



Gas Analysis Laboratory

Over recent years, the emphasis of SOCOTEC's gas analysis laboratory has shifted to working with landfill site operators and local authorities, as well as energy from waste and bioenergy plants.

SOCOTEC's state of the art gas analysis laboratory works with our field technicians to ensure that the samples are collected in the appropriate medium and are returned to the laboratory swiftly to avoid gas effusion and sample deviance. If you wish to send samples directly to the laboratory, you can do so by courier or we can arrange collection by a member of our field team.

SOCOTEC holds UKAS accreditation* for:

- n-Alkanes from methane (C₁) to octane (C₈)
- Bulk gases (N₂, O₂, and CO₂)
- Trace gases (H₂, He and CO)
- Sampling and collections

We are equipped to analyse gas samples from:

- Gresham tubes
- Tedlar bags
- FlexFoil bags
- Gas cylinders
- Water (dissolved gas)

Reporting and Certification

All of the analysis within the gas analysis laboratory is reported using our custom designed laboratory information management system (LIMS), which sends a PDF certificate directly to your email address. All reports clearly identify which method of analysis was used, whether the test was accredited or not and can be tailored to your requirements. We have a standard turnaround time of 10 working days upon receipt of the sample, but we also offer a five / three day priority service. SOCOTEC has a variety of fixed or customised analytical suites charged at a flat rate.

* A listing of SOCOTEC's UKAS accredited activities can be found in our schedule of accreditation - Testing Laboratory 1015 – at socotec.co.uk

GAS ANALYSIS LABORATORY SUITES

Suite 1 Bulk Gas Analysis

We've adapted our bulk gas suite to monitor air quality in a more general capacity.

Gases analysed within this suite are:

- Carbon monoxide
- Methane
- Carbon dioxide
- Oxygen
- Nitrogen

Suite 2 SynGas Analysis

SOCOTEC was one of the first laboratories in the country to hold UKAS accreditation* for the analysis of SynGas. We can offer a comprehensive and quality assured suite of analytes for this fuel.

Analysis consists of (but is not limited to):

- Carbon monoxide and hydrogen
- Hydrocarbons from methane to Hexane
- Gross and net calorific value

As part of this suite, we provide an oxygen concentration as a means of quality control.

Suite 3 Hydrocarbons Analysis

The hydrocarbons suite is often used as part of another suite or for testing the quality of natural gas, usually in gas engines. We offer analysis on n-Alkanes from methane, octane and any other hydrocarbons (see our gas list for full details).

Suite 4 Landfill Analysis

Primarily used to monitor former landfill sites, the ethane results obtained from the landfill suite can clarify that the gas is biogenic (from a landfill) or thermogenic (from a natural source). SOCOTEC offers analysis on hydrogen and carbon monoxide (two key indicators of combustion) and hydrogen sulphide (a toxic and corrosive gas).

Suite 5 Dissolved Gas Analysis

On an ad-hoc basis, SOCOTEC has the capabilities for dissolved gas work. We take a water sample and agitate it under vacuum to cause any gases to effervesce; these are then captured and analysed.

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GAS LIST

Below is a full list of gas analysis SOCOTEC can provide. Here you can find information on our accreditation status for each gas, along with the lower detection limit (LDL) and upper detection limit (UDL) percentages. Details on which analysis suite each gas is covered by is listed here to help you decide the most suitable option.

