Anton Paar

CO_2 | O_2 | TPO
Meter series

Lab and at-line CO_2/O_2 meters and TPO meter for the beverage industry

Throughout the entire production process:
Measurement of TPO, dissolved CO_2, and O_2 in beverages

In the production of alcoholic and non-alcoholic beverages, it is essential to check and control the CO_2 and O_2 content of the product both during the production process and after bottling. In addition, measuring the total package oxygen (TPO) content is of great importance as well.

The CO_2 content strongly influences the taste of beverages and is a considerable cost factor in beverage production.

Precise measurement of the carbon dioxide ensures consistent taste and cost-efficient dosing.

A high level of O_2 in beverages has a negative impact on the taste and shelf life of the beverage.

The continuous monitoring of the oxygen content ensures product safety and permanent beverage quality.

Have it all: CO_2 and O_2 combined
CboxQC combines the fast measurement of CO_2 and O_2 in one measuring cycle.

Combined TPO and CO_2 measurement
TPO 5000 can be teamed up with Anton Paar's carbonation meter to measure both TPO and dissolved CO_2 in one measuring cycle. CarboQC selectively determines the true amount of carbon dioxide in beverages and can be used as a stand-alone instrument as well.

The choice is yours

Whether directly at the production line, in the laboratory, or as part of a larger beverage analyzing system, Anton Paar provides the best instrument for your measurement application. The portfolio includes instruments for selectively measuring total package oxygen, dissolved oxygen, and dissolved carbon dioxide without being influenced by other gases.

	CO_2 Air | N_2 | O_2 Index	**CO_2 | O_2 Air | N_2 | Index**	**O_2**
At-line measurement	 CarboQC At-line	 CboxQC At-line	 OxyQC | OxyQC Wide Range
Laboratory measurement	 CarboQC	 CboxQC	 OxyQC | OxyQC Wide Range
System modules integrated in PBA M measuring systems	 CarboQC ME	 CarboQC ME with Option O_2 (Plus)	
Laboratory and process environment	 TPO 5000	 TPO 5000 | CarboQC	
	TPO	**TPO | CO_2**	

Your future with TPO 5000:
The rapid way to measure total package oxygen

Effortless and fast TPO measurement out of any standard bottle or can is without a doubt the major requirement right after filling. Anton Paar's solution for TPO measurement provides many time-saving and beneficial features in order to guarantee reliable QC. Sample preparation is not required in the stand-alone solution.

Avoid downtimes by always knowing the status of the instrument

The built-in LEDs give you an immediate overview of the instrument's status throughout the whole production process, even in noisy environments. The status of the instrument can be identified immediately, even from a distance.

Traceability is crucial

Checking and adjusting the instrument is a frequently performed task. With the implemented standard operation procedures, this requires no extra effort from the operator. All data is saved on the instrument, which greatly supports process stability.

Endurance is the key to performance

The solid, stainless steel housing provides long-lasting resistance to process environments. TPO 5000 meets the highest safety standards on the market and has a splash-proof design to ensure reliable and continuous operation, even under harsh conditions.

Speed matters

Speeding up measuring time is important – especially when it comes to TPO measurement right after filling. No matter which beverage container type, the positioning of the cans, glass bottles, and PET bottles is simplified by using an automatic centering adapter. The instrument supports you at every step in the process to prevent handling issues before they even occur. The measuring time of less than four minutes makes TPO 5000 the fastest TPO measuring device on the market.

State-of-the-art oxygen measurement with minimum maintenance

Optochemical oxygen measurement is the worry-free method for selectively measuring headspace oxygen and dissolved oxygen. No influence from other gases is guaranteed and there is no need to replace various consumables on a regular basis.

No manual cleaning necessary

Anton Paar's TPO 5000 is equipped with a self-cleaning functionality for automatic cleaning after each measurement without active user interaction. This unique feature ensures that the instrument is always ready for the next measurement at any time.

How about CO_2? There you go.

Anton Paar is well-known for modular solutions. That's why CarboQC, the CO_2 meter for fast determination of carbon dioxide, can be easily connected to TPO 5000. CarboQC selectively determines the true amount of carbon dioxide in beverages and can be used as a stand-alone instrument or in combination with TPO 5000 for combined TPO and CO_2 measurements.

