

SHAMPOO

Introduction

The word shampoo in English is derived from Hindustani chāmpo.

Shampoo is a hair care product that is used for the removal of oils, dirt, skin particles, dandruff, environmental pollutants and other contaminant particles that gradually build up in hair.

Ideal Property of Shampoo

- It should effectively & completely remove dust or soli, excessive sebum or other fatty substances & loose corneal cells from the hair.
- It should produce a good amount of foam to satisfy the psychological requirement of the user.
- It should be easily removed on rinsing with water.
- It should leave the hair non-dry , soft , lustrous with good manageability & minimum fly away.
- It should be impart a pleasant fragrance to the hair.
- It should not cause any side-effects / irritation to skin or eye.
- It should not make the hand rough & chapped.

Function of Shampoo

- 1. Completely remove dirt**
- 2. Protect the Hair**
- 3. Cleaning of hair**
- 4. Soothe the scalp skin**
- 5. Nourishment of hair**
- 6. Treating dandruff, lice or other scalp problems**

Classification

1. Based on Appearance

- a) Powder shampoos
- b) Liquid shampoos or lotion
- c) Gel shampoos or solid cream
- d) Cream shampoos
- e) Oil shampoos
- f) Miscellaneous- antidandruff, medicated shampoo

2. Based on use or function:

- a) Conditioning shampoos
- b) Antidandruff shampoo and Therapeutic
- c) Baby
- d) Balancing
- e) Clarifying

3. Based on origin:

- a) Herbal
- b) Egg

Raw material/Formulation of shampoo

The basic ingredients used in formation of shampoo are as follows:

- 1. Detergents(surfactants):** - They clean hair, removes dirt, soil & debris from hair scalp
e.g. SLS, alkyl benzene polyoxyethyl sulphonates.
- 2. Foam boosters and stabilizers:-** They increase the quality, volume and stability of the foam.
e.g. amine oxide, ethanol amides.

3. **Preservatives:-** They preserve shampoo from microbial growth. E.g. Methyl and propyl paraben.
4. **Opacifiers or clarifying agents:-** used to turn shampoo opaque. E.g. higher fatty alcohols, salt of fatty acids, ethylene.
5. **Hydrotropes:-** They are solubilizing agents added to solubilize poorly soluble ingredients.
e.g. surfactants, urea, alcohol, glycols.
6. **Viscosity modifiers:-** added to enhance viscosity. E.g. methyl and ethyl cellulose, sodium CMC.
7. **Conditioning agents:-** Added to improve texture of the hair, silky. E.g. lanolin, glycol esters

8. Antidandruff substances:- They are used to reduce dandruff from hair. E.g. hexachlorophene, selenium sulphide, selenium disulphide.

9. Sequestering agents or Chelating agents:- Added to prevent the formation of lime soap due to presence of hard water. E.g. sodium salt of EDTA, Sodium polyphosphates.

10. Colourants:- glycerine distearate

11. Perfumes: e.g limonene

Manufacturing of Antidandruff shampoo

Formula:

Selenium disulphide – 2.5 gm

Bentonite- 5.0 gm

Sodium lauryl sulphate- 40.0 gm

Water- 52.5 gm

Perfume – q.s

Procedure: selenium disulphide is dispersed with bentonite, then mix SLS with water with heating and stirring at 90°C. Add part of this detergent mix to the selenium disulphide-bentonite dispersion with stirring to get homogeneous mixture, add rest of detergent with continuous stirring. Cool to 40 °C add perfume.

Quality Control Tests

a) Foam Stability

Cylinder shake method was used for determining foaming ability.

50ml of the 1% shampoo solution was put into a 250ml graduated cylinder and cover the cylinder with hand and shaken for 10 times. The total volumes of the foam contents after 1 minute shaking were recorded. The foam volume was calculated. Foam should retain for atleast 5mins.

$$\text{Foam Stability} = V_2 - V_1$$



b) Skin – irritation Test:

Draize test in Rabbits where a patch test technique is used on the intact skin of Albino Rabbits.

A set of 6 Rabbits used for testing each material.

Shampoos should be tested only for a short duration that is, not more than (NMT) 4 hours as these products come in contact with skin only for a short duration.

These preparations are diluted between concentrations of 8 to 10⁰%.

c)Wetting Action:

Canvas disk is used, is one inch in diameter is floated on the surface of a solution and the time required for it to sink is measured accurately.

d)Viscosity:

Is determined using Brookefield Viscometer.

100ml of shampoo is taken in a beaker and spindle is dipped in it for about 5min and then reading is taken.

