

PCO2 Carbon Dioxide Quality Incident Protection Systems

From production plant to fountain / post mix and beer dispense, guaranteed CO₂ purity is assured.

The PCO2 Carbon Dioxide Quality Incident Protection System from Parker offers a comprehensive solution to preserve and guarantee the quality of gaseous carbon dioxide used in the sparkling beverage industry.

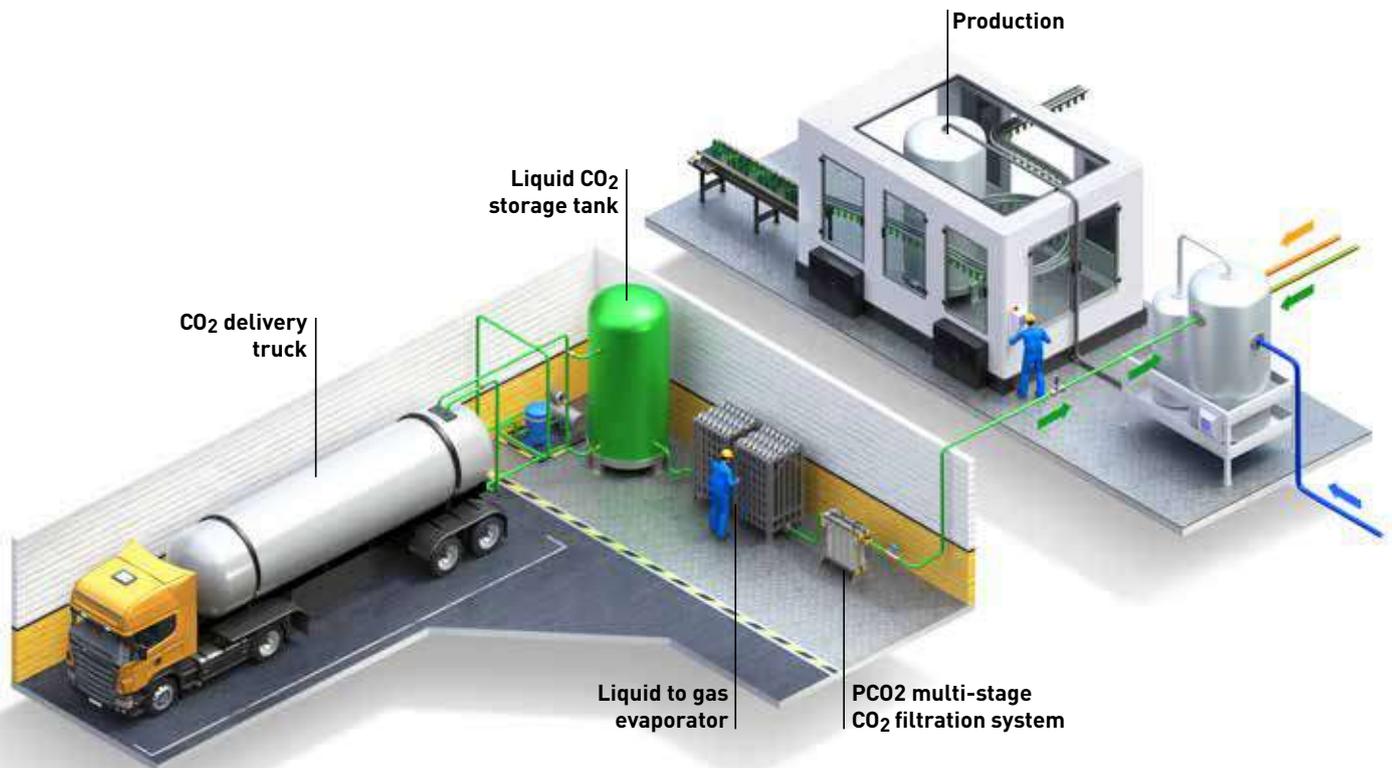
Using multi-layer gas adsorbent technology, the PCO2 range includes models for plant scale protection, as well as smaller variants for fountain / post mix and beer dispense applications respectively.

Operating as a vapour absorber to remove a wide range of potentially harmful carbon dioxide impurities, the system guarantees the gas quality to remain within industry and company guidelines, therefore preventing detrimental consequences to the finished beverage and to the producers reputation.

