

"Armadillo 1.0" A Low-Cost Off-Grid Water Pathogen Testing Device

What is the Armadillo?

Armadillo is an open source device that enables on-site quantification of waterborne *E.coli* and coliform bacteria. The device utilizes inexpensive bacterial indicating plates and is capable of incubating up to forty on a single battery charge. Once inoculated with small samples of water these bacterial indicating plates are exposed to 37°C for a period of 48 hours inside of the Armadillo after which they display the presence and quantity of potentially harmful bacteria.

Why is the Armadillo needed?

Water quality improvement projects in developing countries often require on-site analysis and language-independent data visualization. Currently, bacterial indicating plates are incubated by taping them against an engineer's skin for the duration of the incubation which proved to be an irritating and error-prone process. This analysis may also be carried out by external labs, a time expensive process that generates data which is hard to use persuasively with community members. Armadillo offers a simple, low-cost solution.

How difficult is Armadillo to make?

Armadillo costs less than \$200 and can be assembled in less than 2 hours with parts readily available at a hardware store and/or Amazon. Instructions can be found here: instructables.com/id/Portable-Petrifilm-Incubator-for-Inexpensive-In-Fi/

Specifications

- Allows for 65 hours of incubation at 37±1°C[†]
- Material cost under \$150
- Only 2 hours of assembly time required
- Capable of incubating 40 indicating plates per battery charge
- External temperature display
- Weighs only 7 pounds

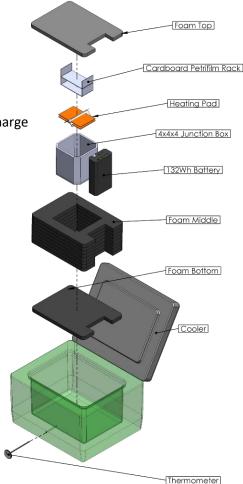
Who created Armadillo?

A collection of students and professionals working at EWB-USA -Greater Austin Chapter.

Where can I find out more?

Contact us at <u>instrumentation-members@ewbgreateraustin.org</u> with any questions, comments, or concerns.

https://ewbgreateraustin.org/ https://github.com/EWB-Austin/petrifilm-incubator



[†]At external temperatures below 22°C run time may be reduced