

Response Technologies

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Technology Description

Airless Metered Dosing Package: 1-Touch®

Business Opportunity: Response Technologies is developing solutions for the tactical market utilizing the 1-Touch® air tight, metered, dispenser-dosing solution. This technology combines a proprietary push-button to operate its mechanical pump, all of which is contained within a traditional pouch. The 1-Touch® solution is air-less, which prevents its contents from being contaminated and potentially spoiling. When tested over a wide range of “materials” the 1-touch® delivered the following results, as compared to a traditional airless pump bottle:

- 1) Delivers up to 98% of contents, an average of 5X less waste
- 2) Delivers a consistent metered dose of +/- 1.5% by weight
- 3) 85% less packaging materials
- 4) 50% lower cost at production quantities
- 5) 360-degree orientation usage – works upside down, on its side, and in zero-gravity
- 6) Recyclable with FDA approved materials
- 7) Can be designed with biodegradable materials



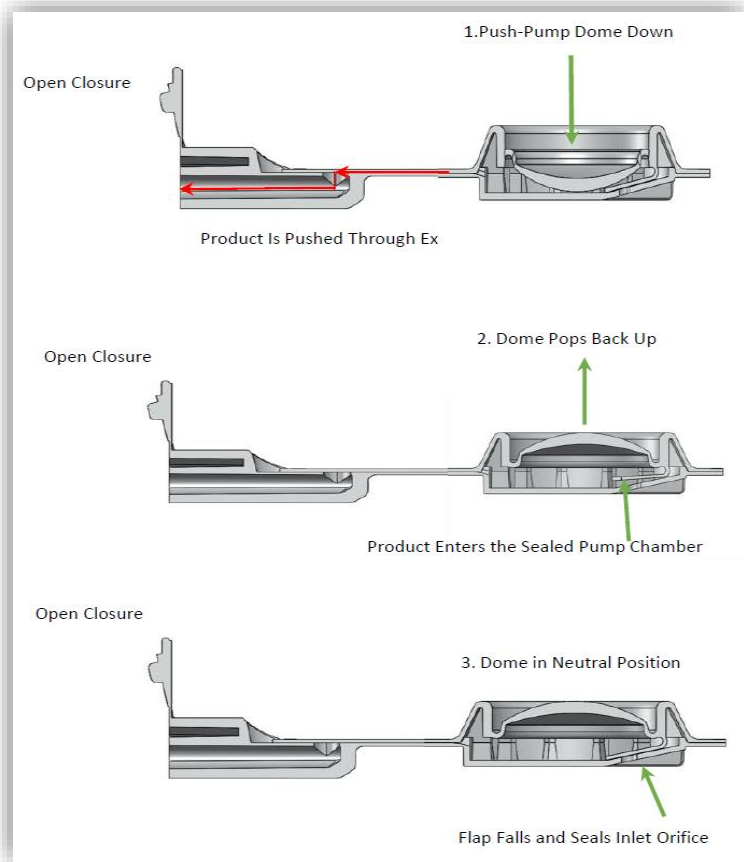
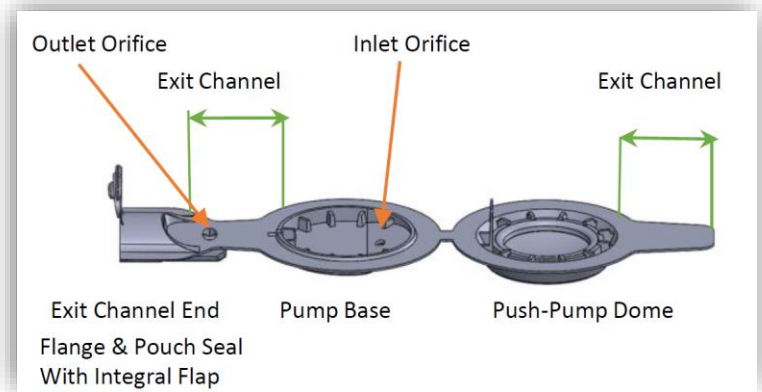
Response Technologies is seeking commercial partners for tactical market applications, where the 1-Touch® solution provides significant value, and/or, functionality.

Company Background: Response Technologies, a certified small business, was founded in 2015 as a product development company utilizing material science and advanced manufacturing processes to deliver breakthrough product and process solutions. The company, which is in Riverside RI, has its own: engineering, product design, prototype manufacturing, testing, and development facilities.

Industry Problem: The military and commercial markets have three basic types of field packaging technologies:

1. A tear-to-open pouch, example: MRE food pouches. This is the lowest cost solution (range \$0.08 – \$0.20); however, it is messy, difficult to remove the contents, and exposed to air when opened and thus quickly contaminated.
2. A flip or screw top squeeze or invert-to-dispense containers, example: toothpaste. This more expensive solution (range \$0.15 – \$0.5) allows the package to be sealed after use, thereby increasing its useful life in some circumstances; however, the contents are still exposed to air and thus potentially contaminated. These containers are also difficult to maximize the use of its contents, e.g. rolling up a toothpaste container or holding the viscous soap container upside down to get the final contents out. There is also no control over the accuracy and repeatability of the dispensed quantities.
3. A push-to-operate pump on a container bug or sun screen sprays and lotions, is the most expensive packaging solution (range \$0.55 - \$1.30); however, it affords an airless solution with an improved level of controlled dispensing. This solution is expensive, not recyclable and cannot be operated upside down.

Technology: The 1-Touch® patented innovation incorporates a novel and precisely engineered, yet simple to operate, injection molded push button pump. When the button is depressed on the dome, the contents of the dome are pushed out of the chamber. As the button returns to its natural up-position it creates a vacuum that sucks the contents from the affixed pouch or package, priming the pump for the next metered dosage. The pump system has internal valves to prevent air from entering the contents of the pouch, thus preventing the contents from being contaminated.



Advantages: The 1-Touch® packaging solution dispenses a reliable and repeatable dose (+/- 1.5% by volume), in 360-degree orientation, while keeping the contents uncontaminated, and dispensing 98% of the contents. The 1-Touch® package is recyclable and at a cost estimated range between \$0.26 to \$1.05 at production quantities. The wide range is based on desired features, making it a cost effective and superior solution to current tactical packaging needs.

Stage of Development: The current demonstrated pump system has been manufactured with FDA approved polyethylene, and has the following technical attributes:

- Pump volume range of dosing, by weight: 0.03 grams – 1.6 grams
- Demonstrated viscosity range: 0.890 cP (water) - 70,000 cP (toothpaste)
- Demonstrated pouch size range, by volume: 1 oz to 8oz
- Can be lab-scale manufactured in 500 packages per day with current equipment

Process Capabilities: Response Technologies anticipates the 1-Touch® solution can achieve the following capabilities with further engineering and product development:

- Minimum pump volume range of dosing, by volume: We anticipate a minimum volume of 10 micro-liters based on current project work
- Pump and pouch materials: TPU, Polyethylene and foil pouches have been used
- Pump dosing accuracy can be improved as/if needed
- Two component mixing/blending
- Atomizing