		TPO 5000
Measuring range	Oxygen in the gas phase	0 hPa to 45 hPa O_2 partial pressure
	Dissolved oxygen	0 ppm to 2 ppm
	Temperature	0 °C to 40 °C
	Pressure	Max. 6.2 bar absolute
	Repeatability TPO	±5 ppb or ±5 % whichever is the greater
Environmental conditions	Ambient temperature	0 °C to 40 °C
	Relative humidity (non-condensing)	10 % rH to 90 % rH
Package dimensions	Package diameter	from 35 mm to 90 mm
	Package height	from 30 mm to 370 mm
	Package volume	>150 mL
Gas consumption / measurement		Vn = 8 L
Required oxygen-free gases		N_2 or CO_2 class 5 (if TPO 5000 is used without CO_2 measurement)
Additional gases		Compressed air[1]
Cleaning		Tap water or process water line
Communication interfaces		3x USB, Ethernet, CAN (for Anton Paar devices only), RS232
Display		7" LCD panel with projective capacitive touchscreen
Data storage		Up to 5000 measurement data sets
Dimensions (L x W x H)		515 mm x 590 mm x 1120 mm (20.3 in x 23.3 in x 44.1 in)
Weight		70 kg (154 lbs)

[1] Oxygen-free gas can be used if no compressed air connection is available.

At-line instruments from the measurement experts

At-line measurements – whether from filling lines, tankers, BBTs, kegs, or casks – provide the assurance that your production process is under control. Besides this, at-line instruments are used to monitor process instruments.

Fully protected for harsh environments

Anton Paar's at-line series of instruments is built to operate under rough conditions. The robust and leakproof housings keep humidity out of the electronics and stop any spills from entering the instrument.

Easy to use, easy to read

The color display makes sure you see your measuring results clearly, even in dark surroundings. Due to the intuitive user interface, standard operations can be performed easily in nine different languages. The eight large keys enable operation of the instrument even when wearing protective gloves.

Continuous control of CO_2 and O_2

Using the CO_2 and O_2 Data Logger function you define the interval for automatic continuous measurements from the sample point. With a memory capacity of 500 measurement data sets, Anton Paar's at-line instruments are prepared for a long working day.

Get started fast with RFID

Equipped with an RFID interface option, the instruments enable you to quickly and conveniently start the measurement by just reading a programmed RFID tag. Whether using RFID or manual settings, the instruments ensure full traceability.

Staying within your beverage targets

The threshold value functionality enables you to set CO_2 and O_2 target margins. Whenever your production process shows slight target deviations, the instrument reports immediately and you are on the safe side. This is a time- and money-saver – your operators can take action within seconds.

Fast measurement saves you time and money

By measuring CO_2 and O_2 in only 90 seconds, Anton Paar's CboxQC At-line saves you valuable working time and money.

Teams up with process instrumentation

The at-line instruments are the ideal complement to Anton Paar's process instrumentation, such as the Carbo 510 online CO_2 analyzer and Cobrix 5 inline beverage analysis system for °Brix, Diet, and CO_2 monitoring.

		CarboQC At-line	CboxQC At-line	OxyQC OxyQC Wide Range
Measuring range	CO_2	0 g/L to 12 g/L (0 vol. to 6 vol.) at 30 °C (86 °F)		
	O_2		0 ppm to 4 ppm	0 ppm to 4 ppm
				0.015 ppm to 45 ppm
	Temperature	-3 °C to 40 °C (27 °F to 104 °F), acc. ±0.2 °C		
	Pressure	0 bar to 10 bar absolute (0 psi to 145 psi), acc. 0.01 bar		
Repeatability s.d.	CO_2	0.04 g/L (0.02 vol.)		
	O_2		±2 ppb (<200 ppb)	±2 ppb (<200 ppb)
				±20 ppb (<5 ppm)
Resolution	CO_2	0.01 g/L		
	O_2		0.1 ppb (<100 ppb)	0.1 ppb (<100 ppb)
				1 ppb
Measuring units	CO_2	g/L, vol., mg/L, kg/cm², MPa, %w/w		
	O_2		ppm, ppb, mg/L, µg/L, % Air-sat., % O_2-sat.	
Measuring time		55 seconds	90 seconds	50 seconds
Data memory		500 measurement data sets		
Built-in support		CO_2 | O_2 Data Logger, threshold value functionality, system check		
Portable use		Up to 10 hours continuous use		
Interfaces		1x USB, 1x RS-232; optional: RFID, Bluetooth		
Accessories		High-performance battery, carrying strap, RFID tags, printer		
Protection class		IP67		
Weight		2.1 kg (4.6 lbs)	2.7 kg (6 lbs)	1.7 kg (3.7 lbs)

Your longstanding partner for laboratory measurements

Using Anton Paar's laboratory solutions for dissolved gas measurement allows you to perform reliable QC on finished packages and run measurements for product development with the highest accuracy.

Small sample amount? No problem!

The very low required sample volume of around 100 mL allows reliable CO_2 and O_2 results, even out of very small packages.

High accuracy, more benefit

The patented selective CO_2 measuring method is not influenced by other dissolved gases such as air or nitrogen. Together with the high-resolution optochemical oxygen sensor the results achieve the highest accuracy.

Low-carbonated beverages? No problem!

With a measuring range from 0 g/L to 12 g/L, Anton Paar's CO_2 meters not only measure highly carbonated beverages, but also samples at low CO_2 levels with outstanding accuracy.

