

## Technical note TNE-08

# Standard units for concentration applied for gas- and liquid calibration mixtures

### To customers of gas and liquid calibration mixtures

Units for concentration of gas- and liquid compounds in calibration mixtures are given on molecular basis as standard (ppm-mol or mol %). These units are preferred because they are not dependent on changes in pressure or temperature. Units based on weight, may for same reasons be directly used (ISO 6141:2015 and ISO 14912:2006).

On special customer request, other units such as volume (ppm-volume or volume %) or combination of weight and volume ( $\text{mg}/\text{m}_3$ ), can be included on the certificate. However, be aware that by using volume units, a recalculation referring to ISO 14912:2006, will be linked to reference conditions for pressure and temperature. The compression factor at actual pressure and temperature for each compound is then included in the calculation. If components are liquid at the specified temperature and pressure the compression factor must be calculated. This will lead to increased uncertainty budgets for each component in the mixture.

For condensed gas-liquid mixtures it is of utmost importance that the concentration of each component is calculated and given in mole (or weight) units. Due to the change in the gas-liquid equilibrium when the liquid phase is tapped out of the cylinder, expression of concentration in volume units will most certainly lead to increased uncertainty budgets.