



PACKAGING OF COSMETICS: A REVIEW

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ABSTRACT

This project explores the packaging of cosmetics. The word cosmetics, kosmetikos means "skilled in adornment". Kosmein means "arrange", or "adorn". Kosmos means "order." It also means "to make for beauty, especially of the complexion, or beautifying"; it also means done or made for the sake of appearance, "or correcting defects especially of the face." There are several types of packaging materials available and suitable for a variety of cosmetic products. Materials used commonly are glass, metals, plastics etc. Now a day, one can easily find a vast range of beauty products to choose from ranging from white cosmetics, i.e. facial creams and body care products containers used are jars and pots for body lotions, face cream, lip balms powders etc. Peelings, color cosmetics e.g. lipsticks mascara, nail polishes, eye shadow, foundations, perfumes etc. The containers used are large sticks for lipsticks, compacts for foundations, Vials generally for lip gloss and mascara, tubes for eye creams, vials for the lip gloss and mascara. High-end products are usually seen in glass containers e.g. perfume. The material, shape, color and durability of the packaging plays a big role when it comes to marketing the cosmetic products. Cosmetic packaging is the most important part of the branding.

Keyword: Mascara, Body lotion, Nail polishes, Lip balm, Bamboo cosmetics jars.

INTRODUCTION

Cosmetics

Cosmetic is defined as an item intended to be rubbed, poured, sprinkled or sprayed on, introduced into or applied to the human body or any part thereof for cleansing, protecting, beautifying, promoting attractiveness or altering the appearance¹.

Classification of cosmetics

Cosmetics are classified into three main categories, as follows

- According to their use
- According to their functions
- According to their physical nature

According to their use

Use for the skin, e.g. creams, powders, lotions, deodorants, antiperspirants.

Use for the nail, e.g. nail polish, nail polish remover, manicure preparations etc.

Use for the teeth and mouth e.g. dentifrices and mouth washes.

Use for the eyes, e.g. eye creams, eye lashes and eye liners.

Use for the hair, e.g. shampoo, hair dyes, hair tonics and hair sprays.

According to their functions

- Curative or therapeutic functions e.g. antiperspirants and hair preparations
- Protective functions e.g. face powders
- Decorative functions e.g. lipsticks nail polishes and eye lashes etc.

According to their physical nature

- Aerosols e.g. hair perfumes, after shave lotions
- Cakes e.g. rough compacts make up compacts
- Emulsions e.g. vanishing cream, cold cream, cleansing
- Oils e.g. hair oils
- Pastes e.g. tooth paste, deodorants paste
- Powders e.g. face powder, tooth powder, talcum powder, etc

Packaging of Cosmetics

Packaging plays a great role in the branding of cosmetics products. The overall look of a cosmetics product is one of the most important determinants of its market appeal, besides its quality. Cosmetics packaging should be easy to brand. It should allow the name for the product, the brand, and other necessary information like composition, usage instructions, and warnings to be printed as required. The container should be designed in such a way that they can allow the product to come out, but not to go in. This is to prevent the contamination e.g. tubes. Other than easy to use, another important element of cosmetics packaging is its pilfer resistance. Almost all cosmetics containers have a seal or a component which is broken when they are opened for the first time. This ensures that the product is brand new and hasn't been tampered. The four main aspects that matter for the selection of a cosmetics container are the type of container, compatibility, functionality and the protection of the products². The advantages and disadvantages of some container are enlisted in following Table³.

Table 1: Advantages and disadvantages of containers

Container type	Purpose	Advantages	Disadvantage
Jars (plastic, glass, ceramic)	Home care -Semi-solid W/O and O/W emulsions -Hydrogels	-Filling easy to take out with fingers, spatula or cotton pads -Decorative	-Unhygienic-contamination during use -O/W products may desiccate
Tubes (plastics, composite materials, aluminum)	Home care -Semi-solid W/O and O/W emulsions -Oleogels -Hydrogels	Aluminum The "one way discharge" from aluminum tubes avoids the penetration of germs	-Non-decorative ointment look -Elastic plastic tubes air and germs penetrate during discharge
Bottles (plastics, glass, ceramics, aluminum)	Home care Beauty, institute products Liquid W/O and O/W emulsion solutions	Variable synthetic material -jet and drop inserts -spray nozzle -frothing caps -pump head with tube glass/rubber Aluminum pressure cylinder	-Requires high microbiological stability -Radiation can penetrate through transparent bottles hence they are not appropriate for sensitive components
Dispensers (plastics, glass)	Home care -Semisolid emulsions -Hydro gels -Oils, liquid wax	-Hygienic: airless dispenser with double bottom cannot be contaminated from the outside -Airless dispenser can be completely emptied	-Transparent dispenser are not accepted in some countries -Radiation can penetrate through transparent dispenser hence they are not appropriate for sensitive components
Sachets (plastic foils)	Home care Beauty institute products -Enzyme peeling(powder) -Modelages (powder) -Free samples of semi-solid W/O and O/W emulsions	-Hygienic -One off use -Promotion material	-Opened products have to be consumed immediately -Lots of packaging waste

