

Tampon

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A **tampon** is a mass of absorbent material, primarily used as a feminine hygiene product. Historically, the word "tampon" originated from the medieval French word "tampion", meaning a piece of cloth to stop a hole, a *stamp*, *plug*, or *stopper*.^[1] At present, tampons are designed to be easily inserted into the vagina during menstruation and absorb the menstrual flow. However, using tampons may be difficult or impossible for those with untreated vaginismus or an untreated imperforate hymen. Several countries regulate tampons as medical devices. In the United States, they are considered to be a Class II medical device by the Food and Drug Administration (FDA). They are sometimes used for hemostasis in surgery.



A tampon with applicator



The elements of a tampon with applicator. Left: the bigger tube ("penetrator"). Center: cotton tampon with attached string. Right: the narrower tube.

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Digital tampon (tampon sold without applicator).

History

Women have used tampons during menstruation for thousands of years. In her book *Everything You Must Know About Tampons* (1981), Nancy Friedman writes, "[T]here is evidence of tampon use throughout history in a multitude of cultures. The oldest printed medical document, Papyrus Ebers, refers to the use of soft papyrus tampons by Egyptian women in the fifteenth century B.C. Roman women used wool tampons. Women in ancient Japan fashioned tampons out of paper, held them in place with a bandage, and changed them 10 to 12 times a day. Traditional Hawaiian women used the furry part of a native fern called hapu'u; and grasses, mosses and other plants are still used by women in parts of Asia."^[2]

R. G. Mayne defined a tampon in 1860 as: "a less inelegant term for the *plug*, whether made up of portions of rag, sponge, or a silk handkerchief, where plugging the *vagina* is had recourse to in cases of hemorrhage."^[3]

Dr. Earle Haas patented the first modern tampon, Tampax, with the tube-within-a-tube applicator. Gertrude Tendrich bought the patent rights to their company trademark Tampax and started as a seller and spokesperson in 1933.^[4] Gertrich hired women to manufacture the item and then hired two salesmen to market the product to drugstores in Colorado and Wyoming and nurses to give public lectures on the benefits of the creation and was also instrumental in instituting newspapers to run public advertisements.

During her study of female anatomy, German gynecologist Dr. Judith Esser-Mittag developed a digital style tampon, which was made to be inserted without an applicator. In the late 1940s, Dr. Carl Hahn, together with Heinz Mittag, worked on the mass production of this tampon. Dr. Hahn sold his company to Johnson and Johnson in 1974.^[5]

Tax

Several political statements have been made in regards to tampon use. In 2000, a 10% Goods and Services Tax (GST) was introduced in Australia. While lubricant, condoms, incontinence pads and numerous medical items were regarded as essential and exempt from the tax, tampons continue to be charged GST. Prior to the introduction of GST, several states also applied a luxury tax to tampons at a higher rate than GST. Specific petitions such as "Axe the Tampon Tax" have been created to oppose this tax, although no change has been made.^[6]

In the UK, tampons are subject to Value Added Tax (VAT) at a reduced rate of 5%, as opposed to the standard rate of 20% applied to the vast majority of products sold in the country.^[7] In 2014 a petition, started by Laura Coryton founder of the *Stop Taxing Periods* campaign, which called for tampons to be fully exempted from VAT gained more than 320,000 signatures. The petition pointed out that there is no tax on exotic meats, but it has also been noted that there is a 20% rate on toilet paper and toothpaste.^[8] The campaign gained the approval of ex-Prime Minister David Cameron, who said "I wish we could get rid of this... There's a problem with getting rid of VAT on certain individual issues because of the way this tax is regulated and set in Europe."^[9] Changes to EU legislation, which would require the approval of all 27 EU member states, would be required to change the rate.^[7]

Design and packaging

Tampon design varies between companies and across product lines in order to offer a variety of applicators, materials and absorbencies.

^[10] Tampon applicators may be made of plastic or cardboard, and are similar in design to a syringe. The applicator consists of two tubes, an "outer", or barrel, and "inner", or plunger. The outer tube has a smooth surface to aid insertion and sometimes comes with a rounded end that is petaled.^{[11][12]}

The two main differences are in the way the tampon expands when in use; applicator tampons generally expand axially (increase in length), while digital tampons will expand radially (increase in diameter).^[13] Most tampons have a cord or string for removal. The majority of tampons sold are made of rayon, or a blend of rayon and cotton. Organic cotton tampons are made from only 100% cotton.^[14]

Absorbency ratings

Tampons are available in several absorbency ratings, which are consistent across manufacturers in the U.S.:^[15]

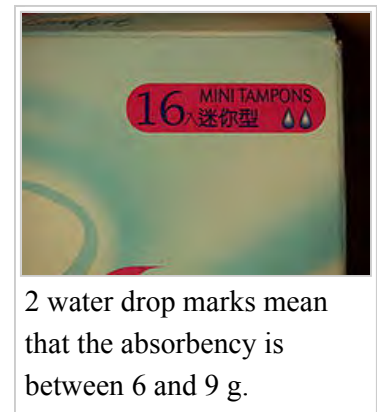
- Junior/Light absorbency: 6 g and under
- Regular absorbency: 6 to 9 g
- Super absorbency: 9 to 12 g
- Super Plus absorbency 12 to 15 g
- Ultra absorbency 15–18 g

