



Complete Filtration Resources, Inc.

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# MILK FRACTIONATION



## APPLICATIONS

UF and MF membranes are used for fractionation to prepare specific protein concentrates with the specific properties desired for the production of a wide variety of dairy products.

- ✓ The production of low carb protein concentrates
- ✓ The production of high protein concentrates useful in
  - Cheese production
  - Low carb yoghurt
  - Low carb ice cream
  - High protein low carb beverages
- ✓ Production of concentrates with specific protein ratios
- ✓ Products from which specific milk or whey proteins have been removed

Among the products that are prepared using UF and MF membranes are

- ✓ Native Casein Concentrates
- ✓ Pure Milk Serum (Whey) Proteins
- ✓ Milk Protein Isolates

*CFR can design, fabricate, and install your membrane filtration process. CFR also provides controls, programming, full start up assistance, and training. You can rely on CFR to stand behind every system that we put in. Even more, you can rely on CFR to provide full after-start up service and support if problems occur or if system modification or expansion is desired..*



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## Products Possible by 3X Whole Milk Concentration

	B.F.	Prot.	Lact	SNF	Prot./Lact.
Raw Milk, % Feed	3.5	3.2	4.7	8.7	0.68
Microfiltration Product, %	10.5	8.1 <sup>2</sup>	4.5	15.0	1.8
Ultrafiltration Product, %	10.5	9.2 <sup>1</sup>	4.5	15.0	2.04
Reverse Osmosis Product, %	10.5	9.6	14.1	26.1	0.68

(1) Only NPN (non protein nitrogen removed from concentrate) - true protein is fully concentrated

(2) More than 1/2 of whey protein and NPN removed from concentrate - only casein is fully concentrated.

## MILK PRODUCT FROM MEMBRANES

Above are the types of products that can be made by simple 3X concentration of whole milk using various types of membranes. As can be seen the ratio of protein to lactose can vary significantly depending upon the membrane process applied.

By varying the concentration levels, membrane pore size and membrane type used one may produce a variety of other products with specific desired properties.

With the additional variations offered by demineralization and diafiltration the number of possible end products may be custom tailored to conform to process needs.

CFR is a leading supplier of membrane plants meeting 3A sanitary standards and meeting state, local and USDA requirements.

## Custom fractionation

High protein concentrates with both low carbohydrate and low sodium contents may now be precisely tailored to make innovative high protein low carb products.

For nutraceuticals further tailoring of product properties permits one to formulate

- Blends of proteins with fruit juices and flavors.
- Stable acid soluble protein blends
- Puddings and other products based on the nutritional properties of pure milk proteins
- The use of tailored milk protein concentrates in breakfast and energy bars.