

**Experis<sup>®</sup> Gas Mixtures**  
When accuracy, stability  
and reliability are a must

**AIR**  
**PRODUCTS** 

# Making the Difference

For over 80 years, Air Products has enabled customers to become more productive, energy efficient and sustainable.

By working closely with our customers we have built up a wealth of experience and technical expertise that has led us to become an automatic partner of choice for companies with one off applications through to multinationals requiring multi-site, pan-European or global agreements.

This extensive knowledge is backed up by one of the most comprehensive product ranges available from any gas supplier in the marketplace today. These include:

## For Calibration

- ISO 17025 accredited mixtures.
- Liquid and gas phase calibration mixtures in refillable cylinders up to 200 Bar.
- Extensive inventory of ultra high purity raw materials.
- Non-refillable, disposable cylinders.

## For Process Control

- Process mixtures in cylinders and packs.

Pivotal to our ongoing success is the understanding of our customers ever more stringent demands for gas mixture quality, stability and availability in whichever application it is being used in, be this analytical or process.

The Experis® range of gas mixtures and non-refillable cylinders, has at its core four key tenets which provides users comfort of knowledge that their mixtures are as specified:

- Accuracy
- Stability
- Traceability
- Peace of mind

Calibration  
Mixtures



Process Mixtures



ISO 17025  
Certified Mixtures



Non-Refillable  
Cylinders



*“Analytical equipment is improving in accuracy all the time – but even the best can’t be relied on without proper calibration.”*

## Ir. Peter Aernouts

Ir. Peter Aernouts  
Instrumentation Engineer, Analytical  
Systems Elster-Instromet NV Belgium



# Accuracy

Accuracy and uncertainty defines the quality of a measurement and allows the user of a calibration gas mixture to assess the reliability of a stated value.

Air Products has been at the cutting edge of gas mixture preparation for decades and has worked tirelessly in improving the accuracy of our stated measurements.

Combining our expert knowledge with modern ultra high accuracy measurement instruments, state of the art filling technologies across all of our world wide special gases facilities, and a vast library of reference materials from national measurement institutes, allows us to deliver market leading accuracy to our customers around the globe.

Uniquely to Air Products, the standard uncertainty of measurement for all our certified gas mixtures is calculated individually for each mixture component, and for many components we offer market leading uncertainties down to +/- 0.2 %. This is a clear indication of the highest accuracy and Air Products leadership position in this field.

Accuracy is helping our customers to be safer, more competitive, more compliant, and more profitable, as well as allowing them to achieve technical excellence across a wide range of industries and applications.

*“ Careful and methodical analysis is key to everything we test. Getting it wrong could affect our excellent reputation and of course add cost to our operation. That is why it’s essential to use the most accurate calibration gas mixtures.”*

**Martin Hughes**

Manager Operations and Instrumentation  
Millbrook Proving Ground Ltd UK

## Mixtures for Diverse Applications

As part of our commitment to our customers applications Air Products offers three groups of mixture types:

- Accredited – Extremely high specification, used in the most exacting applications, certified and traceable to ISO 17025 standard.
- Calibration – High accuracy certified mixtures, used to calibrate an analyser or instrument to a known standard.
- Process Mixtures – Batch manufactured mixtures, with analytical verification of critical impurities, for general process control applications.

Customers who take advantage of the Experis® range of gases have applications in a number of diverse markets including:

- Analytical & Laboratories
- Automotive
- Chemicals and Petrochemical
- Detection and Safety
- Electronics
- Environmental Control
- Pharmaceutical
- Natural Gas
- Engine Testing
- Gas Appliance Testing
- Forensic Science
- Food



# Stability

*Calibration gas mixtures with long stability periods often allow users to reduce the number of cylinder changeovers needed during operation, helping to minimise complexity when working with control charts. EN14181 covering the quality assurance of emissions monitoring systems dictates the use of control charts as part of QAL3, and Air Products manufactured gas mixtures can help operators reduce the frequency of base line resets.*

Gas mixture stability is a measurement of how long a mixture can be confidently used after its initial certification by the manufacturer.

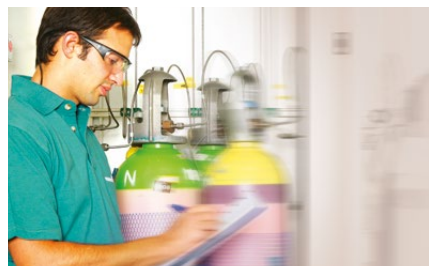
Air Products dominance in the field of mixture stability is based on a range of factors. For each and every mixture we produce, we consider the optimum cylinder and valve selection, the best surface treatments and cylinder preparation techniques, and the selection of ultra high purity component gases. When combined with advanced filling methods and analytical techniques, Air Products is able to create extremely stable blends that will remain within tight specifications for more than 10 years.

In all cases, the advertised mixture shelf lives stated on our certificates of analysis are based on scientific evidence from extensive shelf life studies.

Experis® cylinder treatments reflect decades of research and development, and have allowed Air Products to repeatedly demonstrate market leading stability of a wide range of mixtures. Even mixtures of highly reactive components with concentrations measured in parts per billion are offered with shelf lives of up to 3 years.

Consequently, Air Products has become a trusted supplier of treated cylinders to national laboratories and leading gas metrology institutes, receiving endorsements from around the world. In this way, Air Products is a true leader in advancing the science of gas mixture stability.

