

SPECTRA VOC STANDARDS

T.C.E.Q.

Description SPECTRA VOC standards are part of the HiQ® specialty gases program from Linde and are manufactured using exacting gravimetric techniques with all gravimetric measurements directly traceable to NIST (National Institute of Standards and Technology).

The Texas Commission on Environmental Quality (TCEQ) utilizes a 102 component calibration standard for the determination of multiple ambient air contaminants. Please see reverse side for a complete list of components.

Linde supplies this standard to the TCEQ, formerly the TNRC (Texas Natural Resource Commerce Commission), for their internal use. The TCEQ standard is manufactured using exacting micro-gravimetric techniques with all gravimetric measurements directly traceable to NIST (National Institute of Standards and Technology). For improved quality assurance Linde maintains two distinct lots of raw materials allowing you to order two (2) independent calibration standards from Linde.

Linde offers these 102 components at the concentrations specified by the TCEQ.

The TCEQ calibration standard is supplied in a size 2A cylinder with a guaranteed stability of 12 months.

To enhance your QA/QC procedures, Linde stocks at least two (2) individual batches of each VOC raw material allowing you to order two (2) independent TCEQ Calibration Standards.

HiQ® Specialty Gases

The HiQ® specialty gases program from Linde supplies high purity gases, gas mixtures, precision engineered equipment and gas distribution systems, and services and support, to a wide range of industries employing specialty gases applications. In addition to the line of SPECTRA high purity gases the HiQ® program includes the REDLINE® and BASELINE® trademarked equipment product ranges and the SPECTRA-SEAL®, ECOCYL® and VERISEQ® specialty gas ranges.

HiQ® products represent Linde's commitment to the highest available quality and global consistency across gases, equipment and services.

Number following the components is the concentration in ppb v/v as specified by the TCEQ.

→ Acetylene 200 [74-86-2]	→ 1,2-Dichloropropane 100 [78-87-5]
→ Benzene 100 [71-43-2]	→ cis-1,3-Dichloropropene 100 [10061-01-5]
→ 1-Butene 100 [106-98-9]	→ trans-1,3-Dichloropropene 100 [10061-02-6]
→ 2-Butanone (MEK) 500 [78-93-3]	→ Dichlorodifluoromethane (Halocarbon 12) 100 [75-71-8]
→ Bromomethane 100 [74-83-9]	→ Dichloromethane 100 [75-09-2]
→ 1,3-Butadiene 100 [106-99-0]	→ p-Diethylbenzene 100 [105-05-5]
→ cis-2-Butene 100 [590-18-1]	→ 2,2-Dimethylbutane 100 [75-83-2]
→ n-Butane 100 [106-97-8]	→ 2,3-Dimethylbutane 100 [79-29-8]
→ trans-2-Butene 100 [624-64-6]	→ 2,3-Dimethylpentane 100 [565-59-3]
→ Butyl Acetate 500 [123-86-4]	→ 2,4-Dimethylpentane 100 [108-08-7]
→ Butyl Aldehyde 500 [123-72-8]	→ Dodecane 100 [112-40-3]
→ Carbon Tetrachloride 100 [56-23-5]	→ Ethane 200 [74-84-0]
→ Chlorobenzene 100 [108-90-7]	→ Ethyl Acetate 500 [141-78-6]
→ Chloroform 100 [67-66-3]	→ Ethyl Benzene 100 [100-41-4]
→ Chloromethane 100 [74-87-3]	→ m-Diethylbenzene 100 [141-93-5]
→ 2-Chloropentane 100 [625-29-6]	→ Ethylene 200 [74-85-1]
→ 2-Chloroprene 100 [126-99-8]	→ o-Ethyltoluene 100 [611-14-3]
→ Cyclohexane 100 [110-82-7]	→ m-Ethyltoluene 100 [620-14-4]
→ Cyclopentane 100 [287-92-3]	→ p-Ethyltoluene 100 [622-96-8]
→ Cyclopentene 100 [142-29-0]	→ n-Heptane 100 [142-82-5]
→ n-Decane 100 [124-18-5]	→ 3-Heptanone 500 [106-35-4]
→ 1,2-Dibromoethane (Ethylene Dibromide) 100 [106-93-4]	→ n-Hexane 100 [110-54-3]
→ 1,1-Dichloroethane 100 [75-34-3]	→ 2-Hexanone 500 [591-78-6]
→ 1,2-Dichloroethane (Ethylene Dichloride) 100 [107-06-2]	→ 3-Hexanone 500 [589-38-8]
→ 1,1-Dichloroethylene 100 [75-35-4]	→ 1-Hexene 100 [592-41-6]

