compliant application methods ready for use on the relevant instrument. Define the roles of individual users and set-up the daily task list.

Power Your Bench with LabX® Software

Instrument connectivity
LabX connects Mettler Toledo instruments to a single software. A unique interface means less training and more efficiency.

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Seven2Go™ Portables
Quality pH Measurement Made Mobile

In need of a simple, reliable and robust portable pH meter? The new Seven2Go portables are engineered to provide users with fast quality data, one-handed operation, and durability. Ideally suited for mobile applications in the laboratory, at-line, or outdoors, the new line of pH/mV, conductivity, dissolved oxygen, and ion portables provide highly accurate and reliable measurements through a simple menu and intuitive operation.

Intuitive Operation
Seven2Go’s new intuitive menu guarantees out-of-the-box operation for anyone. Users no longer need to study lengthy operating instructions.

Fast Navigation
Seven2Go’s new T-Pad improves the speed at which you move through menus. The smart button arrangement offers faster navigation, shortening time to measurement.

Easy Readiness Check
With the new LED status light you are instantly aware of how your meter is doing. An easy to understand traffic light concept shows if your meter is ready to measure or not.

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Put Your Lab InMotion™
for Flexible and Efficient Analyses

Automation in today’s laboratory has high demands for a variety of samples and workflows. Automation no longer means just analyzing one sample after another. Autosamplers assist with making workflows more flexible and efficient by eliminating process orders and sample data transcription errors.

Maximum throughput
Designed to maximize throughput in the minimum of space, InMotion autosamplers increase productivity without sacrificing laboratory bench space. The innovative robotic arms of the Pro and Max series reach into the sample tray to optimize space.

Flexible workflows
Intuitive and flexible instrument programming allows sample workflows to be tailored to specific requirements. Whether using PowerShower™ to clean components or more thorough sequences to clean and recharge electrodes, InMotion is here to assist.

Modular and tailored
Every lab and sample has its own demands. Build an autosampler according to sample requirements with modular boards for extra pumps, CoverUp™ system for protecting samples and operators and water bath sample trays for temperature control.

www.mt.com/InMotion
Know-How

Straightforward Routine Testing
Minimize Risks and Costs

Testing laboratory instruments periodically is not only a way of complying with regulations but also the key to obtaining accurate and reproducible results.

Routine testing can be, however, a tedious and complex task. Our whitepapers provide you with recommendations about when and how to perform a routine testing on your instruments – among other good practice tips!

Step-by-step guidance for eased instrument routine testing

Balances
Pipettes
Moisture Analyzers

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