



Applications for High Shear Mixers
Dispersion of Carbopol®



Applications for Carbopol®

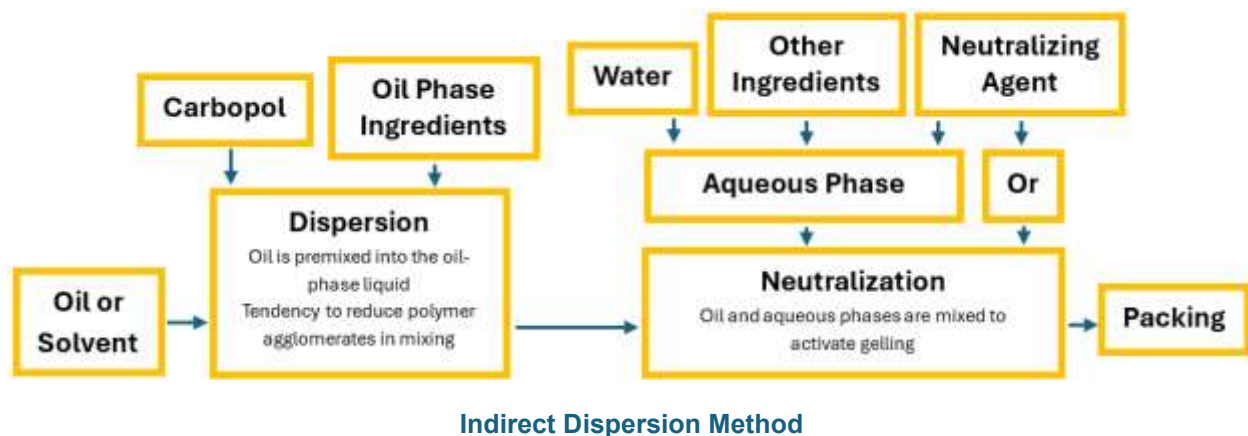
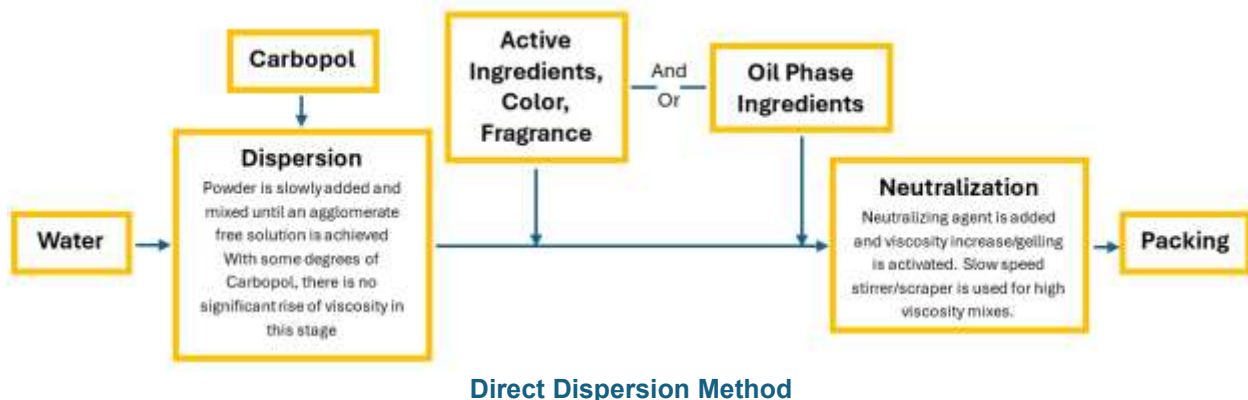
Carbopol®, or Carbomer, is a crosslinking water soluble polymer used for its thickening, emulsifying, and temperature stabilizing properties. The varying levels of crosslinking provide a broad range of viscosities when emulsifying with the polymer, allowing the product to be applied in many different industries.

Some of these applications include:

- Excipient in antimicrobial drug products
- Gelling agent in cosmetics (face masks, styling gels, etc.)
- Thickener in home & cleaning products (laundry detergents, dishwashing liquids, etc.)

Mixing Process

The manufacturing of Carbopol can be generalized by two processes:



*Carbopol® is a registered trademark under the Lubrizol Corporation.

Mixing Issues

- The powder tends to form agglomerates, or fish eyes, when hydrated
- Some grades of Carbopol thicken immediately upon mixing, making the addition of more powder difficult
- The low density of the powder may cause it to settle on top of the liquid, causing dusting issues
- Traditional agitators aerate the mixture, causing a long-lasting foam to form
- Air trapped within the mixture by the agitator creates excess volume, resulting in a lower yield when packaged
- Shear from excess mixing may break the polymers, resulting in a lower viscosity than intended
- Traditional agitators require high mixing times for complete dispersion/hydration

Our Solution

Dispersion: Instead of slowly stirring the mixture until it is homogeneous, Coramix mixers use high-shear and mechanical design to disperse the Carbopol, greatly reducing each batch's cycle time while eliminating any agglomerates.

Phase 1: The Coramix inline mixer is connected with the eductor assembly, as well as pipes from the tank outlet to the mixer inlet and from the mixer outlet to the top of the tank. Base fluid is added to the tank, and the mixer is started to recirculate the fluid.

Phase 2: The powder feed valve is opened, and Carbopol powder is added directly into the hopper. The inline mixer pulls in the Carbopol and hydrates and deagglomerates the powders as they pass through the high shear mixing zone.

Phase 3: After all of the Carbopol is added, the valve is shut and mixing continues while additional ingredients are added.

Neutralization: Coramix mixers are able to be used for neutralizing certain Carbopols depending on viscosity of the mixture. For high viscosity products, a low shear scraper/stirrer is needed.

Advantages

Coramix high shear mixers offer a variety of advantages over traditional agitators and mixing processes.

- Agglomerate-free mixture
- Maximized yields through improved dispersion of Carbopol
- Reduced aeration
- High mixing speeds reduces mixing times and protects from over shearing
- Efficiency and consistency
- High quality at a low cost

