

## **Stability of gravimetrically prepared ammonia in nitrogen standards at 10 and 100 $\mu\text{molmol}^{-1}$**

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Ammonia ( $\text{NH}_3$ ) is a well-known ambient pollutant which plays a key role in both atmospheric chemistry and biogeochemical processes occurring in a variety of ecosystems. Ammonia is emitted from intensive animal farming and certain industrial processes: once in the atmosphere, it contributes to the increasing ambient levels of particulate matter observed across Europe. As legislation is being implemented to curb ammonia emissions, it is crucial to achieve metrological traceability for ammonia measurements in ambient air to allow comparability of field measurements, ensure accuracy of emissions inventories and verify the effectiveness of emission ceiling policies. The development of stable and traceable gas standards for instrument calibration underpins all of the above. To address this requirement, a stability study on gravimetrically-prepared high-pressure ammonia mixtures in nitrogen was carried out for two years for two different cylinder types at two different concentrations: 10 and 100 ppm. New standards were prepared gravimetrically every three to six months for comparison to determine any variations due to instability. In the first type of cylinders ammonia appears stable at 100 ppm but shows degradation of about 2% at 10 ppm over the timescale of the stability study; on the other hand, the second type of cylinders exhibits good stability already at the 10 ppm level.