Experis® ultra-high purity gases Technical specification Hydrogen

Air Products' Experis speciality gases range includes a number of UHP (ultra-high purity) Hydrogen products with specifications intended to deliver peace of mind whatever your application. Whether it is chemical analysis or process control, our experts are on hand to help you select the right gas for your requirements. The range includes gas with unrivalled specifications of critical impurities and a comprehensive range of package options.

Overview of grades and analytical verification

	Hydrogen Technical (3.7)	Hydrogen Premier Plus (5.2)	Hydrogen BIP® (6.0)	Hydrogen BIP® Plus (6.6)
Purity	99.99%	99.9992%	99.9999%	99.99996%
Analytical verification*	N/A	Batch	Batch	Individual
Oxygen (ppm)	<10	<1	<0.1	<0.1
Nitrogen (ppm)	-	<5	<1	<0.2
$CO+CO_2$ (ppm)	-	<0.5	<0.1	<0.05
Water (ppm)	<10	<2	<0.02	<0.02
THC (ppm)	-	<0.1	<0.01	<0.01

Physical properties

Molecular weight	**2.016**
State of product in cylinder	**Gas**
Boiling point at 1 atm (°C)	**-252.8**
Liquid density at boiling point (g/ml)	**0.0708**
Gas density at 20°C (g/l)	**0.084**
Vapour pressure at 20°C (bar g)	**n/a**
Flammability limits in air (vol % in air)	**4.0 to 75.0**

*Explanation of terminology

Batch – Air Products carries out statistical batch analysis on cylinders from the same batch to verify conformance to the advertised specification.

Individual – Each cylinder is individually analysed to verify conformance to the advertised specification.

Benefits of Air Products' BIP® technology

Elimination of external inline purifiers – No initial purchase costs, less analyser downtime, no maintenance costs, no purifier disposal issues, no purifier saturation and a more accurate analysis. No external inline purifiers results in a more environmentally friendly solution for delivering ultra-high purity gas.

More useable gas per cylinder – Reduced gas costs, and less cylinder changeovers.

Consistent gas supply – No 'rogue' cylinders, built in purifier ensures gas purity is as stated, every time.

Hydrogen BIP Plus features even higher overall purity, based on improved specifications of other often critical impurities such as total hydrocarbons, CO, CO_2 and N_2.

Certificates of conformity are available on request for all grades of ultra-high purity Hydrogen.

Ideal for analytical applications

BIP technology removes oxygen and moisture from ultra-high purity gas making it ideal for any application where these are critical impurities.

Benefits include: **< 100 parts per billion H_2O, and < 20 parts per billion O_2**

Resulting in:

- **Reduced GC column bleed and longer column life –** Resulting in lower expenditure on column replacement, less analyser down time, and lower maintenance costs.
- **Reduced baseline noise, and elimination of extra peaks –** Providing a more accurate analysis, greater sensitivity, and lower limits of detection.
- **A perfect detector gas –** The ultra-low levels of total hydrocarbons (THC) make Hydrogen BIP and BIP Plus an ideal fuel gas for **flame ionization detectors** (FID).

Hydrogen specifications

Product	Product code	Size	Valve	Pressure (bar g)	Contents (m^3)
Hydrogen **Premier Plus** 5.2 (D02)	26048	x10s	BS4	200	2
Hydrogen **Premier Plus** 5.2 (D02)	26046	x47s	BS4	200	8
Hydrogen **Premier Plus** 5.2 (D09)	26047	11x47s	BS4	200	86
Hydrogen **BIP** 6.0 (D02)	480733	x10s	BS4	200	2
Hydrogen **BIP** 6.0 (D02)	138390	x47s	BS4	200	8
Hydrogen **BIP** 6.0 (D09)	465246	18x50s	NEVOC	300	213
Hydrogen **BIP Plus** 6.6 (D02)	138744	x47s	BS4	200	8

Other UHP gases available from the speciality gases product portfolio include: Acetylene, Argon, Carbon Dioxide, Helium, Nitrogen, Oxygen and Synthetic Air.

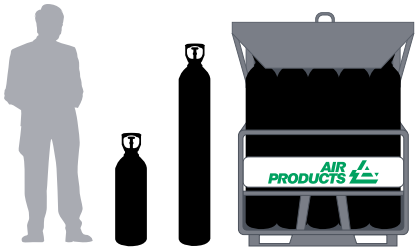
For further information on these gases please see individual data sheets.

Cylinder and pack specifications

Size	Pressure (bar g)	Height (mm)	Diameter (mm)	Width (mm)	Length (mm)	Empty weight (kg)	Full weight (kg)
x10s	200	655	176	-	-	20	20
x47s	200	1525	230	-	-	67	68
11x47s	200	1963	-	680	1000	1046	1053
18x50s	300	1900	-	862	1190	1688	1706

Dimensions and weights are approximate, actual cylinder values may differ.

Hydrogen is available in the following cylinder size options:



x10 x47 11x47, 18x50

Recommended control equipment*

Type	Model	Product code
Pressure regulator	Two stage, brass, high purity, low flow rates	R300
Pressure regulator	Single stage, brass, high purity	R400
Pressure regulator	Two stage, brass, high purity	R500
Manifold	Single wing, high purity	M1000
Manifold	Two wing, manual changeover, high purity	M2000
Manifold	Two wing, automatic changeover, high purity	M3000

*Please refer to the **Equipment Centre Selection Tool** for full equipment information.

For more information please contact us at:

Air Products PLC
T 0800 389 0202
E apukinfo@airproducts.com
airproducts.co.uk

Air Products Ireland Ltd.
T 1800 99 50 29
E ieinfo@airproducts.com
airproducts.ie

tell me more
airproducts.co.uk
airproducts.ie