

Seamless Gas Cylinders and Pressure Vessels not taken under water – Dry Internal Service

Note: This includes both fixed and transportable gas storage cylinders and tubes and filter housings.

It does not include welded pressure vessels or pressure vessels for human occupancy

If the cylinders are composite material use detail sheet 10.2

When new

Examination/Test	Category of Competent Person
Manufactured in accordance with a recognised international code or standard and fit for the purpose it will be used for	3 or 4

When in service

Examination/Test	Validity Period	Category of Competent Person
External visual examination	6 months	1, 2, 3 or 4
Thorough external visual examination and gas leak test to maximum working pressure	2½ years	3 or 4
Thorough internal and external visual examination and gas leak test to maximum working pressure. If the competent person deems it necessary, an overpressure test and/or NDE may be required, followed by a gas leak test to maximum working pressure (Also see special situation below)	5 years	3 or 4

Special situation when in service

In certain very special circumstances (it is likely that only large specialised gas supply companies will be able to comply with these) the five-yearly internal examination above can be substituted by ultrasonic testing only with a validity of 10 years. The circumstances are:

- ◆ The cylinder must be within its 2½ yearly test validity listed above.
- ◆ The cylinder must not have been used for compressed air storage, due to inherent moisture.
- ◆ The cylinder must be connected to a residual pressure valve (RPV) while in service. In the event that the RPV fails to retain pressure or has visible signs of tampering, an internal visual examination in line with the five-yearly examination will be required.
- ◆ Moisture readings taken upon filling and return of the cylinder demonstrate that levels within the cylinder have not exceeded 25ppm (-46°C at 1013 mbar) whilst in service. If the moisture level is found to have exceeded 25ppm, an internal visual examination in line with the five-yearly examination will be required.

Examination/Test	Validity Period	Category of Competent Person
Ultrasonic testing of the gas cylinder as an alternative to the 5-yearly internal inspection. The ultrasonic testing system used must conform to the requirements of ISO 6406:2005, section 11.4	10 years	3 or 4

Reference:

- ◆ ISO 6406:2005, Gas cylinders – Seamless steel gas cylinders – Periodic inspection and testing, International Organization for Standardization (ISO) 2005

Note:

- ◆ In many countries there are detailed national regulations concerning gas cylinders, particularly if these are transportable. Such regulations must be complied with, even if they conflict with or are more onerous than the recommendations given above.
- ◆ Hydraulic testing of large storage tubes subject to dry internal service is not recommended as it introduces moisture in to the system which may prove difficult to remove. In such cases pneumatic or gas overpressure testing may be substituted.
- ◆ If testing is not hydraulic and the competent person requires it then other testing such as wall thickness measurement or acoustic emission testing may also be required.
- ◆ Some national regulations, certifying authorities or gas cylinder codes may give no option but to apply hydraulic overpressure testing.
- ◆ In all types of overpressure testing suitable safety precautions must be taken to ensure the safety of all testing personnel and others.
- ◆ If a hydraulic test has been carried out, it is important that confirmation is received that all moisture has been removed prior to the unit being put back into service.