



## **FORMULATION AND EVALUATION OF COMPACT POWDER**

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### **ABSTRACT**

The compact powder was demanded by many nations in the world in the beginning AD and in Asia white skin was believed to be the sign of aristocratism, white colour is the pure symbol of the internal beauty and goodness. In addition, some compact powders are sold in varying specialty shades to suit different skin needs. There is a legal reason to use compact powder, and the Pharmacopoeias prescribe them in the treatment of many skin affections. At all events the proper use of powder is beneficial, improving even the beautiful face. Compact powder comes in different shades to match varying skin tones, and it is a good idea to choose the skin tone that most closely matches the natural skin. This will help the makeup appear more natural; it should be virtually unnoticeable. It may be mandatory to use different compact powders for summer and winter, as the skin may become tanner in the summer or drier and in need of extra moisture in the winter. They are of benefit in acne, freckles, sunburn and red nose. Compact powders should be made by the perfumer to combine the qualities of an elegant cosmetic and therapeutic agent; they must primarily possess adherence, lightness and be transparent; secondly, they should be detergent and elegant absorbent in order to aid the natural functions of the skin, taking up the fatty matters not easily remove by water; they should also tend to increase the natural elasticity and regular functions of the skin.

**Keywords:** Absorbency, Adhesion, Covering powder, Pressed powder.

## **1. INTRODUCTION**

### **COSMETICS**

In 21st century, the winds of changes in the society are blowing forcefully in all parts of world for application of cosmetic. Cosmetic word is originated from Greek word "Kosmetikos" means adorn and preparation, which is used for this purpose, is known as cosmetic. We can define the cosmetic as "Cosmetic are external preparation meant for to apply on external part of the body i.e., nails, skin, hair for coloring, covering, softening, cleaning, nourishing, waving, setting, mollification, preservation, removal and protection" etc. We can also define it as "A cosmetic is an item intended to be rubbed, poured, sprinkled or sprayed on, introduced in to or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance".<sup>[1]</sup>

#### **Uses:**

- They are used as a cleansing, moisturizing and beautifying agent.
- They help in enhancing attractiveness of the body.
- They help in altering the appearance of the body without affecting its functions.
- Sunscreen products help in protecting the body from UV rays and treating sunburns.
- Acne, wrinkles, dark circles under eyes and other skin imperfections are treated or repaired by treatment products.
- Cosmetics help in treating skin infection<sup>[2]</sup>.



**Fig 1: Face cosmetics**

### **CLASSIFICATION**

Cosmetics are broadly categorized into four types:

- Skin Cosmetics
- Hair Cosmetics
- Nail Cosmetics

### **SKIN COSMETICS**

The purposes, functions and roles of skin care cosmetics such as face cleansing cosmetics, lotions, milky lotions, creams, gels, essences (beauty lotions), packs and masks, shaving cosmetics, and several other products (for example, powder and cleansing oil). The purposes of skin care cosmetics include cleaning the skin, preserve the skin's moisture balance, stimulate skin metabolism, and protect the skin from harmful ultraviolet radiation. They must also be safe when used constantly over long periods<sup>[3]</sup>

### **POWDERS**

A face powder is basically a cosmetic product, which has as its prime functions the ability to complement skin color by imparting velvet like finish. It enhances the appearance of the skin by masking the shine due to the secretion of sebaceous and sweat glands. Powder achieves its effect by being opaque enough to mask minor blemishes, but not impart a mask like effect, It possesses reasonably lasting properties. So that repowdering frequently is unnecessary<sup>[4]</sup>.

### **CLASSIFICATION OF COSMETIC POWDER**

- Loose powder
- compact powder or pressed powder
- Two-way cake powder
- Setting powder
- Finishing powder

### **LOOSE POWDER**

Loose powder is the original type of face powder. It has light and soft texture. The talc powder makes the formula easily absorbed on the skin and make face free from oil. That is why; loose powder is suitable for oily skin. Typically, loose powder is packaged in a jar equipped with a puff. The disadvantages of this powder are not durable and easily smudged by sweat. It also helps to prevent makeup transfer or runoff one may experience in the middle of the day. For people with oily skin, wearing loose powder is a must because it helps to control oil, keeping the face free from shine.



**Fig 2: Loose powder**

### **COMPACT POWDER OR PRESSED POWDER**

Compact powder or pressed powder is a loose powder that was compacted. The main difference between loose and pressed powders is the way the product is packaged. Pressed powders are pressed into a compact, loose powders are often packaged in jars or tubs. Typically, compact powder has been formulated with a moisturizer and oil. It makes the texture heavier than loose powder. It also makes face look greasy in 2-3 hours after wear this powder. Therefore, compact powder is recommended for dry skin. Beside brighten the face, it also moisturizes the skin.<sup>[5]</sup>



Fig 3: Compact powder

### **TWO WAY CAKE POWDER**

This multi-tasking pressed powder glides easily over skin to provide a flawless, natural looking matte finish. The coverage of this powder is very perfect, because it contains a foundation formula. This powder very recommended to cover blemishes, dark spot, with durable results.



