

# Hydrocarbon Calibration Standards



Our expertise allows us to produce your particular blend with no compromises to quality

Air Liquide has earned a reputation for expertise in the preparation and analysis of hydrocarbon calibration standards. We have developed the techniques to assure the accuracy and stability of these blends.

## Gas Phase Hydrocarbon Standards

Air Liquide produces the most widely used standard gaseous reference blends, as well as custom blends, for use in calibrating laboratory and field instrumentation. Most of these are gaseous hydrocarbon standards, custom designed to match a particular gas stream.

## Natural Gas Reference Standards

These mixtures are supplied with a certificate of analysis, which details: the components (mol%); the BTU value of the

mixture; the specific gravity; and the compressibility factor. These mixtures' exact compositions are on file with several of the relevant organizations<sup>1</sup>. Certified BTU and Specific Gravity Natural Gas Standards are also available. The BTU value and the Specific Gravity are calculated based upon the analysis of the gas.

Many other standard gas blends are available. Tell us the instrument to be calibrated and we can provide a calibration gas mixture that conforms to the manufacturer's specifications.

<sup>1</sup> Gas Processors Association; publication GPA No. 2261, Analysis of Natural Gas, by Gas Chromatography. ASTM; in Test Method D-1945.



Standard liquid blends, as specified by the GPA or ASTM, as well as custom blends that meet your exact requirements, are available.

**Liquefied Uniphase™ Calibration Standards** are mixtures made with high-purity components, which are carefully analyzed. After blending, the mixtures' compositions are analyzed and verified using dedicated instrumentation. An extended analysis certificate accompanies each mixture, in which individual components are identified, quantified, and specified. Liquid blends are typically prepared gravimetrically using precision scales, which are calibrated against weights traceable to the Institute for National Measurements standards (INMS) of the National Research Council of Canada (NRCC), and National Institute of Standards and Technology (NIST).

Liquid blends are available in several different sizes and types of cylinders. Among the available options are:

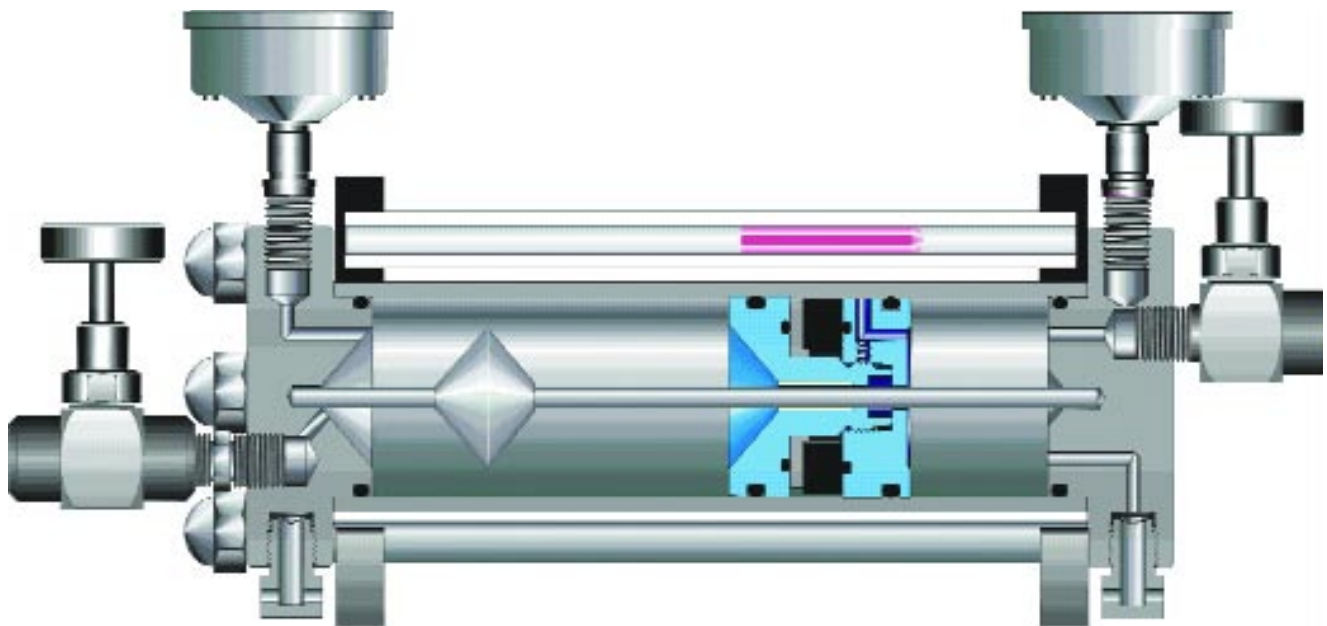
**Low Pressure Cylinders:** These cylinders are equipped with dip tubes that allow the liquid blend to be removed from the bottom of the low-pressure cylinder.