PCO2 quality incident production systems for production plant

The system for the production plant environment offers in-line quality incident protection against peak levels of trace impurities which may be present in beverage-grade carbon dioxide.

Typical production plant application



ISBT Quality Guidelines for Carbon Dioxide

The International Society of Beverage Technologists (ISBT) is the only organisation whose sole interest is the technical and scientific aspects of soft drinks and beverages.

The ISBT is a highly respected body which is dedicated to the promotion, development and dissemination of knowledge relating to the art and science of beverage technology.

The quality guidelines and analytical procedure bibliography has been developed by the ISBT to provide guidance for manufacturers of carbonated beverages and suppliers of carbon dioxide to the carbonated beverage industries about key characteristics for the quality and purity of carbon dioxide when used as a direct food additive in beverages.

The following table lists the voluntary quality standards taken from the document with relation to CO₂ quality.

Voluntary quality standards as listed in the ISBT Quality Guidelines

Parameter	Guideline	Rationale†
Purity:	99.9 % v/v min.	Process
Moisture:	20 ppm v/v max.	Process
Oxygen:	30 ppm v/v max.	Sensory
Carbon Monoxide:	10 ppm v/v max.	Process
Ammonia	2.5 ppm v/v max.	Process
Nitric Oxide / Nitrogen Dioxide:	2.5 ppm v/v max. (each)	Regulatory
Non-volatile Residue:	10 ppm w/w max.	Sensory
Non-volatile Organic Residue:	5 ppm w/w max.	Sensory
Phosphine:	To pass test (0.3 ppm v/v max.)	Regulatory
Total Volatile Hydrocarbons: (as Methane)	50 ppm v/v max. including 20 ppm v/v max. as total non-methane hydrocarbons	Sensory
Acetaldehyde:	0.2 ppm v/v max.	Sensory
Aromatic Hydrocarbon Content:	20 ppb v/v max.	Regulatory
Total Sulphur Content* (as S): (*Total sulphur-containing impurities excluding sulphur dioxide)	0.1 ppm v/v max.	Sensory
Sulphur Dioxide	1 ppm v/v max.	Sensory
Odour of Solid CO ₂ (snow):	No foreign odour	Sensory
Appearance in water:	No colour or turbidity	Sensory
Odour and taste in water:	No foreign odour or taste	Sensory

Source: ISBT CO₂ quality & analytical procedure bibliography, 2019.

Rationale definitions:

Sensory: Any attribute that negatively impacts the taste, appearance or odour of beverage.

Process: Any attribute that defines a key parameter in a controlled process and an important consideration in the beverage industry.

Regulatory: Any attribute whose limit is set by governing regulatory agencies.

PCO2 Carbon Dioxide Quality Incident Protection Systems

For the sparkling beverage industry

Technical Data

Model	Port Size*	Flow Rate		Quantity Required	Max Operating Pressure		Min Operating Temperature		Max Operating Temperature		Inlet CO ₂ Quality**
		Kg/h	Lb/h		bar g	psi g	°C	°F	°C	°F	
PCO2-400	1"	181	400	1	20.7	300	-20	-4	40	104	ISBT Beverage Grade CO ₂
PCO2-800	1½"	363	800	1	24.1	350	-20	-4	40	104	
PCO2-1600	1½"	726	1600	1	24.1	350	-20	-4	40	104	
PCO2-2400	1½"	1089	2400	1	24.1	350	-20	-4	40	104	
PCO2-3200	1½"	1451	3200	1	24.1	350	-20	-4	40	104	
PCO2-4000	1½"	1814	4000	1	24.1	350	-20	-4	40	104	
PCO2-4800	1½"	2177	4800	1	24.1	350	-20	-4	40	104	
PCO2-3200 Duplex*	1½"	2903	6400	2	24.1	350	-20	-4	40	104	
PCO2-4000 Duplex*	1½"	3628	8000	2	24.1	350	-20	-4	40	104	
PCO2-4800 Duplex*	1½"	4354	9600	2	24.1	350	-20	-4	40	104	

*Duplex systems are installed in parallel to double the flow.

