



# PERMATRAN-C® 4/41 SERIES CARBON DIOXIDE PERMEATION ANALYZER

High Performance CO<sub>2</sub>TR Testing for Barrier Films & Packages

## CO<sub>2</sub>TR Barrier Measurements... Done Right.



### High Performance Carbon Dioxide Permeation Analyzer

The PERMATRAN-C 4/41 series of instruments can test the Carbon Dioxide Transmission Rate (CO<sub>2</sub>TR) from low to high barriers on films, packages and bottles. PERMATRAN-C 4/41 utilizes AMETEK MOCON's patented modulated infrared (IR) sensor system allowing it to provide accurate results in much less time. Designed for a wide range of barriers this analyzer provides highly repeatable test results from 1.0 to 155,000 cc/(m<sup>2</sup> • day). The 4/41 is for higher barriers while the 4/41 T is for lower barriers.

#### Modulated IR Sensor

Using a patented modulated infrared (IR) technology, this sensor provides accurate and repeatable results with the longest life of any CO<sub>2</sub>TR sensor on the market. It's the only modulated IR sensor system to meet the ASTM F2476 standard.

#### Accuracy and Speed

Obtaining accurate and repeatable results when testing carbon dioxide transmission rate is a challenge. The IR sensor method provides accurate results within hours instead of days like traditional test methods. It does not require long test times with manual interventions and supervision. Additionally, we offer a special reference film for the instrument that ensures your testing results are accurate.

#### Highly Versatile

The accuracy and wide testing capability of the 4/41 make it an ideal CO<sub>2</sub>TR instrument for both research and development as well as production support laboratories. It has the capability to test a wide range of films and complete or partial packages, flexible or rigid containers, bottles and closers.

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#### Modulated IR Sensor

- Short exam times reduces overall test time to increase throughput
- Longest life CO<sub>2</sub> permeation modulated IR sensor
- Accurate and repeatable results
- Most trusted modulated IR sensor that fully complies with ASTM F2476
- Does not require partial pressure for analysis

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#### Simple user interface

- Overview dashboard screen provides the status of both cells at a glance
- Automatically generated test reports contain complete test data and conditions
- One control system can be connected to other AMETEK MOCON instruments providing centralized monitoring and control for multiple instruments

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## Industry Standard in Carbon Dioxide Permeation Testing

Many companies rely on the quick test results from the PERMATRAN-C 4/41 instrument to help reduce development time of their package designs. Common in the beverage industry, the 4/41 connected to a remote capture vessel provides fast accurate test results for bottles and closures.

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*Use the PERMATRAN 4/41 in your lab for accurate CO<sub>2</sub>TR permeation testing.*



## Simple Operation

For films, place all desired samples into test cells and clamp in place. Adjust the flow to the desired level. Enter the conditions such as temperature into the connected computer with the WinPerm™ software and start your test. Monitor all independent cells from the computer to see progress and test results when complete.

AMETEK MOCON's WinPerm™ Permeability software offers value added features such as:

- Quickstart – Quickly choose standard ASTM, ISO, JIS or user defined test conditions
- Preprogrammed test set-up may be saved and recalled for later use
- Test results are automatically converted to Excel format for export and further data manipulation
- Test results are available in individual detailed or multi-test summary format
- Compatible with PERMNET™, AMETEK MOCON's powerful test and data management system

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## Automated Control Features

- Automated temp control
- Integrated reference cell to verify stability
- Stored calibration history
- Built-in help menu

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## Warranty

- Full 100% parts and workmanship warranty for 12 months

# PERMATRAN-C® 4/41 SERIES SPECIFICATIONS

## Industry Standards

- ASTM F-2476-13
- ISO 15105-2
- DIN 53380-4

## Conformance Standards

- CE Safety Compliance

## Performance Specifications

Performance Specifications	
Temperature Control Range	5°C to 50°C ± 0.5 °C
Humidity Control, Film Cell, Test Gas	0% RH
Film Size	4.25" x 4.25" (10.8 cm x 10.8 cm)
Film Thickness	Up to 80 mil, 2 mm
Gas Supply Requirements	
Carrier Gas	Nitrogen (99.7% N <sub>2</sub> or better)
Test Gas	Carbon Dioxide (99.7% CO <sub>2</sub> or better)

## Connectivity

- Dual RS-485 ports

## Dimensions & Weight

Depth: 26" or 5660 cm  
 Width: 12" or 30,4 cm  
 Height: 12" or 30,4 cm  
 Weight: 63 lbs. or 28.6 kg

## Accessories

- PermWare™ software for data collection and remote monitoring
- Closure Test Cell
- 1 Liter Bottle Capture Volume test cell
- 2 Liter Bottle Capture Volume test cell

## Technical Specifications

Models		Test Ranges			Resolution	Repeatability
		cc/(m <sup>2</sup> · day)	cc/(100 in <sup>2</sup> · day)	cc/(pkg · day)	cc/(m <sup>2</sup> · day)	cc/(m <sup>2</sup> · day)
4/41	Normal (50 cm <sup>2</sup> )	1.0 to 8000	0.0645 to 515	0.005 to 40.0	0.000001	0.2 to 0.5%*
	Masked (5.0 cm <sup>2</sup> )	10 to 80,000	0.645 to 5150	-	-	-
4/41 T	Normal (50 cm <sup>2</sup> )	4000 to 155,000	258 to 10,000	20 to 775	0.000001	1%*
	Masked (5.0 cm <sup>2</sup> )	40,000 to 1,550,000	2580 to 100,000	-	-	-

\*Based on range and flow



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