
**FAQ Series** July 10, 2008

# DO CALIBRATION GASES HAVE A SHELF LIFE?

Calibration is a vital and necessary step to ensuring the proper performance of any gas detector. The calibration process requires use of a known concentration of test gas, also known as span gas or calibration gas. Use of incorrect or expired calibration gas can result in improper calibration. This can result in unsafe operation, as well as improper diagnosis of instrument malfunction. This article will focus on disposable (non-refillable) calibration gas cylinders for both reactive and non-reactive gases.

## Reactive Gas Mixtures

Reactive gas mixtures are calibration gas mixtures that include at least one component gas which is classified as reactive. This is a broadly used term for chemicals that have some instability under certain conditions, and may react with certain materials, moisture, oxygen, or other chemicals. Reactive gas mixtures include mixtures containing hydrogen sulfide, chlorine, sulfur dioxide, ammonia, hydrogen chloride, among others. Reactive gas mixtures are generally packaged in a special cylinder made of aluminum and treated (passivated) by a special process to minimize reactivity with the reactive gas. Reactive gas mixtures typically have a shelf life of one year or less. After shelf life has expired, it is likely that the concentration of the reactive gas will either decrease or eventually disappear all together.

## Non-reactive Gas Mixtures

Non-reactive gas mixtures are calibration gas mixtures that do not include any reactive gases. This is a broadly used term for chemicals that are stable under most conditions, and are not affected by moisture, oxygen, or other chemicals.

Non-reactive gas mixtures include mixtures containing alkane or alkene hydrocarbons (methane, ethane, propane, hexane, isobutylene, etc.), nitrogen, hydrogen, carbon monoxide, carbon dioxide, among others. Non-reactive gas mixtures are generally packaged in a cylinder made of steel. Non-reactive gas mixtures have a shelf life of three years.

## Shelf Life For All Cylinders

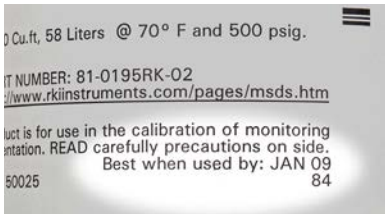
The shelf life for a cylinder is RKI's warranty. Below is a guide to the shelf life for RKI gas mixtures. As a general rule, all steel cylinders have a 3 year shelf life while aluminum cylinders range from 6-24 months.

**Cal Gas Shelf Life**

| Cylinder Size | Description | Shelf life |
|---|---|---|
| 17/34/103 L (steel) | All mixtures | 3 Years |
| 34 AL/ 58 AL | H2S/N2 | 1 Year |
| 34 AL/ 58 AL | H2S/CO/O2/N2 | 1 Year |
| 34 AL/ 58 AL | SO2/N2 | 1 Year |
| 34 AL/ 58 AL | NH3/N2 | 1 Year |
| 34 AL/ 58 AL | Cl2/N2 | 8 Months |
| 34 AL/ 58 AL | HCl/N2 | 8 Months |
| 34 AL/ 58 AL | NO/N2 | 1 Year |
| 34 AL/ 58 AL | NO2/N2 | 6 Months |
| 34 AL/ 58 AL | PH3/N2 | 6 Months |
| 34 AL/ 58 AL | SiH4/N2 | 1 Year |

## How Do I Know When My Calibration Gas Cylinder Has Expired?

All RKI Instruments calibration gas cylinders include the statement "Best when used by" followed by month and year. Cylinders should not be used beyond this date.




"Best when used by" on cylinder Label