McGill AirPressure LLC designs and manufactures vacuum shelf dryers for drying heat-sensitive materials that must not be agitated or that are processed in small batches. Vacuum dryers remove moisture by exposing the materials to reduced pressure. Just enough heat is used to replace that lost through vaporization.

Shelves

Each dryer shelf is constructed of a baffle and side closure bar sandwiched between two steel plates. The flat heating shelves allow maximum pan contact with minimum temperature variation. They are heated by an internally circulating fluid, with large headers allowing uniform flow through all shelves. Heating fluid connections between the headers and heating shelves provide vacuum-tight service and make the shelves easy to remove. They can be located at the front or rear of the shelves. Standard shelves are designed for 30, 50, or 100 psig internal pressure, coincidental with full vacuum in the drying chamber. Customized shelves can be built to the customer's specific pressure requirements. They can be fabricated to meet ASME code standards. Lightweight, embossed panel coils/heating shelves are available.

Doors

Dryer doors are reinforced to reduce deflection under vacuum pressure. A parabolic door gasket is set in a machined dovetail groove to provide a tight seal. Doors are equipped with heavy-duty hinges to withstand constant use. Hinges can be set on either the right or left side. Tempered sight glasses can be built into doors to allow operators to view the product as it is being dried.

Construction

Drying chambers are made of reinforced carbon steel for durability. To resist corrosion inside the drying chamber, internals can be fabricated of stainless steel, special alloys, or coated with baked phenolic resins. External surfaces can be painted or given a bead-blasted finish.

External insulation sheathing is available in carbon steel or stainless steel and can be seam welded or joined with sheet metal screws. Sheathing is available with a commercial mill, polished, or painted finish.

Auxiliary Equipment Options

- Vacuum gauge, vacuum release valve, thermometer, or pressure gauge.

- Vertical shell and tube surface condensers.

- Refrigerated or dry-ice traps.

- Vacuum pumping systems: mechanical, water-sealed, or steam jet.

- Heating systems: steam, water, oil, or other fluid.

- Cooling systems: direct or indirect.

- Extra connections.

- Special casing or shelf arrangements.

- Product pans (trays) fabricated of carbon steel, stainless steel, and other alloys.

- Instrumentation for process control and documentation: fully wired control panels or field-mounted individual instruments for sensing, indicating, or recording temperature, pressure, and other variables.

- Complete systems with components assembled on a common baseplate.

Above: A vacuum shelf dryer with a 316 stainless steel polished finish on the interior and exterior surfaces for corrosion resistance.

Bottom: A skid-mounted dryer complete with vacuum system, hot water circulation system, and controls is piped and wired at the factory for easy installation.

McGill AirPressure can custom design a vacuum dryer to meet your specific processing requirements.

Shelf dryers can be constructed of a variety of materials with sight glasses built into the doors.
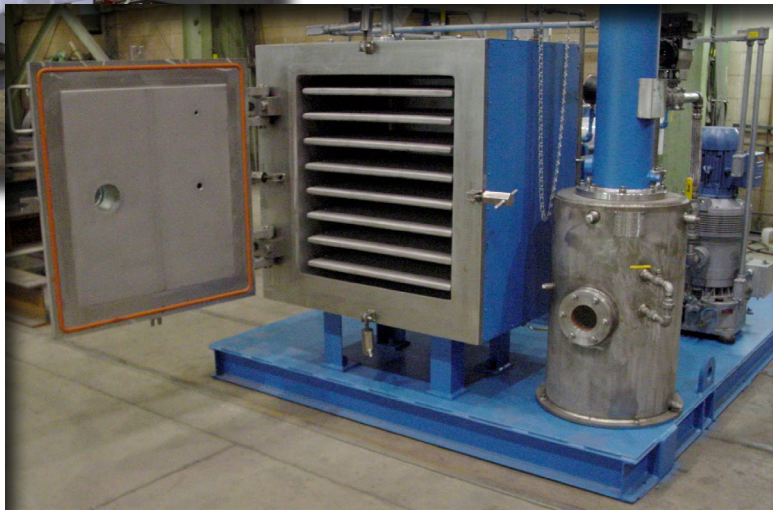
McGill AirPressure Vacuum Shelf Dryers - Standard Specifications

