



NEWSLETTER Q2 2019

CLINICAL PATHOLOGIES

LABORATORY PRODUCT
SOUTHEAST ASIA AND TAIWAN

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ThermoFisher
SCIENTIFIC

ESSENTIAL TO SCIENCE

by Laboratory Products Division

SAMPLE PROTECTION - SIMPLY TWIST THE CAP TO CLICK AND SEAL THE VIAL
FOR LEAKPROOF PROTECTION

FLUORESCENT AND LUMINESCENT ASSAY IN CLINICAL PATHOLOGY

WATER PURIFICATION SYSTEM - THERMO SCIENTIFIC BARNSTEAD SMART2PURE
PRO UV/UF 16 LPH WATER SYSTEMS

Q&A

HOW CAN I HELP IMPROVE SAFETY IN MY LABORATORY WHEN SPINNING
PATHOGENS OR PATIENT SAMPLES IN SWING-OUT ROTORS?

CENTRIFUGE

USING THERMO SCIENTIFIC SMALL BENCHTOP CENTRIFUGES FOR THE
EFFECTIVE AND EFFICIENT PROCESSING OF CLINICAL SAMPLES

SIMPLY TWIST THE CAP TO CLICK AND SEAL THE VIAL FOR LEAKPROOF* PROTECTION



We understand the value of patient samples. Sample collection needs to be easy, and sample transport needs to be secure. Thermo Scientific Samco Clicktainer vials have a wide opening and leakproof* seal. The “click” seal system indicates when the cap is properly applied so the sample will not leak or cause contamination.



Application

With their innovative closure system, Thermo Scientific Samco Clicktainer vials are suited for the collection and transport of fluids, solids, and powders. This makes them ideal for a wide range of customer applications, from the collection of valuable and often hazardous patient samples such as urine, feces, and sputum, to their suitability for use with formalin or fixatives for histology applications.

Thermo Fisher Scientific subjects the Samco Clicktainer Vial to a number of rigorous leak test procedures. We conduct a vacuum test that draws 95 kPa of pressure within a sealed chamber, followed by leak testing in accordance with BS EN 14254.

What makes Clicktainer vials different from other sample containers?

- **Click Seal closure**

The NEW Click Seal closure allows for visual and audible indication of the full cap closure. You will feel it click into place!

- **Easy sample handling**

The smooth internal tabs reduce the risk of tearing with gloves or the tab breaking off, contaminating the sample.

- **Leakproof performance guaranteed**

Each Clicktainer vial is thoroughly tested in accordance with BS EN 14254

- **Knurls on cap and base**

Vials are easy to handle with gloved hands.

- **Stackable**

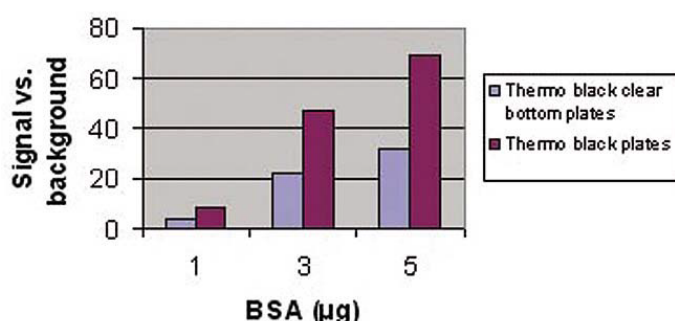
Clicktainer vials are stackable, helping you to optimize sample storage.



FLUORESCENT AND LUMINESCENT ASSAY IN CLINICAL PATHOLOGY

Quantitation of proteins is a common analysis in a wide variety of clinical pathology testing. There are several commercial kits available for this purpose. To determine the concentration of a protein the fluorescence or luminescent can provide a high sensitivity for trace of pathologic proteins.

