

# Experis<sup>®</sup> ultra-high purity gases

## Technical specification

### Carbon Dioxide



Air Products' Experis speciality gases range includes a number of UHP (ultra-high purity) Carbon Dioxide 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

	Carbon Dioxide (3.0)	Carbon Dioxide Premier (4.5)	Carbon Dioxide Pharma	Carbon Dioxide UltraPure (5.5)
Purity	99.9%	99.995%	99.995%	99.9995%
Analytical verification*	N/A	Batch	EP GMP Part II	Individual
Oxygen (ppm)	-	<10	-	<0.5
Nitrogen (ppm)	-	<25	-	<2
CO (ppm)	-	<2	<2	<0.5
Water (ppm)	-	<7	<7	<2
THC (ppm)	-	<5	-	<0.1
NOx (ppm)	-	-	<2	<2
Total Sulphur (ppm)	-	-	-	<1

#### Physical properties

Molecular weight	44.01
State of product in cylinder	Liquid
Boiling point at 1 atm (°C)	n/a
Liquid density at boiling point (g/ml)	n/a
Gas density at 20°C (g/l)	1.831
Vapour pressure at 20°C (bar g)	56.22
Flammability limits in air (vol % in air)	Inert

#### \*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.

**EP, GMP part II** – Pharma grade gases are delivered with hard copy certificates of analysis as standard and are fully compliant with the monographs of the European, US and Japanese pharmacopoeias.

All work is carried out within the scope of our ISO:9001 2008 accredited Quality Management System. All analytical results are retained for quality control and auditing purposes. The full product specification is shown on the cylinder label together with a unique lot number delivering traceability to the filling location, raw material batch, and quality control records.

#### Benefits of CO<sub>2</sub> UltraPure

CO<sub>2</sub> UltraPure with 99.9995% purity and liquid off-take is the optimum grade of CO<sub>2</sub> for both **Supercritical Fluid Extraction (SFE)** and **Supercritical Fluid Chromatography (SFC)** systems. This grade of CO<sub>2</sub> is also available with a Helium over-pressure or head-space.

## Carbon Dioxide specifications

Product	Product code	Size	Valve	Contents (kg)
Carbon Dioxide <b>Premier</b> 4.5 (D02)	181607	x10s	BS8	8
Carbon Dioxide <b>Premier</b> 4.5 (D02)	25939	x47s	BS8	35
Carbon Dioxide <b>Premier</b> 4.5 (D09)	25908	11x47s	BS8	385
Carbon Dioxide <b>Premier Liquid</b> 4.5 (D02)	26011	x10s	BS8	8
Carbon Dioxide <b>Premier Liquid</b> 4.5 (D02)	26021	x47s	BS8	35
Carbon Dioxide <b>Pharma</b> 4.5 (D02)	475953	x47s	BS8	34
Carbon Dioxide <b>UltraPure</b> 5.5 (D02)	25932	x47s	BS8	35
Carbon Dioxide <b>UltraPure Liquid</b> 5.5 (D02)	28945	x47s	BS8	21*
Carbon Dioxide <b>UltraPure Liquid</b> 5.5 (D02)	439852	x47s	BS8	35

\*With Helium over-pressure.

## Cylinder and pack specifications

Size	Pressure	Height (mm)	Diameter (mm)	Width (mm)	Length (mm)	Empty weight (kg)	Full weight (kg)
x10s	Liquid	655	176	-	-	20	28
x47s	Liquid	1525	230	-	-	67	88
11x47s	Liquid	1963	-	680	1000	1046	1430

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

## Recommended control equipment\*

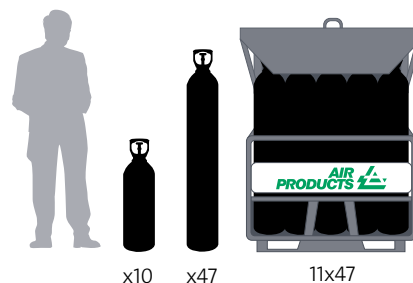
Type	Model	Product code
Pressure regulator	Single stage, brass, high purity	R400
Pressure regulator	Two stage, brass, high purity	R500
Pressure regulator	Two stage, brass, with vaporizer heater	R2000
Manual control valve	Brass, no gauge	MCV5001
Manual control valve	Brass, with pressure gauge	MCV5001-G
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.

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

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

Carbon Dioxide is available in the following cylinder size options:



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