Compound [CAS#]
(continued)

- cis-2-Hexene 100 [592-43-8]
- trans-2-Hexene 100 [4050-45-7]
- Isobutane 100 [75-28-5]
- Isopentane 100 [78-78-4]
- Isopropylbenzene (Cumene) 100 [98-82-8]
- Isooctane 100 [540-84-1]
- 2 Methyl 1,3 Butadiene (isoprene) 100 [78-79-5]
- 3-Methyl-1-Butene 100 [563-45-1]
- 2-Methyl-2-Butene 100 [513-35-9]
- Methyl tert-Butyl Ether (MTBE) 100 [1634-04-4]
- Methylcyclohexane 100 [108-87-2]
- Methylcyclopentane 100 [96-37-7]
- 2-Methylheptane 100 [592-27-8]
- 3-Methylheptane 100 [589-81-1]
- 2-Methylhexane 100 [591-76-4]
- 3-Methylhexane 100 [589-34-4]
- 2-Methyl-3-Hexanone 500 [7379-12-6]
- 5-Methyl-2-Hexanone 500 [110-12-3]
- Methyl Isobutyl Ketone (MIBK) 500 [108-10-1]
- 2-Methylpentane 100 [107-83-5]
- 3-Methylpentane 100 [96-14-0]
- 2-Methyl-1-Pentene 100 [763-29-1]
- 4-Methyl-1-Pentene 100 [691-37-2]
- 2-Methylpropanal 500 [78-84-2]
- n-Nonane 100 [111-84-2]
- n-Octane 100 [111-65-9]
- n-Pentane 200 [109-66-0]
- 1-Pentene 100 [109-67-1]
- cis-2-Pentene 100 [627-20-3]
- trans-2-Pentene 100 [646-04-8]
- 3-Pentanone 500 [96-22-0]
- Propane 200 [74-98-6]
- Propene 200 [115-07-1]
- Propyl Acetate 500 [109-60-4]
- n-Propylbenzene 100 [103-65-1]
- Styrene 100 [100-42-5]
- 1,1,2,2-Tetrachloroethane 100 [79-34-5]
- Tetrachloroethylene 100 [127-18-4]
- Toluene 100 [108-88-3]
- 1,1,1-Trichloroethane 100 [71-55-6]
- 1,1,2-Trichloroethane 100 [79-00-5]
- Trichloroethylene 100 [79-01-6]
- Trichlorofluoromethane (Freon 11) 100 [75-69-4]
- 1,2,3-Trimethylbenzene 100 [526-73-8]
- 1,2,4-Trimethylbenzene 100 [95-93-6]
- 1,3,5-Trimethylbenzene 100 [108-67-8]
- 2,3,4-Trimethylpentane 100 [565-75-3]
- n-Undecane 100 [821-95-4]
- Vinyl Chloride 100 [75-01-4]
- o-Xylene 100 [95-47-6]
- m-Xylene 100 [108-38-3]
- p-Xylene 100 [106-42-3]

Specifications

Blend Tolerance	100 ppb to 1 ppm +/- 10%
	>1 ppm to 10 ppm +/- 5%
Analytical Accuracy	100 ppb to 1 ppm +/- 5%
	>1 ppm to 10 ppm +/- 2%
Stability	12 months

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, Linde will perform the initial assay and certification analysis utilizing the regulator and cylinder as a matched set.

Linde's model 7621 regulator is ideal for use with the TCEQ 102 component standard. Please see the equipment section for information on this and other gas handling equipment.

Standard Available Cylinder

Cylinder Size	Volume	Pressure	CGA
2A	4000 liters	2000 psig	350

All SPECTRA VOC Calibration Standards are guaranteed for a minimum of 12 months.

Please contact Linde for information on other concentrations, tolerances, and cylinder sizes.

Linde Electronics and Specialty Gases

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