

# HEMA PEN<sup>®</sup>



Volumetric accuracy  
Sample integrity | Convenience

## hemaPEN<sup>®</sup>

Microsampling made simple

Collecting samples that otherwise could not or would not be taken

*The hemaPEN<sup>®</sup> is under development and the prototype device is supplied for research or investigational purposes only. This device is not for therapeutic or diagnostic use. Registration of hemaPEN as a Class 1 blood collection and storage device is scheduled for end of 2019.*

hemaPEN provides a convenient sampling procedure for collection and storage of four identical dried blood spot (DBS) samples to drive information-rich decision making.

Unlike conventional DBS sampling tools, hemaPEN enables collection of an accurate and precise volume, and is designed to maintain sample integrity for quantitative analysis.

An easy-to-use sophisticated microsampling tool in the hands of non-analysts.

Volumetric accuracy | Sample integrity  
Convenience



## Advanced microsampling technology

Derived from capillary blood collection and the best of DBS technology, hemaPEN provides additional benefits for better patient outcomes.

### User friendly

- Intuitive pen-like design
- Collect blood from any source
- Rapid sample collection (<20 seconds)
- Remote sampling

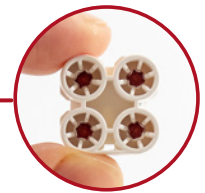
### Volumetric accuracy and precision

- Capillary-based technology enables autonomous accurate 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)



### Simplified sample processing

- Pre-punched discs
- DBS cartridge compatible with standard 96-well plate
- Entire collected sample goes directly into analytical workflow
- 2D barcode supports chain of custody

## Volumetric accuracy and precision

hemaPEN collects and stores volumetrically accurate and precise blood samples independent of blood hematocrit, user or batch.

- Volumetric accuracy: 2.74  $\mu\text{L} \pm 5\%$
- Inter-device precision: <2.5%

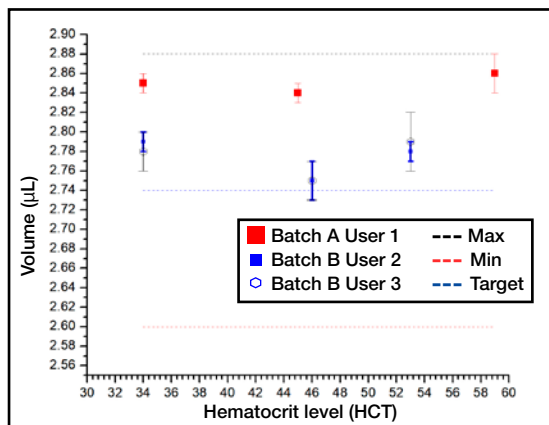


Figure 1. Volume of blood collected by hemaPEN, based on weight across different blood hematocrit levels, batch and user (n=6 hemaPENs per point)

Volumetric accuracy and precision is driven by end-to-end capillary collection.

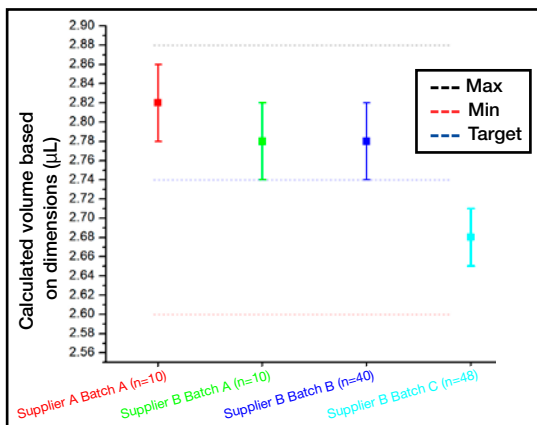


Figure 2. Calculated volume based on dimensions (n=hemaPEN capillaries measured)

## Sample integrity

hemaPEN provides a consistent drying profile independent of environmental conditions.

- Drying efficiency assessed by measuring the change in weight of 4 x 3.5 mm discs, stored under different environmental conditions.
- Discs were 80% to 100% dry within one hour, and 100% dry within two hours, under all evaluated environmental conditions.

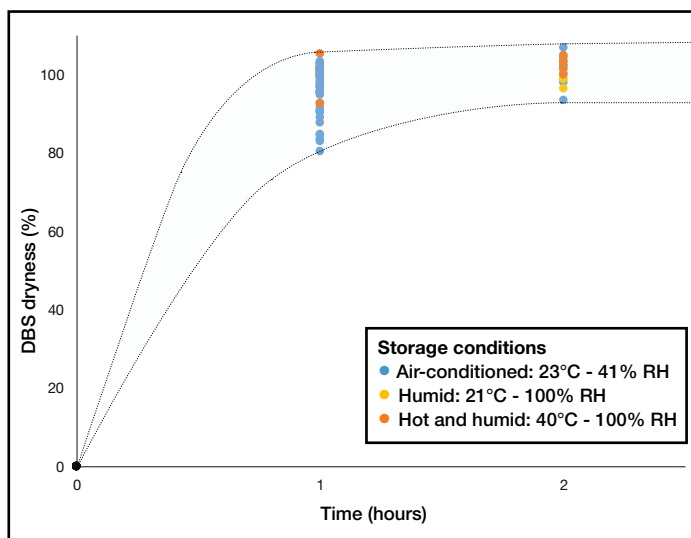


Figure 3. Drying state of DBS samples inside hemaPEN under three different storage conditions (n=42, 42 hemaPENs, two time points)

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

## hemaPEN

### Precision microsampling

hemaPEN provides a convenient sampling procedure for collection and storage of four identical dried blood spot (DBS) samples to drive information-rich decision making.



Visit [www.hemapen.com](http://www.hemapen.com) or contact us to discuss your workflow challenges and evaluate hemaPEN.

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## 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.