

Sweating in Lip Products

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Abstract

Sweating in lip products, especially lipsticks, is one of the biggest problems facing the cosmetics formulator today. It can be caused by any number of physical or mechanical possibilities. The physical possibilities can stem from the ingredients that are used in the formulation, while the mechanical possibilities can come from the equipment, manufacturing temperatures and mixing time. Either way, these all have to be thoroughly examined in order to solve or even prevent sweating issues in a lip product.

This article will examine the true nature of sweating and how it can be dealt with and eliminated in a formula. Sweating is a phenomenon that results in an unacceptable stick appearance where liquid droplets appear on the stick surface after exposure to elevated temperatures. These droplets can go away and can either disappear completely leaving no marks or blemishes on the stick surface, or they can leave marks on the stick surface where these droplets used to be. In some cases the sweating doesn't even go away. All of this will be examined in more detail in the article.

Introduction

One of the most difficult problems to solve in a lip product is a phenomenon called sweating. Also referred to as syneresis, it is usually referred to by its more common everyday name – sweating. The first thing to do when troubleshooting a problem like this is to understand what is happening in the particular type of lip product. The lip products of most concern are lip glosses and lipsticks. Lip pencils usually do not sweat owing to the high level of powders, solids and waxes. It is also extruded rather than hot-poured during filling. Sweating is a phenomenon that exhibits itself usually when the product is being studied during its normal stability testing program. Sweating can range from small, insignificant looking droplets

as shown in Figure 1 (see next page) which are not so offensive, to numerous and unsightly liquid spots on the surface of the product as in Figure 2 (see next page) that can run and even get on the package. Hopefully this phenomenon will manifest itself in the laboratory during the testing and not when it is under the bright hot lights of the cosmetics counter or when it finally gets into the hands of the consumer.

One of the most difficult scientific properties to understand is the crystalline structure of a lipstick. The nature of crystallinity is best understood by material scientists and of course those involved in the science of metallurgy. Who would ever expect that a person would have to understand these scientific principles to understand the crystalline matrix of a lipstick? Lipsticks in most cases are mixtures of waxes, oils, emollients, polar solvents such as esters and triglycerides and non-polar solvents such as mineral oil and other hydrocarbons such as paraffins, preservatives, fragrances, and of course colour additives, effect pigments and other fillers. These combinations can at times be very complex with combinations of different waxes and numerous solvents, moisturizers and other ingredients and sometimes can total up to 30 or more ingredients in a particular formula. This number of ingredients is most evident in upscale or high end prestige products. This can make a lipstick-type product more prone to sweating.

We usually do not see that many ingredients being used in mass market formulations, which are much more simplified and basic products and significantly cheaper to manufacture. Simple is always better. I'm sure you have seen lipsticks, especially mass market-type products, that have sweating even in a closed shrink-wrapped package. These are usually low cost no-name brands where very little research and testing has been put into the product to ensure its stability