



PerMix

Perfect Mixing Technologies



**PERSONAL CARE,
HEALTH & BEAUTY,
& COSMETIC
MANUFACTURING**



 WWW.PERMIXMIXERS.COM



From young to old, people all over the globe rely on personal care, health & beauty, and cosmetic products to look & feel their best. As a manufacturer of these products, you need to be able to meet this demand with the efficient production of high-quality, highperformance products today, while keeping the otential demands of tomorrow in mind. There is nobody that understands that more than PerMix.

Whether developing new formulations, scaling-up to production, or improving your full-scale manufacturing, PerMix technical sales and application experts have the knowledge and experience to engineer a mixing solution to meet the needs of today while keeping in mind the demands of tomorrow. Our mixers provide:

- Lump-free incorporation and dispersion of gum thickeners
- High shear mixing to create stable emulsions
- Uniform dispersion of ingredients
- Hydration of carbomers & polymers without lumps, agglomerates, or fish eyes
- Dispersion of bentonite clay for maximum thickening



PerMix mixers and processors are ideal for producing a wide range of cosmetic products and Personal Care formulations, including:

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|---------------|--------------------------|------------------------------|
| ■ Shampoo | ■ Lipstick | ■ Nail Varnish |
| ■ Conditioner | ■ Clay Masks | ■ Pre-saturated Wipes |
| ■ Hair gel | ■ Soaps | ■ Deodorant & Antiperspirant |
| ■ Lotion | ■ Moisturizing Body Wash | ■ Sunscreen and sunblock |
| ■ Skin Cream | ■ Toothpaste | ■ Hand sanitizer |

Productivity

- Your capital equipment investment cannot be sitting idle, maximum uptime is a necessity in today's competitive environment and must be flexible and diverse enough to support the production of a wide range of products.
- Equipment must be able to produce products quickly and efficiently, maximizing the yield from the raw ingredients and minimizing waste, while reducing labor.

Production of quality products

- Repeatable manufacturing & product consistency ensures retention of your customer base. GMP, SQF, & HACCP are crucial areas when manufacturing that must be accounted for when engineering & configuring production lines.
- Hygienic, easy to clean equipment and systems ensure no cross-contamination from batch to batch.

Speed to market

- Speedy development of new products and reliable scale-up to full-scale production is a must in a competitive market. Purchasing equipment that is diverse in design allows you to adapt to needs as they come your way quickly.

PRODUCTS THAT REQUIRE HEATING

The products that require heating are typically either an oil based or a water based product. The oil based products will be a combination of melted waxes and oils mixed with dry ingredients that are soluble in oil. Water based product preparation often involves the incorporation and dispersion of gum thickeners and stabilizers which require high shear mixing to properly hydrate these ingredients. The two bases are brought up to temperature in separate vessels and then homogenized together in a processor to create a stable emulsion. While blending & shearing of ingredients are key components to hot process products, thermodynamics and crystallization rates play an important role as well. Some products like lipstick and mascara need to be filled into their final containers hot so that the product will flow and take the shape of the mold, while others like face creams and serums need to be cooled under gentle agitation to keep the product from separating or crystallizing. Proper mixing and precise temperature control are paramount to a successful hot process. PerMix provides mixers for oil and water phase preparation, including complete turnkey processing systems for the production of your final product. Ask our application experts and we can assist you with your current processing challenges.

- **Lipstick** - Lipsticks are commonly created in small batches by mixing oil, wax, pigment, and other ingredients. Oil is heated to between 175 - 185°F. Wax is melted separately, then added to the oil and mixed.

The pigment is made by dispersing powder into part of the oil. It is then added to the oil/wax and mixed until homogenized. The mixture is cooled and fragrances, preservatives, and other ingredients added. Our high shear mixers ensure agglomerate free dispersion of pigments that are essential to color consistency in the final product.

- **Mascara** - Many makeup products are made in a two-step process with water and oil. Typically, the water and oil are heated in separate tanks, then added together when they reach the same temperature. Pigments and binders are added and mixed to create a stable emulsion.

Use our high shear mixers to create agglomerate free dispersion of pigments for color consistency in the final product.

- **Eye, Hand & Face Creams** - Products are created by mixing the oil phase of oil-soluble waxes, emollients, and active ingredients. This formulation is then mixed with water-soluble additives containing stabilizers, thickeners, and other agents to emulsify. The two phases are combined together and homogenized to produce a stable cream. High shear mixing is used to disperse lump-free stabilizer/thickener additives with a fine droplet oil-in-water emulsion to produce a stable product.
- **Clay Masks** - Bentonite clay is mixed with water to form a paste that can be applied as a facial mask. The clay in contact with the face absorbs oils and dirt from the skin surface and pores. The clay must be rapidly incorporated and dispersed lump-free into the water to ensure the efficacy of the mask.

PERMIX MIXERS USED IN MAKING HOT PRODUCTS



PerMix PVC Universal Vacuum Emulsifier

PerMix PVC Universal Vacuum Emulsifier is an all-in-one mixer that allows you to blend, mix, homogenize, emulsify & disperse in one unit, under vacuum.

