

QUALITY ASSURANCE OF PRECISION GAS MIXTURES

CryoService manufacture and market a range of precision calibration and check gases in non-refillable pressure vessels which are filled from pre-mixed, high pressure cylinders. Our aim is that our customers are completely satisfied with the product they receive from us.

Gas Mixtures Preparation

Gas mixtures used for filling non-refillable pressure vessels are produced gravimetrically (by weight) according to ISO 6142, using sensitive, highly accurate modern balances. This equipment allows direct measurement of cylinder content during filling, and eliminates potential errors associated with indirect, manometric (pressure based) mixing techniques, which are subject to inaccuracies due to temperature, gas compressibilities and non-ideal behaviour.

The weights used to calibrate the balances are all traceable to National Physical Laboratory (NPL) Standards, (compatible with international standards of measurement eg NIST in the USA) which ensures standard gas mixtures are of the highest possible accuracy. High purity precursor gases are used to ensure gravimetric filling calculations hold true.

The certification accuracy of gravimetric mixtures is dependent on the concentration levels of particular components and on molecular weights. Typically, the accuracy for a given concentration is:-

Certified Accuracy

5 – 10ppm	Depends on components (typ $\pm 2\%$ to $\pm 10\%$)
10 – 50ppm	$\pm 2\%$ to $\pm 5\%$
51ppm – 1%	$\pm 2\%$
1% - 10%	$\pm 2\%$ or better
10% - 50%	$\pm 2\%$ or better

Non-refillable products are labelled with the nominal concentration requested by our customers. Where analytical work is required to certify minor components, the accuracy is $\pm 2\%$ of certified value. A charge is made for Certificates of Analysis.

All non-refillable pressure vessels are filled and supplied in accordance with our ISO 9001 procedures. All incoming materials are checked and inspected for conformance to agreed specifications and despatched products are inspected for quality, aesthetics and conformance to our customer's requirements.

Our aim is to achieve zero complaints or rejections. If we fall short of this objective in any way, please let us know. We offer a no quibble guarantee on all our gases but may request return of the product for investigation.

Quality Control

The pre-mixtures used to fill the non-refillable cylinders are produced in-house from constituent gases of the highest purity. All elements of recipe creation and production are under CryoService direct control and in accordance with our ISO 9001 accreditation. Analysis is undertaken in CryoService's own laboratory under the control of our qualified Quality Chemist.

