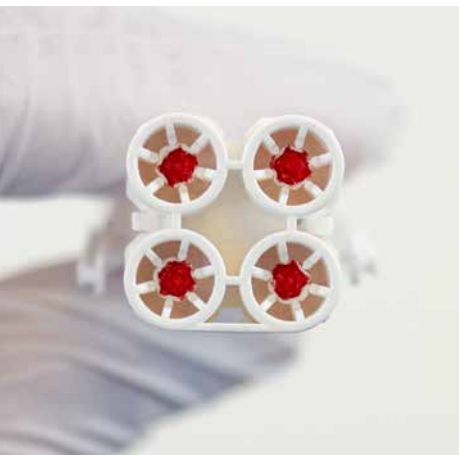


HEMA PEN[®]



Volumetric accuracy | Sample integrity
Convenience

hemaPEN[®]

Advanced precision microsampling

Confident and accurate results begin with hemaPEN.

hemaPEN is a microsampling tool that enables the collection of four volumetrically fixed, accurate and precise, samples from a single source.

Where there is no option to compromise, the hemaPEN is designed to maintain sample integrity for quantitative analysis and enable information-rich decision making.

hemaPEN is an easy to use advanced precision microsampling tool that can be used by anyone in any place.



Volumetric accuracy | Sample integrity
Convenience

Advanced precision microsampling technology

Convenience

- Intuitive pen-like design
- Collect blood from any source
- Rapid sample collection
- Remote sampling

Volumetric accuracy and precision

- Capillary-based technology enables autonomous accurate fixed volume collection
- Four replicates from a single source
- Eliminate analytically relevant hematocrit bias
- Enables quantitative analysis

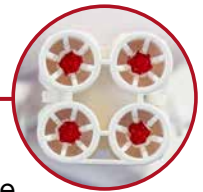


Sample integrity

- Single use and tamper-resistant
- Contained sample to minimize contamination and prevent human contact
- Integrated desiccant enables consistent sample drying profile
- Dried format for simplified storage and logistics (no cold-chain)

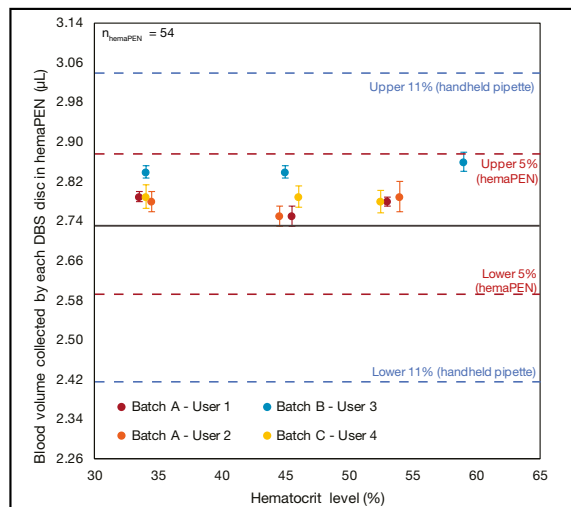
Laboratory integration

- Customizable cartridge design integrates into microtiter plate formats
- Custom analytical workflow integration or automation solutions support
- 2D barcode supports chain of custody
- Space available for customized laboratory labelling



Volumetric accuracy and precision

hemaPEN exceeds industry gold standard volumetric accuracy and precision.¹



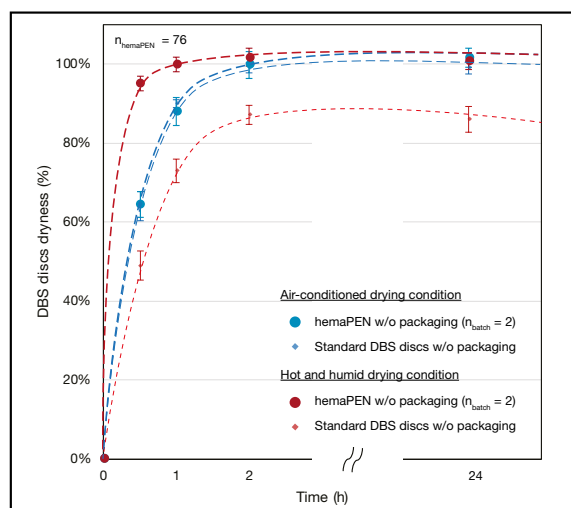
- Leverages the accuracy and precision of micro-capillaries to deliver fixed volumes.¹
- Empowers any user to collect and store quality blood samples.
- Removes volumetric hematocrit bias.
- Collects four samples from any single source of blood.

