



WHITE PAPER

Prevention of Product Piracy

By

Secured Packaging

IN RETROSPECT TO THE PACKAGING INDUSTRY

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RadianTrust is a brand through which RadianTrust Pte Ltd offers security solutions, services and consultancy in Singapore.

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1 PRODUCT PIRACY- A CRIPPLING PLAGUE

Product piracy has infested different sectors of economy resulting in billions of dollars of loss every year to the respective industries. Pharmaceutical, Food, Entertainment, Cosmetic etc are some of the worst hit. The World Health Organization (WHO) estimates that 25% - 50% of the medicines consumed in developing countries are counterfeits, a problem which is exacerbated by the fact that counterfeit drugs are easier to manufacture and the labelling and packaging can easily be reproduced as well. It is estimated that seven percent of the world trade is counterfeit worth \$350 billion. The industries affected also include software houses, automobile and aircraft parts, pharmaceuticals and consumer goods such as food, beverages, tobacco, clothing and personal care products.

The US based Centre for Medicines in the Public Interest predicts that counterfeit drug sales will reach **US\$ 75 billion globally in 2010, an increase of more than 90% from 2005.**¹

The scale of the problem

- 5 -7 % of world trade
- \$250 -350 billion
- Growing fast: 1990-95 while world trade grew by 47%, counterfeits grew by 150%.

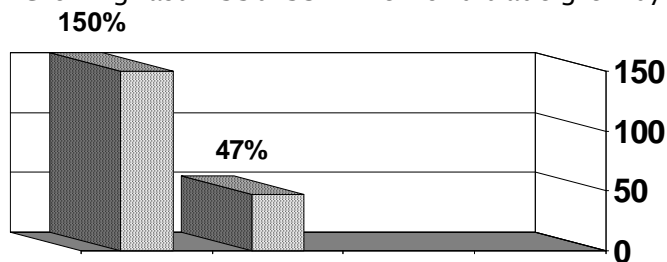


Figure 1 counterfeits for all trade²

1.1 ECONOMIC AND HEALTH REPERCUSSIONS

Depleting sales revenue, wasted advertising budget, product price reduction are some of the undesired results of product piracy which can easily cripple the very existence of the genuine manufacture. Eventually it will tarnish the reputation of the company and its brand name resulting in customer distrust which could take a Herculean effort to restore in the long run.

Counterfeit is also directly responsible for the loosing of jobs as well. According to the Organisation for Economic Co-operation and Development as well as the European Commission, counterfeit goods are responsible for the loss of 100,000 jobs in Europe each year³

A report done by AIM (ASSOCIATION DES INDUSTRIES DE MARQUE) states the following figure on Counterfeiting world wide.

¹ Source: <http://www.who.int/mediacentre/factsheets/fs275/en/>

² Source: ICC Counterfeiting Intelligence Bureau

³ Source: (European Commission 1998, OECD 1998, ICC Counterfeiting Intelligence Bureau 1997).

Value of counterfeits in relation to total turnover		Revenue losses
Computer software	35%	1996 world-wide losses on fake whisky are estimated at \$22.8 million.
Audio-video	25%	
Textiles and clothing	22%	
Toys	12%	
Perfumes	10%	
Pharmaceuticals	6%	
Watches	5%	

Figure 2 Percentage of Counterfeit trade⁴

Apart from the economic repercussions, counterfeit in pharmaceutical, food and beverages, automobile parts pose serious health risk and danger to the end consumers. Even though Counterfeit products are designed to resemble the original, they do not perform like the original. Thus, counterfeit goods are likely of lower quality, which means some counterfeit goods can be exceptionally dangerous to the health and poses serious risk on life to the consumer.

Michele Forzley, JD, MPH in his paper on "Counterfeit Goods and the Public's Health and Safety" states that "Worldwide, children and adults are experiencing injuries, harm and death associated with counterfeit goods, particularly; drugs, alcohol, cigarettes, foods, and personal care items"⁵