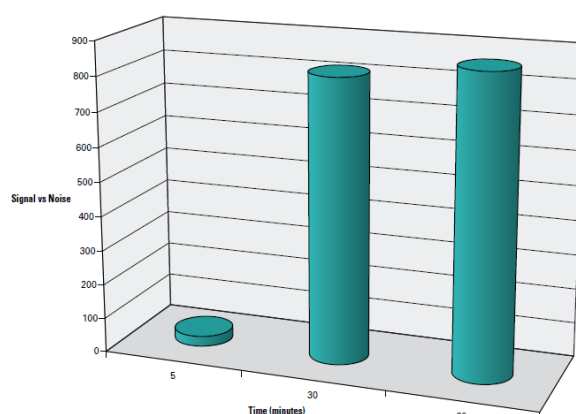
Fluorescent and chemi-luminescence probes and substrates are used more and more in assays for detection of biomolecules. Both luminescence and fluorescence assays can be split into two major applications, one using the label directly by light absorption/chemical reaction, the other using a conventional label such as the enzyme peroxidase or alkaline phosphatase to convert the substrate into a medium with which the label reacts.



Signal vs. background values for Thermo Scientific black and black clear bottom plates for three different BSA quantities.

Thermo Scientific Nunc black/white modules and plates

These plates are optimized for IFMA (Immunofluorometric Assays), FIA (Fluorometric Immuno Assays), or LIA (Luminescent Immunoassay). The transparent polystyrene plates give a low background fluorescence and are optimal where a read through system is used. The white plates/modules provide maximum reflection of fluorescence/luminescence signal while maintaining low background. The white plates/modules are often used for epifluorescence reading. Black modules reduce background fluorescence and minimize back-scatter light which is often encountered in epifluorescence.



Signal versus background values detected at different time points during kinetic enzyme reaction

Thermo Scientific Barnstead Smart2Pure Pro UV/UF 16 LPH Water Systems

Tap to Type 1 Water purification system with UV/UF

All in one! The Thermo Scientific™ Barnstead™ Smart2Pure™ Pro system converts tap water into ASTM Type 1 and Type 2 water. The Smart2Pure Pro 16 offers the choice of a 30 or 60 L reservoir for customizable storage capacity.

Suitable for even the most demanding and sensitive applications, Barnstead Smart2Pure Pro water purification systems exceed international standards **ASTM D11931 Type 1, ISO 3696 Grade 1, and CLSI-CLRW**, delivering ultrapure **18.2 MΩ.cm** water with consistent quality.



Feature	Benefit to customer
Variable flow dispensing	Dispensing knob dials in to exact flow customer needs to fill quickly or down to the drop for fine measurements.
Dual quality water from tap water	Customer can use one unit to obtain type 2 water and type 1 water from tap water eliminating need for alternative supply of pre-treated water.
Flexible mounting	Units can be mounted on wall or on the bench providing for maximized space usage.
Consumable replacement	System displays alerts to remind customer of consumable replacement.
Complete packages	Everything is included so guess work is taken out AND consumables such as UV and UF come already installed so unit is truly plug and play. Packages available to include pretreatment, storage tank and tank accessories.
Aquastop quick connections	No need to depressurize system—when you hear the click the cartridge is connected—prevents potential leaks due to over-tightening, pinched o-rings, or misaligned parts (like having Autolock for centrifuge rotors).
Tilting display	Display can be tilted for easy viewing to compensate for glare or vertically challenged individuals, and user viewing preference.
Remote hand dispenser	System remote dispenser option for Type 1 and Type 2 water

Water Purification System



How can I help improve safety in my laboratory when spinning pathogens or patient samples in swing-out rotors?

Thermo Scientific™ ClickSeal™ rotor lids for Thermo Scientific™ rotors are designed to provide a secure and quick solution for biocontainment of rotors. Local safety rules will regulate the processing of pathogens, or potential pathogens, and the protective measures that should be undertaken to help reduce the risk of Laboratory Acquired Infections (LAIs). These regulations may require the use of biocontainment lids on centrifuge rotors.

Centrifugation is a key part in many clinical and scientific workflows in which pathogens or potential pathogens are processed. Certified by the Public Health England Laboratories (Porton Down, UK), Thermo Scientific™ rotors swinging bucket rotors feature our ClickSeal lids that are tested to ensure that when used correctly, pathogens are safely contained in the event of a tube breakage, tube leakage, external tube contamination or over-fill contamination within tube and cap threads. This containment helps minimize the risk of pathogens being aerosolized into the lab environment, where they could be inhaled or spread, contaminating surrounding surfaces and equipment and posing a risk to lab personnel. Highlighting innovative design features and useful application information for Thermo Scientific Centrifuges and Rotors

Sample containment is a key consideration for lab safety, in part due to the pressures that are exerted on sample tubes during centrifugation which can cause tube breakage or leakage. The high speed air movements within a centrifuge bowl can increase the risk of pathogens being aerosolized. Implementing correct levels of containment, as well as providing regular training and maintenance, help to minimize risk associated with high-risk sample processing.

