

ProductSafe

Safety Guidelines and Procedures for Entrepreneurs

Simple Pressure Vessels [SPVD]

APPLICATION

The main use for simple pressure vessels is to provide a pressurised reservoir to smooth out or regulate the air supply from a compressor and minimise the changes in pressure resulting from variations in the load or flow rate. The compressed air from a simple pressure vessel can be used in the operation a paint spraying system, sand blasting equipment, or to drive various pneumatic tools. Another major application is the air reservoir in vehicle and rail wagon braking systems.



The most common example of a simple pressure vessel is a compressor similar to the type shown above. The associated tools are classified as either pressure equipment and/or machinery. For information about air tools and other power tools, see the appropriate *ProductSafe* web page.

LATVIAN LAW

The safety of simple pressure vessels is controlled in Latvia by the following legislation:

- Consumer Rights Protection Law, 1999
- Law on the Safety of Goods and Services, 2004
- Cabinet Regulation No 242, Adopted 18 July 2000. - Regulations regarding Simple Pressure Vessels

This legislation has transposed the requirements of the relevant European Directives into Latvian law. Producers, importers, distributors and suppliers must ensure that they comply fully with the provisions of their national legislation.

EU DIRECTIVE

The Simple Pressure Vessels Directive (87/404/EEC) (SPVD) applies to 'series produced'¹, unfired pressure vessels of welded construction which are intended to contain air or nitrogen at an internal gauge pressure greater than 0.5 bar. There are also limits to the maximum working pressure and the minimum working temperature, and it has specific requirements covering the geometry of the design and the materials that can be used.

Simple Pressure vessels are widely used today in industry e.g. for regulating the air supply to power tools and spraying equipment, but they are increasingly being incorporated into products intended for use by consumers.

Definition

'Simple pressure vessel' means any welded vessel subjected to an internal gauge pressure greater than 0.5 bar which is intended to contain **air or nitrogen** and which is not intended to be fired.

Exclusions

The following vessels are specifically excluded from the scope of the SPVD:

- vessels specifically designed for nuclear use, failure of which may cause an emission of radioactivity,
- vessels specifically intended for installation in or the propulsion of ships and aircraft,
- fire extinguishers.
- gas bottles for divers etc are not covered by the SPVD, but they are covered by the Pressure Equipment Directive (PED).

¹ If more than one vessel of the same type is manufactured during a given period by the same continuous manufacturing processes, in accordance with a common design, this is referred to as 'series production'.

Categories of vessels

The Directive makes different provisions for different categories of vessels, depending on their stored energy, expressed in terms of the product of its maximum working pressure in bar and its capacity in litres (PS.V).

General provisions

Most simple pressure vessels with a stored energy of **over 50 bar.litres**, including imports, when supplied in the EU must:

- meet the essential safety requirements;
- have safety clearance (which involves checking by an approved body);
- bear CE marking (minimum 5mm high), last two digits of year of marking, number of Approved Body;
- be accompanied by manufacturer's instructions;
- be safe.

Most simple pressure vessels with a stored energy of **up to 50 bar. litres**, including imports, when supplied in the EU must:

- be manufactured in accordance with good engineering practice recognised as being sound in a country within the European Economic Area (EEA);
- bear specified inscriptions (but not CE marking);
- be safe.

Essential Safety Requirements

Materials

Materials must be selected according to the intended use of the vessels and in accordance with 1.1 to 1.4 of Annex 1.

Pressurized parts

The materials used for manufacturing the pressurized parts must be:

- capable of being welded,
- ductile and-tough, so that a rupture at minimum working temperature does not give rise to either fragmentation or brittle-type fracture,
- not adversely affected by ageing.

There are additional requirements for the materials used to construct steel vessels and for aluminium or aluminium alloy vessels. They must be accompanied by an inspection slip drawn up by the producer of the materials as described in Annex II.

