



MicroBulk CO₂ Applications & Storage Systems



Chart Inc.

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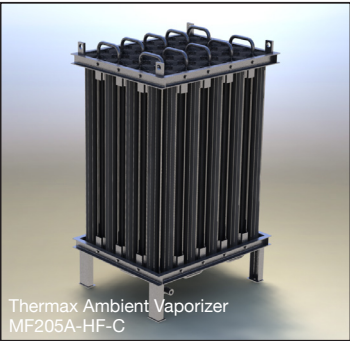
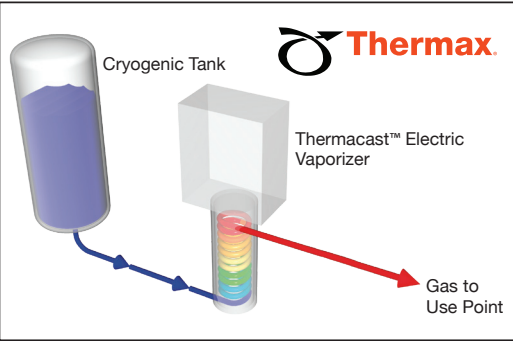
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Gas Applications					Perma-Max™		Internal Tank	Tank/System Options					
	Process Flowrate		Peak Flow	Tank Size ⁽⁶⁾	Tank NER in CO ₂ ⁽²⁾		PB/Vap System	Thermax Ambient Vaporizer ⁽⁴⁾		Thermax Electric Vaporizer Systems ⁽⁵⁾			Python® VIP ⁽⁷⁾
	lb/hr	lb/mo	lb/hr	lb	%/day	lb/day	lb/hr	Model	lb/hr	Model	Power	lb/hr	
CO ₂ Incubator	5-15	2400	100	2200	0.3	6.6	36	MF065A-HF-C	100	TT3B-120	3kW	100	Recommended
Welding, Laser Cutting & Casting Hardening	15	3600	100	3300	0.3	9.9	51	MF065A-HF-C	100	TT3B-120	3kW	100	Recommended
Greenhouse Growing	15	3600	100	3300	0.3	9.9	51	MF065A-HF-C	100	TT3B-120	3kW	100	Recommended
Beverage Carbonation Production & Processes	5-30	4800	100	4400	0.3	13.2	51/76	MF125A-HF-C	200	H3A	9kW	225	Recommended
pH Control Wastewater & Swimming Pool	10-40	6000	200	6000	0.3	18	51/76	MF125A-HF-C	200	H3A	9kW	225	Recommended
Modified Atmospheric Packaging	10-40	6000	200	6000	0.3	18	51/76	MF125A-HF-C	200	H3A	9kW	225	Recommended
Brew Pubs & Micro-Breweries	180 ⁽¹⁾	14,400	300	12,000	0.3	36	130/190	MF205A-HF-C	300	H3	12kW	300	Recommended
Liquid & Snow Applications	lb/hr	lb/mo		lb	%/day	lb/day	Pressure Builder lb/hr						Python® VIP ⁽³⁾
Botanical Extraction	5-10	1680	–	1400	0.3	4.2	150 ⁽⁸⁾	–	–	–	–	–	Recommended
Special Effects	50-60	2400	–	1400	0.3	4.2	150 ⁽⁸⁾	–	–	–	–	–	Recommended
Pellet Production for Blasting	10-20	3600	–	3300	0.3	9.9	51	–	–	–	–	–	Recommended
HP Bottle & Fire Extinguisher Filling	15-35	6000	–	6000	0.3	18	51/76	–	–	–	–	–	Recommended
Concrete Curing	10-50	7200	–	6000	0.3	18	51/76	–	–	–	–	–	Recommended

NOTES (1) Gas burst: 30 lbs over 10 min purging cycle (2) Based on published gross capacity. (3) Python® VIP required to reduce heat transfer & increase snow yield in some applications. (4) Based on ambient temperature of 60°F @ an 8 hr duty cycle for 300 psig CO₂. Outlet temperature will be 20°F below ambient. Ideal for installations in surge applications. See Thermax Product Data Sheet 3.9 and 3.9A for details. (5) Ideal for installations where ambient temperatures drop below 20°F. See Thermax Product Data Sheet 1.0 and 1.2 for details. (6) Use ‘Tank Sizing App’ for proper tank sizing. (7) Python® VIP recommended for vaporized gas to application if ambient temperature drops anytime below 20°F. (8) Perma-Max 1400 XHP model comes standard with Thermax electric PB vaporizer on skid. See Specification Sheet P/N 21176920.



