

QUALITY CONTROL OF COSMETICS

Quality control is essentially a tool which enables to maintain product quality at desired level. In other words it maintains value of a product.

Quality control is an ongoing process. It is a comparison with a standard whether a cosmetic product adheres to a certain criteria. Standard consist of:

1. **Formula:** This gives precise statement of different ingredients which comprise the product.
2. **Operating Standards:** This gives detail of manufacturing procedures, storage, filling and packaging.
3. **Raw material Specification:** Giving all details of characteristics and limits of deviations permissible.
4. **Packaging material standards:** It covers all components which go around the product shape, size, colour and other aesthetics and acceptance criteria and limits.
5. **Finished product standard:** It covers all characteristics essential for proper performance, durability and safety of product .
6. **Testing methods** This covers tests procedures of all components

Quality control could be basically divided into:

1. Raw material and packaging material quality control
2. Finished product quality control.
3. Microbiological quality control
4. Production line quality control.

1. Raw material quality control: The cosmetic raw materials varied in nature. Bureau of Indian Standards has done commendable work in fixing specification for many raw materials used in cosmetics. The raw materials which do not have IS standards are normally analysed as per I.P., B.P., U.S.P. or CTFA specification. The tests normally involve:

Physical Parameters: Colour, odour, density, refractive index, viscosity, etc.

Chemical Parameters: Like assay of active ingredients, impurities present, etc.

Drugs & Cosmetic act specifies the limits of impurities in cosmetic raw materials like lead arsenic and heavy metals. Soon new specification may be added for other heavy metals.

Packaging material quality control:

Cosmetic packaging has special importance as it enhances aesthetics. Packaging acts as protectant to product which is sold at the same time it gives eye appeal. Many a times sale take place due to aesthetics which is also known as Impulse purchase.

Main purpose of packaging material quality control is to weed out defective packaging. The defects could be classified into:

1. **Critical defects** : Which lead to total spoilage like cracked neck of bottle. It may be unsafe for users.
2. **Major defects**: These defects are very obvious defects which may not functionally give problem.
3. **Minor defects** : These defects are minor in nature but will have an effect on aesthetic appeal.

Statistical techniques are used for sampling and interpreting the results.

Based on sampling plan, samples are drawn and inspected.

2. Finished product quality control:

Finished product quality control involves testing physical and chemical parameters.

1. **Colour**: Shade matching is one of the important aspect of quality control of cosmetics. Mostly colour matching is done by visual means by colour experts. It is always a comparison between a standard and sample lot. Visual observation are made on two films drawn of similar thickness depending on type of products either glass slides or drawn apparatus is used for producing film of uniform thickness. Colour matching computers are available nowadays.
2. **Density - Specific Gravity** : Usually specific gravity cups are used which are calibrated for particular weight of water.
3. **Viscosity**: Different types of instruments are available. Most popular one is called Brookfield viscometer. This instrument is based on spring which is attached to spindles. The viscosity is measured based on torque registered on the spring indicated on the dial. Other viscometers are falling ball viscometer, Gardner tubes or Fords cup which are based on different principles.
4. **Melting point or boiling point**: Usual capillary method is followed for melting point. Boiling range is also done using normal distillation set up. Now a days instrument to determine M.P/B.P. is available.
5. **Hardness- Softness** : This kind of testing is done using penetrometer. A needle penetrates the block of desired mass and the depth of penetration indicates the hardness. There are other means like break points which are measured by specialized instrument.
6. **Foam Tests**: Foam tests are done using cylinder methods and also there are instruments like Ross Miles apparatus used for measuring foam.
7. **Accelerated stability tests** : Many cosmetic products are emulsions. Emulsions are prone to degradation. The tendency of emulsion degradation is usually checked by accelerated tests like storage of products at elevated temperatures like 40, 45, 50°C or putting them under high stress conditions like centrifugal force and artificial humidity conditions or exposed to extremely daylight conditions. These tests are also done for non-emulsion products to assess perfume stability or physical separation or sweating, etc.
8. **Chemical tests** : These are usual tests carried out to find out acidity, alkalinity and assay of particular active ingredient, etc.

BIS(Bureau of Indian Standards) lays down specification for finished cosmetics as per Schedule S of Drugs and Cosmetics Act 1940. Perhaps India was the only country who had standards for Finished Cosmetics.

Instruments like thin layer chromatography, Gas Liquid chromatograph, High pressure liquid chromatograph and infrared and ultraviolet spectrophotometers, Skin meter are widely used for raw material as well as finished product quality control.

3. Microbiological Quality Control: It is imperative that each manufacturer should ensure products he manufactures are safe for use by his customers. Many of the bacteria which come from surrounding environment or coming from raw materials are not safe. Some of the microorganisms are relatively harmless. Microbiological quality control is aimed to ensure that all the finished products are free from harmful pathogenic bacteria and other bacteria are within the limit.

4. Production Line Quality Control: This type of quality control is practiced in large scale assembly type production units wherein so many different types of products are assembled into final product. Main aim is to ensure good quality of outgoing goods.

Procedure involves drawing of random samples from production line at different intervals and these samples are inspected and if the product quality is found below the standard. Entire production is taken up for 100% rechecking.

OBJECTIVES OF QUALITY CONTROL:

- 1) To establish standards of quality which are acceptable to consumers.
- 2) To ensure that the customers are provided with products which conform with the standard specifications.
- 3) To locate and identify process faults and defects of products.
- 4) To ensure that defective items are not used.
- 5) Evaluation of quality standards of incoming material, product in actual manufacture and of outgoing product.
- 6) Judging the conformity of the process to the established standards, and taking suitable action when deviation are noted.
- 7) Evaluation of optimum quality obtainable under given conditions.
- 8) To improve quality and productivity by process control and experimentation.
- 9) To ensure that defective products are not passed to customer.
- 10) Developing quality consciousness both within and without the organization.