Properties of Cosmetics

Physical properties

- The material should be impervious to any possible contaminants, for example solids, liquids, gases, vapors or microorganisms.
- The container must be able to withstand with heat if the processing include sterilization.
- The surface must be capable of clear labeling, often difficult, for example with plastic.
- The packaging must have a suitable size, thus, rubber may presents problem if it perishes.
- The material must protect from light if necessary, i.e., it must be ultraviolet absorbent.
- The container must not absorb substance from the product; e.g. absorption of water from creams in to cardboard

Chemical properties

- The container and the closures should not react together, either alone or in the presence of the product. This can occur with certain combination of dissimilar materials.
- The product should not react with the container or closure, as might happen if alkaline substances are placed in aluminum containers.
- Substance must not be extracted from the product, such as the loss of bactericides from glass, plasticizers from plastics etc.

Biological properties

- The material of the container must be able to withstand attack by insects if this hazard is likely to be encountered.
- The packaging should not support mould growth. The risk is greatest with cellulosic substance and if the use of such materials is unavoidable, the attack may be minimized by impregnation⁴.

Materials used for Packaging

Glass Packaging

Glass is one of the oldest packaging materials which have been in use since years. Glass is nonporous and impermeable it does not degrade and is chemically inert. This means it is meant to guard its content from oxygen and moisture, so that the content is in good shape. This is one of the main reasons why glass is used in packaging of many cosmetics. Glass is also a highly sustainable product which means it can be recycled indefinitely and there is no loss in quantity. Inexpensive soda lime glass may release sodium ions in aqueous media and, depending on the buffering capacity of the filling material, increase the pH level. Glass and ceramic are advantageous so far as they are absolutely impermeable for gaseous substance like oxygen and water vapor. Oxygen-sensitive products are filled under protective gas atmosphere hence are packed in glass containers. When using pipette containers with rubber seals, it should be considered that liposome's or liquid nano particles that get onto the screw thread will work like perfect ball bearings⁵.

Composition of Glass

Glass is composed principally of silica with varying amount of metal oxides, soda-ash, limestone and cullet. The sand is almost pure silica; the soda-ash is sodium carbonate, and the limestone, calcium carbonate. Cullet is broken glass that is mixed with the batch and acts as a fusion agent for the entire mixture. The composition of glass varies and is usually adjusted for specific purposes. The most common cations found in pharmaceutical glassware are silicon, aluminum, boron, sodium, potassium, calcium, magnesium, zinc and barium. The only anion of consequence is oxygen. Many useful properties of glass are affected by the kind of elements it contains. Reduction in the proportion of Sodium ions makes glass chemically resistant; however, without sodium or other alkalis, glass is difficult to melt and is expensive. Boron oxide is incorporated mainly to aid in the melting process through reduction of the temperature required⁶.

Types of Glass

Type I-Borosilicate Glass

Borosilicate glass is a highly resistant. In this type of glass a substantial part of the alkali and earth cations are replaced by boron and/or aluminum and zinc. It is more chemically inert than the soda-lime glass, which contains either none or an insignificant amount of these cations. Although glass is considered to be a virtually inert material and is used to contain strong acids and alkalis as well as all types of solvents, it has a definite and measurable chemical reaction with some substances, notably water. The sodium is loosely combined with the silicon and is leached from the surface of the glass by water. Distilled water stored for one year in flint type III glass (to be described) picks up 10 to 15 parts per million (ppm) of sodium hydroxide along with traces of other ingredients of the glass. The addition of approximately 6 % boron to form type I borosilicate glass reduces the leaching action, so that only 0.5 ppm is dissolved in a year.

