Datasheet 20180604

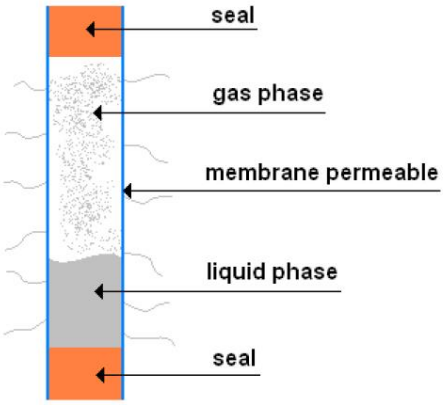
Permeation tubes

Description

Permeation tubes are small containers filled with a pure chemical compound in a two-phase equilibrium between its gas phase and liquid phase. The containers are in suitable inert polymeric material and at a constant temperature; the device emits the compound through permeable wall with a constant rate.

The permeate is mixed with a carrier gas at a controlled flow rate to obtain a known mixture used as reference in gas testing equipment.

A wide range of permeation rates can be made, normally from 20µg/min to 500 µg/min, and accurate, stable concentrations range from ppb to high ppm.



Advantages of permeation tubes :

Use pure substances in an inert matrix

- Precise concentrations;
- Easily generated with traceablity established from protocol U.S. EPA-600/R-97/121, Section 3, procedure P3 (see calibration certificate)
- Several tubes can be used simultaneously to obtain a mixture, removal and/or addition of a single component is simple
- Wide range of concentrations easily generated by varying the dilution flow rate and/or the set point temperature;
- Consistent concentrations for extended periods of time
- A relatively inexpensive source of standard gas.

Applications

Often the gas standards in cylinder mixtures are very reactive and instable, especially at low concentrations. Permeatiion tubes are ideal devices in generation of calibration gas standard for:

- air quality analyzers and gas analyzers;
- FTIR;
- gas chromatograph;
- GC-MS;
- Ion Mobility Spectrometer.

With permeation devices is possible modify the mixtures components simply removing and/or auditioning a single tube in permeation chamber. Permeation devices are utilized in:

- petrochemical plants and refinery;
- semiconductor industry (trace moisture standard);
- gas sensor development ;
- test with controlled atmosphere; Catalyst test with synthetic gas.

Specifications

Art. Nb 6800 90 001
Tubular type

Certified with accuracy of 5%, Available with special certification ±2%,
Range of permeation rate ±25%
Dimensions in mm :

- diameter max 10,0;
- length max 180,0 and proportional to desired permeation rate.

Art. Nb 6800 90 002
EL type

Certified with accuracy of 5%, Available with special certification ±2%
Range of permeation rate ±25%
Dimensions in mm :

- diameter max 9;
- length max 84 + length of permeable tube proportional to desired perm rate.

Art. Nb 6800 90 003
Wafer type

Certified with accuracy of 5%, Available with special certification ±2%
Range of permeation rate ±25%
Dimensions in mm :

- diameter 16,4;
- length 46,5.

Art. Nb 6800 90 004
Slim Wafer

Certified with accuracy of 5%, Available with special certification ±2%
Range of permeation rate ±25%
Dimensions in mm :

- diameter 9.5;
- max length 88.

