Choosing the Best Mixing Machine for Your Requirements: Three Roll Mills vs. Planetary Centrifugal Mixers vs. Unguators

When selecting the perfect mixing machine for your project, it is important to understand all of the choices available to you. For instance, understanding the differences between ointment mills, unguaters, and planetary centrifugal mixers/paste mixers is very important. Many assume that these machines are identical in function because they are all categorized as mixing machines, but they each can produce slightly different results and meet varied requirements due to their unique capabilities. Selecting the right machine for your project will make a significant difference in your results. Let’s explore the options available to you!

A three roll mill has three horizontally positioned rollers. Each roller rotates in an opposite direction from the adjacent roller with a tiny gap between them, creating tremendous shear force that can finely disperse, mix, refine or homogenize viscous materials. Three roll mills excel at reducing particle size, especially in highly concentrated blends. If fine dispersion and particle size reduction is a top concern then considering a three roll mill like our T50 Ointment Mill or the award-winning T65 Lab Model might be the best fit for your needs. A three roll mill can handle high viscosity materials at a high speed. Due to the level of advanced customization and speed control that can be attained, three roll mills are the industry standard for achieving perfect dispersion and desired particle size.

On the other hand, an unguator is solely for mixing and can be used as a standalone machine when using already-micronized powders. Unguator machines have an enclosed jar system with a standard mixing blade. As this blade spins inside the jar, the S-shaped edge pushes the contents outward to the wall of the jar, where they are met with a forceful, shearing effect by the paddle on each end of the blade. This process is repeated throughout the cycle to create a homogenous and smooth mixture. The primary difference between three roll mills and unguatators revolves around the particle size able to be achieved. However, unguatators are known for increased throughput and speed. If a fine particle size is not required or micronized powders can be used, an unguator would have a greater daily yield than an ointment mill. Please keep in mind that
while an unguator mixer can produce compounds quickly, it cannot blend and disperse nearly as well as a three roll mill can.

At this point, you might be wondering if there’s a single mixer that can combine some features of both three roll mills and unguators. A planetary centrifugal mixer, also known as a paste mixer, can mix topical powders, creams, liquids, suspensions, and mill non-micronized powders. One popular brand is Mazerustar. Mazerustar paste mixers are efficient and fully-automated machines that specialize in mixing viscous material while degassing at the same time. A Mazerustar employs a no-touch, no-blade mechanism to mix materials using simultaneous rotation and revolution. The final product is a uniformly dispersed mixture with submicron bubbles removed. Although a paste mixer might produce a greater yield than a three roll mill in a shorter amount of time, the results obtained from using a three roll mill cannot be rivalled. A three roll mill is considered to be the best dispersion tool available, especially for thicker materials.

These different types of machines can also work together so that you can benefit from their combined advantages. Because the shear force of the blade on the jar walls in an unguator mixer does not suffice to break down the non-micronized powders, a three roll mill would be helpful when using non-micronized powders. A three roll mill would micronize or reduce particle size of the powders within the cream so that the texture of the cream is smooth and not gritty. Deciding which machine or combination of equipment would be best for your project can be a multifaceted decision. The right tool for your application can depend on how many compounds are being made per day, the type of compounds being made, as well as budget. THT is always happy to offer guidance to help you select the perfect machine for your mixing needs.