

Whey Pretreatment



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UF operation is used to recover and concentrate whey proteins. Therefore it is imperative to maintain the whey quality, i.e: stop the bacteriological growth, which uses and depletes the same proteins that you wish to concentrate.

Another concern to be addressed is starter cultures and coagulants used in the cheese making operation. These products carry over with the whey solids and if not deactivated, can lead to serious functionality problems when the finished whey products are rewetted and used.

It is our recommendation that whey pretreatment be taken seriously to ensure product quality and proper membrane performance. **Pasteurization**, **clarification** (minimizes fines), **separation** (removes fat) and **cooling** (helps to maintain product quality), all are important pretreatment steps. These steps will give you control over factors that will impact whey processing, as well as final product quality.

Pasteurization is one of the most overlooked processes for pretreatment improvements or problems. Proper pasteurization is most commonly exercised by maintaining product temperature at 160° F for 16 seconds. This will minimize bacteriological activity and deactivate unwanted carry over ingredients.

Clarification is required to remove cheese fines prior to membrane processing. Clarification must be after any heating to protect the product stream from any fouling materials associated to heating and must have the ability to assure clarification to a maximum level of 100 ppm fines or suspended solids.

Fat separation should remove fat to less than .05% Majorier. Separation is essential to the processing of high percentage WPC's. WPI production requires less than .01% fat, sometimes accomplished with Microfiltration.

Immediately cooling the whey helps maintain product quality by controlling bacteriological activity. At this point the product should be held and run at 50° F. The product is very stable at this point and also addresses concerns about calcium insolubility. This procedure should provide a very stable and uniform performance of the UF. This is usually accomplished with plate and frame heat exchangers to reduce energy loss. .

Regarding the concerns for anti-foam agents, the use of silicone defoamers in the whey stream beyond the draining tables can not be tolerated. The problem here is that the silicon base of this product stays with the whey solids and ends up blinding the membrane surface. Worse yet, it is an inert substance and very near impossible to remove once it is on the membrane.



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