Fig 4: Two-way cake powder

### **SETTING POWDER**

Designed to “set” or hold foundation in place, setting powders prevent base makeup from rubbing off and reduce shine for a long-lasting, flawless complexion. Available in two common forms, loose and pressed setting powders can be translucent or slightly tinted to match skin tone.



Fig 5: Setting powder

### **FINISHING POWDER**

It is used to lock the finished makeup. It can be used to maximize the bright makeup that looks uneven, and fading the fine lines or pores in the face. Typically, finishing powder is the white powder.<sup>[6]</sup>



**Fig 6: Finishing powder****2. COMPACT POWDER**

Compact powders are compressed in the form of cake along with binder by compaction process in order to form compact Powders. Compact are applied on the face with help of powderpuff. The pressure used in compaction process is an important factor in the formulation of compacts. As low pressure may form cake which break easily during use and high-pressure form very hard cake. Which will not adhere to puff easily. The average particle in compact powders is looser compared to loose powders, due to compaction.<sup>[7]</sup>

**Fig 7: Compact powder****ADVANTAGES**

- Applying compact powder can help in absorbing excess oil from skin.
- Compact powder also helps face natural non oily matte finish look.
- The light weight texture makes it easy to blend and complexion,
- Helps to set all the previous layers of makeup including color, concealer and foundation.
- All compact contain waxes and silicones are provide more coverage as compared to loose powder.
- Prevents sun burn and premature aging and dark spots<sup>[8]</sup>.

**DISADVANTAGES**

- Inhaling cosmetic talc can cause serious respiratory problems.
- It could cause irritation and redness in the skin and eyes when it gets into the open wounds and eyes.
- Sometimes, compact powder may cause allergies and itching to sensitive skin.
- Applying too much can cause foundation to look cakey and clog those pores.

**FORMULATION OF COMPACT POWDER**

S. No	Ingredients	Uses of Ingredients	Trial 1	Trial 2
1	Talc	Adhesive agent	3gm	2gm
2	kaolin	Covering agent	1gm	1gm
3	Zinc stearate	Lubricating Agent	2gm	2gm

4	Maize starch	Soothing agent	1 gm	1 gm
5	Glycerol	Binding agent	1ml	1ml
6	Jasmine oil	Flavouring agent	0.5ml	0.5ml
7	Sunset yellow	Coloring agent	0.2 gm	0.2gm
8	Formaldehyde	Preservative	0.5ml	0.5ml
9	Water	Vehicle	q.s	q.s

**Table 1: formulation of compact powder**

### 3. FEATURES

#### Covering character:

Kaolin, zinc stearate, magnesium stearate and rice starch are other substances used as covering agents. However, they are not as good as titanium dioxide and zinc oxide.

#### Adhesion character:

The materials primarily used for imparting adhesive characters are metal soaps primarily zinc stearate and magnesium stearate, talc

#### Absorbency character:

Colloidal kaolin is a fine, soft, white powder. It has a good absorbent capacity for aqueous and fatty substances and good covering power also. It is non toxic and non-irritating and inert. It has less slip.

#### Colouring substance:

Various synthetic or natural inorganic pigments used are iron oxides for yellows, reds, and browns and ultramarine for green and blue Toxic lead and arsenic compounds are not used.<sup>[9]</sup>

#### Perfumes:

Flowery fragrance or synthetic odour used in the formulation of powders. Perfumes should be compatible with the other ingredients in the formulation. Otherwise, the perfume character will change

### 4. METHODOLOGY

Preparations of Compact powders are prepared by 3 methods. They are following

- Wet Method
- Dry Method
- Damp Method

#### WET METHOD

The basic material, color and binders are formulated in the form of paste with the help of water. Then the pastes are pressed into moulds and slowly the products are dried by air. This method is not widely used, as there is a possibility of producing cracks and other faults in the preparation.

**Fig 8: Powder pressing machine**



#### **DRY METHOD**

In this method, the basic materials and binders are compressed in special presses with the help of pressure. This method is carried out under controlled conditions.



**Fig 9: Mechanical press**

#### **DAMP METHOD**

This method is most used for commercial purposes. The base powder, color and perfume are properly mixed to form a mixture. Then liquid binder i.e., aqueous mucilage rich emulsion (oil-in-water type) are added to the mixture. Then it is properly blended until the desired plasticity of the product is obtained. Screening of mixture is carried out followed by compression by machine. Finally, the product is dried at elevated temperature.<sup>[10]</sup>



**Fig 10: Dry gas seal**

#### **METHOD OF PREPARATION**

Compact powder was prepared following way:

Take a clean and dried mortar and pestle



Add kaolin, talc, maize starch, Zinc stearate to the mortar and pestle and triturate well



To this mixture add required quantity of glycerol and water and continue the trituration.



