

An Overview of Cosmetic Science

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ABSTRACT

In recent years scientists are more frequently looking for ingredients that influence the skin's condition and slow down the aging process. Peptides are involved in many natural processes with relevance to skincare and therefore have been used in skincare and pharmaceutical industry.

In this article we will overview the cosmetics, makeups usefulness, etc. Makeup cosmetics are used to protect the skin and to provide safety and comfort, but their main purpose is as a beauty product to make the face and skin attractive. There are base makeup products and decorative makeup products; the former are used to hide imperfections such as stains and wrinkles, to adjust skin tone, and to add firmness or translucence to make the skin look beautiful.

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INTRODUCTION

The definitions for cosmetics differ slightly around the world, but they are basically any substance or mixture that is intended to be applied to the external parts of the human body or the teeth and mucous membranes for the purposes of improving appearance.

Cosmetic science is the area of study focused on the development of products designed to improve the look and feel of skin, hair, nails, and other surfaces of the body. The subject of cosmetic science overlaps with a number of sciences including Chemistry, Physics, and Biology but also includes softer topics like Marketing and Market Research.

Cosmetic science is not a subject typically covered in a single subject. This research will introduce the basic techniques, laws, advantages, disadvantages, and ingredients used by cosmetic formulators to create functional products. The subjects we need to know are: -

Chemistry

Since all cosmetics are made up of chemicals (yes even so-called "natural" cosmetics are chemicals), the most important aspect of cosmetic science is chemistry. This is the study of chemicals and how they interact with each other. As a cosmetic scientist, you need to first get to know the cosmetic raw materials available and what they do. You also need to learn how to put the raw materials together into a safe and effective formula.

Physics

Depending on the type of products you are making, there are a number of topics in the field of physics that are important. For color cosmetics, the principles of light reflection are important for determining color mixtures and formulations. In cleansing products, it's important to know about the physics of colloidal solutions and the mechanisms of foam creation and dirt removal. For sunscreens, the physics of energy absorption and reflection. For all cosmetic products, it's helpful to know the science of rheology. Fluid dynamics are also important to understand as this

relates to the mixing and filling of large batches of cosmetics.

Biology

Since cosmetics are put on biological surfaces, it is helpful to know the basics of hair, skin, and nail biology. Cosmetic chemists learn about hair growth, the composition of hair fibers, and the ways in which it is damaged and repaired by personal care products. For skin science, cosmetic chemists need to understand how the skin grows and the structure of the different layers. It is also helpful to know some of the biochemistry involved in creating skin as some raw materials and cosmeceuticals are thought to interact with biochemical mechanisms to improve the look and feel of skin.

Math

Math is the foundation of almost any scientific subject. For this reason, it is important that students of cosmetic science have a good understanding of basic math. This means being able to quickly figure out percentages and convert units from mass to volume and vice versa. While math can get complicated the job mostly involves straightforward calculations and avoids more complex math like Calculus or Number Theory.

Classification of cosmetics

The major five main types of cosmetic products are,

- Skincare range
- Haircare range
- Face care range
- Personal care range
- Treatment range

Skincare ranges

These are items designed to make skin look and feel better. The skincare market accounts for around 20% of all cosmetics sold, which is the largest share in any category. Skincare products can be further classified by how they function and what they do. These include moisturizers, creams, powders, essential oils, toners, serums, etc.

Haircare ranges

Haircare products are the second most popular form of cosmetic that accounts for about 25 percent of sales. Like the skincare group, hair products can also be categorized according to how they work and what they do. The hair products most frequently purchased are the ones designed to remove things from the hair, like shampoos. Some are meant to be left on like leave-in conditioners, hair gels, essential oils, etc.

Face care ranges

This category includes **herbal cosmetics** that can only be used, particularly on the face. These range of products kind of overlap with the skincare products.

This range of category accounts for 30% of market sales. The difference is while all the face care products are on the skin, not all skincare products can be used on the face. Some of the face care products include face wash, face scrub, toner, sun creams, face packs, facial kits, face gels, serums, etc.

Personal care ranges

Other personal care products are the new beauty product category. This category accounts for about 15 percent of market sales (depending on which goods you include). These include products for oral care, such as toothpaste, mouthwash, and whitening products. They also include soaps, bathing gel, soaps, massaging oils, etc.

Treatment care ranges

This type of treatment care product is designed to cure specific skin or hair problems. For example, there is a specific type of cream that is targeted to cure acne, or spots, etc. The same goes for hair fall or dandruff issues too.

