



Technical note TNE-03

Residual pressure

Moisture is undesirable in most applications. When the pressure in the gas cylinder is reduced, the concentration of moisture will increase in the gas flow.

Moisture will always be present in larger or smaller amounts in gas production. When gases are filled into gas cylinders, the pressure increases and the moisture will accumulate in the pores in the surface of the inner wall of the cylinders and be absorbed in them. Different porosity in the walls will cause varying degrees of absorption.

When the gas is consumed and the pressure drops, a desorption of the absorbed moisture will take place and this will gradually release moisture back to the gas stream again.

To avoid contamination of moisture in the application, it is recommended to leave pressure on the bottle and not empty it completely. This is of utmost importance, both with regard to any damage to the instruments that are supplied with the gases, but also from the point of view of the gas producers, who do not need to initiate new pre-treatment of the cylinders.

The illustration in Figure 1 is just an example, and the values depend on a number of parameters. For example, the cylinder material and porosity will change the situation, as well as the temperature and pre-treatment of the cylinders.

The residual pressure depends on the original filling pressure.
The recommended minimum pressures are specified in Table 1.

However, Nippon Gases has developed methods for pre-treating gas cylinders that enable us to control the moisture content of the cylinders over a large pressure range. A result of this is that calibration standards for humidity can be produced.

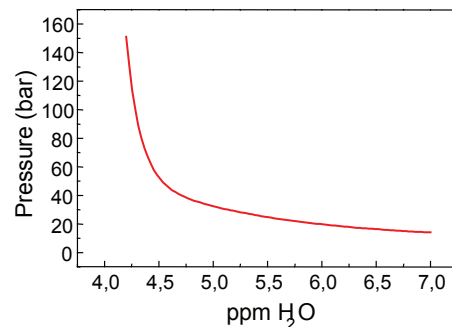


Fig.1

Filling pressure	Recommended minimum pressure
< 10 bar g	0,1 bar g
10-25 bar g	1 bar g
25-50 bar g	2,5 bar g
50 -100 bar g	5 bar g
100-200 bar g	10 bar g

Tab.1