

Hydrogen BIP® technology

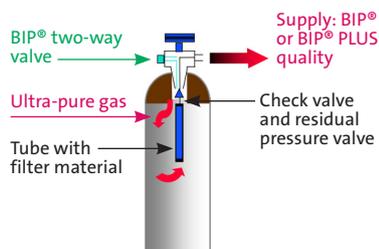
The new standard for purity



- Purity
- Accuracy
- Stability
- Peace of mind

- Reduced leakage in column chromatography
- Longer service life of chromatographic columns
- Reduced baseline noise
- Better-defined detection limits for perfect chromatography results every time

BIP® Technology from Air Products



Design of BIP® valve and purification system

BIP® technology features both an integrated residual pressure valve and a check valve. It is therefore impossible for impurities to enter the cylinder from the outside, (unlike systems which incorporate in-line purifiers). This results in on specification gas, providing peace of mind for you to focus on the work itself.

➤ Experis® gases

Whether the application is for chemical analyses or for process control, Experis® gases give the best possible solution for your application. The Experis® product range is made up of stable and extremely accurate calibration mixtures, ultra-pure gases and specialised equipment.

➤ H₂ BIP® cylinders

BIP® technology is available in a range of gases including hydrogen, helium and nitrogen, all of which contain some of the lowest impurity levels available in the marketplace today (see table below for example hydrogen specification).

➤ H₂ BIP® cylinders deliver the perfect gas for gas chromatography

H₂ BIP® gas has been specifically developed for analytical applications. With extremely low water and oxygen levels, H₂ BIP® gas cylinders deliver the ideal carrier gas. Benefits to users include increased service life of chromatographic columns, reduced baseline noise and enabling better-defined detection limits.

➤ BIP® technology in operation

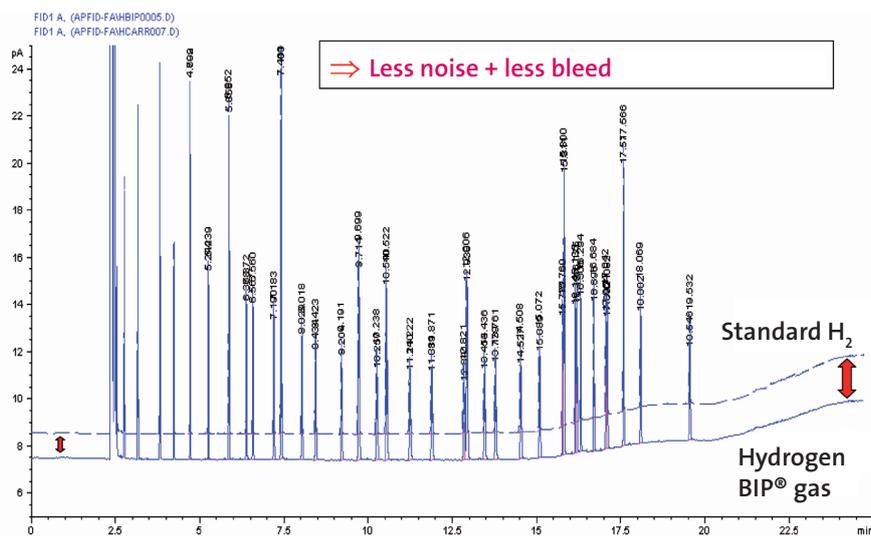
Before the gas exits the BIP® cylinders, it is cleaned of critical impurities using a unique filtering method. The result is an ultra-pure gas, perfect for even the most demanding of applications. An H₂ BIP® cylinder contains less than 20 ppb of water, less than 100 ppb of oxygen and less than 10 ppb of hydrocarbons. This means that H₂ BIP® gas is many times purer than standard-quality hydrogen.

Impurity specifications in ppb or mole ppm

Type	H ₂ O	O ₂	THC	CO + CO ₂	N ₂	Certification
H ₂ BIP® cylinder	20 ppb	100 ppb	10 ppb	0.1 ppm	1 ppm	Batch
H ₂ BIP®-PLUS cylinder	20 ppb	100 ppb	10 ppb	50 ppb	200 ppb	Individual

THC = Total hydrocarbons, measured as methane

Reduced baseline noise and column bleed in column chromatography when simultaneously switching fuel and carrier gas from standard H₂ to H₂ BIP® gas



Hydrogen detection

High purity hydrogen, with low levels of impurities presents itself as the ideal carrier gas for gas chromatography applications, however there is one perceived drawback in that of the potential explosive hazard in the GC oven in the event of a leak.

To eliminate this potential hazard, you can install a hydrogen sensor which can be fully integrated into a gas chromatograph. By constantly monitoring the gas concentration in the GC oven, the system is able to switch directly to an inert gas if too high a concentration of hydrogen is detected, therefore eliminating any risk of an explosive hazard.



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