



EVALUATION AND TESTING OF MARKETED FACE POWDERS

Garima Laddhad¹ Sangeeta Saharabudhe²

Student¹, Professor²

Department of Cosmetic Technology, LAD and Smt. R P College for

Women, Seminary Hills, Nagpur, Maharashtra, India

ABSTRACT

Face powder is a must-have item in each woman's makeup bag. Face powders have been and continue to be one of the fundamentals of the cosmetic industry, From the mask-like covering of ancient times to the natural look that is the preference of today. Over the past two decades, face powder fashion has undergone significant alterations. The modern lady can be more attractive than she has ever been with only a little bit of effort since she is tinted, shining, and improved by our modern cosmetics. It is essential to have high grade of ingredients in it, otherwise the product may cause an adverse effect when applied to the skin. The evaluation and testing of face powder is very important because it is directly or indirectly in contact with the other products like cream, sunscreen, serum, facewash etc. The current research paper is focusing on the comparison of marketed face powders with the one made in the laboratory. This perception and assessment of the result with the tests performed will thereby conclude the application and properties of the face powder and its safety to use on the skin.

KEYWORDS: Face powder, Evaluation and testing, marketed products, microbiological testing, product usage.

INTRODUCTION

Face powder is a cosmetic item that may be used to give the skin a specific touch, manage shine and oil, or both, as well as give the skin a matte finishing look. This matte texture, when paired with the powder's high transparency, may provide a unique soft effect on the face, minimising the visibility of discolouration and softening the appearance of wrinkles and lines to improve skin look. [1] Some pigmented face powders are designed to be used on their own, without a base foundation. Powder evens out skin tone and tones the face. Some powders with sunscreen help lessen skin damage from the sun and other environmental stresses in addition to toning the face. The opacity varies in that, it could be extremely opaque matt finish and an almost transparent finish which has its own inherent shine. Adequate lasting characteristic and to adhere to the skin is an important aspect, otherwise there will be a need to reapply frequently. Face powders should be created by the perfumer to combine the qualities of an elegant cosmetic and therapeutic agent beneath their appealing appearance and scent. They should have adherence, lightness, and transparency as their primary qualities; they should also be detergent and delicately absorbent in order to aid the natural functions of the skin by absorbing the fatty substances that are difficult for water to dislodge; they should also tend to increase the natural elasticity and regular functions of the skin. [2]

As the art of making this toiletry improved, perfume and color, as well as other improvements were introduced. In this modern era, face powders are really products that add very materially to personal attractiveness. Persons who are concerned about their looks employ it several times daily. Face powders as made today, by reputable manufacturers, consist of purified ingredients, approved colors and non-irritating perfumes. They have very fine particle size, which helps in producing large surface area per unit weight. This helps in proper dispersion of powder, which covers the large surface area of the body.[3] Loose powder is easier to pick up on a brush and it's easier to tell how much it's in use. Loose face powder still gives a more professional finish and there is resurgence in popularity from time to time. Analysis of face powder is an important aspect and hence it is done according to the following methods. [4]

MATERIAL AND METHOD

In this experiment, five marketed products are selected and one product from the laboratory formulation is made which is the sample no. 6. A face powder is made for comparing with the marketed products and all the six products are compared and tested. The formulation is done using minimal use of raw materials which gives the powder its required properties. The formulation is made by selecting the Talc as a base along with other ingredients like zinc oxide, Zinc stearate, Kaolin and Titanium dioxide. [5] Testing is done according to the Bureau of Indian Standard (BIS) along with some additional tests which are important in evaluating the parameters of the face powders.

Table no 1 shows Formulation for the face powder for the laboratory sample.

Sr no.	Ingredients	Quantity for 100 gm
1	Talc	50 gm
2	Zinc oxide	25 gm
3	Zinc stearate	5 gm
4	Kaolin	15 gm
5	Titanium dioxide	5 gm
6	Methyl Paraben	0.3 gm

Table no: 1 Formulation for face powder⁶

The tests which are performed as per BIS for face powders along with standards are mentioned below in table 2.

Sr no.	Characteristics	Standards for face powder	Sample no. 1	Sample no. 2	Sample no. 3	Sample no. 4	Sample no. 5	Sample no. 6
1	Matter insoluble in boiling water, % by mass, Min	90	92.32%	91.88%	91.20%	91.10%	92.20%	92.28%
2	Fineness							
	a) Residue on 75 micron IS sieve, % by mass, Max	1.0	0.79	0.80	0.82	0.79	0.81	0.80
	b) Residue on 150 micron IS sieve, % by mass, Max	0.5	0.35	0.38	0.42	0.40	0.41	0.36
3	Moisture and volatile matter, % by mass, Max	3.0	2	2.6	2.8	2.4	2.4	2
4	pH of aqueous suspension	5.5 to 9.0	7.32	8.01	7.89	8.05	8.16	7.49
5	Test for solubility of colors	Colorless or faintly colored	Colorless	Faintly colored	Colorless	colorless	Light yellow colored	Colorless

Table 2: Standards⁷ and results for face powders according to BIS.

The additional tests which are performed, along with standard, are mentioned in table 3.

Sr no.	Tests for Face powder	Standards	Sample no. 1	Sample no. 2	Sample no. 3	Sample no. 4	Sample no. 5	Sample no. 6
1	Angle of repose, max	30°	24.4906	26.1413	25.0037	25.7018	26.4354	23.1686
2	Grit test	No particles should be observed	No grit particles were Observed	No grit particles were Observed	A few grit particles were observed	No grit particles were Observed	No grit particles were observed	No grit particles were observed
3	Oil absorption test, max	1%	0.2	0.3	0.3	0.3	0.2	0.2
4	Water absorption test, max	1%	0.8	0.6	0.6	0.6	0.8	0.7

Table no: 3 Standards^{8,9,10,11} and Results for additional tests for face powder

Microbiological analysis:

Fig 1 to 12 shows Bacterial and Yeast and Mold count for sample no. 1 to 6 respectively.

