

Application Note

/// Solution in the development of toothpaste formulations

PRODUCT

LR-2.ST the High-Performer laboratory reactor (0020013291)

T 25 digital LR disperser (0020008824)

VACSTAR control vacuum pump (0020109385)

CBC 5 basic refrigerated and heating circulator (0020008507)

INDUSTRY

Daily chemical

OVERVIEW

Every day we are using toothpaste for cleaning our teeth. It contains a variety of ingredients, generally composed of friction agents, moisturizers, thickeners, foaming agents, fragrances, water and other additives (such as preservatives, colorants, flavors and fragrances, etc.). In the process of research and development, it involves mixing, dissolving, heating, cooling, homogenizing emulsification, degassing and other multi-step processes. Each of these steps affects the quality of the final product. How to make a uniform paste without agglomeration or bubbles and to standardize the process are the most concerned questions for customers.

SAMPLE MATERIAL

Deionized water, friction agent, moisturizer, foaming agent, thickener, fragrance, etc.

EXPERIMENTAL SETUP

Laboratory reactor	LR-2.ST the High-Performer + LR 2000.1 reactor vessel (0002508300)
Stirrer	LR 2000.10 Anchor stirrer (0002508400)
Dispersing tool	S 25 KV - 25 G (0002466900)
Sample temperature	< 40 °C (CBC 5 basic)
Sample size	1 kg



EXPERIMENT STEPS

1. Add deionized water and friction agent into reactor, stir to make them fully dissolved.
2. After complete dissolution, add moisturizer and stir evenly.
3. Then add foaming agent and thickener while stirring and control the sample temperature within 40 °C.
4. After completing above sample addition, adjust the speed to full stirring. Turn on the vacuum, then start the disperser to homogenize and emulsify.
5. Add fragrance and other additives. Turn on the stirring, vacuum and the disperser. After a uniform sample obtained, stop the disperser, continue stirring and vacuum to degas the sample.

RESULT

A uniform translucent paste obtained under above conditions.



NOTE

1. Different formulas have different processing techniques. According to the characteristics of the sample, it is necessary to explore the process conditions (stirring, temperature, dispersion, vacuum, etc.) to obtain an end product with good effect.
2. IKA reactor combines various functions such as mixing, temperature control, homogenization and dispersion, vacuum, pH, program control, which make it easy to realize formula research and process improvement.