U.S. EPA PAMS Calibration Standards

The United States Environmental Protection Agency's ozone precursor monitoring program known as PAMS, Photochemical Assessment Monitoring System, utilizes Spectra Gases standards for program quality assurance.

Under the 1990 Clean Air Act Amendments, EPA has required more extensive monitoring of ozone and its precursors in areas with persistently high ozone levels (mostly large metropolitan areas). In these areas, the States have established ambient air monitoring sites which collect and report detailed data for volatile organic compounds, nitrogen oxides, ozone and meteorological parameters. Analyses of these data help the EPA and the States to better understand the underlying causes of ozone pollution, to devise effective remedies and measure environmental improvement.

The standard that Spectra supplies is manufactured using exacting micro-gravimetric techniques with all measurements directly traceable to NIST (National Institute of Standards and Technology).

Spectra offers the PAMS standard at the EPA specified concentrations expressed as ppb C (parts per billion expressed as carbon) and also at 100 ppb v/v and 1 ppm v/v. The PAMS calibration standard is supplied in a size 2A cylinder with a guaranteed stability of 12 months or a size 6A cylinder with a six month stability guarantee.

To enhance your QA/QC procedures, Spectra stocks at least two (2) individual batches of each VOC raw material. This allows you to order two (2) independent **US EPA PAMS Calibration Standards** from Spectra.

Regulator Recommendation

Various independent and Agency laboratories have indicated that to ensure repeatability with low level calibration gases it is best to utilize the same regulator for initial assay and for daily usage, thus minimizing the sources for potential variances and possible cross contamination. If a regulator is purchased along with the TCEQ standard, Spectra Gases will perform the initial assay and certification analysis utilizing the regulator and cylinder as a matched set.

Spectra Gases' model 7621 regulator is ideal for use with the PAMS standard. Please see the equipment section for information on this and other gas handling equipment.

(Continued)

Spectra Gases Inc.

U.S. EPA PAMS Calibration Standards

Number following the compounds is the concentration in ppb C (parts per billion expressed as carbon) as specified by the U.S. EPA.

Acetylene 40 [74-86-2]
Benzene 30 [71-43-2]
n-Butane 40 [106-97-8]
1-Butene 30 [106-98-9]
cis-2-Butene 35 [590-18-1]
trans-2-But trans-2-Butene 25 [624-64-6]
Cyclohexane 40 [110-82-7]
Cyclopentane 20 [287-92-3]
n-Decane 30 [124-18-5]
m-Diethylbenzene 40 [141-93-5]
p-Diethylbenzene 25 [105-05-5]
2,2-Dimethylbutane 40 [75-83-2]
2,3-Dimethylbutane 50 [79-29-8]
2,3-Dimethylpentane 50 [565-59-3]
2,4-Dimethylpentane 40 [108-08-7]
n-Dodecane 40 [112-40-3]
Ethane 25 [74-84-0]
Ethyl Benzene 25 [100-41-4]
Ethylene 20 [74-85-1]
o-Ethyltoluene 30 [611-14-3]
m-Ethyltoluene 25 [620-14-4]
p-Ethyltoluene 40 [622-96-8]
n-Heptane 25 [142-82-5]
n-Hexane 30 [110-54-3]
1-Hexene 60 [592-41-6]
Isobutane 25 [75-28-5]
Isopentane 40 [78-78-4]
Isoprene 40 [78-79-5]

Isopropylbenzene 40 [98-82-8]
n-Octane 30 [111-65-9]
n-Pentane 25 [109-66-0]
1-Pentene 25 [109-67-1]
Methylcyclohexane 30 [108-87-2]
Methylcyclopentane 25 [96-37-7]
2-Methylheptane 25 [592-27-8]
3-Methylheptane 25 [589-81-1]
2-Methylhexane 25 [591-76-4]
3-Methylhexane 25 [589-34-4]
2-Methylpentane 20 [107-83-5]
3-Methylpentane 40 [96-14-0]
n-Nonane 25 [111-84-2]
cis-2-Pentene 35 [627-20-3]
trans-2-Pentene 25 [646-04-8]
Propane 40 [74-98-6]
n-Propylbenzene 30 [103-65-1]
Propylene 25 [115-07-1]
Styrene 40 [100-42-5]
Toluene 40 [108-88-3]
1,2,3-Trimethylbenzene 25 [526-73-8]
1,2,4-Trimethylbenzene 40 [95-63-6]
1,3,5-Trimethylbenzene 25 [108-67-8]
2,2,4-Trimethylpentane 30 [540-84-1]
2,3,4-Trimethylpentane 25 [565-75-3]
n-Undecane 30 [1120-21-4]
o-Xylene 25 [95-47-6]
m/p-Xylene (combined) 40 [108-38-3 / 106-42-3]

NOTE: CAS numbers are in square brackets, i.e. [00-00-0]