Easy checks – reliable results

Anton Paar's CO_2 and O_2 meters are supplied factory-adjusted and can be used right from the start. Numerous wizard features guide you through periodically recommended system checks and help in your everyday work.

Correct filling for correct results

Correct results strongly depend on the right filling under pressure: The integrated FillingCheck™ feature automatically detects filling errors.

Works through power outages

Voltage fluctuations or power outages are no threat for the CO_2 and O_2 meters. They automatically switch to battery-operated mode and you can easily continue your measurements as planned without losing any data, time, or money.

		CarboQC	CboxQC	OxyQC OxyQC Wide Range
Measuring range	CO_2	0 g/L to 12 g/L (0 vol. to 6 vol.) at 30 °C (86 °F)		
	O_2		0 ppm to 4 ppm	0 ppm to 4 ppm
				0.015 ppm to 45 ppm
	Temperature	-3 °C to 40 °C (27 °F to 104 °F), acc. ± 0.2 °C		
	Pressure	0 bar to 10 bar absolute (0 psi to 145 psi), acc. 0.01 bar		
Repeatability s.d.	CO_2	0.01 g/L (0.005 vol.)		
	O_2		±2 ppb (<200 ppb)	±2 ppb (<200 ppb)
				±20 ppb (<5 ppm)
Resolution	CO_2	0.001 g/L		
	O_2		0.1 ppb (<100 ppb)	0.1 ppb (<100 ppb)
				1 ppb
Measuring units	CO_2	g/L, vol., mg/L, kg/cm², MPa, %w/w		
	O_2		ppm, ppb, mg/L, µg/L, % Air-sat., % O_2-sat.	
Measuring time		55 seconds	90 seconds	50 seconds
Data memory		500 measurement data sets		
Built-in support		FillingCheck™, threshold value functionality, system check		
Interfaces		1x USB, 1x RS-232 (CAN-open*); optional: RFID, Bluetooth		
Accessories		PFD, SFD, carrying strap, RFID tags, printer, rubber protection		
Protection class		IP67		
Weight		2.0 kg (4.4 lbs)	2.6 kg (5.7 lbs)	1.7 kg (3.7 lbs)

* CarboQC and CboxQC only

The perfect complement

Using Anton Paar's CO_2 and O_2 instruments in combination with a piercing and filling device means easy handling. Just press 'Start' and the sample is transferred to the measuring chamber without any loss of CO_2 and O_2. Reliable results can therefore be guaranteed.

SFD Sparkling Wine Filling Device

Transfers samples from wine and sparkling wine bottles closed with corks: Using SFD, the operator pierces the cork manually and inserts a sample tube. The sample is transferred under pressure. The SFD filling device can be used with most plastic and traditional corks.

- Full operator protection
- For all sizes, from small bottles to magnum bottles
- Sample transfer directly from the bottle

PFD Piercing and Filling Device

Fills samples reliably and safely directly out of closed PET bottles, glass bottles, or cans into the measuring chamber. No sample preparation, such as degassing or filtering, is needed.

PFD pierces the bottle closure or the base of the can automatically and transfers sample from the package using compressed gas.

- Gas spring for safety shield ensures operator safety
- Easy cleaning due to removable safety shield
- Robustness guaranteed by clever design and high-quality materials
- Additional splinter shield for protection when the full amount of sample is needed out of glass and PET bottles

	SFD piercing and filling device for sparkling wine and wine	PFD (Plus) piercing and filling device
Filling mode	Pressurized filling from closed and open packages	Pressurized filling from closed packages
Compressed gas supply	7.5 bar rel. ±0.5 bar (109 ±7 psi) for sparkling wine 3 bar rel. ±0.5 bar (44 ±7 psi) for wine	6 bar rel. ±0.5 bar (87 ±7 psi)
Package types	Glass bottles: 0.2 L to 1.5 L	Glass bottles | cans | PET bottles
Ambient temperature	0 °C to +40 °C (+32 °F to +104 °F)	
Dimensions	320 mm x 370 mm x 550 mm (12.6 in x 14.6 in x 21.7 in)	190 mm x 270 mm x 670 mm (7.5 in x 10.6 in x 26.4 in)
Weight	12.3 kg (27.1 lbs)	10.1 kg (22.3 lbs)

Built to work in a team

Which beverage parameters do you need to determine? Combine a CarboQC ME module with a wide range of Anton Paar instruments to get the beverage analysis you need in one measuring cycle, with minimum sample preparation required. Beyond this, TPO 5000 can be combined with CarboQC as well. Selective TPO and CO_2 measurement is performed out of the same beverage container.

Fit for the future

Whether you require an Alcolyzer system, the Option O_2, pH or other modules at a later date, Anton Paar's modular concept allows you to create a measuring system that exactly suits your requirements.

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