Note: Here the percentage sold means consumed by the people

Cosmetic Regulation in India

In case we want to work in a cosmetic industry we need to know some basic regulations in India. The cosmetic products in India are regulated under the Drugs and Cosmetics Act 1940 and Rules 1945 and Labelling Declarations by the Bureau of Indian Standards (BIS). BIS sets the standards for cosmetics for the products listed under Schedule 'S' of the Drugs and Cosmetics Rules 1945.

Cosmetics Act, 1940

Cosmetic is defined under section 3(aaa) of the Drugs and Cosmetics Act, 1940 as, any article intended to be rubbed, poured, sprinkled or sprayed on, or introduced into, or otherwise applied to, the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance, and includes any article intended for use as a component of cosmetic.

Under the provisions of the Drugs and Cosmetics Act, 1940 and Rules made thereunder, the manufacture of cosmetics is regulated under a system of inspection and licensing by the State Licensing Authorities appointed by the respective State Governments, while the import of cosmetics is regulated under a system of registration by the Central Licensing Authority appointed by the Central Government. The Drugs Controller General (India) functions as the Central Licensing Authority who grants the Import Registration Certificate and regulates the import of cosmetics into India via Gazette notification G.S.R 763(E) under the provisions of Drugs and Cosmetics Act, 1940.

Any article falling within the definition of cosmetic is required to be registered along with pack size, variant(s) and manufacturing premises before its import into the country. No cosmetic shall be imported into India unless the product is registered under the rules by the Central Licensing Authority appointed by the Central Government under rule 3(f) or by any person to whom such powers may be delegated under rule 5. [As per rule 12(1) of the Cosmetic Rules, 2020]. No cosmetic shall be imported or manufactured unless it complies with the specifications prescribed under the Ninth Schedule or any other standards of quality and safety, applicable to it, and other provisions under the rules. In case, the cosmetic is not included under the Ninth Schedule, it shall meet the requirements under these rules and specifications and standards applicable to it in the country of origin. [As per rule 39 of the Cosmetic Rules, 2020].

No cosmetic may purport or claim to purport or convey any idea which is false or misleading to the intending user. [As per rule 36 of the Cosmetic Rules, 2020].

Companies

Top 5 Cosmetics Brands in India

Lakme

Lakme is a reputed Indian brand which is owned by Unilever. The company is headed by Mr. Anil Chopra who is the CEO of the company. Lakme was founded in the year 1952 by JRD Tata.

Lotus

The company Lotus Herbals Ltd. was set up two decades ago in the year 1993 by Kamal Passi.

Biotique

Biotique was launched by Vinita Jain in 1984. This brand also manages to stand out in the world of chemical-based cosmetics as it doesn't contain any artificial preservatives or synthetic fragrances. The ingredients used are extracted naturally from herbs.

L'Oreal

L'Oreal is one of the giants in the cosmetic segment in the world. Jean-Paul Agon is the chairman and CEO. The Company has been present in India for about 20 years.