PerMix PD Dispersion Mixers

PerMix PD Dispersion Mixers allow for simple & rapid dispersion of powders into liquids while maintaining vacuum if desired.



PerMix Double Planetary Mixers

PerMix Double Planetary Mixers allow total flexibility and diversity in regards to maxing various products. The versatility makes it perfect for co-packers who private label various products



PRODUCT THAT DO NOT REQUIRE HEATING

Many products made do not need heating. Most of these products are hair care products or other water based products. Although many of these products contain gums & thickeners to control viscosity and provide stability, they do not require heat. Ingredients such as Xanthan gum, guar gum, CMC (Carboxymethyl Cellulose), HPMC (Hydroxypropyl Methylcellulose), and Carbomers are some of the more commonly used modifiers. Efficient incorporation and lump-free dispersion of these ingredients into water are key to a stable and quality final product.

Complete utilization of expensive active ingredients and gums can be aided by applying shear to the process. Most of the motion in the tank will be provided by a sweep or impeller style mixer but these are not suitable for the proper wetting and dispersion of these dry ingredients. Processors stand to improve their products by using high shear mixers for these demanding applications. As many of these cold process products are produced in large volumes, PerMix recommends the application of high shear inline mixers as the most efficient and economical approach for these applications.

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|------------------------------|---------------------|
| ■ Shampoo, conditioners | ■ Hand sanitizer |
| ■ Body wash and moisturizers | ■ Serums |
| ■ Topical gels | ■ Essential oils |
| ■ Liquid soap | ■ Sunscreen lotions |

Shampoo, conditioners - Shampoos and conditioners are made up primarily of surfactant, or surface-active components for cleaning, mixed into a water base, and involve the addition of other functional ingredients to thicken, preserve, emulsify, add fragrance, and color. Active ingredients may also be added for a specific purpose such as dandruff control.

The key to the efficient production of these large volume products is the rapid incorporation, lump-free dispersion, and effective blending together of these ingredients. Many of these ingredients are not easily mixed into a solution with traditional agitator style equipment and will benefit from the application of a suitably sized high shear mixer. We can integrate the process with a tank and multiple mixers to be a one-stop-shop for the entire production process.

Body wash and moisturizers - Body wash or shower gels are made up primarily of surfactants, or surface-active components for cleaning, mixed with a water base and involve the addition of other functional ingredients to thicken, preserve, emulsify, add fragrance, and color. Additionally, moisturizing agents can be added such as Aloe, other bean/nut oils, mineral oil, or glycerin.

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Toothpaste - Toothpaste usually comes in one of two forms, a gelbased formulation or an abrasive paste formulation, and are from a similar array of ingredients.

All toothpaste has at least two key components: abrasives and surfactants. Abrasives are rough materials that aid the toothbrush in scrubbing debris such as plaque, tartar, and food particles from teeth. Perhaps the most well-known toothpaste abrasive is sodium bicarbonate or baking soda. Other abrasives include aluminum hydroxide, calcium carbonate, calcium phosphate, and silica.

Other inactive ingredients found in toothpaste include water (which can account for nearly 40% of what's in the tube) and chemicals to keep the paste from drying out, such as propylene glycol and glycerol, rheology modifiers to provide flow properties and suspension, and ingredients for flavor, sweetening, and color.

A number of challenges exist for manufacturers in the production of toothpaste:

- Rheology modifiers tend to form lumps which are difficult to break down by agitation. Some rheology modifiers require high shear in order to obtain functionality.
- Some ingredients, e.g. hydrated silica have a low density and are very difficult to incorporate and wet out. Abrasives such as calcium carbonate need to be properly dispersed to prevent lumps which either require further processing to smooth the product or filtering from the process
- Conventional agitators tend to cause aeration, especially when incorporating powders in the presence of a surfactant.

Deodorant - Deodorant kills bacteria and masks odor. Antiperspirant reduces the amount of water on the skin.

Both are made with water in oil or water in silicone emulsions, active ingredients, emulsifiers, gelling, suspending or thickening agents, waxes, emollients, preservatives, colorants, and fragrances. Our mixers ensure you get the proper dispersion and emulsification required to save time and improve product quality.

PERMIX MIXERS USED IN MAKING NON-HEATED PRODUCTS

From batch mixer to continuous mixers, PerMix has the mixer to meet the demands of today while keeping in mind the needs of tomorrow. Our range of mixers that are used in the cosmetic industry in areas that do not require heat are:

- Powder Induction Mixers
- Shear Pumps
- Bottom & Top Entry Homogenizers
- Dispersion Mixers
- & more....





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Besides, PerMix have been building a network of agents located in **EUROPE** (Germany, Denmark, UK, Belgium, France, Spain, Poland, etc), **SOUTH AMERICA** (Argentina, Chile, Guatemala, etc), **ASIA** (South Korea, Indonesia, India), and several other countries.