Type II—Treated Soda-Lime Glass

When glassware is stored for several months, especially in a damp atmosphere or with extreme temperature variations; the wetting of the surface by condensed moisture (condensation) results in salts being dissolved out of the glass. This is called "blooming" or "weathering," and in its early stages, it gives the appearance of fine crystals on the glass. At this stage, these salts can be washed off with water or acid. Type II containers are made of commercial soda-lime glass that has been de-alkalized, or treated to remove surface alkali. The de-alkalizing process is known as "sulfur treatment" and virtually prevents "weathering" of empty bottles. The treatment offered by several glass manufacturers exposes the glass to an atmosphere containing water vapor and acidic gases, particularly sulfur dioxide at an elevated temperature. This results in a reaction between the gases and some of the surface alkali, rendering the surface fairly resistant, for a period of time, to attack by water. The alkali removed from the glass appears on the surface as a sulfate bloom, which is removed when the containers are washed before filling. Sulfur treatment neutralizes the alkaline oxides on the surface, thereby rendering the glass more chemically resistant.

Type III-regular soda-lime glass

Containers are untreated and made up of commercial soda-lime glass of average or better than average chemical resistant.

Type NP- General-purpose Soda-lime Glass

Containers made of soda lime glass are supplied for non parenteral products, those intended for oral or topical use.

Plastic Packaging

Plastics in packaging have proved useful for a number of reasons, including the ease with which they can be formed, their high quality, and the freedom of design to which they lend themselves. Plastic containers are extremely resistant to breakage and thus offer safety to consumers along with reduction of breakage losses at all levels of distribution and use. Plastic containers for pharmaceutical products are primarily made from the following polymers: polyethylene, poly methyl methacrylate, polyethylene terephthalate, polytrifluoroethylene, the amino formaldehydes and polyamides. Plastic containers consist of one or more

polymers together with certain additives. Those manufactured for pharmaceutical purposes must be free of substances that can be extracted in significant quantities by the product contained. Thus, the hazards of toxicity or physical and chemical instability are avoided. The amount and nature of the additives are determined by the nature of the polymer, the process used to convert the plastic into the containers and the service expected from the container. For plastic containers in general, additives may consist of antioxidants, antistatic agents, colors, impact modifiers, lubricants, plasticizers, and stabilizers⁷.

Advantages of plastic containers

- Low in cost
- Light in weight
- Durable
- Pleasant to touch
- Odorless and inert to most chemicals
- unbreakable
- Able to retain their shape throughout their use.

Disadvantage of plastic container

- Plastics appear to have certain disadvantage like interaction, adsorption, absorption lightness and hence poor physical stability.
- Stress cracking, a phenomenon related to low density polythene and certain stress cracking agents such as wetting agents, detergents and some volatile oils
- Crazing, a surface reticulation which can occur particularly with polystyrene and chemical substances
- Poor impact resistance both polystyrene and PVC have poor resistance⁸.
- Poor key of print certain plastics, such as the poly olefins need pre treating before ink will key.

Metal containers

The collapsible metal tube is an attractive container that permits controlled amounts to be dispensed easily, with good re closure and adequate environmental protection to the product. The risk of contamination of the portion remaining in the tube is minimal, because the tube does not "suck back." It is light in weight and unbreakable and it lends itself to high-speed automatic filling operations. The ductile metals used for collapsible tubes are tin (15 %), aluminum (60 %) and lead (25 %).

Packaging of Cosmetics

Cosmetics are necessities for women. Cosmetics include skin care products and make up products. Some women use skin care products only, and some women use both skin care products and makeup products. There are the many brands and types of cosmetics in the market and female consumers have many options. Some female consumers buy cosmetics because of brand, some buy cosmetics because of price, some buy cosmetics because their friends' recommendations and others buy because of packaging design⁹. For e.g. creams, powder Plastic cosmetic containers can store creams, powders, liquid or gels. They are used in the cosmetic industry because of their sturdy body and affordable price. They come in a variety of shapes and sizes to suit the specific requirements of the manufacturer. These containers are also available in different types of plastic compositions.

Types of plastic



Figure 1

The most common type of plastic used for cosmetic containers is PP plastics. However these can also come in a more affordable PET plastic or a higher-end acrylic plastic. Acrylic plastic is usually clear, and resembles glass. This type of material has an advantage over glass as it is not prone to breakage. PP plastic is more affordable than acrylic and it is usually not clear¹⁰.

