

# INOXPA MIX-Type Skid Application

## Personal Hygiene: Production of Deodorant

### I Introduction

The function of deodorants is to act on body odour and sweating. Deodorants and antiperspirants are both used to reduce or remove body odour, yet they act differently. The main function of a deodorant is to eliminate the odour with the help of an alcohol component such as ethanol, which masks the odour. This, however, does not prevent sweating and sweat may impregnate clothing, which will eventually begin to give off an odour.

Antiperspirants contain aluminium salts that prevent sweating by plugging the skin pores and resulting in longer-lasting action.

There are several formats available on the market:

**Spray:** It must be applied at some distance from the target area, approximately 15 cm.



Spray deodorant



Roll-on deodorant

**Roll-on:** the liquid product is stored in a container sealed by a slightly rough sphere. Half of the sphere is in contact with the product inside the container while the other half remains outside. To use it, the sphere is rolled over the skin in order to apply the product.

**Stick:** it consists of a bar of solid and compact deodorant that is applied directly to the skin.



Stick deodorant



Gel deodorant

**Gel:** it can be applied directly to the skin or spread by hand. Gel deodorants do not normally contain any alcohol and are therefore ideal for sensitive skin.

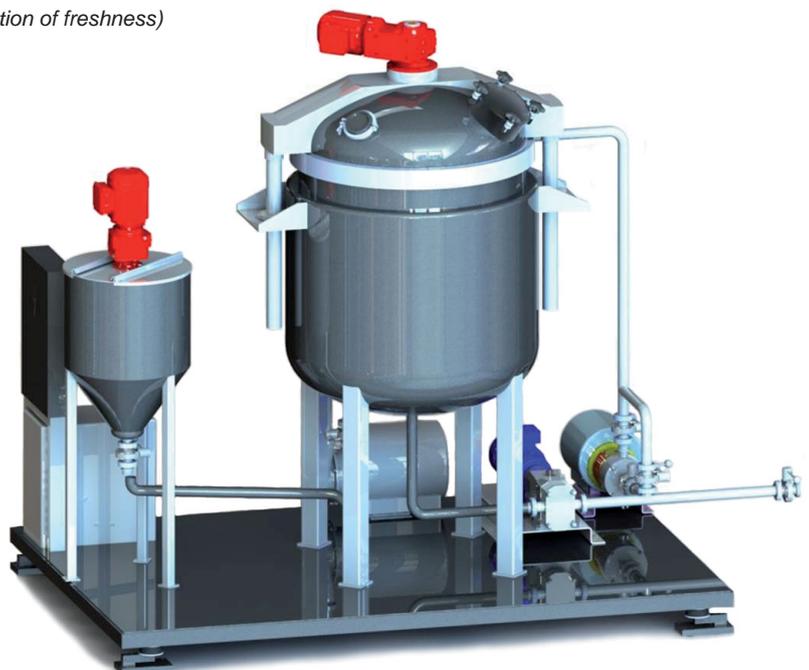
### I Deodorant manufacture

The components of a deodorant may vary depending on the format and its characteristics. The typical composition of a transparent roll-on deodorant is shown below.

- Demineralized water
- Fragrance (masks the odour and provides a sensation of freshness)
- Humectant
- Emulsifiers
- Thickeners
- Aluminium chlorohydrate
- Additives such as pH adjusters, antioxidants, etc.

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

The first step is to dissolve the thickener in hot water. Once everything is dissolved, the aluminium chlorohydrate is added while maintaining constant agitation. The remaining components are added when the mixing is complete, always maintaining constant agitation. Finally, the additives are added.



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### 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 and flow deflector, an auxiliary tank with Cowles-type agitator for mixing the minor ingredients, a rotary lobe pump for discharging the end product or feeding the inline mixer, a control panel, and ancillary services such as 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.

### I Example of a typical roll-on deodorant formula

Phases	Component	Classification	Percentage
Aqueous phase	Water	Solvent	70 %
	Aluminium salts	Antiperspirant	20 %
Fatty phase	Surfactant	Thickener	5 %
	Surfactant	Moisturiser	2 %
Additives	Antibacterial	Preservative	2.8 %
	Fragrance	Aroma	0.2 %

The anionic surfactant and then the other one is introduced to the auxiliary tank, they are stirred at medium speed. If required, some water can be added to facilitate the premix. All products are individually loaded, the adequate amount of each component is ensured by the weighing system.

Water is added to the main tank, and a blade-type agitator is switched on. Water is heated up to the working temperature conditions, normally the process is not carried out at very high temperatures.

The premix is loaded to the main tank by means of a rotary lobe pump. The rotary lobe pump and the inline mixer recirculate the product and transferring it back to the tank.

During the recirculation, the aluminium salts are added. When the homogeneous mixture is achieved, the agitator slows down and product recirculation is stopped. Finally, antibacterial component and perfume is introduced.

The product is discharged once the mixing process is complete.

### 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.