Global Trade in Counterfeit Drugs

Fake and Substandard drugs cause treatment failure and waste money

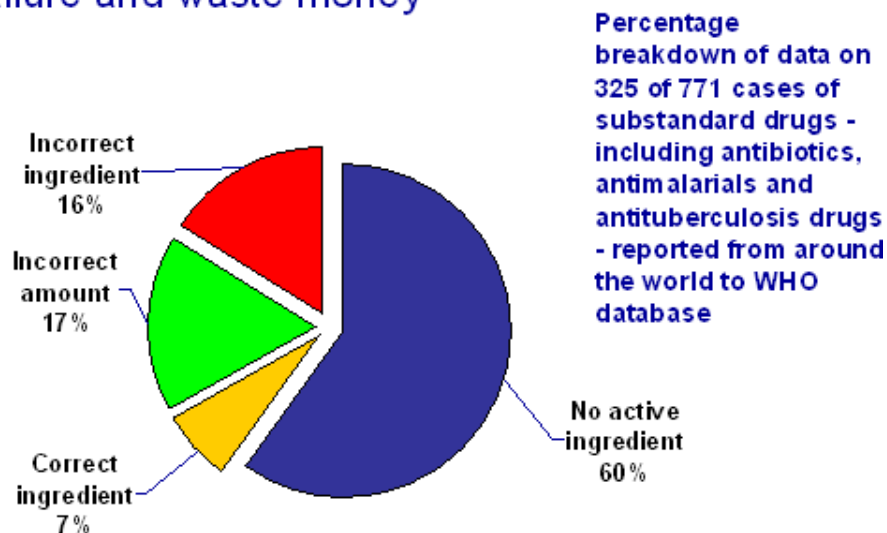


Figure 3 Percentage of Counterfeit trade⁶

⁴ Source: Industry sector organisations

⁵ Source: Michele Forzley, JD, MPH, "Counterfeit Goods and the Public's Health and Safety", International Intellectual Property Institute

⁶ Source: GPHF Global Pharma Health Fund E.V
http://www.gphf.org/web/en/minilab/hintergrund_arzneimittelaeschungen_chart.htm

2 FIGHTING PIRACY USING SECURED PACKAGING

Secured packaging helps in preventing anti-counterfeiting, anti-tampering of products to a large extent. The combination of suitable available technologies will prove detrimental to the efforts of counterfeiters to copy the packaging. Some of the erstwhile and current security methods being deployed for the packaging industries are as given below

RFID (Radio Frequency Identification):-

Technology on tags that can be used to track packages throughout the distribution chain.

Biometric controls: -

This includes technologies such as fingerprinting and eye scanning.

DNA inks:-

Fingerprint a unique production, run via a special, hard-to-replicate protein in the ink for each batch of packaging. However, the detection process can tend to be very expensive.

Coating:-

Coatings such as films and foils that can increase security when attached to a package include heat-resistant holograms and optically variable coatings that change colour depending on the viewing angle.

Usage of X-ray:

X-ray enables to analyze a package to look for foreign objects, as long as they're denser than the original product.

Holograms:

Holograms are used to identify a particular product. Hologram stickers are usually attached to the product. Holograms can cost depending upon their level of sophistication and therefore can add significantly to the MRP of low end products that are staple of the indigenous market. Another problem is that, the holograms themselves can also be eventually be duplicated by counterfeiters making the initial investment by the brand owner ineffective when such knock-offs enter the market

2.1 SECURITY MEASURES IN PACKAGING - A COSTLY AFFAIR

Despite the severity of the issue, different industries has so far not embraced currently available authenticity, tamper protection or track & trace technology to the extent that is desirable and appropriate. The main reason for this reluctance in embracing these innovative technologies is due to the air of apprehension surrounding these technologies. This is in view of the cost being incurred for the security implementation due to the speciality hardware and software being involved.

2.2 COST EFFECTIVE SECURITY MEASURES USING Phidélity

While it is true that most of the above mentioned technologies can prove to be expensive, many of the new innovative technologies are not costly in implementing. Technology or combination of technologies relating to **Water marking, PKI Secure Coding, Steganographical imprint** and **Micro printing** are the new innovative economically viable security solutions which can be implemented in the packaging industry. A combination of these solutions can prove to an effective tool in the fight

against piracy and is highlighted by the fact that no speciality hardware needs to be procured as well.

2.2.1 Water Marking:

Phidélity **Optical watermark** is an impressive piece of innovation that is embedded in to the package label to magically reveal unauthorised attempts to duplicate the label. Verification of the authenticity of the packaging is made so convenient that it is nothing more than a glance. It is impossible to reproduce the label on copiers, cameras and scanners, and pass them off as originals.

The optical watermark in *Phidélity* consists of two features, a visible watermark and an invisible watermark. The visible watermark can be the company logo or the company name while the invisible watermark can be words like "COPY" or "VOID". Both the visible and invisible watermark will be embedded into the label and printed together with the label.

When photocopied, the visible watermark (i.e. the company logo or company name) will deteriorate, while the invisible watermark will appear. To verify that a package labelling is genuine, one only has to check that either the visible watermark is not clearly visible or the invisible watermark is clearly seen. No special decoding equipment is required for this verification process of the watermark as the watermark is visible to the naked eye.

