

Vitamin Fortification of Fluid Milk

Background

Fluid milk is routinely fortified with vitamins A and D as required by regulations and may be fortified with other vitamins in unique product lines. Addition of vitamin concentrates to milk should be done to ensure that vitamin levels that are accurate and agreeable to product label claims. To develop a fortification that works best with your operations, work with your vitamin supply company. Seek advice on the best options for vitamin concentrate formulations and fortification methods.

Different vitamin concentrates are available including oil based and water dispersible formulations. Most contain vitamin D₃ and/or vitamin A palmitate.



Adding Vitamin Concentrates

Milks may be fortified by batch or manual addition of concentrates or by continuous metered addition into product flow. Specific standard operating procedures (SOPs) should be developed and followed. All vitamin addition must be before the milk is pasteurized.

Batch fortification requires accurate measurement of milk volume and vitamin concentrate as well as sufficient mixing time. Add the appropriate vitamin concentrate after the milk is standardized and allow sufficient mixing before pasteurization.

Continuous fortification with metering pumps can correctly deliver the required amount of concentrate to milk directly into the product flow. Positive pressure pumps are required. Some pumps provide digital readouts of flow rates and amounts used; these should be verified. The best point of metered addition is after standardization, prior to homogenization and pasteurization. Metering pumps must be connected to the control so that they turn off during divert flow, to prevent over fortification.

Want more information on [vitamin fortification](#) and the MQIP? Contact Nicole Martin (nicole.martin@cornell.edu) in the Milk Quality Improvement Program or visit our website

<https://foodsafety.foodscience.cornell.edu/mqip/>

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