Color

It is possible to get plastic cosmetic containers in different colors, depending on the material. PP plastic can be fitted with an aluminum sheet or painted with a coat of matte or glossy color. This type of plastic can also be pre-colored, before the bottle or jar is shaped. Acrylic plastics are transparent and can be tinted. These containers can be fitted with a sticker label. PP plastics can have silk-screen labels printed on the side of the container before they are filled.

Shape

Although these are usually round or a tube-like shape plastic cosmetic containers can come in different styles. PP plastic containers can be molded into heart shapes; character shapes or square shapes, to suit the style or marketing of the cosmetic to be distributed. Jars and pots are commonly used for face creams, lotions, foundations, lip balms, powders and other cosmetics. These range in sizes from 20 mm to 60 mm and can hold anywhere from 25 ml (or less) to 250 ml. Shapes include: oval, square, round and some are even square with round pots in the middle of them. Materials used include: glass, acrylic, acrylic glass, polyethylene terephthalate and many others. These are used because they are lightweight, affordable and easy to fill with either liquid or dry cosmetics.

There are many different jars to choose from, and the most commonly used are listed below

Straight Sided Jars with Plastic Lids

These come in a variety of sizes including: 2oz (dimensions of 2.15 x 2), 4oz (dimensions of 2.25 x 2.75) and 6oz (dimensions of 2.5 x 3.25). These are most commonly clear, but also come in amber and blue. There are also different solid colors of lids that twist onto the tops of the jars. These are used for a variety of cosmetics, including: glitter, creams, face powders and bronzer.

Round Glass Jars

These are generally double walled so they have a nice and sophisticated look, but they do come available without

double walled closures as well. These range in sizes, but the most common are 30 ml and 50 ml. They are clear in color (but are available in frosted glass) and there are a variety of different closures available to top them. These include: smooth sided line closures, fine ribbed with pressure sensitive inner seal, fine ribbed, child resistant and round jar. These are commonly used for face creams, but can be used for cosmetics of all kinds.

Thick Wall Glass Jars

These come available in 1/4oz (with 2.3oz of thickness) and 2.3oz. The smaller size is generally used for eye shadows, lip glosses and creamy cosmetics, while the larger is used for foundations, makeup removers and other creams or powders. Other sizes available in this style of glass jar include 6oz and 1oz. The closures for these include: black or white domes, lined caps, smooth lined caps and PV lined caps.

Amber Glass Jars

Amber glass jars are commonly used by companies that don't want to use clear colors for their products. These are generally used for bath and body products, including oils and water based beauty products. There are various sizes of these available in straight sided jars, including: 2oz, 4oz and 8oz. The lids screw onto the top and come in a variety of different colors, including black and white.

Large Sticks

Large sticks are commonly used for things like lip stick, lip balm, concealers and other creamy forms of cosmetics. Some containers twist up while others push up manually. The heights of these containers range in sizes and generally top out at 100 mm. The shapes include round, oval, cylinder and many others. The materials used are normally plastic, aluminum or metal and the capacity ranges from 5 ml to 15 ml. The most important factor when choosing lipstick tubes is to be sure that the container is usable. Unlike some other cosmetics, there aren't many factors to be modified on lipstick containers. However, some designs are easier and more convenient for users. The shape of the lid should be thoughtfully considered when choosing a lipstick tube. The reason behind needing a well designed cap is that this becomes the applicator for the individual using the product. A cap should be easy to hold, not so small that it can't be held comfortably during application, and easy to remove and put back on to the base. Unlike lip balms and glosses, when it comes to the container for a lipstick, simplicity is usually the best option. Those who are using lipstick are most likely not looking for a unique shape to the container. The two options for a tube shape are cylindrical or rectangular. Other shapes and designs will most likely inhibit the user from getting the best use from the product. The tube itself should be easy to hold and should open and close in a way that ensures the cap will stay put between uses. When the function of the container is taken care of, the form should also be considered. These are the design elements that make the product stand out against competitors. The most obvious way to manipulate the design of lipstick tubes is to change the color. Many brands opt to use a neutral color for their packaging, often choosing black or a neutral metallic. There is also a decision to be made in choosing whether to make the container opaque or leaving some portion of the container clear, to allow the consumer to see the color of the product. Vials are commonly used for lip balms and mascaras because they are tubes with

tops that can be inserted into the tube for makeup application. The materials these are made out of include: plastic, acrylic, aluminum, nylon and many others. The most common shapes are cylindrical, but there are also convex, round and square shapes available. These have thick walls with plastic caps that hold sticks that apply the makeup. Capacity for these ranges from 5 ml to 15 ml and will depend on the height and shape of the container.



