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Germanium Windows for Gas Detection

Exhaled Breath = 78.04% Nitrogen + 13.6%-16% Oxygen = CO2

Car Exhaust = Carbon Dioxide + Carbon Monoxide + Sulphur Dioxide + Nitrogen Oxides + Hydrocarbons

How do we know this? Gas detection in Continuous Emission Systems (CEMS), combustion analysers and environmental monitoring are key to ensuring that the world we live in is monitored for its pollution and environments we work in are safe to do so as gases can be detrimental to life.

Knight Optical provide a number of optical components that are used in Gas Detection Systems. We can also provide interference bandpass filters that work within the IR, front surface mirrors, gas cells and singlet lenses and window made from Germanium (Ge), Calcium Fluoride (CaF2), Silicon (Si), Quartz/ Fused Silica, Magnesium Fluoride (MgF2) and Sapphire (Al2O3).

Aren't you a lucky bunch of people?!

Gases are detected at a specific wavelength and all these components work harmoniously to detect what type of gas you are dealing with and the intensity of the gas.

- Carbon Monoxide (CO) – 4.73µm
- Nitric Oxide (NO) - 5.24µm
- Sulphur Dioxide (SO2) – 7.42µm
- Hydrogen Chloride (HCl) – 3.55µm
- Carbon Dioxide (CO2) – 10.7µm

Germanium (Ge) is used within Gas Detection as this very special Infrared Material can transmit over 45% between the 2-14µm up to a temperature on 45°C making it ideal for detecting the gas wavelengths across the whole spectrum.

Check out our stock range online, that's always a good starting point for a prototype to test a concept or to see whether your current system can be improved.

Typical specifications requested:

Diameter Range:	less than 5mm to 300mm
Diameter Tolerance:	better than ± 0.1mm
Thickness Tolerance:	+/- 0.2mm
Clear aperture:	90%
Centration tolerance:	better than 1 arc minute
Form error:	better than 0.5 wave (633nm) over aperture
Surface radius tolerance:	less than 1 fringe over aperture
Surface Quality:	< 40-20 scratch/dig
Coating:	AR/DLC (Diamond like coating @ 1-14µm)

Materials:
Uncoated material
IR material germanium
AR coated material
Ge AR coated 2-9um GE-AI29
Ge AR coated 2-10um GE-AI210
Ge AR coated 2-14um GE-DLC214
Ge AR coated 3-5um GE-AI35
Ge AR coated 8-12um GE-AI812
AR/DLC coated material
Ge DLC AR coated 3-5um GE-DLC35
Ge DLC AR coated 2-14um GE-AI214
Coatings:
Coating AR 1-3µm Infrared IR13
Coating AR 3-5µm Infrared IR35
Coating AR 7-14µm Infrared IR714
Coating AR 8-12µm Infrared IR812

Can't quite find what you're looking for? Then please contact our experienced Technical Sales Team and they can provide a custom quotation.

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Our Germanium optics are checked for quality in our state-of-the-art Metrology laboratory using equipment from Trioptics, Varian and Starret allowing us to work to the highest QA standards and meet the tolerance specifications on these **precision components.**

- View our QA and metrology information
- Watch our Corporate Video
- View Our Corporate Brochure