



How Efficient is Your Lab?

Part III - Time & Cost Implications of Tube Labeling



From Brooks LIFE SCIENCES

INTRODUCTION

Managing large collections of biological samples has many challenges from protecting sample integrity to ensuring samples can be retrieved efficiently and safely. Biobanked samples should be stored in containers that feature a unique identifier in both barcode and human readable form [1]. This unique identification is often achieved through a combination of 2D coded sample tubes with adhesive labels - using adhesive labels however comes with several challenges:

- ✓ Adhesive resistance to laboratory solvents
- ✓ Mechanical resistance during handling/shipping
- ✓ Legibility of handwritten labels
- ✓ Reliability at extremely low temperatures

Assuming that samples are being stored in a consumable that protects sample integrity, the ability to then retrieve and utilize those samples as part of translational research becomes the principal priority. If the ability to guarantee chain of custody is lost, due to: loss of, damage to or illegibility of an adhesive label, then, the sample is effectively lost. Therefore, in many cases, it is necessary to label a 2D coded tube with supplementary information by directly labelling or marking the tube surface.

PROBLEM

There are many hardware options available to label 2D coded sample tubes, ranging from large automated tube labelers to the humble marker pen. Often hand-held label makers are used as a compromise ensuring a label that is both legible and cost effective, as they can print text based laminated labels at a small unit cost compared to alternatives. Comparing a common hand-held labeler to an alternative solution, such as the IntelliXmark™ from Brooks Life Sciences, can highlight multiple efficiency benefits for consumable costs and processing time.

PROCESSING TIME TESTING

Comparing the time taken to label or mark a sample tube with a hand-held labeler or IntelliXmark, respectively; it is evident that using the hand-held labeler is far less efficient. Using the hand-held labeler to mark a column of 8 tubes in SBS format took 4:33s versus 1:14s using IntelliXmark. Extrapolated over a rack of 96 tubes in SBS format using IntelliXmark would save just under 40 minutes in processing time. See figure 1 for details.

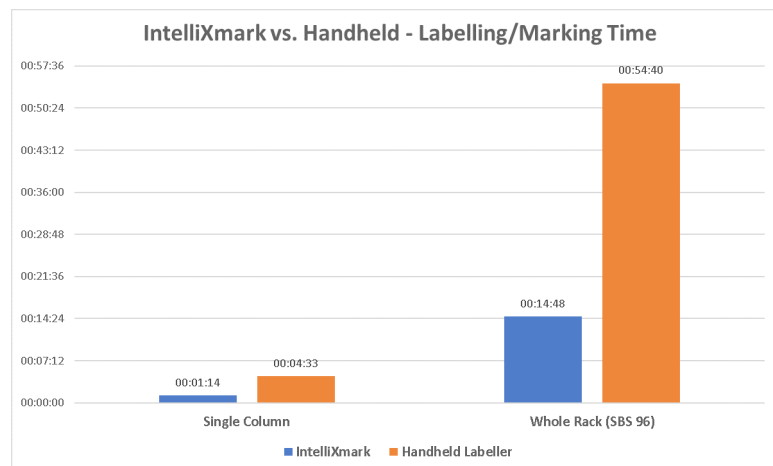


Figure 1



COST IMPLICATIONS

Considering consumables costs for marking and labelling tubes is an important factor that can be overlooked due to these costs not being included in the upfront purchase of the instrument. For example, the upfront costs for the hand-held labeler tested are relatively low when compared to IntelliXmark but, when consumable costs are taken into account it is clear to see a huge difference. Based on marking "1 line of text #x", at a font size of 20, using the IntelliXmark it is possible to mark approximately 60,000 tubes. Using the branded consumables for the hand-held labeler it is only possible to label approximately 148 tubes.

Therefore, consumables for the hand-held labeler need to be purchased more often. When these costs are calculated, there are clear cost benefits to using the IntelliXmark. For example; using the IntelliXmark to mark 60,000 tubes, the consumables cost would be £104; if the hand-held labeler tested were used, the approximate consumables cost would be £6,996. This equates to a consumable cost saving of approximately £6,862 using the IntelliXmark. See Figure 2 for details.

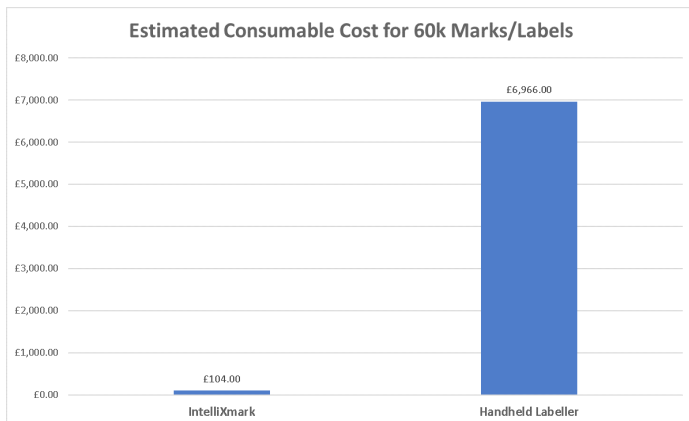
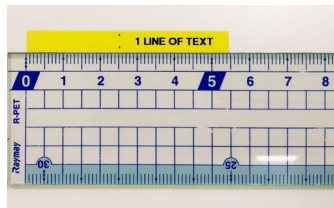


Figure 2

Another important factor for cost consideration is of course the unit price of the instrument, as this is the enabling technology that allows for an efficient process in the lab environment but also comes at a cost. Despite this, the investment required for the IntelliXmark is approximately 28% lower than a hand-held labeler when the cost of 60,000 marks or labels are included.

SUMMARY

From a closer analysis it is clear to see how an alternative solution for marking tubes compared to a hand-held unit is required. An efficient and cost-effective option is the IntelliXmark which offers an optimized process printing directly onto the surface of plastic sample tubes. When used in conjunction with a high-quality sample tube, such as the FluidX 2D Coded tube range, it can fully support ISBER Best Practice [1] relating to sample labelling and the use of a barcode and human readable format.

The clear benefits from a time and cost perspective when using IntelliXmark can also be demonstrated, saving approximately 40 minutes processing time over a full SBS format rack of 96 tubes or £6,862 of consumables costs on 60,000 tubes marked.

The IntelliXmark also adheres to ISBER guidelines by providing a tube marking solution that can resist extreme temperatures, common laboratory solvents and mechanical wear, along with wider benefits such as printing from imported .csv files taken from LIMs/Sample Management Systems.

For more detailed information benefits, pricing and availability please contact your local Brooks Life Sciences Representative.

Acknowledgments:

ISBER Best Practices

Campbell LD, Astrin JJ, DeSouza Y, Giri, J, Patel AA, Rawley-Payne M, Rush A and Sieffert N. The 2018 Revision of the ISBER Best Practices: Summary of Changes and the Editorial Team's Development Process. *Biopreservation and Biobanking* 16(1): 3-6. <https://doi.org/10.1089/bio.2018.0001>