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## **Tampons for menstrual hygiene**

Modern products with ancient roots

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# INTRODUCTION

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Industrially manufactured tampons were first introduced into the market in the US in 1936 and market introduction in Europe followed in 1938 in the UK. Since then, billions of tampons have been sold all over the world. Although a modern product, the principle of an internally (inside the body) worn hygiene product is not new at all and goes as far back as to times Before Christ when, for example, Egyptian women formed smooth papyrus into rolls that they inserted into their vagina.

In contrast to externally worn catamenial products that are simply fixed in the underwear, tampons require a more detailed knowledge of the female anatomy.

The principle function of tampons is to absorb the menstrual fluid inside the body (vagina) after it has left the uterus, thus offering very discreet protection.

Tampons can be used throughout the reproductive age starting with the first menstrual bleeding (menarche) of young girls (on average around the age of 12) until the last menstrual bleeding (menopause) usually around 50. While the monthly bleeding usually lasts between 4 to 7 days, in total, a woman will menstruate for an equivalent of, on average, 6 to 7 years during her life. To meet the individual menstrual protection needs of women due to variances in menstrual bleeding patterns, tampons with different absorbent capacities are offered. Tampons come in different versions; either they are inserted with the finger (digital tampons) or with an insertion aid (applicator).

Whereas the US is an applicator tampon dominated market, Europe is very diverse and markets vary from country to country. The majority of the European countries are mixed digital (non-applicator) and applicator markets, but there are some that are mainly digital tampon markets.



## PRODUCT COMPOSITION

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Modern tampons are mainly composed (over 90% of the tampon) of cellulosic absorbent material, either rayon or cotton or a mixture of these fibres and worldwide this has been the case for many decades. Some other absorbent materials were introduced into tampons in non-European countries, but these disappeared after a period of time, whereas the cellulose based tampons always remained on the market.

In most instances, the absorbent-core is covered by a thin, smooth layer of nonwoven or perforated film helping to reduce loss of fibres and making the tampon easy to insert and remove. The withdrawal cord that is necessary to remove the tampon is usually made of cotton or other fibres and can be coloured. The tampon is individually wrapped with a paper wrapper or a thin film (e.g. polymeric plastic material or cellophane) before being packed into cartons. The applicator of an applicator tampon can be made of either coated paper or polymers or a combination of both.

## MANUFACTURING PROCESS

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Tampons are constructed of compressed cellulosic absorbent materials. Today there are two main technologies to manufacture tampons:

- The coiled tampon type starts with a rectangular fibre pad around which a withdrawal cord is looped. The fibre pad is then asymmetrically folded and rolled and then compressed to a cylindrical shape. A number of longitudinal or helical grooves are formed by the compressing operation. This type of tampon expands radially. Most digital tampons are coiled tampons.
- The second type (typically used for applicator tampons) starts from a rectangular fibre-pad. A withdrawal cord is sewn across the length of the tampon fibre pad which is then compressed to a cylindrical shape. Alternatively the withdrawal cord can be attached after the compression by pierce and loop attachment of the cord at the bottom section of the tampon. The tampon expands widthways and lengthwise.

Both tampon types are usually covered with a nonwoven or perforated film.

## SAFETY EVALUATION

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Tampons are made of well-proven materials that are used in a variety of other, every day products. These materials have proven safety profiles. Tampon raw materials are carefully selected for highest quality and undergo extensive safety evaluation before they are approved and used during manufacturing. Tampon raw materials have to fulfil technical standards, regulatory requirements and appropriate safety guidelines.

Safety evaluation programmes are an integral part of the product development process. A variety of non-clinical and clinical test methods are available for this purpose. The outcome of a product safety evaluation programme helps to determine if there is sufficient evidence to support the use of a certain tampon design or a new tampon material. The safety evaluation assesses potential effects on vaginal condition, vaginal microflora and potential local or systemic effects, such as irritation or allergy. The safety testing programme may even include the performance of clinical studies, which are conducted according to GCP standards (good clinical practice).

In order to further ensure safety, tampons are made under high quality production control standards including a series of checks and tests based on company specific quality assurance (QA) systems and post-market surveillance programmes.

In conclusion tampons have a long history of safe use that spans over 60 years worldwide with millions of products in safe daily use.

## **REGULATORY STATUS IN EUROPE**

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Within the EU, tampons have to follow the General Product Safety Directive 2001/95/EC that holds the manufacturer responsible for providing consumers with products that are safe to use. Furthermore, tampon manufacturers in Europe follow the EU Tampon Code of Practice (CoP) (or a national equivalent) which goes back to an industry (EDANA) initiative to harmonize relevant consumer information in all EU countries, irrespective of the tampon brand used. A key element of the code of practice is a droplet system that categorizes the absorbency of tampons into six classes ranging from 6g to 21g. In addition the code requires that consumers are provided with standardised information on the appropriate use of tampons and standardised health related information (e.g. menstrual toxic shock syndrome).

This standard came into force in 2000 and is explicitly approved by the European Commission. EU Member States' national authorities were requested to adopt this code; in addition to these EU wide regulations national rules also need to be obeyed in some cases. An example is the German Law on Foodstuff and Commodities.

## **ENVIRONMENTAL FACTS**

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Tampon materials are compatible with current waste management systems for municipal household waste such as controlled landfill, waste-to-energy incineration, or common wastewater treatment operations for flushable tampons.

Wastewater treatment may include landfill or incineration for residual materials removed from the wastewater after product disintegration and degradation. The vast majority of tampon products available on the market place today consist mainly of materials which are biodegradable.

There are no known adverse environmental impacts associated with the incineration of tampons, their applicators or wrappers. The co-collection and co-treatment of tampons, applicators or wrappers with other municipal solid waste fractions does not adversely affect safety or regulated emissions associated with the above-mentioned waste management techniques.

Furthermore it can be said that tampons only need very low amounts of materials to guarantee reliable protection – their weights usually range between approximately 2 to 5 grams.

## **SOCIETAL ASPECTS & LIFESTYLE**

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Whether a woman uses tampons or napkins for her menstrual hygiene depends solely on personal preference. With the market introduction of tampons, women, however, had for the first time, the possibility to choose a product that, by its inherent design, offered the utmost in discretion and freedom during the days of her menstruation. In addition, tampon usage encourages women and young girls to understand their body better.

A tampon is neither felt during wearing nor does it restrict movement or hinder a woman from engaging in any sporting activities (including swimming). Furthermore, the use of a tampon is independent of fashion trends. In conclusion, the development of tampons has been a revolutionary step towards the freedom of women.

## **LITERATURE**

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[http://europa.eu.int/comm/consumers/cons\\_safe/prod\\_safe/gpsd/currentGPSD\\_en.htm](http://europa.eu.int/comm/consumers/cons_safe/prod_safe/gpsd/currentGPSD_en.htm)

[Tampon Code of Practice](#)

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