

INOXPA MIX-Type Skid Application

Personal Hygiene: Production of Shower Soap

I Introduction

The main function of shower soap is to clean the body by removing dirt caused by pollution as well as dead skin cells. It must also be able to reduce the excess of oil and sweat.

In addition, in terms of the product characteristics, it must have an optimum viscosity, not irritate the skin, generate a type of foam that is easy to rinse, and have a pH close to 5.5, which is the skin's natural pH.

I Production of shower soap



The typical generic composition is:

- Surfactants
- Demineralized water
- Sodium chloride (thickener)
- Special additives as well as perfume, colouring agents and preservatives.

The components and their respective proportions may vary depending on the manufacturer.

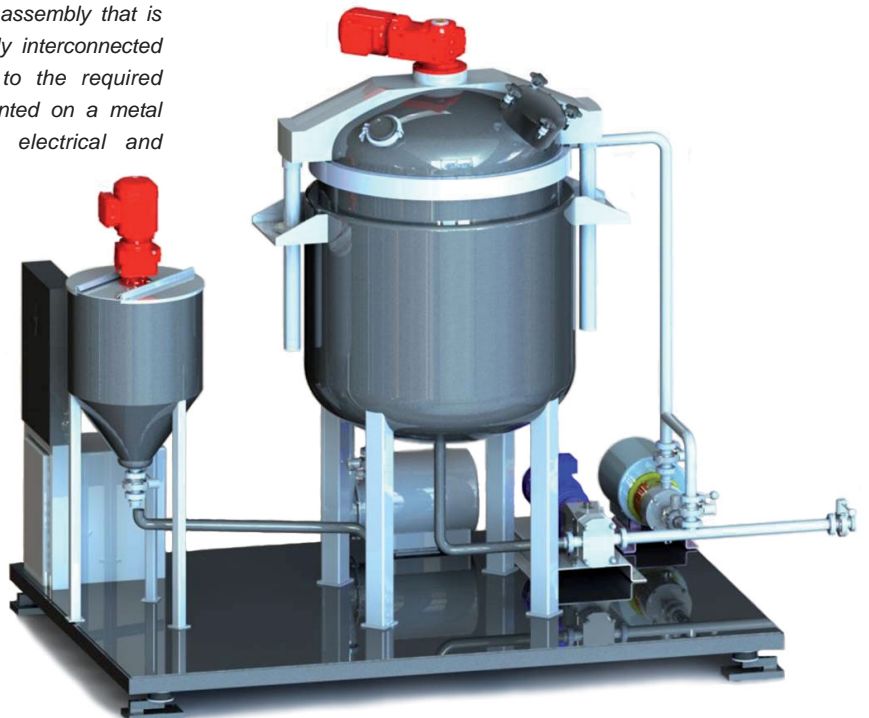
The production process starts by introducing the surfactants and the demineralized water into the blender, and heating if necessary. Agitation should be carried out for as long as necessary, with the inline mixer running. Sodium chloride is then added to control viscosity. Cooling of the product is initiated, if necessary, while the additives are prepared in the auxiliary skid. Once a homogeneous mixture is achieved, the corresponding additives are added while slow agitation is maintained. Finally, the aroma is added.

I INOXPA solution

INOXPA offers a mono-block skid, the MIX-3, to produce this kind of product.

This skid consists of a main tank with a centrally-mounted blade-type agitator with current deflectors, an auxiliary tank with Cowles-type agitator for mixing the minor ingredients, two rotary lobe pumps for product loading, one rotary lobe pumps for final product discharge or feeding of the inline mixer for the recirculation of the product, a control panel, and ancillary services for temperature control. There is also a dosing system with weight control.

The system is arranged as a mono-block assembly that is mechanically, electrically, and pneumatically interconnected and ready to operate once connected to the required ancillary services. The whole unit is mounted on a metal support frame which incorporates the electrical and pneumatic panel and its installation.



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I Example of a typical shower soap formula

Components	Classification	Percentage
Water	Solvent	60 %
Anionic surfactant	Detergent	30 %
Betaine	Viscosity regulator	5 %
Surfactant	Thickener and foam stabilizer	2.5 %
Active ingredients	Additives and preservatives	2 %
Perfume	Aroma	0.5 %

Part of the water is introduced into the auxiliary tank and then the active ingredients are loaded. The agitator is switched on at medium speed to mix the components.

The ingredients are added separately to enable precise adjustment of amount of each ingredient by means of the weighing system.

The remaining water is introduced into the tank and a blade-type agitator is switched on at medium speed. As the water is recirculated through the rotary lobe pump and the inline mixer, the surfactant is added by means of a rotary lobe pump. The surfactant is introduced into the tank and is mixed with water due to the movement of the agitator blades. The pre-mix is recirculated through the rotary lobe pump and the inline mixer to achieve a more homogeneous mixture. The resulting product is returned to the tank. After adding the required amount of surfactant, the same process is repeated with the betaine that is mixed with the water and the surfactant.

The recirculation of the product is maintained closed after the incorporation of the betaine. After a few minutes, the product is transferred by the rotary lobe pump to the inline mixer and then it is introduced into the main tank. The recirculation of the product continues for a controlled time period.

The viscosity and pH meters show the product characteristics and enable their adjustment if necessary. The recirculation stops when both parameters are correct.

Finally, the perfume is added to the main tank while the agitator blades are rotating at medium speed.

It is possible to raise the water temperature slightly before adding the surfactants in order to facilitate mixing and speeding up the production process. In this case, the tank is jacketed to enable temperature adjustment of the product applying cold or heat throughout the process.

With this type of products, it is common to use plant extracts as active ingredients.

I Skid cleaning

The cleaning procedure for the MIX-3 skid described above involves transferring water with anti-foaming detergent through the system to carry out the first rinse, then washing with warm water using the appropriate detergent, and finally rinsing with clean warm water. This process can be performed in three different ways, depending on the customer's requirements.

1. A CIP cleaning system is an automatic washing system that does not require the unit to be dismantled. This allows quick and effective cleaning of all the components.

2. A manual CIP system consists of a tank containing water or water with detergent and a pump used to circulate the contents of the tank through the unit. The tank must be filled or emptied manually according to the cleaning cycle.

3. Cleaning by means of pressure lance and a pump. This process is completely manual.