Options – Accessories – Spare parts

List of most common available substances

Acetaldehyde C2H4O
Acetic Acid C2H4O2
Acetone C3H6O
Acetone-d6 CD3COCD3
Acetonitrile CH3CN
Acrolein C3H4O
Acrylic Acid C3H4O2
Acrylonitrile C2H3N
Allyl Alcohol C3H5OH
Ammonia NH3
n-Amyl Mercaptan C5H11SH
tert-Amyl Mercaptan C5H11SH
Aniline C6H7N
Benzaldehyde C6H5CHO
Benzene C6H6
Benzene Sulfonyl Chloride
Bromine Br2
1,3-Butadiene C4H6
n-Butane C4H10
1-Butanol C4H9OH
2-Butanone (MEK) CH3COC2H5
1-Butene C4H8
Butyl Acetate CH3COOC4H9
Butyl Acrylate C7H12O2
Butyl Benzene C6H5C4H9
Butyl Carbitol C8H18O3
Butyl Glycidyl Ether C6H13O2
n-Butyl Mercaptan C4H9SH
sec-Butyl Mercaptan C4H9SH
tert-Butyl Mercaptan C4H9SH
Butyl Cellosolve C4H9OC2H4OH
Butyraldehyde C3H7CHO
Butyric Acid C4H8O2
Carbon Disulfide CS2
Carbon Tetrachloride CCl4
Carbonyl sulfide COS
Chloroacetyl chloride ClCH**2**COCl
2'-Chloroacetophenone ClC6H4COCH3
Chlorobenzene C6H5Cl
Chloroethane C2H5Cl
Chloroform CHCl**3**
Chloromethane CH3Cl
2-Chlorotoluene CH3C6H4Cl
Cyclohexane C6H12
Cyclohexanone C6H10(=O)
Cyclopentane C5H10
n-Decane CH3(CH2)8CH3
Diallyl sulfide (CH2=CHCH2)2S
1,2-Dichlorobenzene C6H4Cl2
1,2-Dichloroethane CH3CHCl2
Dichloromethane CH2Cl2
Diethyl Disulfide (C2H5)2S2
Diethyl Sulfide (C2H5)2S
Dimethylamine (CH3)2NH
Dimethyl Disulfide (CH3)2S2
Dimethyl Ether (CH3)2O
Dimethyl Sulfide (CH3)2S
2,4-Dinitrotoluene CH3C6H3(NO2)2
Dipropyl Sulfide (CH3CH2CH2)2S
Dipropylene Glycol Dimethyl Ether
CH3OC3H6OC3H6OCH3
(±)-Epichlorohydrin C3H5ClO
Ethanol CH3CH2OH
Ethyl Acetate CH3COOC2H5
Ethylbenzene C6H5C2H5
Ethyl Mercaptan C2H5SH
Formaldehyde (para) HCHO
Formic Acid HCOOH
Furan C4H4O
n-Heptane CH3(CH2)5CH3
n-Hexane CH3(CH2)4CH3
1-Hexanol CH3(CH2)5OH
Hydrazine Monohydrate NH2NH2 · H2O
Hydrogen Bromide HBr
Hydrogen Chloride HCl
Hydrogen Fluoride HF
Hydrogen Sulfide H2S
Iodine I2
Isoamyl alcohol (CH3)2CHCH2CH2OH 7
Isobutylene (CH3)2C=CH2
Isopropyl Alcohol (CH3)2CHOH
Isopropyl Mercaptan CH3)2CHSH
(+) Limonene C10H16
Mercury Hg
Methanol CH3OH
Methyl Acetate CH3COOCH3
Methyl Cyclohexane C6H11CH3
Methyl Cyclopentane C5H9CH3
Methyl Ethyl Ketone C2H5COCH3
Methyl Mercaptan CH3SH
2-Methylthiophene C5H6S
Naphthalene C10H8
Nitrogen Dioxide NO2
2-Nitrotoluene CH3C6H4NO2
n-Propyl Mercaptan CH3CH2CH2SH
Pyridine C5H5N
Styrene C6H5CH=CH2
Sulfur Dioxide SO2
Sulfur Hexafluoride SF6
Tetrahydrothiophene C4H8S
Thiophene C4H4S
Toluene C6H5CH3
Toluene-d8 C6D5CD3
Trichlorobenzene C6H3Cl3
1,1,1-Trichloroethane Cl3CCH3
Trimethylamine (CH3)3N
1,2,4-Trimethylbenzene C6H3(CH3)3
1,3,5-Trimethylbenzene C6H3(CH3)3
Vinyl Chloride H2C=CHCl
Water H2O
o-Xylene C6H4(CH3)2
m-Xylene C6H4(CH3)3
p-Xylene C6H4(CH3)4