



Tetra Pak®

Ice Cream Mix Unit A2

Model 2000 A2, 5000 A2 and 8000 A2



Application

Continuous preparation of ice cream mixes at capacities of 2,000–10,000 liters per hour. The 2000 A2 can run at 2000 and 3000 L/h, the 5000 A2 can run at 4000 and 5000 L/h and the 8000 A2 can run at 8000 and 10000 L/h with minimum holding time 25 seconds during pasteurization. The unit covers all parts of the preparation process – from high shear mixing and high-pressure homogenization to HTST pasteurization and direct delivery to separate aging tanks.

Typical applications of 2000 A2, 5000 A2 and 8000 A2 to prepare Ice Cream mix of *Physprop #4414** (Ice cream mix with a fat content of 19% & a dry matter content of 48%).

Temperature (°C)	Density (kg/m ³)	Specific Heat	Thermal Conductivity (W/(m*K))	Viscosity (mPas 100 ^{s-1})
5	1 129	2.991	0.4170	398
50	1 116	3 027	0.4643	51
84	1 110	3 056	0.4880	29

* Tetra Pak internal reference code

Highlights

- Fully automated continuous production
- Powerful mixing with Tetra Pak® High Shear Mixer, fully compatible with recombinant ice cream production
- Production traceability and product safety system
- Highest focus on hygienic design and sustainability
- Variable options, including integrated CIP unit, external cooler, recipe handling Operation principle

Customized Mix Units

- Mix units for different recipes and flow rates from 2000-15000 liters per hour are available on A3 platform.
- Connect with BSIC for mix units on A3 platform

Working Properties

Ingredient mixing takes place in a Tetra Pak® High Shear Mixer, which can be either an open mixer with manual handling or a vacuum mixer. Liquid and powder ingredients can be connected directly to the vacuum mixer, minimizing operator resources and optimizing production flow.

The mix is recirculated over the mixing tanks to ensure complete hydration of the ingredients. The Tetra Pak® Plate Heat Exchanger facilitates heating and cooling of the mix before homogenization, at pasteurization and at final cooling in a regeneration system that minimizes the energy consumption.

The unit is built in a compact standard system separated into four parts:

- Mixing tanks and Tetra Pak High Shear Mixer
- Integrated HWM with Product recirculation PHE heater with automated provision of liquid ingredients dosing.
- Unified frame design with pasteurizer, balance tank and HMI
- Tetra Pak® Homogenizer

The design is constructed with a focus on optimizing production space and maximizing work accessibility and cleanability, both with regards to exterior cleaning and CIP.

Standard Material

The unit features two stainless steel mixing tanks equipped with an agitator, sample valve, level sensor and CIP spray balls connected to a nearby Tetra Pak High Shear Mixer for recirculating the ice cream mix. A compact frame with pump, recirculation heater and valves facilitates easy operation.

The main frame contains a double strainer, balance tank, plate heat exchanger (10 bar, H-model) with regenerative sections for product heating and cooling, pumps and hygienic valves, flow controllers, a climbing holding cell for HTST pasteurization and an HMI panel.

The frame is connected to a two stage Tetra Pak® Homogenizer with automatic pressure release and pressure indication depending on the options selected.

All parts in contact with products are hygienic design. The unit is automatically operated from the HMI. Ingredient dosing can be performed manually or automatically depending on the choice of high shear mixer and options for automatic dosing points.

Automation Functions

- Automated PLC operated sequences, Siemens system
 - » Sterilization
 - » Mixing
 - » Pasteurization / production
 - » Circulation (water or product)
 - » Emptying
 - » Intermediate cleaning
 - » CIP
- Automated pasteurization temperature control
- Automated flow diversion controlled by temperature sensors before and after holding cell

Optional Equipment

- CIP dosing unit
- Fat / sugar dosing inlets
- Energy Regeneration by tower water

Product parameter collection and control Automated Additionally, it is possible to customize the unit regarding layout and/or design towards a specific product if it falls outside of standard conditions (e.g. viscosity, special ingredients).

Selection of Tetra Pak High Shear Mixer and Tetra Pak Homogenizer is done separately based on manual/automatic powder handling and homogenization pressure requirement.

Technical Data

ICMU Model	2000 A2	5000 A2	8000A2
Pasteurizing flow	2,000 & 3000 l/h	4,000 & 5,000 l/h	8,000 & 10,000 l/h
Mixing tank capacity	3,000 l	5,000 l	10000 l
Steam Peak load	1700kg/h	1700kg/h	1700kg/h
Process Water	36m3/h	36m3/h	47m3/h
Ice Water	14m3/h	14m3/h	24m3/h
Tower Water	10m3/h	10m3/h	24m3/h
Installed Power	97kW	103kW	154kW

Conditions	
Process water	Temp 18-28 °C
Steam	3-3.5 bar, saturated
Compressed air	6.0-6.5 bar
Ice water	3 bar, max 2°C
Seal water	3 bar, max 25°C

Dimensions

Overall dimensions vary depending on the model and additional options selected. Recommended free space around the unit is 1 meter at the sides and around the frame.

Approximate sizes can be seen in the following table:

	2000 A2	5000 A2	8000 A2
Height	4 015 mm	4 015 mm	4 100 mm
Lenght	14 000 mm	14 500 mm	15 500 mm
Width	7 285 mm	7 500 mm	7 800 mm

The mixing tank capacity is the critical factor with regard to size. Considerations should be made regarding height and length of the production area. Additionally, the choice of Tetra Pak High Shear Mixer affects the unit size (above mentioned sizes are based on an open mixer).

Environment

Tetra Pak® Ice Cream Mix unit A2 is built in a modular design, which makes it easy to rebuild and adapt for new purposes.

Energy consumption is optimized throughout via regenerative sections in the plate heat exchanger and thanks to the high efficiency of Tetra Pak® Homogenizer and Tetra Pak® High Shear Mixer.

With Tetra Pak Ice Cream Mix unit A2 you have the option to optimize utility and energy consumption even further with automation functions such as hibernation mode.