1. Hawthorne, G., L. Dillen, M. Barfield, Z. Cobb, A. Kandira, K. Schroeter, S. White, et al. "Feedback from the European Bioanalysis Forum Liquid Microsampling Consortium: Microsampling: Assessing Accuracy and Precision of Handheld Pipettes and Capillaries." *Bioanalysis* (2019).

Figure 1. Blood volume collected with hemaPEN from gravimetric measurement of 54 DBS cartridges by 4 users, 3 HCT levels, 3 device batches, at 3 different time points. The error bars represent 1 x SD. The red dash lines delimit the nominal precision range of 5% defined by Trajan. The blue dash lines delimit the observed precision range ($\pm 11\%$) obtained from the collection of biological microsamples using handheld pipettes by experienced users from the EBF liquid microsampling consortium.¹

Sample integrity

hemaPEN provides consistent sample drying profile and integrity compared to traditional dried blood spot format.



- Consistent drying within two hours.
- Batch to batch consistency of drying.
- Maintains dry conditions for 24 hours without the tertiary packaging in any environmental conditions.
- Maintains the DBS samples in a dry condition (>85% dry) for at least 30 days when stored in the tertiary packaging independently of the environmental conditions (no additional desiccant).
- Contained sample to minimize contamination risks.
- Tamper-resistant chamber to prevent unintentional access to samples.

Figure 2. Drying state of the (circle) DBS discs inside the hemaPEN (without tertiary packaging) and (diamond) standard DBS discs outside hemaPEN under 2 drying conditions (Air-conditioned: 15-25°C - 30-70% RH; Hot and humid: 33-37°C - >90% RH) and 5 drying times from gravimetric measurements of 76 (hemaPEN) + 22 (standard DBS) DBS cartridges. The error bars represent 1 x SD. Independently of the drying conditions, hemaPEN provides a consistent drying profile within 2 hours, and maintains their dryness stable for 24 hours without the use of the tertiary packaging. In comparison, standard DBS discs dryness depends on the drying conditions.

Product specifications

hemaPEN functionality remains consistent independent of substrate. Each hemaPEN is identified through a specific model number which references substrate material, volume of capillaries and hemaPEN model type.

Substrate	Volume reference	Model	Model number
D* = 226™	+ 300 = 2.74 µL	+ S = Standard (base model)	= D300S
W† = 903®	+ 300 = 2.74 µL	+ S = Standard (base model)	= W300S

Technical data

Product features			
Sample type	Whole blood	Capillary specification	K2 EDTA-coated borosilicate Type 1 USP
Storage format	Dried	Substrate dimensions	3.5 mm diameter
Sample volumetric accuracy	2.74 µL ±5% (0.14 µL)	Substrate	226* or 903†
Volumetric precision	CV <2.5% (interdevice)	Shelf life	One year
Number of samples collected	4		
Material and colors			
Product color	White main body, a clear plastic tip and base and a green indicator stripe		
Packaging			
Units/pack	Provided as a single unit per pack		
Pack dimensions	160 mm x 230 mm x 50 mm		

Trajan Scientific and Medical

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*226™ supplied by PerkinElmer Pty Ltd. 226™ is a trademark of PerkinElmer, Inc or its affiliated entities. †903® 100% cotton fiber supplied by Eastern Business Forms, Inc. 903® is a registered trademark of Eastern Business Forms, Inc.

hemaPEN® is supplied for therapeutic or IVD use in Australia, New Zealand, UK, EU and USA only: ARTG number: 280007; CE mark, general IVD; US FDA number: D410490. Outside of the territories listed above, the hemaPEN is supplied for research purposes only and not for therapeutic or diagnostic use.



Visit www.hemapen.com or contact us to discuss your workflow challenges and evaluate hemaPEN.

Are you having challenges with:

1. Sampling of small volumes.
2. Frequent monitoring of vulnerable patients.
3. Achieving consistently accurate and precise results for quantitative analysis.
4. Testing of remote populations.
5. Escalating sampling costs.



Trajan is building a suite of technologies and solutions around hemaPEN as a platform technology that can be applied to any microsampling workflow challenge:

- Synthetic substrates that can be functionalized to improve sample stability, reduce ubiquitous impurities of standard cellulose-based DBS papers, or streamline sample extraction.
- Customizable cartridge design.
- Custom analytical workflow integration or automation solutions.

Trajan Scientific and Medical

Science that benefits people

Trajan is actively engaged in developing and delivering solutions that have a positive impact on human wellbeing. Our vision revolves around collaborative partnerships that improve workflows, delivering better results.