Model Number*	Number of Usable Shelves	Shelf Area (sq ft)	Shelf Spacing (inches)	Shelf Size W x D (inches)	Approximate Outside Dimensions (feet)			Approximate Weight (lb)
					H	W	D	
1A	2	2.25	3	12 x 13$\frac{1}{2}$	2	2	2	700
2B	2	9.50	6	29 x 23$\frac{1}{2}$	5	3$\frac{1}{2}$	3$\frac{1}{2}$	1,850
2B	3	14.20	3$\frac{5}{8}$	29 x 23$\frac{1}{2}$	5	3$\frac{1}{2}$	3$\frac{1}{2}$	2,000
2B	4	18.90	2$\frac{1}{2}$	29 x 23$\frac{1}{2}$	5	3$\frac{1}{2}$	3$\frac{1}{2}$	2,150
3B	5	23.70	5$\frac{3}{8}$	29 x 23$\frac{1}{2}$	5	3$\frac{1}{2}$	3$\frac{1}{2}$	2,850
3B	6	28.40	4$\frac{3}{8}$	29 x 23$\frac{1}{2}$	5	3$\frac{1}{2}$	3$\frac{1}{2}$	3,000
3B	7	33.10	3$\frac{1}{2}$	29 x 23$\frac{1}{2}$	5	3$\frac{1}{2}$	3$\frac{1}{2}$	3,100
4C	6	36.00	5	24 x 36	5$\frac{1}{2}$	3$\frac{1}{2}$	3$\frac{1}{2}$	3,500
4C	7	42.00	4	24 x 36	5$\frac{1}{2}$	3$\frac{1}{2}$	3$\frac{1}{2}$	3,700
4C	8	48.00	3$\frac{1}{2}$	24 x 36	5$\frac{1}{2}$	3$\frac{1}{2}$	3$\frac{1}{2}$	3,850
5D	3	34.70	5	39$\frac{1}{4}$ x 42$\frac{1}{2}$	5	5	5$\frac{1}{2}$	3,600
5D	4	46.30	3$\frac{1}{2}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	5	5	5$\frac{1}{2}$	3,900
5D	5	57.90	2$\frac{1}{2}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	5	5	5$\frac{1}{2}$	4,150
6D	6	69.50	3$\frac{5}{8}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	5	5	5$\frac{1}{2}$	4,800
6D	7	81.00	3	39$\frac{1}{4}$ x 42$\frac{1}{2}$	5	5	5$\frac{1}{2}$	5,100
6D	8	92.60	2$\frac{1}{2}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	5	5	5$\frac{1}{2}$	5,350
7D	9	104.20	4$\frac{3}{8}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	6$\frac{1}{2}$	5	5$\frac{1}{2}$	6,850
7D	10	115.80	3$\frac{7}{8}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	6$\frac{1}{2}$	5	5$\frac{1}{2}$	7,150
7D	11	127.40	3$\frac{1}{2}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	6$\frac{1}{2}$	5	5$\frac{1}{2}$	7,450
7D	12	139.00	3	39$\frac{1}{4}$ x 42$\frac{1}{2}$	6$\frac{1}{2}$	5	5$\frac{1}{2}$	7,700
7D	13	150.60	2$\frac{3}{4}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	6$\frac{1}{2}$	5	5$\frac{1}{2}$	8,000
8D	12	139.00	4$\frac{3}{8}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	8	5	5$\frac{1}{2}$	8,600
8D	14	162.10	3$\frac{1}{2}$	39$\frac{1}{4}$ x 42$\frac{1}{2}$	8	5	5$\frac{1}{2}$	9,200
8D	16	185.30	3	39$\frac{1}{4}$ x 42$\frac{1}{2}$	8	5	5$\frac{1}{2}$	9,750
9E	9	110.00	4	44 x 40	5$\frac{1}{2}$	5$\frac{1}{2}$	6	7,150
9E	11	134.40	3	44 x 40	5$\frac{1}{2}$	5$\frac{1}{2}$	6	7,800
9E	13	158.90	2$\frac{1}{2}$	44 x 40	5$\frac{1}{2}$	5$\frac{1}{2}$	6	8,400
9E	15	183.00	2	44 x 40	5$\frac{1}{2}$	5$\frac{1}{2}$	6	9,000
10E	18	220.00	2$\frac{5}{8}$	44 x 40	8$\frac{1}{2}$	5$\frac{1}{2}$	6	10,850
10E	20	244.40	2$\frac{1}{4}$	44 x 40	8$\frac{1}{2}$	5$\frac{1}{2}$	6	11,500
10E	22	268.80	2	44 x 40	8$\frac{1}{2}$	5$\frac{1}{2}$	6	12,100
11F	12	192.30	4$\frac{3}{8}$	59 x 39$\frac{1}{8}$	8	6$\frac{1}{2}$	5	10,950
11F	14	224.40	3$\frac{1}{2}$	59 x 39$\frac{1}{8}$	8	6$\frac{1}{2}$	5	11,750
11F	16	256.40	3	59 x 39$\frac{1}{8}$	8	6$\frac{1}{2}$	5	12,550
11F	19	304.50	2$\frac{3}{8}$	59 x 39$\frac{1}{8}$	8	6$\frac{1}{2}$	5	13,700
12G	9	290.30	4$\frac{3}{8}$	59 x 78$\frac{3}{4}$	7	6$\frac{1}{2}$	5	16,750
12G	10	322.60	3$\frac{7}{8}$	59 x 78$\frac{3}{4}$	7	6$\frac{1}{2}$	9	17,500
12G	12	387.10	3	59 x 78$\frac{3}{4}$	7	6$\frac{1}{2}$	9	19,050
12G	14	451.70	2$\frac{1}{2}$	59 x 78$\frac{3}{4}$	7	6$\frac{1}{2}$	9	20,500
13G	12	387.10	4$\frac{3}{8}$	59 x 78$\frac{3}{4}$	8	6$\frac{1}{2}$	9	20,600
13G	14	451.70	3$\frac{1}{2}$	59 x 78$\frac{3}{4}$	8	6$\frac{1}{2}$	9	22,150
13G	16	516.20	3	59 x 78$\frac{3}{4}$	8	6$\frac{1}{2}$	9	23,700
13G	19	613.00	2$\frac{3}{8}$	59 x 78$\frac{3}{4}$	8	6$\frac{1}{2}$	9	26,000

*Larger sizes are available upon request. **Note**: Horizontal lines indicate change in internal cabinet dimensions.