Figure 2

Material Used for Lip balm containers

Plastic containers are the most widely used among lip balm manufacturers. Plastic is a popular choice because it is easy, inexpensive, and works well for many thinner lip balm products. This material is also great because of its versatility. Plastic can be formed into such a wide variety of shapes and designs that many manufacturers will continue choosing it over any other material. Glass containers are not as common, but still have a place in the lip balm market. Glass containers are fantastic because they are extremely durable. Many consumers will save empty glass containers and reuse them for other purposes after the product is gone. These containers often look more expensive, making consumers believe that they are getting a high end product. The problem, however, is that glass containers are more expensive. Making and purchasing the containers costs more than using other materials, meaning that the finished product will also cost more.

Mascara Tubes

Mascara tubes are important part of the makeup cosmetic mascara itself, as are the wand applicators that are used in the tubes. Because of mascara's primary purpose and the formula that many are made with, it is crucial that mascara tubes and wands are made and designed in such a way to promote the best application. Mascara tubes come in all different types of shapes, sizes, and colors. Generic mascara tubes can be found in circular formations, and this is usually the most common shape for the tube. This allows the tube to be very easy to hold, as it's oval and slim enough to grasp with a couple of fingers. These specific mascara tubes come in all different colors. Most of the colors that are available in the generic mascara tubes are purely for selection and preference purposes. Different types of mascara are used for different effects. Some are used to lengthen lashes, some to thicken them, others to separate and make them pop. The wands that come with the mascara tubes play an integral role on whether or not the desired effect happens. Usually most wands that comes with the tube, are the strands wands with the brittle that are a certain width apart a certain diameter. Fancy and unique wands obviously give the mascara a different look because of it is being administered to the lashes. The specific wands have brittles that are closer together or thicker than the

strands wands. Some wands even have one side that is strand and one side that is specific and unique¹¹.

Lotion bottles

Lotions bottle come in all different shapes size and forms. They are made from many different types of material, most are either plastic, glass or acrylic containers. Because there are several different kinds of lotions, whether it is face, hands or body, the formulas for lotion differ considerably. Some lotions are kept in capped tubes. These tubes are usually made from plastic and depending on their size, can hold quite a bit of lotion. Capped plastic tubes aren't always the best choice though when it comes to lotion bottles. Whether its face lotion, hand lotion or otherwise, the lotion can sometimes cause build up and cake around the spout that it comes out.

There are lotion bottles that are also made of plastic, but instead of the capped tops, they have the pump dispensers. This is helpful for many people who don't want to have to screw a top on and off, or not want to flip up a cap. Pump dispensers come in a wide variety of options. There are the smooth pumps, the up lock pumps, the down lock pumps and the foamers. This method can be the least strenuous for those that have problems with the strength in their hands. So for those who have trouble gripping or twisting things, this option is preferred. The most notable downside to this method of keeping lotion is that, depending on how much lotion you need, you may have to pump more than a few times. That can get a bit annoying, especially if the pump doesn't dispense a lot each time.



Figure 3

Nail polish bottle

Bottle size

The first factor to consider when it comes to nail polish bottles is the actual size of the bottle. Full sized bottles typically hold 5 oz. of nail polish. A full size bottles also allows for a full size brush and cap that is easy to hold while using the brush. Mini bottles are typically half the size of their full sized predecessor. Mini bottles mean smaller brushes and caps which can make them more difficult to use. However, many choose to purchase mini bottles to carry with them for quick touch ups.

Bottle shape

Next up is the shape of the body of the bottle. Often, this is how each beauty company sets itself apart from the rest. Round and square bottles are most common however the brands have made the choice to use novelty shapes to market their polishes. The shape of the bottle does not impact the

ability to use the polishes. The shape of the bottle does not impact the ability to use the polish. However, many costumers have a preference when it comes to purchasing products. Some will say that certain bottle shapes make it more difficult to get all of the polish out. Some simply prefer the look of one shape to another.

