



# Electro Optical Components, Inc.

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Highest accuracy · Highest selectivity

## Gas Filter Cell

for best optical measurement of gases

**Key features**

Example procedure for filling and sealing of gas cells.

Only suitable for non explosive, non flammable and non-corrosive gases.

**Important:** Please observe the working instructions for handling with gases.

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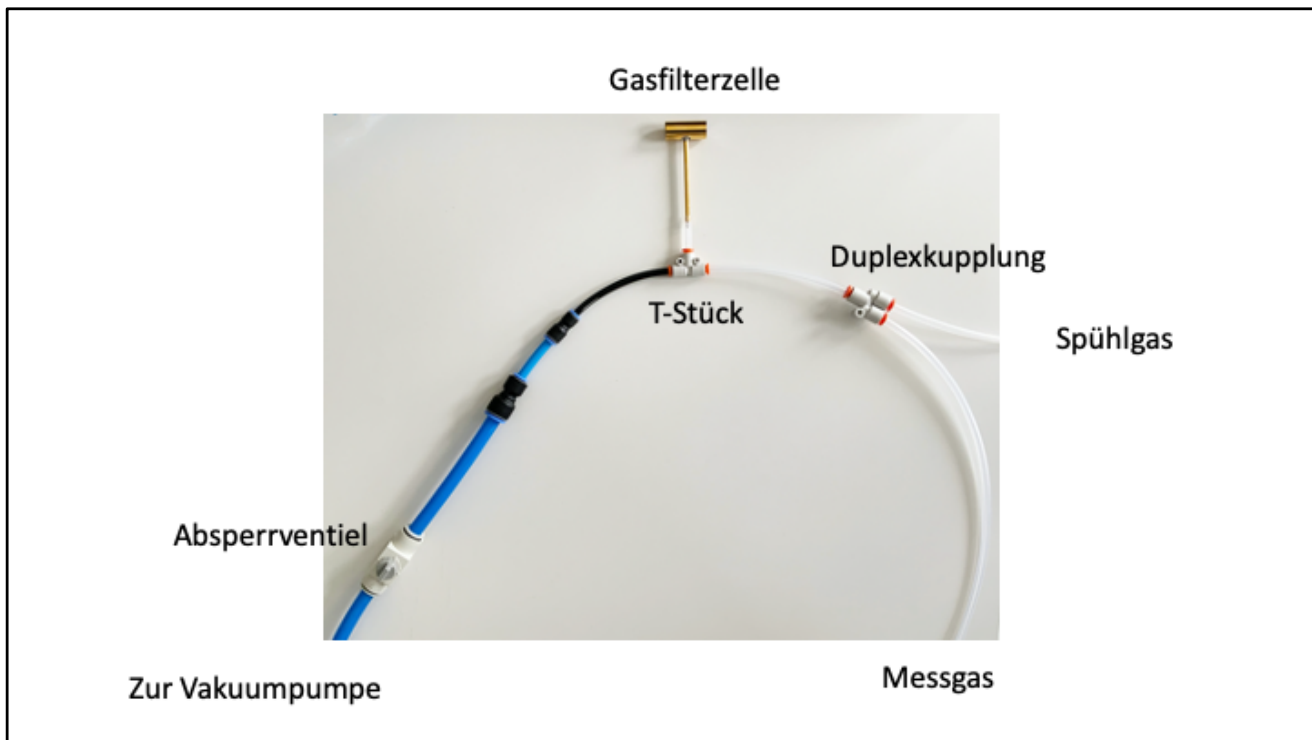
### Bedeutung der Helium-Leckrate

LECKRATE IN mbar x l/s	GASLECKBESCHREIBUNG ( $\Delta p = 10^5$ Pa)	GENERELLE LECKBESCHREIBUNG ( $\Delta p = 10^5$ Pa)	BENÖTIGTE ZEIT ZUM „FÜLLEN“ EINES GOLFBALLS
$1 \times 10^0$	1 cm <sup>3</sup> Gasverlust pro Sekunde	Tropfender Wasserhahn	Minute
$1 \times 10^{-1}$	1 cm <sup>3</sup> Gasverlust in 10 Sekunden		
$1 \times 10^{-2}$	1 cm <sup>3</sup> Gasverlust in 100 Sekunden	wasserdicht	Stunde
$1 \times 10^{-3}$	1 cm <sup>3</sup> Gasverlust in 15 Minuten	dampfdicht	Tag
$1 \times 10^{-4}$	1 cm <sup>3</sup> Gasverlust in 3 Stunden	bakteriendicht	
$1 \times 10^{-5}$	1 cm <sup>3</sup> Gasverlust pro Tag	benzin- und öldicht	Monat
$1 \times 10^{-6}$	1 cm <sup>3</sup> Gasverlust in 10 Tagen	virendicht	Jahr
$1 \times 10^{-7}$	1 cm <sup>3</sup> Gasverlust in 100 Tagen	gasdicht	Jahrhundert
$1 \times 10^{-8}$	1 cm <sup>3</sup> Gasverlust in 3 Jahren	virendicht (gesichert)	
$1 \times 10^{-9}$	1 cm <sup>3</sup> Gasverlust in 30 Jahren	gasdicht (gesichert)	Jahrtausend

Meaning of leakage test. We make 100% test of every gas filter cell at  $10^{-8}$  mbar x l/s. The optical CaF<sub>2</sub> shall not be exposed to mechanical stress at any time!



To avoid decontamination we recommend to use soldering tin without flux inside of the filling tube, diameter 1.5 mm, alternatively, use 2x0.75mm as shown in the picture above. Before cleaning and filling with gas, push the piece of tin into filling tube until the intended pinch point. This will improve the sealing of the gas filter cell when squeezing the filling tube later.