**PCO2 CO₂ Systems are for gaseous CO₂ only.

All systems are rated at a maximum operating pressure of 24.1 bar g / 350 psi g.

PCO2-400 is rated at 20.7 Bar g / 300 psi g.

Correction Factors

Inlet Pressure	bar g	3	4	5	6	7	8	9	10	11	12	13
	psi g	44	58	73	87	102	116	130	145	160	174	189
Correction factor		0.19	0.23	0.28	0.33	0.38	0.42	0.47	0.52	0.57	0.61	0.66
Inlet Pressure	bar g	14	15	16	17	18	19	20	21	22	23	24
	psi g	203	218	232	247	261	275	290	304	319	333	348
Correction factor		0.71	0.76	0.80	0.85	0.90	0.95	1	1	1	1	1

Operation

Stage 1

0.01 micron particle filtration
Removal of non-volatile organic residue (NVOR) and other contaminants down to 0.01 ppm

Stage 2

Removal of water vapour and partial removal of hydrocarbons

Stage 3

Primary removal of aromatic hydrocarbons (Benzene, Toluene etc and Acetaldehyde)

Stage 4

Removal of sulphur compounds (COS, H₂S, DMS etc)

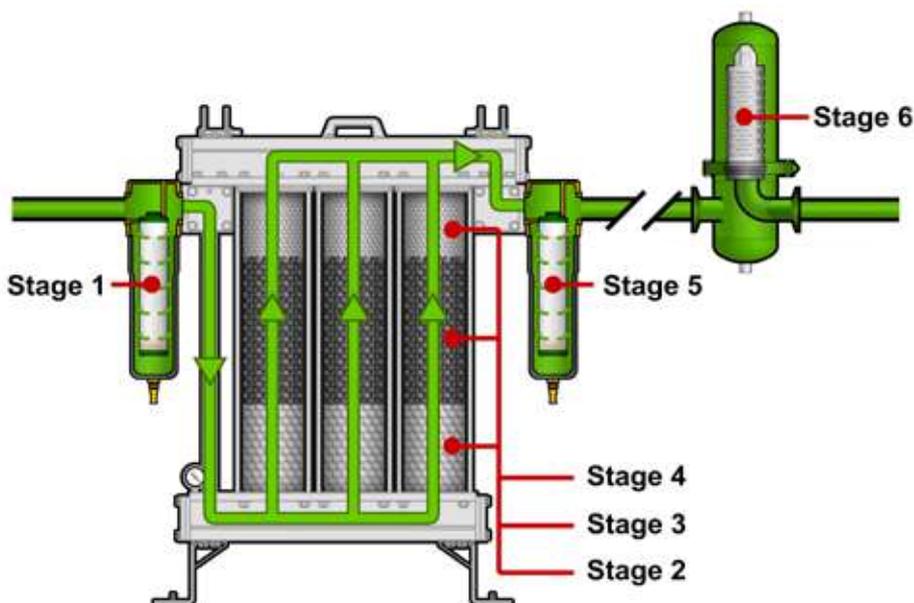
Stage 5

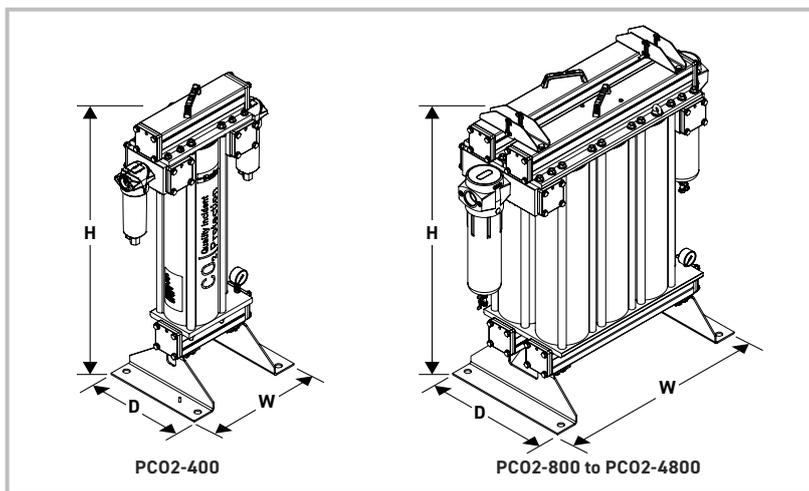
0.01 micron particle filtration

Stage 6*

Point of use VBACE sterile gas membrane. Hi Flow Tetpor II

* Optional - Sterilizing Grade: consult Parker for operational use





Weights and Dimensions

Model	Height (H)		Width (W)		Depth (D)		Clearance**		Weight	
	mm	ins	mm	ins	mm	ins	mm	ins	kg	lbs
PCO2-400	1035	40.8	564	22.2	350	13.7	680	27	75	165
PCO2-800	1060.7	41.8	632	24.9	450	17.7	680	27	84	185
PCO2-1600	1060.7	41.8	801	31.5	450	17.7	680	27	128	282
PCO2-2400	1060.7	41.8	970	39.4	450	17.7	680	27	172	379
PCO2-3200	1060.7	41.8	1139	44.8	450	17.7	680	27	217	478
PCO2-4000	1060.7	41.8	1308	51.5	450	17.7	680	27	260	573
PCO2-4800	1060.7	41.8	1477	58.1	450	17.7	680	27	304	670

*All systems are supplied as NPT with stainless steel adapters 'NPT to BSP' as standard.

** Clearance required for the removal and servicing of cartridges.

Preventative Maintenance Kits - Required Every 8000 Hrs (12 months)