Shahnaz Husain

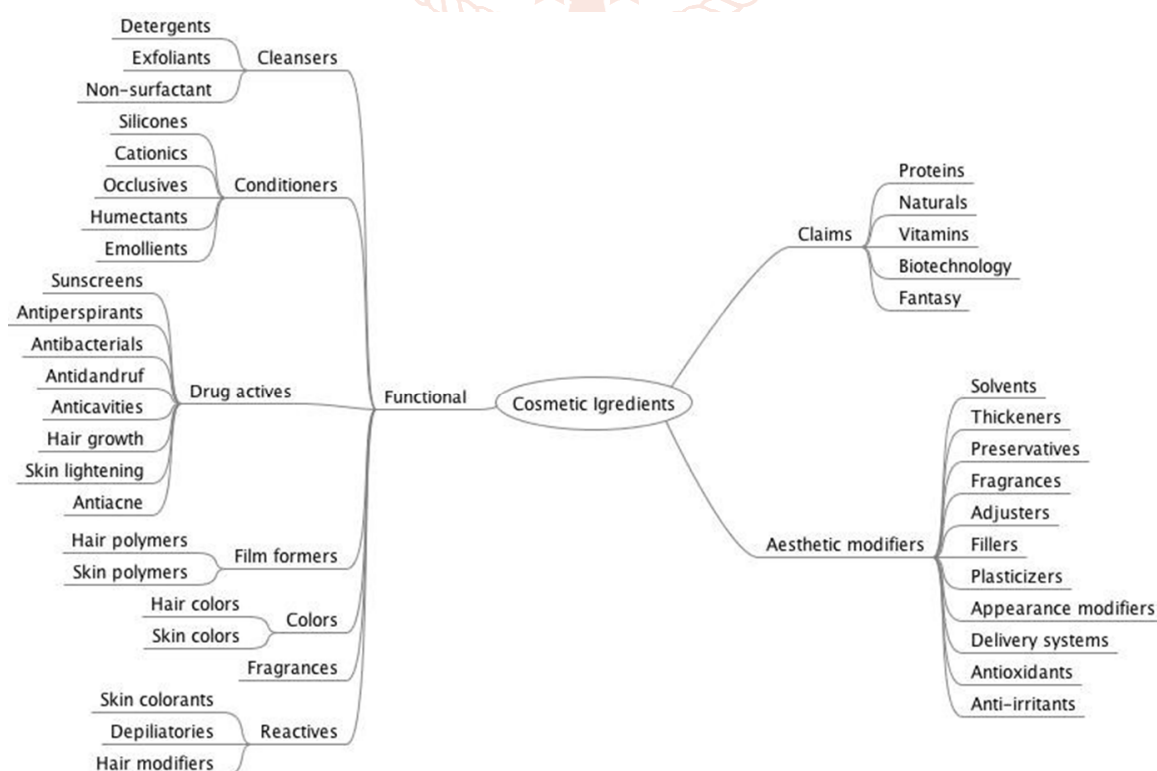
This brand was founded in the 1970s by Shahnaz Husain. In the year 2006, she was awarded the Padma Shri.

Top 5 Largest Cosmetics Companies in the World

- L'Oréal
- Unilever
- Estée Lauder
- Proctor and Gamble
- Coty

Raw materials

The raw materials that are used in most cosmetics around the world are listed in the International Nomenclature of Cosmetic Ingredients Dictionary. The latest edition of the INCI Dictionary has over 22,000 entries so it takes some time to learn about everything you could include in your cosmetic formulas. In reality, those thousands of options can all be simplified and we've described how there are really only three types of cosmetic ingredients. These include functional, aesthetic, and claims.



➤ **Functional ingredients**

Functional cosmetic ingredients are ones that actually have an effect on the body that the formulator wishes. You cannot make a useful cosmetic product without including at least one functional ingredient. However, you could make an entire cosmetic using just one functional ingredient. Vaseline has built a huge brand on a single functional ingredient cosmetic (Petrolatum).

Functional ingredients include cleansers, conditioning agents, colorants, fragrances, reactive ingredients, film formers, and drug actives. Every cosmetic you've ever used or made has at least one functional ingredient.

➤ **Aesthetic ingredients**

The most common and abundant type of cosmetic raw material is aesthetic modifiers. These are ingredients that help to make the delivery of the functional ingredients more acceptable. They are the compounds that help the ingredients spread, dilute the ingredients, make them more stable, and improve the look and feel of the overall product. The sub-category of aesthetic modifiers includes solvents, thickeners, preservatives, fragrances, pH adjusters, plasticizers, fillers, appearance modifiers, anti-oxidants, anti-irritants, and delivery systems. When you look at the ingredient list of most cosmetics, most of the ingredients are aesthetic modifiers.

➤ **Claims ingredients**

While people use cosmetics to improve the way their skin and hair look and feel, this isn't the primary reason that they buy cosmetics. Consumers buy cosmetics because they like the story that the product tells. They like the packaging or the way that the product looks and smells. And to help support the marketing story and the claims made about the product, formulators have to include claims ingredients.

Claims ingredients (sometimes called fairy dust) are ingredients added to formula at a low level for the primary purpose of getting to put the ingredient name on the label. This includes ingredients like natural extracts, vitamins, proteins, biotechnology, and fanciful made-up ingredient names. They are not put in the formulas to have any measurable effect and almost invariably they don't.

Ingredients

A variety of organic compounds and inorganic compounds comprise typical cosmetics.

➤ **Natural**

Handmade and certified organic products are becoming more mainstream, due to the fact that certain chemicals in some skincare products may be

harmful if absorbed through the skin. Products claimed to be organic should be certified.

➤ **Mineral**

The term "mineral makeup" applies to a category of face makeup, including foundation, eye shadow, blush, and bronzer, made with loose, dry mineral powders.