A piece of test equipment referred to as a Syngina (short for synthetic Vagina) is usually used to test absorbency. The machine uses a condom into which the tampon is inserted, and synthetic menstrual fluid is fed into the test chamber.^[16]

Toxic shock syndrome

Dr. Philip M. Tierno Jr., Director of Clinical Microbiology and Immunology at the NYU Langone Medical Center, helped determine that tampons were behind toxic shock syndrome (TSS) cases in the early 1980s. Tierno blames the introduction of higher-absorbency tampons in 1978, as well as the relatively recent decision by manufacturers to recommend that tampons can be worn overnight, for increased incidences of toxic shock syndrome.^[17] However, a later meta-analysis found that the absorbency and chemical composition of tampons are not directly correlated to the incidence of toxic shock syndrome, whereas oxygen and carbon dioxide content is associated more strongly.

^{[18][19]}



The U.S. Food and Drug Administration suggests the following guidelines for decreasing the risk of contracting TSS when using tampons:

- Follow package directions for insertion
- Choose the lowest absorbency needed for one's flow
- Consider using cotton or cloth tampons rather than rayon
- Change the tampon at least every 4 to 6 hours
- Alternate between tampons and pads
- Avoid tampon usage overnight or when sleeping
- Increase awareness of the warning signs of Toxic Shock Syndrome and other tampon-associated health risks

Cases of tampon-connected TSS are extremely rare in the United States.. A study by Tierno also determined that all cotton tampons were less likely to produce the conditions in which TSS can grow, this was done using a direct comparison of 20 brands of tampons including conventional cotton/rayon tampons and 100% organic cotton tampons from Natracare. In fact Dr Tierno goes as far to state that "The bottom line is that you can get TSS with synthetic tampons but not with an all-cotton tampon." ^[20]

Sea sponges are also marketed as menstrual hygiene products. A 1980 study by the University of Iowa found that commercially sold sea sponges contained sand, grit, and bacteria. Hence, sea sponges could also potentially cause toxic shock syndrome. ^[21]

Clinical use

Tampons are currently being used and tested to restore and/or maintain the normal microbiota of the vagina to treat bacterial vaginosis. ^[22] Some of these are available to the public but come with disclaimers. ^[23] The efficacy of the use of these probiotic tampons has not been established.

Environment and waste

Ecological impact varies according to disposal method (whether a tampon is flushed down the toilet or placed in a garbage bin). Factors such as tampon composition will likewise impact water treatment systems or waste processing. ^[24] The average woman uses approximately 11,400 tampons in her lifetime. ^[25] Tampons are made of cotton, rayon, polyester, polyethylene, polypropylene, and fiber finishes. Aside from the cotton and fiber finishes, these materials are not bio-degradable. Organic cotton tampons are biodegradable, but must be composted to ensure they break down in a reasonable amount of time.

Environmentally friendly alternatives to using tampons are the menstrual cup, reusable sanitary pads, menstrual sponges and reusable tampons. Menstrual cups are silicone cups that are worn inside the vagina to collect the fluid. Reusable sanitary pads are similar to disposable sanitary pads,

but differ in the sense that they can be washed and used as many times as needed by the owner. For women who cannot or don't want to use a menstrual cup, but like internal products, sea sponges inserted like tampons may be a good option. These can also be washed out and reused and when they lose their absorbency can be composted. Some women have also made reusable tampons, often pieces of knit or crocheted fabric that are rolled up and inserted into the vagina, and later washed, dried and reused.^[26] These alternatives are environmentally friendly because they are reusable, and in some cases compostable, so they contribute less waste to landfills.

Alternatives also include reusable absorbent underwear by Thinx.^{[27][28][29]}

The Royal Institute of Technology in Stockholm carried out a life cycle assessment (LCA) comparison of the environmental impact of tampons and sanitary pads. Their “cradle to grave” assessment of the raw material extraction, transportation, production, use and waste management stages took three main impact categories into consideration: human health, ecosystem quality and resource use. They found that the main environmental impact of the products was in fact caused by the processing of raw materials, particularly LDPE (low density polyethelene) – or the plastics used in the backing of pads and tampon applicators, and cellulose production. As production of these plastics requires a lot of energy and creates long-lasting waste, the main impact from the life cycle of these products is fossil fuel use, though the waste produced is significant in its own right.

^[30]

See also

- Cloth menstrual pad
- Menstrual cup
- Sanitary napkin
- Tamponade

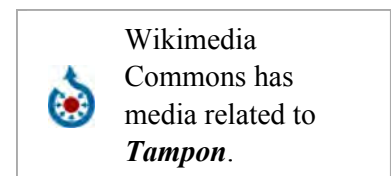
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External links

- Original patent by Dr. Earle Haas (<http://www.freepatentsonline.com/1926900.html>)
- Tampon Related Patents



(<https://web.archive.org/web/20110715120036/http://www.professorpatents.com/tampon.htm>) (archived)

- The Quantified Vagina: This Startup Aims To Track Women's Health Through Smart Tampons (<http://www.fastcompany.com/3059799/body-os/the-quantified-vagina-this-startup-aims-to-track-womens-health-through-smart-tampons>)

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