With the proper setup, the gas filter cell gets evacuated and cleaned with N<sub>2</sub> (up to 10x). In the next step, the measurement gas will be filled up to the desired pressure in the gas filter cell. For CO<sub>2</sub> we recommend 1000 mbar pressure at 25 degree C.



After the gas filter cell is filled with gas and still connected to the gas connection tube, mechanically squeeze the filling tube end with a clamping tool (cold welding of the filling tube) until the diameter of the filling tube shrinks to app. 2mm



Heat the squeezed area of the filling tube with soldering iron and use tin with flux for best heating transportation. Use a heat sink tool at the soldering spot between the filling tube and the gas filter cell. Finally, seal the end of the filling tube with the soldering iron.

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**Key features**



Beispiel: 100% CO<sub>2</sub>, 1000 mbar @ 25 Grad C

Example of CO<sub>2</sub> filled Gas Filter Cells

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## Gas Filter Cell

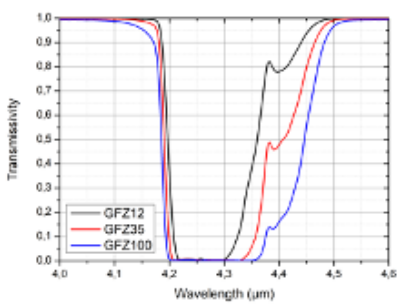
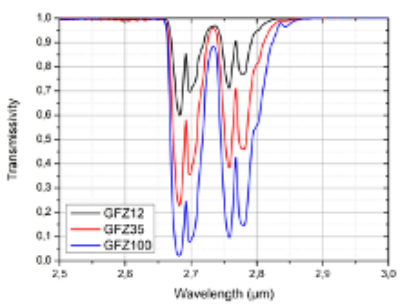
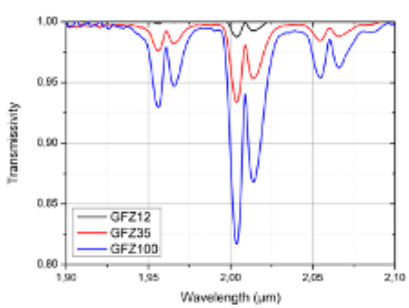
for best optical measurement of gases



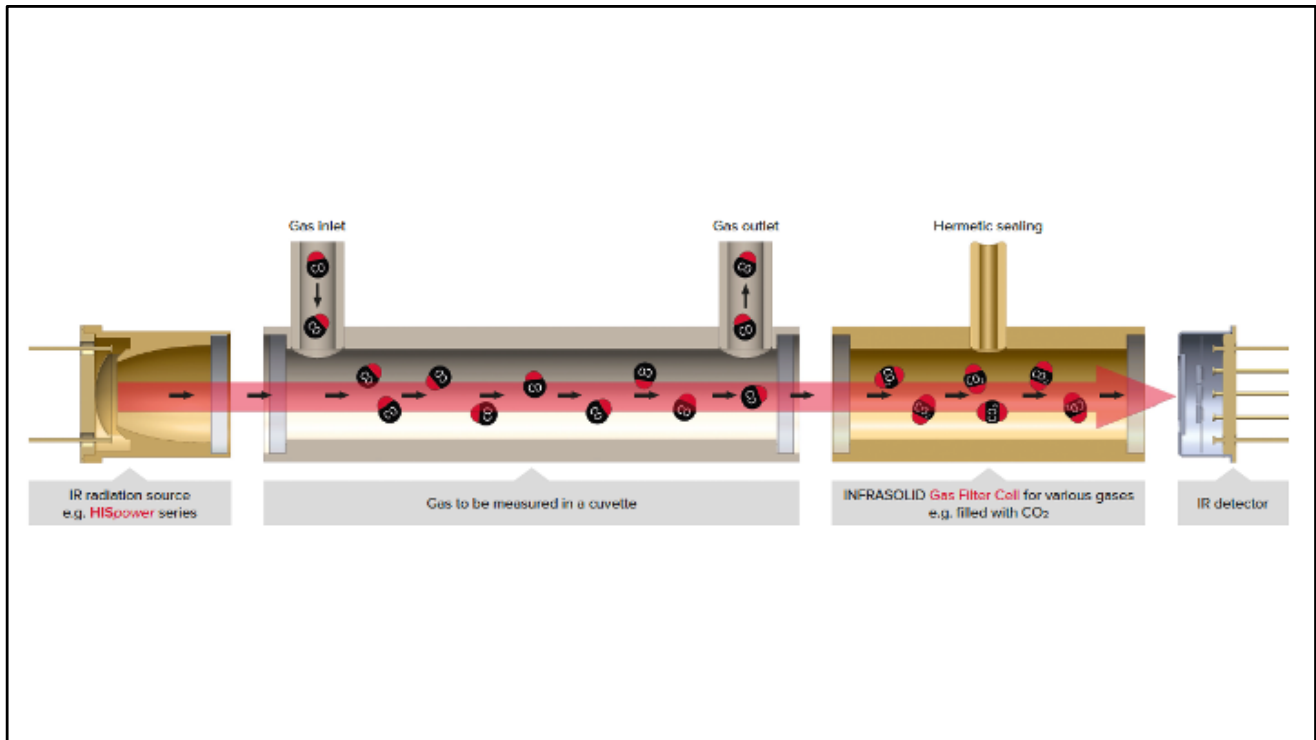
**Key features**



Beispiel: 100% CO<sub>2</sub>, 1000 mbar @ 25 Grad C



Example of CO<sub>2</sub> filled Gas Filter Cells. Measurement results with IR spectrometer



Measure CO and eliminate CO<sub>2</sub>