

Gases and Services

for Engine Emissions Testing



Key Benefits

- Dual-compliance to both EPA and EU legislations
- Identical mixtures among cylinders in a given batch and from batch-to-batch
- Reduced downtime between test cycles
- Increased analytical accuracy
- Perfect match between your equipment and ALPHAGAZ™ products
- Gases for PEMS testing
- Proficiency testing to assess performance of the analysis
- Automatic calibration facilitated by electronic Certificates of Analysis (e-CoA)

Compliance through excellence

In order to protect the environment, authorities are increasingly imposing more stringent regulations on vehicle manufacturers, no matter the country. As a result, meticulous engine emissions analysis must be performed to ensure compliance to local standards, with the American regulations (EPA) and the European directives (EURO) being the most common.

Whether you are an automotive manufacturer, a subcontractor or a testing center, Air Liquide provides a dedicated range of pure gases and calibration mixtures needed to perform rigorous engine emissions testing for certification and validation.

Air Liquide is the first and only gas supplier on the market to propose dual-compliance analytical gases, which are becoming increasingly more important as the manufacturing and sales of automobiles are global.

With 30+ years of experience in specialty gases production and application, and strong, recognized R&D capabilities, you can trust Air Liquide to ensure product quality, availability and responsiveness.

A product range dedicated to Engine Emissions Testing worldwide

Air Liquide's offer encompasses specialty gases with dual-compliance and certification to EPA and EU standards (EPA CFR 40 Part 1065/1066 and EURO 6 A/B & future GTR-15 WLTP).



These products are part of the **ALPHAGAZ™ range**, Air Liquide's premium brand of specialty gases for analytical applications.

The offer features a complete, yet simple range of the most commonly requested pure gases and mixtures for engine emissions testing:

- **ALPHAGAZ™ Auto:** pure gases (ultra pure air, nitrogen) for zero and purge.
- **ALPHAGAZ™ Mix:** hydrogen/helium mixture for instrumentation, plus a range of standard and custom calibration mixtures.

ALPHAGAZ™ products for Engine Emissions Testing are supplied with a single dual-compliance certificate: certificate of conformity for pure gases, certificate of analysis for mixtures.

All **ALPHAGAZ™ products** are made to guarantee high accuracy and repeatability of analysis.

Simpler choices

- A straightforward range of dedicated products designed in partnership with the leading analytical OEMs.
- Convenient and easy-to-use packaging, from laboratory analysis to PEMS (Portable Emissions Measurement System) testing on roads.
- A selected range of gas handling equipment to ensure high purity at the point of use.

Quality you can depend on

- Dedicated expertise to offer indisputable accuracy and traceability, guaranteed by dual-compliance to EPA and EURO regulations.
- Guaranteed identical mixtures between cylinders and from batch-to-batch.
- Reliable repeatability and stability for the products in all your locations.
- All Air Liquide laboratories are ISO-9001 compliant, and most accredited according to ISO-17025 globally.
- Strict monitoring of all trace impurities in raw materials.

Consistent, reliable service

- Guaranteed short and reliable lead time to meet your demands.
- Experts' and front office teams' support from feasibility study, to quotation, up to delivery at your facilities.
- Commitment to move industries forward, by bringing innovations into your labs and meeting new industry standards.

Products for certification and validation



ALPHAGAZ™ Auto Pure gases

ALPHAGAZ™ Auto gases meet current EURO 6B requirements, and are fully compliant with EPA CFR 40 Part 1065/1066.

	ALPHAGAZ™ Auto Nitrogen	ALPHAGAZ™ Auto Air
Purity	N ₂ > 99.9999%	20.9% O ₂ in N ₂
THC (as C1)	≤ 0.05 ppm	≤ 0.05 ppm
CO	≤ 1 ppm	≤ 1 ppm
CO ₂	≤ 10 ppm	≤ 10 ppm
NO _x	≤ 0.02 ppm	≤ 0.02 ppm
O ₂	≤ 2 ppm	20.75 - 21%
N ₂ O	≤ 0.02 ppm	≤ 0.02 ppm *
Shelf life	60 months *	60 months *

* Only when applicable for EPA testing for N₂O

ALPHAGAZ™ Mix

Instrumentation and high precision calibration mixtures

ALPHAGAZ Mix mixtures meet current EURO 6B requirements, and are fully compliant with EPA CFR 40 Part 1065/1066, including requirements for traceability defined by EPA approved reference materials.

	ALPHAGAZ™ Auto Hydrogen / Helium	ALPHAGAZ™ Mix 3	ALPHAGAZ™ Mix 4
Components	40% H ₂ +/- 0.5% abs. / 60% He	NO, NO ₂ , CH ₄ , C ₃ H ₈ , CO, CO ₂	NO, NO ₂ , CH ₄ , C ₃ H ₈ , CO, CO ₂
Accuracy (analytical or process)	N/A	1% ≤ A ≤ 2%	A ≤ 1%
Blend tolerance	BT 1%	2% ≤ BT ≤ 5%	BT ≤ 2%
Shelf life	36 months	36 months **	36 months **

** Some reactive mixtures can by the nature of the components not be guaranteed for 36 months; examples are very low level corrosive or reactive mixtures. Please inquire with your local sales representative.

- Accuracy is the driver for the classification system
- Blend tolerance may vary depending on the concentration and the chemical nature of the components in the mixtures
- All accredited mixtures are classified Mix 4
- Customizable options exist for all of these mixtures, such as increased reproducibility for instance

Accuracy (A): the degree of statistical agreement (usually at the 95% of confidence level) between a measured value and a true value. It can come from an analytical measurement or can be determined by a precise and validated process.

Blend Tolerance (BT): the degree of agreement between the blended concentration and the requested concentration for a component.

Convenient Packaging

- All sizes of packaged gases, ranging from small portable cylinders to large cylinders and bundles.
- Pure gas cylinders are equipped with a SMARTOP™, our cutting-edge, smart residual pressure valve
- Instrumentation gases available in bundles
- Portable small cylinders for PEMS testing

All of our cylinders are tracked by barcodes, ensuring an optimized inventory management.

A la carte services

- Local customer service with on-site cylinder management
- Express delivery
- Roadside delivery
- Automatic calibration with certificate values. Our electronic certificates of analysis can be directly imported into your analytical system, allowing automatic calibration of your instruments.
- Gas safety training

Check the availability of these services with your local sales representative.

www.airliquide.com



The world leader in gases, technologies and services for Industry and Health, Air Liquide is present in 80 countries with approximately 65,000 employees and serves more than 3 million customers and patients.