

GAS PRODUCTS FOR SPECIAL APPLICATIONS

CERTIFIED AND PRIMARY CALIBRATION STANDARDS

The main application of certified and primary standards is to calibrate extremely sensitive instrumentation that used in many fields, such as air pollution monitoring, environmental studies, safety & health. These standards are normally used when an EPA Protocol calibration standard is not required or an EPA Protocol standard is not available.

Certified and primary calibration standards provided by Hong Kong Specialty Gases are produced gravimetrically and are directly traceable to NIST standards. The cylinders used for the standards have been individually passivated by proprietary cylinder preparation process.

Each cylinder is individually analyzed and supplied with a Certificate of Analysis (COA).

Specifications of HSG Calibration Standards

Concentration Range	CERTIFIED STANDARDS		PRIMARY STANDARDS	
	Blend Tolerance	Analysis	Blend Tolerance	Analysis
< 100 ppb	Consult factory	Consult factory	Consult factory	Consult factory
100 ppb to 999 ppb	± 10%	± 5%	± 5%	± 2%
1 ppm to 9999 ppm	± 5%	± 2%	± 5%	± 1%
> 1%	± 2%	± 1%	± 1%	± 0.02% absolute

Certified and Primary calibration standards are available in size A001, A007, A016 & A030 high pressure aluminum cylinders and where appropriate in size 010, 016, 044 and 049 internally polished and passivated steel cylinders.

INFORMATION PERTAINING TO CALIBRATION STANDARDS

There are numerous restrictions in producing gas mixtures, a few of these are discussed below:

- **Reactive Gas Mixtures** Certain gases react with the internal walls of a cylinder effecting the stability of the desired gas mixture. Hong Kong Specialty Gases offer, as an alternative, aluminum cylinders for gas mixtures of this type. These specially prepared cylinders will maintain stability of normally reactive gas mixtures such as SO₂, H₂S, NO and NO₂ in low concentrations. Also, some gases can react with each other in the cylinder under high pressure conditions causing unstable mixtures or unwanted side products. If you request a mixture of this nature, our technical staff will advise.
- **Mixtures of Oxidizers and Flammable Gases** Certain concentrations of flammable gases in a mixture containing an oxidizer can be produced provided they meet certain safety criteria. A general rule is that the desired concentration does not exceed 50% of the Lower Explosion Level (L.E.L.). Other mixtures concentrations may be available if they are low in flammable or oxidizer content.
- **Cylinder Pressure** Certain gases components with low vapor pressures can be mixed in the gas phase at reduced cylinder pressure. Typical of these mixtures are organic chemicals which are liquids at room temperature and pressure. Mixture of this type will have a higher pressure as the desired concentration is reduced.
- **Cylinder Outlet Connection** Cylinder outlet connections are chosen by following strict CGA (Compressed Gas Association) recommendations. This proven system protects the user as well as the producer of gas mixtures. The correct outlet connection for gas mixtures is determined by considering composition and concentrations.