The cylinder is pressurized with an inert gas to reduce the amount of volatile components in the headspace of the cylinder. The advantages of low-pressure cylinders are they offer larger volumes of product and convenience of use.

The limitation with low-pressure of cylinders is: as liquid product is withdrawn, some volatile components may vaporize into the headspace, which can slightly alter the product's composition. For applications where this is not a critical issue, low-pressure cylinders offer the best option.

**Floating Piston Cylinders:** Piston cylinders offer the advantage of maintaining the liquid blend in a single phase. Cylinder pressure is maintained by the constant force of an inert gas on one side of the piston. Mixtures in these cylinders are typically used where extremely accurate liquid calibration standards are necessary.



*Floating piston cylinders offer the advantage of maintaining the blend in its liquid phase for greater accuracy*

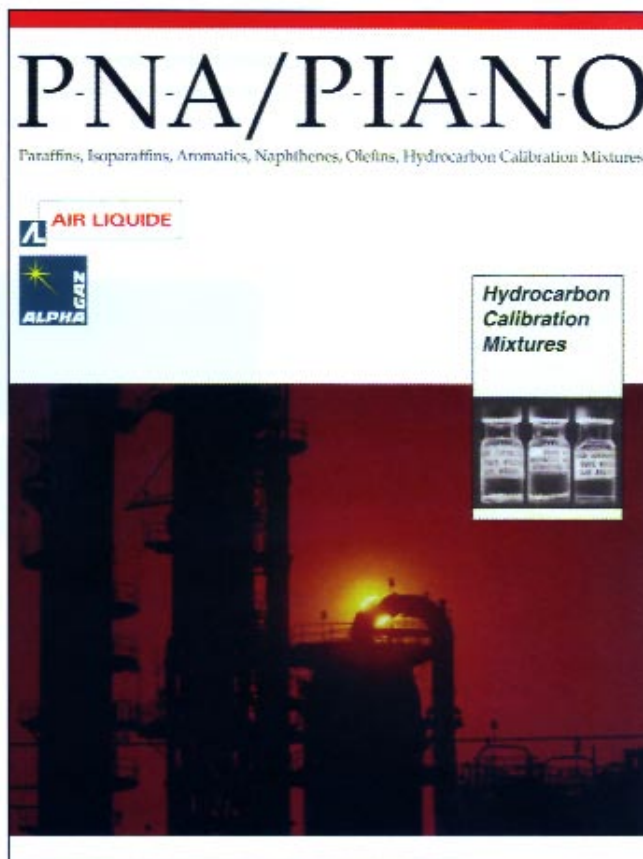
## Hydrocarbon Calibration Standards

*(Paraffins, Isoparaffins, Aromatics, Naphthenes, Olefins)*

P-I-A-N-O mixtures are used to calibrate instruments used in the analysis of naphtha fractions, gasoline fractions, and other refinery streams. The individual blends are packaged in septum vials for convenience of syringe sampling. A chromatogram and a Certificate of Composition accompany each vial.

The pinpoint accuracy of these mixtures saves the analyst time and investigative expense in performing chromatographic analysis. The accompanying Certificate of Composition lists the weight, molar and liquid volume percentages, the molecular weight, specific gravity, boiling point, the chromatographic retention order, and elution times for each component. The instrument conditions used to produce the chromatogram are also included.

Contact your local Air Liquide representative for detailed technical information on our standard and custom-blend gas mixtures.



*P-I-A-N-O blends are available either as separate vials containing each individual blend or as a complete P-I-A-N-O kit*