To the above mixture add sufficient quantity of perfume, coloring agent and preservative. Then properly mix all the above ingredients.



Dried the above mixture temperature at 100°C (hot air oven)



**Fig 11: Preparation of compact powder**

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## 5. EVALUATION OF COMPACT POWDER

**Shade Test:** In this test, the variations of color shade are determined and controlled. It is carried out by spreading the powder sample on a white paper and appearance is observed which is compared with the standard one.

**Fig 12: Shade test**



**Pay-off Test:** This test is carried out to check the adhesive property of powders with the puff. This test is mainly carried out on compact powders.



**Fig 13: Pay off test**

### **Determination of water insoluble in boiling water**

1gm of each sample was weighed and transferred to a 500ml beaker. Each sample was wetted with little rectified spirit. To this 200ml of water was added and boiled. It was allowed to settle and the supernatant liquid was filtered through Gooch crucible. The residue was washed with water and completely transferred to the filter. The residue remains in the crucible was dried at 105°C to obtain a constant mass. This procedure followed for all individual samples.



**CALCULATION**

Matter in soluble in boiling water, percent by mass= $100M1/M$

Report:

$M1$  = Mass in grams of the residue.

$M$  = Mass in grams of the material taken for the test

Matter in soluble in boiling water, percent by mass = $100M1/M$

= $100 \times 0.85/1$

=85mg

S. No	Formulation	Water insoluble in boiling water (mg)
1	Trial 1	81
2	Trial 2	85

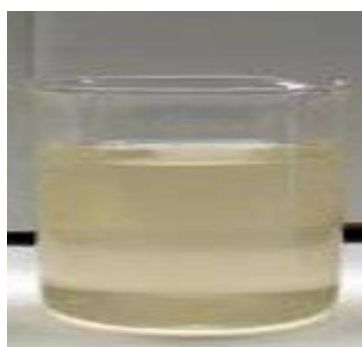
**Table no 2: result of water insoluble in boiling water**

**TEST FOR SOLUBILITY OF COLORS**

1gm of sample was taken. To this 50ml of water was added and boiled for 15minutes and filtered. From this filtered solution 10 ml of sample was taken and 15ml of rectified spirit was added it was refluxed for 15 minutes and filtered. The filtrate should be colorless or faintly colored.

S. No	Formulation	Solubility
1	Trial 1	Faintly colored
2	Trial 2	Faintly colored

**Table no 3: Result of solubility**



**Fig 14: Solubility test****6. DETERMINATION OF FINENESS**

About 10gm of each sample material was placed in specified (standard sieve 150 micron) sieve. It was washed by means of slow stream of running tap water and finally with fine stream of a wash bottle until as much material had passed through the sieve. In case the material was not easily wetted by water, the washing should be started with slow stream of filtered denaturated spirit. The water should be completely drained from the sieve and it was dried on steam bath. Then residue was carefully transferred to a tarred watch glass carefully and dried at 105°C for constant mass.

**CALCULATION:**

The fineness of all samples was calculated by using the following formula.

Material retained on the specified sieve, percent by =  $M_1/M$

$M_1$  = Mass in gram of the residue retained on the specified sieve,  $M$  = Mass in grams of material taken for the test

**Report:**

Material retained on the specified sieve, percent by =  $M_1/M$

=  $0.8/2$

= 0.4%

S. No	Formulation	Fineness (% by mass)
1	Trial 1	0.3
2	Trial 2	0.4

**Table no 4: Result of fineness****Fig15: Fineness test**

## 7. DETERMINATION OF PH OF AQUEOUS SUSPENSION:

10gm of each sample face powder was taken in a 150ml beaker. To this 90ml of freshly boiled and cooled water was added. It was stirred well to make a thorough suspension. The pH was determined within 5 minutes for all samples using pH meter.

S. No	Formulation	pH
1	Trial 1	7.5
2	Trial 2	7

Table no 5: Result of PH



Fig 16: PH test

## 8. CONCLUSION

The compact powder was prepared keeping in mind that it suits all skin type as the formulation was kept mild. Compact powder is a cosmetic product used to provide a special touch on the skin, to control oil and combat shines, or, in addition to provide a matt finishing effect on the skin. It comes package either as compact or loose powder. Oil based foundation products have become increasing popular in cosmetic consumer market. The compact powder prepared such that they were fit for daily use. Various tests were conducted to prove the efficiency and stability of product. The goal of the study was to develop an efficient compact powder that may be used on a daily basis by people of all ages. The compact powder can be applied to skin and found to be very effective.

From this study we can concluded that oil based compact powder (trial-2) shows better evaluation parameters and this formulation containing talc 2gm, kaolin 1gm, zinc stearate 2gm, maize starch 1gm, glycerol 1ml, jasmine oil 0.5ml, sunset yellow 0.2gm, formaldehyde 0.5ml, water q.s in terms of appearance, color, spread ability and smoothness property. It did not produce harshness and skin irritation.

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