SAND2008-5287P

Primary Standards Laboratory

Metrology Program

Fact Sheet

Humidity and Flow

The Primary Standards Laboratory (PSL) maintains a wide variety of primary standards to assure accurate and traceable measurements for its customers. Capabilities include gas flow and humidity.

All the primary thermodynamic standards are directly traceable either to the National Institute of Standards and Technology (NIST) or to fundamental quantities.

Gas flow measurements can be performed over a wide range of flow rates from a few milliliters/minute to 3000 liters/minute for a variety of flow standards and devices.

Dew point can be measured to a few hundred parts per billion moisture and relative humidity from a few percent to 97 percent.

Capabilities

Below is a representative sample of our uncertainties. We are NVLAP accredited under Lab Code 105002-0 by the National Institute of Standards and Technology/National Voluntary Laboratory Accreditation Program (NIST/NVLAP) in most of our capabilities. For full details see **http://ts.nist.gov/standards/scopes/1050020.pdf**

Humidity / Temperature	**Uncertainty**
5% to 97% RH/-70°C to +170°C	± 0.5% RH from 5% to 50% RH ± 1.0% RH from 50% to 95% RH ±0.2°C from -70°C to +170°C
Frost/Dew points -80°C Frost pt to +20°C Dew pt	± 0.4°C from -80°C to 0°C Frost pt ± 0.1°C from -15 to 20°C Dew pt

Thunder Scientific 4500 Humidity Generator

Gas Flow	**Range**	**Uncertainty**	**Standards**
Mass flow, nozzles, rotometers, laminar flow, accumulation meters, turbine flow meters	0.5 to 30 SCFM	0.24%(K=2)	Bell Prover
	10 ml to 50 SLPM	0.33%(K=2)	Brooks Flow Calibrator

Major Resources

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- Thunder two-pressure automated humidity system
- Thunder automated frost point generator
- Bell prover for gas flow
- Brooks system for gas flow

Bell Volumetric Prover

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