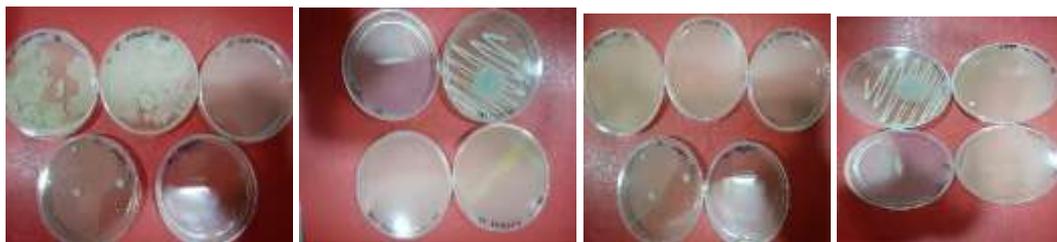


Fig no. 1 Fig no. 2
Sample no. 1

Fig no. 3 Fig no. 4
Sample no. 2

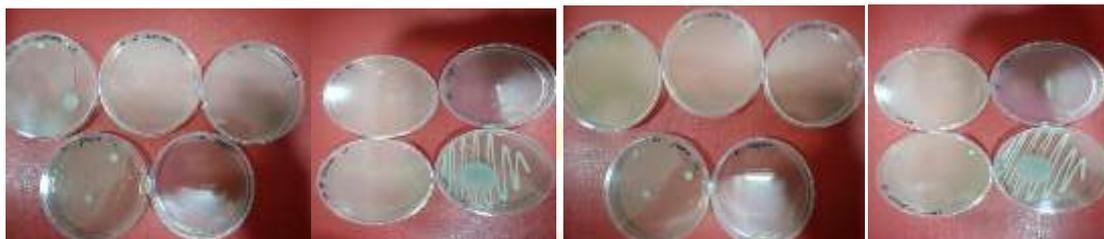


Fig no. 5 Fig no. 6
Sample no. 3

Fig no. 7 Fig no. 8
Sample no. 4



Fig no. 9 Fig no. 10
Sample no. 5

Fig no. 11 Fig no. 12
Sample no. 6

Table no. 4 shows standards and results for microbial content for face powder as per above observations.

Microbial content/limit	Standards	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Total viable count cfu/g	Not more than 1000	120 cfu/gm	Less than 10 cfu/gm	140 cfu/gm	Less than 10 cfu/gm	Less than 10 cfu/gm	540 cfu/gm

Table no. 4: Standards¹² and results for Microbial content for face powder.

RESULTS FOR THE EVALUATION OF FACE POWDERS

For Matter insoluble in boiling water, Sample 1 > sample 6 > sample 5 > sample 2 > sample 3 > sample 4.

For fineness, Sample 3 > sample 5 > sample 2,6 > sample 4,1 hence sample 4 & 1 is considered of finer particles among others.

For Moisture and volatile matter, Sample 3 > sample 2 > sample 4,5 > sample 1,6 hence, tendency to cake and microbial contamination will be greater in sample no 3 and lowest in sample 1 & 6.

For pH, Sample 5 > sample 4 > sample 2 > sample 3 > sample 6 > sample 1 hence, all the products are compatible with the skin when a pH is considered.

The order of angle of repose is, Sample 5>sample 2> sample 4 > sample 3> sample 1> sample 6, the lower the angle of repose, greater is the flowability.

From the grit test, only sample 3 has a few grit particles present while others do not have any grit particles present.

The oil and water absorption capacity for all the products are below 1% hence they are considered to be of great sebum, and moisture retention from the face.

Total viable count shows that the highest growth is found in sample no. 6 that is 540 cfu/gm. Sample 3 has 140 cfu/gm and sample 1 has 120 cfu/gm. Sample no 2, sample 4 and sample 5 have colonies less than 10 and hence they are highly safe.

DISCUSSION AND CONCLUSION

As per IS standards the powder passed all the tests and hence the products are of standard grade. All the products were free from grit, except sample no. 3 which had a few grit particles in it. Such product when applied on face may sometimes be abrasive or rough in nature which may cause damage to the face when rubbed. All the products have good oil and water absorption capacity and therefore they are useful in absorption of sweat, sebum, oil and moisture satisfactorily. The angle of repose of a powder for excellent flowing is less than or equal to 25 degrees, and for good flowing it is between 25 to 30 degrees. Sample no. 1 and 6 have the excellent flowing property whereas sample no. 2, 3, 4 and 5 have a good flowing property. All the products were found to be stable in all aspects that is, at low temperature, at room temperature and high temperature. Compatibility with perfumes were shown by every product and they were sweet smelling and did not cause any irritation when applied.

The total viable results of all the samples were within the permissible range according to the BIS. Sample no. 2, 4 and 5 have the minimum microbial growth because they might have been formulated by extreme care in terms of sterilizing and precautions in terms of packaging are taken. In sample no. 1 and 3 products are within the permissible range although few colonies are seen which may be due to lack of care in product development and packaging. However, sample no. 6, which is the laboratory sample, showing higher value of microbial count, among all the five products, because it is not possible for laboratory sample to take extreme care and human error contributes to the microbial contamination. But still the sample is under the permissible range of microbial count. In future studies this point is to be studied in more detail.

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