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Introduction to designing test strips

An engineer's guide to designing blood glucose
test strips for accuracy.

3M Medical Materials and Technologies



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An engineer's guide to designing blood glucose test strips for accuracy.

Authors: Kim Haglund, Advanced Product Support Engineer, 3M Health Care
David Franta, Microfluidics Global Business Manager, 3M Health Care

You create lifesaving technology. The blood glucose test strips you design enable those living with diabetes to make life-sustaining decisions while maintaining their independence and active lifestyles.

Blood glucose test strip accuracy is paramount, and it all starts with flawless design. Each layer within the strip has a critical function and needs to be able to do its job and work together without interference from other layers or external contamination.

We would like to take you through the series of white papers titled: *Science Behind the Strip: An Engineer's Guide to Designing Blood Glucose Test Strips for Accuracy*. The series consists of 4 white papers, each covering a subject important to Design Engineers, who are involved in designing blood glucose strips:

- **Anatomy of a typical test-strip white paper** reviews different stages of the blood glucose test strip design process, talks about the role each layer of the test strip plays, as well as effects and reactions of different materials used in the strip design.
- **What malfunctions can occur white paper** cover some problems that can arise during the design and manufacturing phases and potential solutions to help mitigate complications.

- **Choosing the right material for blood glucose test strip construction white paper** is about the importance of choosing compatible materials as not every material works well with other materials. Lack of compatibility can cause the test strip to fail under use conditions. The white paper offers some considerations for best results.
- **How to choose hydrophilic material white paper** will expand on selecting hydrophilic materials as these materials and coatings play an undeniable role in the success of a test strip's reliability.

Regardless if you've designed blood glucose test strips before or are new to the process, understanding the importance of each layer's role, effects, and reactions of different materials and design process considerations will help you provide the reliable results people depend on. Confidence in the materials used in the strip design allows the design engineer to focus on other factors known to contribute to bias in glucose measurements such as temperature, enzyme performance, and patient factors.



Medical Materials & Technologies
3M Center, Building 275-5W-05
St. Paul, MN 55144-1000 USA

Phone 800-584-2787
Web www.3M.com/MedTech

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