Label

Labeling Requirements for Cosmetics in India

Cosmetic products manufacturers have to abide by the following label elements on all the packaged items to market them in India:

1. The name of the Product
2. Name and address of the manufacturers and the manufacturing unit
3. List of ingredients of the content of the product

➤ **Outer Label**

- Declaration of the net content of the cosmetic product
- List of ingredients
- Name and address of manufacturer and importer as per legal documents

➤ **Inner Label**

- Product warnings and precautions for usage
- Directions for safe usage
- Special mention for the hazardous elements
- The list of ingredients
- Number of the manufacturing batch
- For soap, the date and year of manufacturing must be mentioned instead of the manufacturing batch number

Misleading Claims of Cosmetic Labels in the Market

Some of the misleading cosmetic claims that are prevailing in India.

#Hypoallergenic

#Natural, Organic

#Non-comedogenic

#Reduce wrinkles

Benefits of cosmetic

The use of cosmetics to improve our appearance can affect our self-perception. When we feel good, our self-esteem increases and our performance improves which favorably affects what others think of us, and how they behave towards us. In the same way, negative feelings about our appearance can trigger self-doubt that leads to lower self-esteem, confidence, and performance.

Each group of cosmetics can impart specific physiological and psychological benefits to the user. SHADED PRODUCTS (pigmented foundations, lipsticks, eye shadows, blushers, etc.), apart from

making the wearer look and feel more attractive, can have a psychologically therapeutic effect.

MOISTURISERS can induce a smoother feel and appearance to the skin and reduce the flaking associated with dryness. Certainly, the maintenance of normally hydrated skin is a very tangible physiological benefit.

SUNSCREENS impart both physiological and psychological benefits. They help protect the skin from wrinkling, premature aging effects in general, and skin cancer by screening out harmful ultraviolet rays. They also allow the wearer to build up a controlled tan if they so wish, which in our society represents vitality, health, and attractiveness. There is a growing awareness that tanning, even with the appropriate use of sunscreens, may still carry some risk of damage from ultraviolet rays.

HAIRCARE PRODUCTS have obvious physiological benefits. Anti-dandruff preparations fit into this category as do shampoos. Shampoos remove the lipids from the hair which, when they accumulate, make the scalp feel itchy and uncomfortable. Conditioners, perms, and hair colors improve the overall aesthetics of the hair and allow the individual to convey different messages. For example, certain hairstyles and colors maximize credibility in the workplace.

DENTAL CARE has both physiological and psychological benefits. Teeth cleaning removes dental plaque and helps inhibit dental caries. The use of fluoride has dramatically reduced dental problems

ANTIPERSPIRANTS and **DEODORANTS** are both physiologically and psychologically useful. Feelings of social inferiority, guilt, or shame may be provoked by perspiration and body odor.

Disadvantage of Cosmetics

1. skin diseases and reaction,
2. allergies,
3. harmful for eyes,
4. damage to nails if using nail polish,
5. cancer and other chronic diseases,
6. aging,
7. danger to reproductive organs,
8. hair problems,
9. headaches and
10. unwanted dependency on cosmetics.

It is indeed true that cosmetics bring harm not only to our skin but also increase the risks to have cancer and other diseases. Of course, it is impossible to talk about the harmful effects of makeup without mentioning ageing. Girls like to use concealers to cover the spots, but ultimately, this spots may look

even worse and you will look older than you actually are. In some cases a foundation or powder may dry out your skin and make it look flaky, dull and ashen. Makeup can also cause acne.

Conclusion

The impulse to look our best is age-old. The use of cosmetics is not a need created by the cosmetic industry but something that has arisen spontaneously in many cultures. The reason for their popularity is the important physiological and psychological benefit they impart to the user.

The benefits of cosmetics and toiletries are many and Cosmetic Scientists are skilled at developing products to meet these needs.

When we first encounter other people, their physical characteristics represent a salient source of information. People use this information to judge what the individual is like. This first impression is often important. Evidence has shown that people assign valuable social characteristics to those well-endowed with physical attractiveness, conforming to the "what is beautiful is good" stereotype. This can be extended to "what is made beautiful is good" Studies have shown that people of average attractiveness who use cosmetics can gain the advantages of positive personality attributes

Though there are a large number of different cosmetics used for a variety of different purposes, all cosmetics are typically intended to be applied externally.

There are thousands of different cosmetic products on the market, all with differing combinations of ingredients. In the United States alone there are approximately 12,500 unique chemical ingredients approved for use in the manufacture of personal care products.

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