Cap size

While the shape of a bottle may not matter, the shape of the cap absolutely does matter. The cap becomes the handle used to apply the polish, meaning that it need to be easy to hold and should be comfortable to hold while applying the product. If a cap feels awkward in the hand, it will turn customers off from the brand. A slight curve on the cap will make it more comfortable to rest between the fingers. A cap that is too slender will be less comfortable to hold while a cap that is too short or thick will be difficult to control.

Brushes

Finally the brushes attached to the bottle will need to be considered. These are also extremely important as they allow the user to get the task of painting the nail done. There is a risk of choosing a brush that is too stiff, causing the dragging of color over the nail and leaving streak marks behind. A brush might also be too soft, causing the color to spread too quickly over a wide area. The width of the brush is also important. A brush should fan out, allowing the nail to be covered.

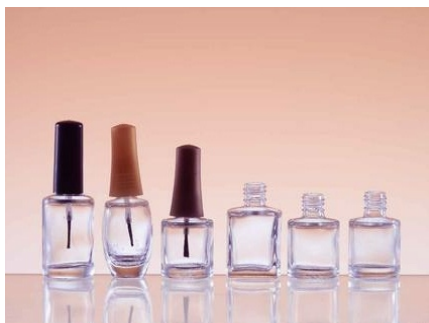


Figure 4

Bamboo Cosmetics Jars

The increasing inclination of consumers towards eco-friendly materials has contributed to a trend called “sustainable fashion.” As a response, many cosmetic manufacturers have ditched the traditional cosmetic packaging to give way to environmentally friendly containers in this case, bamboo cosmetic jars.

Specifications of bamboo cosmetics jars

There are different types of bamboo cosmetic containers, but the end use is one and the same: to serve as a biodegradable container for beauty creams. They are the ideal packaging material for organically made products such as concealer, facial cleanser, and sun screen lotion. The “bamboo cosmetic jar” label can be misleading. To some packaging companies, their bamboo jars are entirely made from glass or acrylic with a bamboo design. But the real bamboo cosmetic jar is one that displays the characteristics of polished bamboo wooden, unique, and toxin-free.

Decoration

The creation of bamboo cosmetic containers is a three-step process. It starts with the careful selection of the best bamboo, and then these raw materials go through the blades of a cutting mill. The cut portions are then given to a skilled craftsman for decoration. Bamboo jars can be decorated to help them stand out further. To achieve the desired effect, manufacturers use different techniques such as screen printing, etching, hot stamping, frosting, carving, and laser engraving.

Color

Just like wood, the bamboo as a raw material can be polished to display its unique visual aspect. Some of the most common colors and patterns that manufacturers can create include natural bamboo, zebra stripe, burnt.

Capacity

Bamboo cosmetic jars can be customized to fit a client’s capacity requirement. The usual capacity, though, are 5 ml, 10 ml, 15 ml, 30 ml, 50 ml, 100 ml, 150 ml, and 200 ml

Airless Dispensers

There are different designs of airless dispensers¹²:-

Type 1

At filling, the dispenser is equipped with a double bottom part. After the filling, the top section of the dispenser is attached and snapped in. The interior double bottom is then traced upwards due to the vacuum generated by the dispenser top with each use. Characteristic for this type of dispenser is a tiny opening in the dispenser bottom which allows the air to fill in when the interior part moves upwards.

Type 2

Before filling, the dispenser top is tightly connected with the bottom part that is open at the back. The bottom part is now filled from the rear side with a sliding disk applied on the filling material. After the surplus air escaped via an opening in the sliding disk, this opening is tightly sealed with a plastic nipple. The dispenser bottom part is then equipped with an even Bottom panel. Now, the dispenser is ready for use. If the bottom panel is then removed with the product use, the upward movement of the sliding disk can be observed. Cosmetic products such as lotions, foundations, toners and serums are packaged in airless cosmetic bottles. These bottles are generally crafted to provide better preservation of the product; with the airtight sealing, oxidation is minimized. Oxidation can cause cosmetic products to deteriorate faster and therefore packaging cosmetics in airless bottles means the quality of the product is preserved for longer and the shelf life is extended. Avoiding oxidation and contamination has always been a challenge when it comes to packaging cosmetic products. Contact with air often affects the physical and chemical properties of the ingredients. Microbes can also play havoc with cosmetics, especially as the trend these days is to reduce the use of preservatives. Airless cosmetic bottles are the perfect solutions for packaging products which are sensitive to chemical or microbial attacks. Production of airless cosmetic bottles allows plenty of room for customization because buyers can give specifications to the manufacturer to make bottles that suit the specific needs. For example, many manufacturers provide several options regarding color, shape and size or volume, material, number

of bottles and style. Because the bottles are sold in bulk, there are usually a minimum number of pieces that a buyer can order.

