PRAXAIR

Praxair Grades

Environmental Grades

- **NTRM –** NIST Traceable Reference Materials are certified by the National Institute of Standards and Technology (NIST) and accepted by the Environmental Protection Agency (EPA), as the highest accuracy standards commercially available. These standards are the regulatory equivalent to NIST's Standard Reference Materials (SRMs) and are made up of the same components and are within the analytical range of NIST SRMs.
- **EPA Protocols –** Used for the calibration and audit of Continuous Emission Monitors (CEMs), Praxair EPA Protocols are NIST traceable and produced in accordance with the latest EPA specifications found in document-600/R97/121 Rev. 9/97.
- **Primary Master –** High accuracy mixtures prepared gravimetrically on electronic high-precision balances. These standards are analyzed and named against NIST traceable reference materials.
- **Certified Master –** These routine calibration mixtures are prepared by either gravimetric, volumetric or partial pressure methods and analyzed against NIST traceable reference materials.
- **Dynamic-Blend Master –** These zero blend tolerance mixtures are prepared on an instrument based dynamic blending system. Batches of cylinders from two to one hundred can be produced with the identical concentrations.
- **Dynamic-Blend Standard –** These mixtures are prepared similarly to the Dynamic Blend Master. Certification of the mixtures is based on process accuracy and Praxair Primary Laboratory Standards (PPLS).

All master gases are analyzed and named against NIST traceable materials.

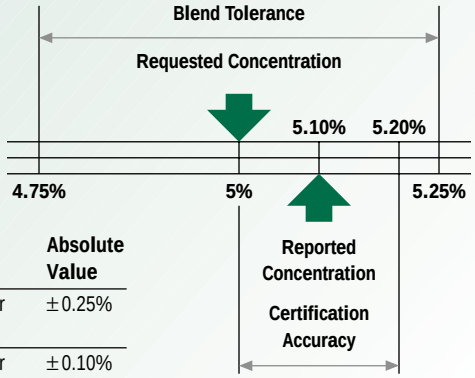
Standard Grades

- **Primary Standard –** Highly accurate mixtures prepared gravimetrically on high-precision electronic balances. These standards are analyzed against Praxair Primary Laboratory Standards (PPLS) and named to a gravimetrically generated concentration.
- **Certified Standard –** These routine calibration mixtures are prepared by either gravimetric, volumetric or partial pressure methods. These standards are analyzed against Praxair Primary Laboratory Standards (PPLS).
- **Non-Certified –** Mixtures are prepared by the same methods and the same care used for Certified Standard Grades. Analyses are not reported.
- **Custom –** Mixtures prepared to the exact blend tolerance and analytical uncertainty requested.

Mixture Grade	Order Reference	Mixture Component Concentration Range	Blend Tolerance	Analytical Uncertainty
EV – Environmental Grades[1]				
NTRM	T	N/A	N/A	≤ 1%
EPA Protocol	E	2 ppm - 25 ppm 25.1 - 49.9%	± 10% ± 5%	± 1% ± 1%
Primary Master	N	1 ppm - 9.9 ppm 10 ppm - 25 ppm 25.1 ppm - 9999 ppm 1.0% - 49.9%	± 10% ± 10% ± 5% ± 2%	± 0.1 ppm ± 1% ± 1% ± 1%
Certified Master	M	1 ppm - 25 ppm 25.1 ppm -999 ppm 0.1% - 49.9%	± 20% ± 10% ± 5%	± 5% ± 2% ± 2%
Dynamic Blend Master	D	1 ppm - 99 ppm 100 ppm - 49.9%	Zero Zero	± 2% ± 1%
Dynamic Blend Standard	Y	1 ppm - 99.9 ppm 100 ppm - 49.9%	Zero Zero	± 5% ± 2%
ST – Standard Grades				
Primary Standard	P	1 ppm - 9.9 ppm 10 ppm - 25 ppm 25.1 ppm - 9999 ppm 0.1% - 49.9%	±10% ±10% ±5% ±2%	±0.1 ppm ±1% ±1% ±1% or 0.02% abs
Certified Standard	C	1 ppm - 99.9 ppm 100 ppm - 9999 ppm 0.1% - 49.9%	±20% ±10% ±5%	±5% ±2% ±2%
Non-Certified Standard	U	1 ppm - 999 ppm 0.1% - 49.9%	±20% ±10%	N/A
Custom Standard	Z	1 ppm - 49.9%	TBD	TBD

[1] All Environmental Grades are NIST traceable. Actual ranges, blend tolerance and analytical uncertainty are based on available National Institute of Standards and Technology (NIST) SRM concentrations. Please see individual components for specific information.

Note: For all mixtures, blend tolerance and analytical uncertainty specification may vary depending on the chemical characteristics of the component and the cylinder size. For mixtures outside of these ranges, please contact your local Praxair representative.



Example:	Relative Value	Absolute Value
Blend Tolerance	±5% of minor component	±0.25%
Analytical Uncertainty	±2% of minor component	±0.10%