Containment Levels

 PRIMARY	High quality tubes should be used to minimize the risk of tube failure and leakage and should always be spun within their rated force (RCF) and within their cycle limits. Correct size adapters should also be used to minimize tube movement and provide proper support during acceleration and deceleration.
 SECONDARY	Seal the full rotor or bucket with a cover, ideally with transparent covers, allowing the tubes to be inspected and breakage or leakage identified prior to opening. Biocontainment systems should be independently certified by a testing agency such as Public Health England (Porton Down, UK). Glove-friendly ClickSeal lids are designed for both left- and right-handed users with an audible "click" to confirm sample containment and transparent lids provide easy visualization of the containment status. Available on our TX series of benchtop rotors, these lids are designed to provide safety, while maintaining quick access to samples.
 TERTIARY	For samples with the highest risk, an additional level of containment around the tube helps prevent cross contamination between tubes and can remove the need for sealing tapes or cling films. Also this level of containment provides easier, safer handling when transporting samples throughout the lab. For example, the sealed vessel adapters for use with Thermo Scientific TX-1000 or TX-750 rotors provide individual sealing of conical or bloodtubes. When combined with ClickSeal lids, samples have double containment.

Training and Safety Checks

All personnel using a centrifuge should be trained on the safe operation, including correct loading of rotors, buckets and adapters to prevent accidents. Additionally, it is important to understand the use of biocontainment lids and local procedures if an accident or leakage occurs. O-rings on these biocontainment lids are an integral part of the sealing and should be regularly checked to ensure they are in place, there is no damage or degradation and that they are cleaned and lightly lubricated regularly with grease. Centrifuges should also be regularly cleaned and maintained ensuring continued safe operation.

Summary

Sample protection with Thermo Scientific ClickSeal biocontainment rotor lids on our TX series of benchtop rotors, as well as regular training and maintenance, help minimize risk of LAIs associated with sample processing and contribute to the safety of lab personnel.

Clinical laboratory testing plays an important role in the detection, diagnosis, and treatment of disease. The use of centrifugal force for separation of blood and urine is a very crucial step within the process. It is very important not only to perform this step correctly, but also efficiently so as to derive the best results for the patient sample.

Blood is typically separated to yield platelet-poor plasma (PPP), which in turn is used for most coagulation tests. Ideally, PPP should have a platelet count of less than 10×10^3 per μL .

Similarly, the analysis of urine is also very important in the clinical laboratory. Information derived from this testing can predict many important medical concerns, one of which is the function of kidneys or associated infections. This common test measures various compounds such as white blood cells, red blood cells, epithelial cells, bacteria, calcium oxalate crystals, mucous threads, yeast, and hyaline casts that pass through the urine.

Finally, blood chemistry analysis is also a very common test in the clinical laboratory. These results are used to evaluate a variety of components such as potassium, aspartate aminotransferase (AST), phosphorus, and lactate dehydrogenase (LDH).

Thermo Scientific™ small benchtop centrifuges are effective in critical centrifugation steps of the following clinical testing: (A) platelet-poor plasma (PPP) preparation, (B) urinalysis, and (C) blood chemistry analysis.

Thermo Scientific small benchtop centrifuges (see Table 1) offer sample protection with the Thermo Scientific™ ClickSeal™ biocontainment lid system certified by Public Health England, Porton Down, UK. They also provide Thermo Scientific™ Auto-Lock™ rotor exchange which allows rotors to be installed and removed from the chamber of the centrifuge with the push of a button – no tools required.



Thermo Scientific Small Benchtop Centrifuge

Table 1. Thermo Scientific™ Small Benchtop Centrifuges

Heraeus™ Megafuge™ 8 small benchtop centrifuge, ventilated
Heraeus™ Megafuge™ 8R small benchtop centrifuge, refrigerated
Sorvall™ ST 8 small benchtop centrifuge, ventilated
Sorvall™ ST 8R small benchtop centrifuge, refrigerated
SL 8 small benchtop centrifuge, ventilated
SL 8R small benchtop centrifuge, refrigerated

Centrifuge

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