Besides Optical Watermark, *Phidélity's* **Transactional Micro-Print** is another layer of security feature for printed label to guard against duplication, an innovative use of very tiny imprints of dynamically generated text, such as the document serial number into the product label. Its contents can only be viewed clearly under a magnifying glass. This line of text will be distorted when any attempt is made to duplicate the document optically, thus revealing any unauthorised reproduction of the document. It is simple, yet effective.

2.2.2 Secure Coding:

Phidélity comes with a **SecureCODE** feature that help protects the product integrity. SecureCODE synergised 2D barcodes and public key infrastructure (PKI) technology to store and secure encrypted data in the package. SecureCODE ensures the authenticity, data integrity and non-repudiation for the packaging and allows easy detection of any information tampering being done on the packaging.

Every product is given a unique digital identity generated by an encryptor with the help of a private key. Every product from the item to the pallet level can be given its own unique digital code. The encrypted code is put in to the 2-D data matrix barcode. 2-D barcodes are printed on packaging during manufacture, providing each package item with the identity before it enters the supply chain.

Besides the encryption and decryption of the codes, *Phidélity* allows brand owners to fully manage their supply chain, so that the needed e-pedigree is made possible. The drug manufacturers can track their shipments from the factory through all intermediate nodes right down to the retail level. An additional advantage of such a powerful

supply chain management tool is that manufacturing companies are better able to manage product recalls, if any.

Also, **2D-encryption** allows the consumer to authenticate an end product. The widespread use of internet/mobile phones makes it possible to actually authenticate a product at the point of sale. Genuine products will pass authentication and the consumer will be sent a message to this effect. Counterfeit products will either contain no code or have an invalid code, which will not pass the authentication process. It is impossible for a counterfeiter to make up arbitrary codes, because the possibilities of combinations are astronomically large.

SecureCODE can be easily and conveniently verified via several offline/online channels:

- Mobile phone
- Fax
- Email
- Web page
- PocketPC
- Software Client (if offline mode required)

2.2.3 ID Trace:

ID-Trace feature employs the use of steganography to insert a traceable fingerprint into package. Traceable information, such as the identity of the entity who initiated the printing, wholesaler to whom this package lot is intended to or the date of printing, is covertly embedded into the document.

For auditing or verification purposes, this information can later be decoded and verified to assert the identity. This allows manufactures to take the necessary corresponding actions to limit further risk and employ other mechanisms to ensure accountability from within.

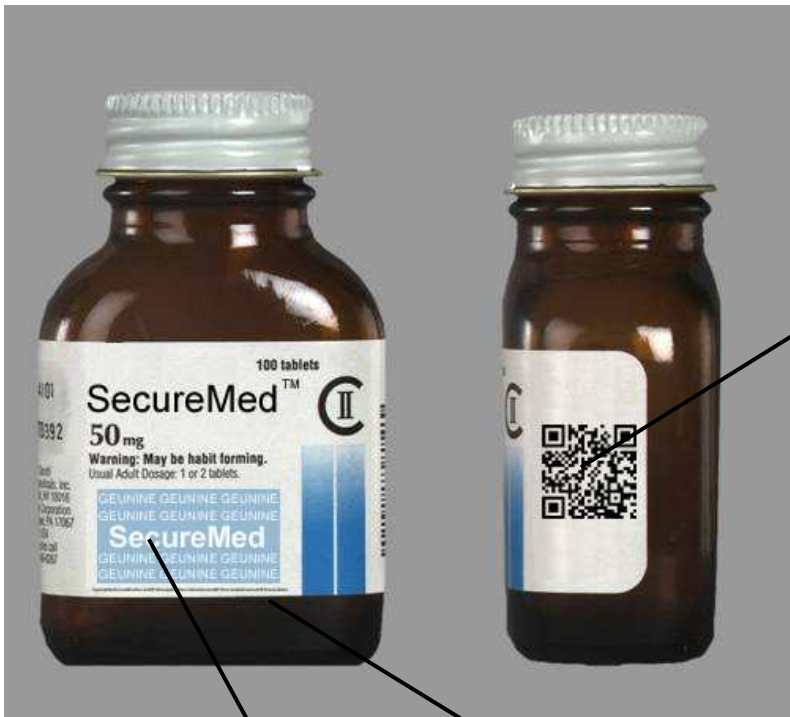


Figure 3 Original Label

Water Mark

Transactional Micronprint



Figure 4 Duplicated label

Water Mark

Transactional Micronprint