Model	Part Number	Contents	Order Quantity
PCO2-400	MK-PCO2-400	1 x Desiccant Cartridge, 2 x Outlet Block O-Rings, 2 x P020-AA Filter Elements, 2 x IP50-AA Filter Elements, 2 x Filter Bowl O-Rings	1
PCO2-800	MK-PCO2-800	2 x Desiccant Cartridges, 2 x Outlet Block O-Rings, 2 x P035AA Filter Elements, 2 x IP50-AA Filter Elements, 2 x Filter Bowl O-Rings	1
PCO2-1600	MK-PCO2-1600	4 x Desiccant Cartridges, 2 x Outlet Block O-Rings, 2 x P035AA Filter Elements, 2 x IP50-AA Filter Elements, 2 x Filter Bowl O-Rings	1
PCO2-2400	MK-PCO2-2400	6 x Desiccant Cartridges, 2 x Outlet Block O-Rings, 2 x P035AA Filter Elements, 2 x IP50-AA Filter Elements, 2 x Filter Bowl O-Rings	1
PCO2-3200	MK-PCO2-3200	8 x Desiccant Cartridges, 2 x Outlet Block O-Rings, 2 x P035AA Filter Elements, 2 x IP50-AA Filter Elements, 2 x Filter Bowl O-Rings	1
PCO2-4000	MK-PCO2-4000	10 x Desiccant Cartridges, 2 x Outlet Block O-Rings, 2 x P035AA Filter Elements, 2 x IP50-AA Filter Elements, 2 x Filter Bowl O-Rings	1
PCO2-4800	MK-PCO2-4800	12 x Desiccant Cartridges, 2 x Outlet Block O-Rings, 2 x P035AA Filter Elements, 2 x IP50-AA Filter Elements, 2 x Filter Bowl O-Rings	1
PCO2-3200 (Duplex)	MK-PCO2-6400	16 x Desiccant Cartridges, 4 x Outlet Block O-Rings, 4 x P035AA Filter Elements, 4 x IP50-AA Filter Elements, 4 x Filter Bowl O-Rings	1
PCO2-4000 (Duplex)	MK-PCO2-8000	20 x Desiccant Cartridges, 4 x Outlet Block O-Rings, 4 x P035AA Filter Elements, 4 x IP50-AA Filter Elements, 4 x Filter Bowl O-Rings	1
PCO2-4800 (Duplex)	MK-PCO2-9600	24 x Desiccant Cartridges, 4 x Outlet Block O-Rings, 4 x P035AA Filter Elements, 4 x IP50-AA Filter Elements, 4 x Filter Bowl O-Rings	1



With OIL-X filter elements (PCO2-400 Models only)



With OIL-X IP50 filter elements (PCO2-800 to PCO2-4800 Models)