

# Accurate Traceable Gas Calibration Standards

NPL prepares and maintains the UK's primary standard gas mixtures (PSMs). These standards are prepared by gravimetric methods following rigorous QA/QC procedures. The PSMs regularly undergo comparisons with those of other leading National Metrology Institutes to ensure their accuracy and international comparability.

NPL specialises in producing an extensive range of gas calibration standards through a chain of direct comparisons to the national measurement standards. This ensures amount fractions of guaranteed uncertainty and measurement traceability at national and international levels. The current range of standards provides ultimate references for highly accurate measurements of ambient air quality, natural gas, industrial emissions, vehicle and aircraft emissions, odour measurement and occupational exposure.

## Primary Standard Gas Mixtures (PSMs)

Amount fraction uncertainty  $\pm 0.02\%$  to  $0.1\%$   
(95% level of confidence)

## Primary Reference Gas Mixtures

Amount fraction uncertainty  $\pm 0.03\%$  to  $\pm 0.3\%$   
(95% level of confidence)

## Secondary Gas Standards

Amount fraction uncertainty  $\pm 0.5\%$  to  $\pm 1\%$   
(95% level of confidence)

## Calibrated Gas Mixtures

Amount fraction uncertainty  $\pm 1\%$  to  $\pm 3\%$   
(95% level of confidence)



## Primary Reference Gas Mixtures and Secondary Gas Standards

NPL's Primary Reference Gas Mixtures (PRGMs) and Secondary Gas Standards (SGSs) are prepared using the same quality assured gases, apparatus and procedures as the PSMs. A wide range of species and amount fractions can be prepared with guaranteed measurement uncertainties to meet specific customer requirements.

### Calibrated Gas Mixtures

NPL's Calibrated Gas Mixtures (CGMs) are mixtures supplied by reputable gas companies and individually analysed against NPL's own PSMs. This service provides users with increased confidence in the accuracy of their commercial gas mixtures.

### Larger Cylinders with No Rental Costs

NPL's gas standards are supplied in 10 litre cylinders, filled in excess of 100 bar†. The cylinders are sold rather than rented, eliminating cylinder rental costs. This proves financially beneficial if customers require standards over significant periods of time.

*†A minority of NPL gas standards are filled to less than 100 bar for technical reasons*

### Cylinder Re-certification Service

NPL's gas standards are certified for a period of up to five years depending on the stability of the mixture. Longer certification periods are available for mixtures that have been shown to be stable over long periods of time. NPL offer a cost-effective re-certification service after the initial certification period has expired, ensuring long-term traceability of measurements.

### International Traceability

Traceable gas standards ensure accuracy and comparability of measurement results at national and international levels. Gas analysers that have been calibrated with traceable standards provide consistent measurement results over time and guaranteed measurement accuracy even when cylinders need to be replaced.

### Accreditation

NPL is accredited within an agreed scope to ISO 17025 and ISO Guide 34 for the production and certification of gas standards.

### Custom Amount Fractions

NPL specialise in producing custom gas mixtures with guaranteed uncertainties for complex gas analysis. NPL's gas experts are available to discuss specific gas requirements.

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### For further information, please contact:

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