Advantages of airless cosmetics containers

- Oxygen, sunlight and microbes, which cosmetic products are often exposed to during storage and use, can change their characteristics, result in strange odors, discoloration or contamination. This reduces the shelf life of the product and degrades its quality and effectiveness once opened. Airless packaging helps prevent contact of the product with air and contaminants during filling, storage and use, thus increasing longevity and preserving quality.
- As the danger of contamination and degradation is almost non-existent for airless packaging, it allows manufacturers to reduce the use of preservatives thus keeping products more organic. This is a great advantage, especially in the case of natural products. In fact, some cosmetics can only be packaged using airless cosmetic bottles.
- Airless packaging avoids wastage as the consumer can use the product up to the last drop. The precision pumps and other mechanisms used by airless packaging allow smooth and accurate dispensation of the product during each use even for highly viscous products.

Closures

The closure is normally the most vulnerable and critical component of a container in so far as stability and compatibility with the product are concerned. An effective closure must prevent the contents from escaping and allow no substance to enter the container. The adequacy of the seal depends on a number of things, such as the resiliency of the liner, the flatness of the sealing surface on the container, and most important, the tightness or torque with which it is applied. In evaluating an effective closure system, the major considerations are the type of container, the physical and chemical properties of the product, and the stability-compatibility requirements for a given period under certain conditions¹³.

Functions of closures

- Provide a totally hermetic seal.
- Provide an effective seal which is acceptable to the products.
- Provide an effective microbiological seal.

Characteristics of closures

- It should be resistant and compatible with the product and the product/air space.
- If closure is of closable type, it should be readily operable and should be re-sealed effectively.
- It should be capable of high speed application where necessary for automatic production without loss of seal efficiency.

Types of Closures

Closures are available in five basic designs:-

1. Screw on threaded or lug
2. Crimp on (crowns)
3. Press on (snap)
4. Roll on
5. Friction

Threaded Screw Cap

The screw cap when applied overcome the sealing surface irregularities and provides physical and chemical protection to content being sealed. The screw cap is commonly made of metal or plastics. The metal is usually tinplate or aluminum, and in plastics, both thermoplastic and thermosetting materials are used. Metal caps are usually coated on the inside with an enamel or lacquer for resistance against corrosion. Almost all metal crowns and closures are made from electrolytic tinplate, tin-coated steel on which the tin is applied by electrolytic deposition.

Lug Cap

The lug cap is similar to the threaded screw cap and operates on the same principle. It is simply an interrupted thread on the glass finish, instead of a continuous thread. It is used to engage a lug on the cap sidewall and draw the cap down to the sealing surface of the container. Unlike the threaded closure, it requires only a quarter turn. The lug cap is used for both normal atmospheric-pressure and vacuum-pressure closing. The cap is widely used in the food industry because it offers a hermetic seal and handles well in sterilization equipment and on production lines.

Crown Caps

This style of cap is commonly used as a crimped closure for beverage bottles and has remained essentially unchanged for more than 50 years.

Roll-On Closures

The aluminum roll-on cap can be sealed securely, opened easily, and resealed effectively. It finds wide application in the packaging of food, beverages, chemicals, and pharmaceuticals. The roll-on closure requires a material that is easy to form, such as aluminum or other light-gauge metal. Re sealable, non re sealable, and pilfer proof types of the roll-on closure are available for use on glass or plastic bottles and jars. The manufacturer purchases these closures as a straight-sided thread less shell and forms the threads on the packaging line as an integral part of the filling operation. The roll-on technique allows for dimensional variation in the glass containers; each roll-on closure precisely fits a specific container etc¹⁴.

CONCLUSION


There is a clear association between the packaging of a product, where glass, metal and plastic packaging are associated with the generic looking of the cosmetic products. The packaging material used must be good in appearance as well it should be compatible with the contents. According to the need of the cosmetics, material can be selected and used.

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