

Fact Sheet

from the Consumer Information Service

HOW THEY WORK

Personal Care – Shampoo & Conditioner

Although mainly a cleaning process, shampooing is also seen as a cosmetic treatment. Outlined here are some of the raw materials used, plus several considerations concerning formulation, so as to achieve both of these purposes.

The constituents of a shampoo can be broken into three main groups:

1. Principal Surfactants: Surfactants provide foam and detergency which are the major cleaning functions of a shampoo. The most common primary surfactants are the lauryl sulphates, with sodium laureth sulphate being probably the cheapest and most widely used of this group.

Others include alkyl ether sulphates, which offer cost and colour advantages over alkyl sulphates, but make the hair more prone to static and more difficult to comb. They have good foaming properties, but the foam is lighter and more open, and readily collapses in the presence of grease.

2. Auxiliary Surfactants: Because of the shortcomings of principal surfactants it is sometimes necessary to add what is known as an auxiliary surfactant to a formulation.

These cover a wide range of types including chemical groups such as anionics, cationics, nonionics and amphoteric.

Examples of auxiliary surfactants are:

- Sulphosuccinates, which are low irritants and have their major use in baby shampoo
- N-Acyl sarcosides, which are alkaline surfactants. They provide a conditioning effect and cause less static than many other detergents.
- Nonionics such as alkanolamides, (e.g. cocodiethanolamide) which are well known as

economical foam boosters, foam stabilisers and viscosity builders.

- Amphoteric are popular as mild non-irritating components, which also reduce the irritation potential of other surfactants used.

3. Miscellaneous Additives: These are the raw materials which give the product consumer appeal. They include such things as colours, perfumes, opacifiers, thickeners, preservatives, antidandruff agents and conditioners. These additives come in many and varied forms and can be used in various combinations to contribute to the aesthetic appeal as well as the function of the product.

It was originally thought when formulating shampoos for oily, normal and dry hair, that products required for oily hair should be greater in surfactant level and less in refatting material, with the reverse for a dry hair shampoo.

It has since been learnt however, that strong detergents pit the hair, removing natural oils and body. As a result, the hair becomes flatter and attracts more oil because it is pitted and lies close to the scalp. A mild detergent base minimises cuticle damage, strengthens the structure of the hair by not removing body and allows the hair to stand away from the scalp. A delicate balance between oil removing capabilities and prevention of hair damage must therefore be investigated.

Shampoos which are suggested for everyday use are usually mild conditioning shampoos, which because of their frequency of application, do not need to remove much oil or dirt but must keep the hair well conditioned and undamaged.

Baby shampoos must be non-irritating and non-sensitising to allow the desired mildness claims. The selection of surfactants used is important

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and particular attention should be paid to eye-irritation potential.

Laboratory trials utilising hair tresses are used to test for the various effects of a shampoo on the hair, and various methods are available. There are however, no real substitutes for practical trials with consumers in the selection of surfactants for shampoos.

The usual companion products for shampoos are cationic hair conditioners, which involve a completely different set of standards. They require cationic ingredients which not only impart lustre, manageability and softness but in some way must be able to remedy hair problems, such as tangles and hair damage due to auxiliary treatment, such as blow drying, perming or colouring. The list of possible materials and formulations is as extensive as that for shampoos.

With all the materials available and many thousands of combinations possible, shampoos created for the consumer market can be designed to fit almost every conceivable hair type and condition, allow for specialisation or be for general all-purpose use. This can be seen from the wide range of products available in the supermarket or hairdressing salon.

Glossary

Aesthetic- For appearance only, has no other functionality.

Opacifiers- Ingredients which don't allow light to penetrate through the product.

Surfactants- Assist in the removal of soils and prevent the soils from redepositing on the cleaned surface. There are various types:

Anionic - These surfactants carry a negative charge and are very good at removing oily soils.

Nonionic - These have no charge and are also good for removing oily soils.

Cationic - These surfactants carry a positive charge and produce softening and antistatic benefits.

Amphoteric - These carry both a positive and negative charge and balance out the acidity or alkalinity of the other ingredients in the product.

Viscosity-The consistency of the product.

Below: The 2006 range of Palmolive Aromatherapy Shampoos and Conditioners (top) and 2006 range of Palmolive Naturals Shampoos and Conditioners (bottom)