| GAS ANALYSIS | | | | | |
|-------------------|---------------------------------|---------------|--------|-------|------------|
| ANALYTE | CHEMICAL FORMULA | ACCREDITATION | LDL % | UDL % | SUITE |
| Oxygen | O ₂ | UKAS | 0.1 | 21 | 1, 2, 4 |
| Nitrogen | N ₂ | UKAS | 1 | 100 | 1 |
| Carbon Dioxide | CO ₂ | UKAS | 0.02 | 100 | 1, 4 |
| Carbon Monoxide | CO | UKAS | 0.0005 | 30 | 1, 2, 4 |
| Helium | He | UKAS | 0.0005 | 0.1 | - |
| Hydrogen | H ₂ | UKAS | 0.0005 | 30 | 2, 4 |
| Methane | CH ₄ | UKAS | 0.0005 | 100 | 1, 2, 3, 4 |
| Acetylene | C ₂ H ₂ | Non-UKAS | 0.0005 | 100 | - |
| Ethene | C ₂ H ₄ | Non-UKAS | 0.0005 | 100 | - |
| Ethane | C ₂ H ₆ | UKAS | 0.0005 | 100 | 2, 3, 4 |
| Propene | C ₃ H ₆ | Non-UKAS | 0.0005 | 100 | - |
| Propane | C ₃ H ₈ | UKAS | 0.0005 | 100 | 2, 3 |
| Butene | C ₄ H ₈ | Non-UKAS | 0.0005 | 100 | - |
| Iso-Butane | iC ₄ H ₁₀ | Non-UKAS | 0.0005 | 100 | - |
| Butane | C ₄ H ₁₀ | UKAS | 0.0005 | 100 | 2, 3 |
| Iso-Pentane | iC ₅ H ₁₂ | Non-UKAS | 0.0005 | 100 | - |
| Pentane | C ₅ H ₁₂ | UKAS | 0.0005 | 100 | 2, 3 |
| Hexane | C ₆ H ₁₄ | UKAS | 0.0005 | 0.1 | 2, 3 |
| Heptane | C ₇ H ₁₆ | UKAS | 0.0005 | 0.1 | 3 |
| Octane | C ₈ H ₁₈ | UKAS | 0.0005 | 0.1 | 3 |
| Hydrogen Sulphide | H ₂ S | Non-UKAS | 0.0001 | 10 | 4 |
| CV Calculation | as part of a suite | | | | 2 |

DISSOLVED GAS LIST

Below is a full list of dissolved gas analysis SOCOTEC can offer. Here you can find information on the lower detection limit (LDL) $\mu\text{g/l}$ and mg/l for each dissolved gas. All analysis of dissolved gasses is covered by Suite 5.

| DISSOLVED GAS | | | | | |
|-------------------|---------------------------|---------------|---------------------|-------------------|-------|
| ANALYTE | CHEMICAL FORMULA | ACCREDITATION | LDL $\mu\text{g/l}$ | LDL mg/l | SUITE |
| Carbon Dioxide | CO_2 | Non-UKAS | 7000 | 7 | 5 |
| Carbon Monoxide | CO | Non-UKAS | 10 | 0.010 | 5 |
| Helium | He | Non-UKAS | 1 | 0.001 | 5 |
| Hydrogen | H_2 | Non-UKAS | 1 | 0.001 | 5 |
| Methane | CH_4 | Non-UKAS | 6 | 0.006 | 5 |
| Acetylene | C_2H_2 | Non-UKAS | 10 | 0.010 | 5 |
| Ethene | C_2H_4 | Non-UKAS | 11 | 0.011 | 5 |
| Ethane | C_2H_6 | Non-UKAS | 11 | 0.011 | 5 |
| Propane | C_3H_8 | Non-UKAS | 17 | 0.017 | 5 |
| Butane | C_4H_{10} | Non-UKAS | 22 | 0.022 | 5 |
| Pentane | C_5H_{12} | Non-UKAS | 27 | 0.027 | 5 |
| Hexane | C_6H_{14} | Non-UKAS | 32 | 0.032 | 5 |
| Heptane | C_7H_{16} | Non-UKAS | 38 | 0.038 | 5 |
| Octane | C_8H_{18} | Non-UKAS | 43 | 0.043 | 5 |
| Hydrogen Sulphide | H_2S | Non-UKAS | 1 | 0.001 | 5 |

FOR MORE INFORMATION

For more information or advice on the best service for you, please call 0845 603 2112 or email salesuk@socotec.com