



Freshline[®] Tumbler Freezer
delivers modern technology
for today's food choices

Air Products' Freshline tumbler freezer harnesses the speed and economy of liquid nitrogen for the fast freezing of a variety of free-flowing food products – in a very unique way. The products are more than individually quick frozen (IQF). They are also coated, enrobing the food pieces with sauces or herbs, producing portionable, ready-to-heat products. Highly convenient for consumers to prepare, these products also give food manufacturers a way to market novelty products with very modest investment.

The Freshline tumbler freezer can help you stay ahead of your competition by enabling you to develop new product innovations. With this type of batch coating of IQF products, there is no end to the combinations you can come up with – vegetables coated with cream sauce, mushrooms coated with herbs, pasta coated with tomato sauce, shrimp coated with Cajun sauce, diced chicken coated with barbeque sauce, stir-fry vegetables, chili and paella-type products, to name a few. The flexibility of the Freshline tumbler freezer allows virtually unlimited possibilities for new product developments and line extensions based on the use of creative combinations of ingredients, either as complete meals or side dishes.

The Freshline tumbler provides:

- Ability to market novelty, value-added products
- Manufacture of portionable prepared meal mixtures or components
- Evenly-coated IQF products
- User-friendly batch operation at low cost
- Compact size requiring minimal floor space



Ready-to-heat meets ready-to-eat

The Freshline tumbler freezer's IQF process enrobes and freezes foods as individual pieces, producing portionable food for one-pan preparation by individuals or institutions. The food preparer can easily select any amount from a packet and then heat the product on a stove or in a microwave. The result: serving portions with an ideal balance of solids and sauces with the convenience of speed and exact portion control.

Coat. Freeze. All in one unit.

The Freshline tumbler freezer employs a highly efficient batch production method that evenly coats meal ingredients during the freezing process. It combines two processes in one system – enrobing with sauce and IQF freezing.

How does it work? First, liquid nitrogen (LIN) is used to precool the vacuum-insulated, stainless steel, cylindrical drum below the point of zero-adhesion. Next, the IQF products to be coated are loaded manually or by conveyor into the drum. Sauce and LIN are then alternately sprayed onto the product while the drum is in rotation until the desired coating level is achieved. The constant rotation of the drum, combined with the very low temperature of liquid nitrogen freezing, prevents even the moistest foods from clumping or sticking to the

inside of the freezer. For easy unloading, the direction of the drum rotation is simply reversed.

The vacuum-insulated drum helps maintain a safe surface temperature throughout the operation and helps to minimize LIN consumption. The freezer's drum-mixing process enables:

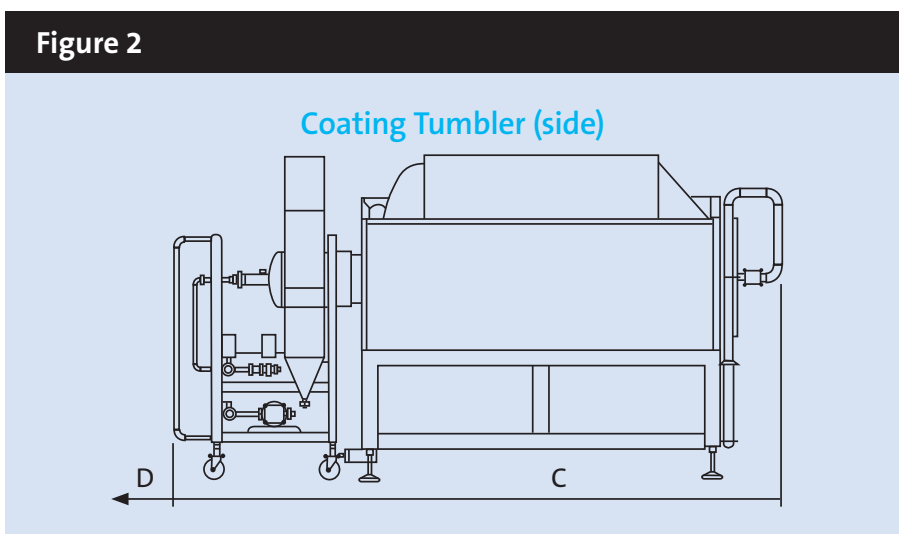
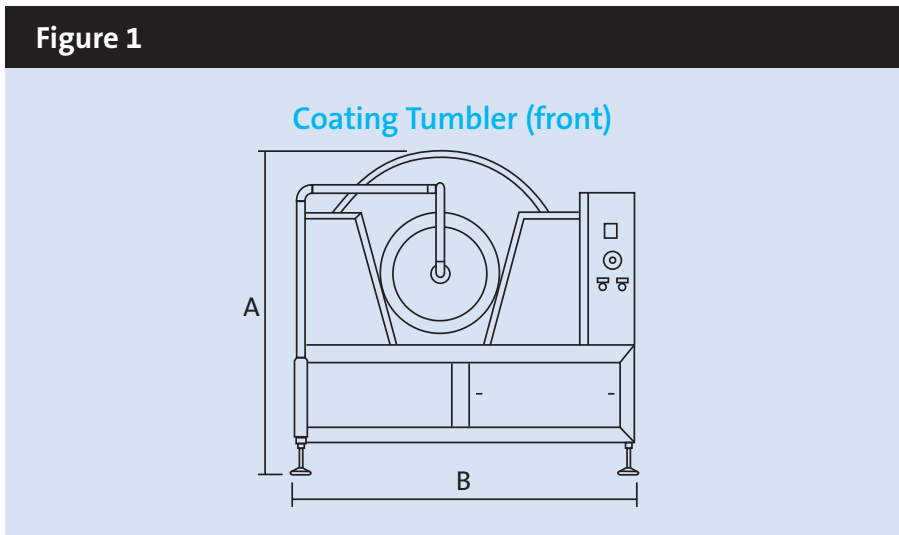
- Even application of sauces
- Gentle treatment of the ingredients
- Sustained cryogenic temperature
- Safe, economical operation
- Consistent product output quality
- Ease of operation.

The entire process is automated through a programmable logic controller (PLC) that stores user-defined recipes and controls drum rotation, speed, process time and sauce injection. Process automation helps deliver high product quality through consistent, reproducible processing conditions from batch to batch.

Even the cleaning is semiautomatic. As soon as production stops, the sauce-injection system can be used to dispense cleaning fluid inside the drum to minimize downtime.

Your top supplier of LIN – and expertise

Air Products provides the Freshline tumbler freezer as a turnkey solution to your IQF processing needs. In addition to the equipment, we can manage installation and testing, integrate your LIN supply system and provide expert technical support before, during and after installation. This scope of supply speeds project implementation while reducing risk and worry.



Freshline Tumbler Models

The Freshline tumbler freezer comes in three models, all with a compact design requiring minimal floor space.

Model	A (in)	B (in)	C (in)	D (in)	Weight (lbs, approx)	Product Range (lb/hr)	Capacity finished (gallons product)
CT-25	74	71	112	38	2200	50–350	25
CT-150	79	79	152	63	3500	400–1000	150
CT-300	89	95	157	63	4400	800–1800	300



For more information

Call us today to talk with a food industry expert about how the Freshline tumbler freezer and IQF processing technology can broaden your product line and improve your product quality.

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