UPTOSPEED Express Updates

SCIENTIQUIPP

Application Note | Feb 2025 | Vol. 6



Use of Plasto Crafts Centrifuges
In Cosmetic Techniques

The Plasto Crafts ROTA 4R V/FM Centrifuge is a General-Purpose Hight Speed centrifuge designed for various life science workflows with great rotor versatility. The Indian cosmetics industry is majorly categorised into skin care, hair care, oral care, fragrances, and colour cosmetics segments. Coupled with multiple other factors, herbal cosmetics products are driving growth due to increasing adoption, and the segment alone is expected to grow at 15%, as people become more aware of the possible perils in consistently using chemical formulations. From daily lotions and oils that keep the skin soft to moisturizers for a refreshing face wash, emulsions are synonymous with protecting and nourishing the skin. These cosmetic products are indispensable to many, and the science behind them is quite fascinating.

Blending the Incompatible

When you successfully combine two or more fluids that usually do not mix well together, you create an emulsion. Think of mixing oil and water and actually having them gel together to form a new substance. T Lotions, creams, serums and moisturizers are all cosmetic emulsions – light weight, non-sticky, water based mixtures of oil, fat, wax and other raw materials. As these emulsions are water based, they help the skin retain its hydration level and prevent moisture loss.

During the emulsification process of cosmetic lotions, creams and moisturizers, small droplets of far, oil or wax are suspended in a fluid – usually water- and are evenly dispersed. These incompatible liquids are then divided into layers. The substances with lower density, like oil or wax are at the upper layer, while water, which has the highest density, is at the lower one.

For Laboratory Use. It is the customer's responsibility to ensure that the performance of the product is suitable for customers' specific uses or applications.
© Scientiquipp. Pvt. Ltd. All rights reserved. All trademarks are the property of Scientiquipp. Pvt. Ltd. and its subsidiaries unless otherwise specified.

When the right surface-active agents are added into the mix and are stirred strongly, the oil or wax will disperse in water, forming the emulsion.That new substance is the emulsion, and the process of mixing the fluids together is called emulsification.

The Importance of Equipment, Temperature & Time in the Emulsification Process

The kind of equipment used to emulsify incompatible liquids is the most important factor in the process. Whether simple or complex, emulsifying equipment breaks up the substances during the internal phase and disperses them during the external one, forming small particles and ensuring there is no oil seepage or stratification during the stable period.

Presently, three types of emulsifiers exist: The Agitator, The Colloid Mill and the Homogenizer. Results vary based on the size, structure and performance of these devices, generally impacting the dispersion and stability of the final product. In other words, the size of the particles in the emulsion and the quality of the emulsion itself strongly depend on how the components are processed and stabilized by these devices. Amongst the three the poorest performer compared to the colloid mill and the homogenizer, which are both better at emulsifying incompatible substances. In recent years, improvements in emulsification technology have led to the emergence of vacuum emulsification mixers. These devices are able to prepare emulsion with excellent dispersion and stability, creating lotions and creams that are much more delicate and smooth. In addition to equipment, temperature and time also play important roles in the emulsification process. These two factors mainly impact the quality of the final product.

In general terms, the temperature portion of the process is typically carried out in two phases. Phase one addresses the highest melting point of each substance, and phase two addresses solubility. During each phase, the temperature must be monitored very closely. If the viscosity increases greatly during the emulsification process, for example, the temperature may be increased appropriately.

As for determining the time involved in the emulsification process, that depends on the volume ratio of the oil-to-water phase, the viscosity achieved during the two temperature phases, and the resulting emulsion.

Centrifugation Experiments

As cosmetic emulsions are applied directly on the skin, the quality of these products must be rigorously tested and analyzed. Centrifugal separation experiments accomplish this by testing the stability and shelf life of cosmetic emulsions such as face wash, skin lotion, and hair dye.

These experiments can be carried out with a General Purpose Refrigerated Centrifuge such as the ROTA 4R V/FM. The number of rotations and time vary by product, however generally speaking, when a sample is placed inside the centrifuge, it is spun around at a speed that ranges between 2,000 and 4,000 rotations per minute for an interval of 30 minutes. This allows for observable separation and stratification of the product.

In basic face wash products, for instance, the sample needs to be centrifuged at a rate of 2,000 rotations per minute for an interval of 30 minutes. With regard to skin lotion, quality is determined based on separation. High-quality lotions do not experience emulsification after being centrifuged at 4,000 rotations per minute during a 30-minute interval. The lower the number of rotations, the lower the quality of the final product.

For Laboratory Use. It is the customer's responsibility to ensure that the performance of the product is suitable for customers' specific uses or applications.
© Scientiquipp. Pvt. Ltd. All rights reserved. All trademarks are the property of Scientiquipp. Pvt. Ltd. and its subsidiaries unless otherwise specified.

The Plasto Crafts ROTA 4R V/FM Centrifuge

High Speed Multipurpose Refrigerated Centrifuge:



Product – Rota 4R V/FM

ROTA 4R V/FM
Refrigerated Centrifuge
PART NO : 100114

ROTOR : S004 x175ml
PART NO : 200157

ROTOR : L6x50mL
PART NO : 200151

About Scientiquipp. Pvt.Ltd.

Since the 1980's Scientiquipp (formerly known as Plasto Crafts) has been synonymous with customer-oriented processes and innovative products, such as laboratory devices. Today, we serve as experts and advisors, using our unique knowledge and experience to support laboratories and research institutions around India. The foundation of the company's expertise is its focus on its customers. Scientiquipp's exchange of ideas with its customers results in comprehensive solutions that in turn become industry standards. Scientiquipp will continue this path in the future, to the standard set by the company's founders: that of *enabling the future of medicine.*

European Brushless Technology | CE ISO 9001:2015 Certified | IAF

CE Certified / ISO 9001:2015

Scientiquipp Private Limited
C/101, Shanti Industrial Premises,
Tambe Nagar, S N Road,
Mulund West, Mumbai 400080.
+919769431680 | scientiquipp@gmail.com

Follow Us On:

Learn more about our products at scientiquipp.com/centrifuges

For Laboratory Use. It is the customer's responsibility to ensure that the performance of the product is suitable for customers' specific uses or applications.
© Scientiquipp. Pvt. Ltd. All rights reserved. All trademarks are the property of Scientiquipp. Pvt. Ltd. and its subsidiaries unless otherwise specified.