This innovative and customer focused approach allows our customers to reduce inventory costs versus shorter shelf life equivalents, minimize the inconvenience of cylinder changeovers, and simplify legislative or quality compliance in diverse industries. An Air Products gas mixture provides added peace of mind that it will remain within a tight specification for years to come.



***“ Stability of gas mixtures is important for us, since some gas calibration mixtures we use are low turnover and contain reactive components like NO. Since every Experis® gas mixture cylinder has its own unique surface treatment, we can be sure that the content stays as it should be.”***

**Ángel Moratilla | Abad**

Technical Manager

Ambiental De Verificaciones S.L. Spain

# Traceability

Traceability of measurement requires an unbroken chain of comparisons to stated references, each with a stated uncertainty. The objective is to deliver national and international comparability. All calibration gas mixtures offered by Air Products are traceable to international standards.

Traceable calibrations automatically provide our customers with the means to obtain consistent data over time, even when one mixture is replaced by another, and it allows full comparability of data obtained from similar measurements taken around the world.

Our mixtures are traceable either to certified reference gas materials provided by national measurement institutes, or to the national mass standards. All Experis® calibration gas mixtures are issued with a fully ISO 6141 compliant certificate of analysis. These documents feature unique inspection lot numbers, certified concentrations with expanded uncertainties, stability periods, and detailed information on the applicable traceability route.

In recognition of our excellence in this field, Air Products has been awarded a comprehensive ISO 17025 accreditation scope serving the stringent technical demands of our customers in the environmental monitoring, emissions trading, natural gas analysis, and

exhaust emissions testing markets. Air Products was the first commercial gas company in the world to offer NO, SO<sub>2</sub>, CO, and CO<sub>2</sub> multi-component ISO 17025 accredited mixtures to serve the demand of our customers in the emissions monitoring sector, which is indicative of our leadership position.

We are an active participant in proficiency testing schemes for gas mixture certification, whereby our analytical measurements are regularly compared with those of national laboratories, and other independent, participating laboratories in the global community.

All of these product features are intended to provide our customers with absolute confidence in the accuracy and comparability of our measurements, allowing them to achieve legislative compliance and technical excellence in a wide range of industries.

*A certificate issued by an accreditation body in one country is recognised across all countries whose accreditation bodies are signatories to the EA (European Cooperation for Accreditation) Multilateral Agreement or the ILAC (International Laboratory Accreditation Cooperation) Multilateral Agreement.*

*Therefore, for example, an ENAC certificate is equivalent to a certificate from UKAS, RvA, COFRAC, BELAC, DAkkS or any other signatory body.*

*(Source: european-accreditation.org)*

**“As a laboratory accredited to ISO 17025, we need to use highly pure and stable reference materials in order to comply with legislative requirements. The certified mixtures supplied by Air Products provide us with this, as well as total security and traceability.”**

**Emma Antolinez**  
Technical Director  
Calibración de Analizadores de Gas, S.I. Spain

Type	Who will certify
Primary Reference Mixture (PRM) / Primary Reference Gas Mixture (PRGM)	National Metrology Institutes (NMI)
Secondary Gas Standard (SGS) / Secondary Reference Gas Mixture (SRGM)	National Metrology Institutes (NMI)
Certified Gas Mixture (CGM) / Certified Reference Gas Mixture (CRGM)	ISO 17025 Calibration Laboratory
Commercial Gas Mixture	Commercial Gas Supplier

# Peace of mind

By supplying gas mixtures at 200 bar either individually or in multi-cylinder packs, we are able to provide more gas per unit than many of our competitors. This combined with a 10 year shelf life and lower uncertainties results in customers being able to reduce their overall cost of compliance in analysis or testing. These benefits can give organisations an advantage in their own marketplace

Air Products, with our breadth of experience, wide product range, and supply services capability is a perfect partner to work with any organization and can reduce costs further by enabling a reduction in the supplier database due to our scope and range available from a single source.



# ISO 17025 accredited laboratory

## Gases that meet internationally recognised standards

Carburros Metálicos, Air Products Group, Sant Celoni laboratory in Spain is accredited by ENAC a full member of the European Cooperation for Accreditation (EA), and the International Laboratory Accreditation Cooperation (ILAC). Our gases certified within this accreditation scope therefore meet the same rigorous standards as those certified by any other signatory to these multilateral agreements.

Wherever the ENAC symbol appears – on accreditations, test reports and calibration certificates – it is your assurance that our gases meet internationally recognised standards and that our products and services are certified for use across Europe and throughout the world.

■ EA Full Members   ■ Non-EA Members



# All your solutions at hand

## Complete range of products to meet all your needs

As one of the world's largest merchant gases and chemicals companies Air Products has an extensive range of Industrial, Medical and Speciality gases available in package types including on-site generation, bulk liquid supply and cylinder options.

In addition, we are the world's largest supplier of hydrogen and helium and have built up global supply positions in growth markets such as semiconductor materials, refinery hydrogen, coal gasification, natural gas liquefaction.



## Service

For such an extensive product portfolio there is a comprehensive support network, ensuring our customers are never far from expert technical advice in any of the territories we serve. Air Products local customer service and order management centres operate in all major European countries, with dedicated, specialist teams on hand to assist. Our online AP Direct service provides 24 hour access to critical information.

All our state of the art mixture filling facilities are strategically located, and our supply network and world class logistical capabilities allow us to respond rapidly to the demands of our customers wherever they are. It means our customers have absolute confidence, not only in the quality of the products we supply, but in our service, and our reliability. Consequently, Air Products are preferred suppliers to many of the biggest and most demanding laboratories in the world.



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**GENERATING A CLEANER FUTURE**