

Project Design Specifications—Colorimetric Time Indicator

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Function:

The purpose of the colorimetric time indicator is to notify medical personal when an IV needs to be changed. The indicator should be easily read, smaller than 30 cm², cost-effective and change color at appropriate time intervals. It should also securely attach to IV tubing or dressing but also be removed with out difficulty.

Client Requirements:

- Cost Efficient
- Small (< 30 cm²)
- Attach to IV tubing or dressing

Design Requirements:

- 1) Physical and Operational Characteristics
 - a) *Performance requirements* – Must change color at appropriate time intervals. Ideally in a color gradient form. Attach to IV tubing or dressing.
 - b) *Safety* – Must contain any chemicals or substances used securely to prevent contact with skin. Uses chemicals that are safely disposed.
 - c) *Accuracy and Reliability* – Must have clear and drastic color changes
 - d) *Life in Service* – One-time use, 3-5 days
 - e) *Shelf Life* – Able to withstand a basic medical storage environment and remain inactive until use.
 - f) *Operating Environment* – Must work properly at room temperature.
 - g) *Ergonomics* – Should not interfere provide discomfort to the patient or introduce any harmful substances.
 - h) *Size* – Must be smaller than 30 cm².
 - i) *Weight* – Should be as light as possible.
 - j) *Materials* – Cost-efficient, no latex
 - k) *Aesthetics* – Simple and clean
- 2) Production Characteristics
 - a) *Quantity* – One, but should be designed with the intent of mass production in the future.
 - b) *Target Product Cost* – Under \$5
- 3) Miscellaneous
 - a) *Standards and Specifications* – Must change color at appropriate time intervals
 - b) *Customer* – Medical Community
 - c) *Patient-related concerns* – Do not include latex due to allergies. Make sure substances used are securely contained and would not harm patient if broken.
 - d) *Competition* – There are other types of colorimeters, most which change with temperature.