

Saving Lives with Better Seals

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A NEW TAMPER EVIDENT PACKAGING SEAL FOR COMBATING COUNTERFEIT/SUBSTANDARD MEDICAL PRODUCTS

Health Problems Addressed

- 500 000 – 1 000 000 die every year due to counterfeit/substandard medicine, mostly in middle and low income countries
- 1-8% pharma globally is counterfeit, about 30% in low resource countries, a USD 75 Billion market
- At risk: Drugs against Malaria, HIV, Antibiotics (TB), Cancer
- Too little active ingredients causes resistance and deaths
- Infections: Dirty and reused injection needles sold as new
- Stock outs: Thefts and removed substandard medicine are detected too late

These problems persists despite substantial counteractions

Current Methods to Detect Counterfeit /Substandard Products and their Shortcomings

1. Testing the ingredients before use. **OK for samples but not for every pill.**
2. Ensuring the original product is the same at point of use as at production. All three below must be in place and have good security.
 - 2.1. Most nations mandate or will soon mandate authentication of the packaging (serialization). Each package gets a unique ID-code which is reported to a database. Before opening the code is checked, and if it is in the database, the product is supposed to be OK.
 - 2.2. **Rather low requirements on security markers on the package to detect illegal copying of the ID-code and place it on a package with counterfeits.**
 - 2.3. Very low requirements on tamper evident seals on all packaging levels to detect **unauthorized opening of the package to steal, divert, exchange with fake, or adulterate the original content. Void tape over the lid is considered sufficient.**

When serialization has been implemented the inadequate intrusion detection will be the weakest point, which the pharma criminals will attack. Hence, better seals will save lives.

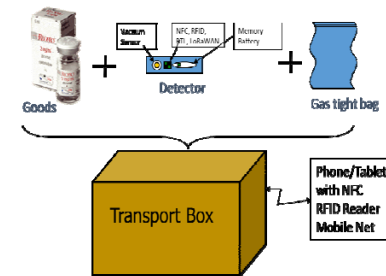
TamperSeal's Burglar Alarm for Packages are Patent Protected

At manufacturing or repacking

- Gas tight bag placed inside a transport box
- 10-200 patient packs placed in bag
- Detector placed in bag
- Bag vacuum sealed

At terminal and before use

- Status of detector is checked
- If vacuum all the time, all inside untouched and safe to use
- No need to check all patient packs
- If not: remove from supply chain, report, re-seal, return



Optional

- Temperature sensor for temp logging
- Unique serial number for authentication
- Serial number for logistics
- Display on package: OK or not OK, for low-resource settings

Seal Manufacturing

- Vacuum packaging well known for food and explosives
- From envelope to ISO container
- Detector costs
 - USD 20 using traditional manufacturing
 - USD 2 using printed electronics

Comparison between Seals Currently on the Market and the TamperSeal Technology

Requirements	Foile Secure void tape	OneSeal Mechanical seal	Brooks El seal	IBM-Maersk TREC Container	Fraunhofer Box with RFID reader	SQS Cash Case	Lockheed Martin Opto Fibre Nuclear material	Tamper Seal Vacuum
No backdoor						++	++	++
Non erasable ID			?	+	+	++	++	++
Not possible copy			?	+?	+	++	++	++
Non erasable tamper evidence	?	?	+?	+?	+	++	++	++
Automatic read technology			++	++	++	++	++	++
Seal protects itself						++	+?	++
Detects small holes						?	?	++
Stops water, gases, dirt, scratches						+		++
Cost USD per package	< \$1	\$2-40	\$25-200	\$700-\$2,000	\$160-\$2,500	\$8,000	\$20,000	\$3 envel. \$100 pallet