Perma-Max™ Fast Fill MicroBulk Storage for CO₂ Service

The Perma-Max™ MicroBulk Storage Systems are specifically designed for CO₂ service. One notable performance improvement is the fast fill feature – at least three times the fill rate over our standard Perma-Cyl® MicroBulk Storage Series from a typical beverage delivery truck. The upsizing and redesign of the top fill eductor circuit reduces the overall fill time, and it also reduces the amount of vent gas during delivery for a more efficient fill. Other new design features include all stainless steel ball valves, larger internal pressure builder and vaporizer coils for faster pressure recovery and increased gas flow rates. Dedicated pressure builder and economizer regulators also contribute to this improved performance.

GENERAL SPECIFICATIONS	1400 XHP ⁽⁵⁾	2200 HP	3300 HP	4400 HP	6000 HP	12,000 VHP
Relief Valve Setting / MAWP (psig/barg)	800 / 55	350 / 24.1	350 / 24.1	350 / 24.1	350 / 24.1	350 / 24.1 ⁽⁷⁾
Overall Height (in/mm)	66.7 / 1694	89 / 2260	92 / 2337	116 / 2946	122 / 3099	119 / 3020
Width with Pallet Base (in/mm)	46.6 / 1184	46.6 / 1184	53 / 1346	53 / 1346	60.5 / 1537	86 / 2180
Length with Pallet Base (in/mm)	62.6 / 1590	50.6 / 1285	67 / 1702	67 / 1702	75.5 / 1918	102 / 2590
Tank Diameter (in/mm)	42 / 1067	42 / 1067	48 / 1219	48 / 1219	58 / 1473	80 / 2030
Tare Weight ⁽¹⁾ (lbs/kg)	2015 / 914	1781 / 807	2200 / 998	2600 / 1179	3300 / 1497	9100 / 4128
CAPACITIES						
Gross Volume (gal/liters)	171 / 646	279 / 1056	409 / 1550	539.5 / 2042	769 / 2911	1435 / 5434
Net Volume (gal/liters)	160 / 606	251 / 950	384 / 1455	513.9 / 1945	715 / 2707	1350 / 5110
Gas Storage Capacity ⁽²⁾ (scf/Nm ³)	11,826 / 335	19,960 / 564	29,340 / 830	38,048 / 1000	52,954 / 1390	99,954 / 2627
Liquid Storage Capacity ⁽²⁾ (lbs/kg)	1352 / 615	2283 / 1035	3256 / 1477	4352 / 1974	6058 / 2747	11,427 / 5183
PERFORMANCE						
Normal Evaporation Rate (% per day) ⁽³⁾	.3%					
Gas Supply Rate @ 150 psig (scfh/Nm ³ H)		320 / 9.0	450 / 12.7	500 / 14.2	500 / 14.2	1167 / 33
(lbs/hr) / (kg/hr) ⁽⁴⁾	2 lbs / 1 kg ⁽⁶⁾	36 / 16.3	51 / 23	51 / 23	51 / 23	130 / 59
CONSTRUCTION						
Design & Manufacturing Code	ASME Sec. VIII Div. 1					
Outer Vessel	Type 304 SS					Paint ⁽⁸⁾
Pallet Base	Galvanized Carbon Steel					

Footnotes: Specifications subject to change without prior notice. (1) Weights include lab base. (2) Gas measured at 1 atm & 70°F. Liquid measured at 1.7°F & 300 psig / 20.7 barg saturated pressure. (3) Values are based on gross volume. (4) For 12 consecutive hours at room temperature. (5) Thermax Electric PB Vaporizer: 6kW / 150 lb/hr. (6) Per second/per nozzle. (Liquid Supply Rate/Peak Flow Rate for Model 1400.) (7) Can be upgraded to 500 psig / 34.5 barg. (8) Model 12,000 is built with stainless steel outer top & bottom heads.

For more information, see the Perma-Max Specification Sheet, P/N 20890958 and the Perma-Max 1400 XHP Specification Sheet, P/N 21176920.