Steel vessels

Non-alloy quality steels meet the following requirements:

- they must be non-effervescent and be supplied after normalization treatment, or in an equivalent state;
- the content per product of carbon must be less than 0.25 %
- the content per product of sulphur and phosphorus must each be less than 0,05 %.
- they must have the mechanical properties per product as set out in Annex 1.

The safety requirements for a vessel over 50 bar litres

- It meets the essential safety requirements;
- It has safety clearance;
- The CE marking and the other specified inscriptions have been affixed;
- In the case of the supply of a vessel or a relevant assembly, it must be accompanied by the manufacturer's instructions;
- It is in fact safe.

Additional marking (specified inscriptions) required for a vessel over 50 bar litres

- max working pressure (PS) in bar
- max working temperature (T max) in °C
- min working temperature (T min) in °C
- capacity (vol in litres) of the vessel (V in l)
- name or mark of the manufacturer
- type and serial/ batch number of the vessel
- manufacturer's instructions including – the intended use of the SPV and installation and maintenance requirements

Note: *In the case of the taking into service of a vessel or a relevant assembly, the manufacturer or importer must ensure that, at the time of the taking into service, the manufacturer's instructions are made available to all those people concerned with the vessel's installation and operation.*

The safety requirements for a vessel of 50 bar litres or less

- it is manufactured in accordance with engineering practice recognised as sound in an EEA State;
- it bears the specified inscriptions (but not the CE marking);
- it is in fact safe.

Additional marking (specified inscriptions) required for vessels of 50 bar litres or less

- max working pressure (PS) in bar
- max working temperature (T max) in °C
- min working temperature (T min) in °C
- capacity (vol in litres) of the vessel (V in l)
- name or mark of the manufacturer
- type and serial/ batch number of the vessel

SIMPLE PRESSURE VESSELS CHECKLIST

Use this checklist to determine whether a vessel is a 'simple pressure vessel' and therefore covered by the Directive.

Simple pressure vessel criteria	Conforms to directive	
	Yes	No
1 - Geometry of vessel simple:		
2 - Material of construction:		
3 - Contents (air/nitrogen):		
4 - Internal pressure greater than 0.5 bar:		
5 - Internal pressure not exceeding 30 bar:		
6 - Pressure x volume product not exceeding 10 000 bar.litres		
7 - Operating temperature: <ul style="list-style-type: none"> • (-50°C to 300°C for steel) • (-50°C to 100°C for aluminium) 		
8 - Material of construction:		
9 - Intended to be unfired:		
10 -All risks covered by Directive:		
Conclusion: – If all the Yes boxes are ticked, the product should be considered as a simple pressure vessel.		

SOURCES OF FURTHER INFORMATION

Overview of the Simple Pressure Vessels Directive

http://ec.europa.eu/enterprise/pressure_equipment/spvd_sector/index_en.html

The Simple Pressure Vessels Directive (Directive 87/404/EEC)

<http://eur-lex.europa.eu/LexUriServ/site/en/consleg/1987/L/01987L0404-19930802-en.pdf>

The Simple Pressure Vessels amending Directive (Directive 90/488/EEC)

http://ec.europa.eu/enterprise/pressure_equipment/spvd_sector/guidelines/spv-guideline_art16-1_march04_en.pdf

Simple Pressure Vessels - Harmonised Standards

<http://ec.europa.eu/enterprise/newapproach/standardization/harmstds/reflist/spvessel.html>

The CE Marking Directive (93/68/EEC)

<http://www.ce-marking.org/directive-9368eec-ce-marking.html>

The Pressure Equipment Directive (97/23/EC)

http://ec.europa.eu/enterprise/pressure_equipment/ped/index_en.html

Gas Appliances Directive

http://ec.europa.eu/enterprise/gas_appliances/index_en.htm

RAPEX

http://ec.europa.eu/consumers/safety/rapex/index_en.htm

Training Seminar on New Approach Directives - SPV

www.cys.mcit.gov.cy/eu/hello/SPV_training.pdf

Technical Guidance on Simple Pressure Vessels Directive 87/404/EEC

www.berr.gov.uk/sectors/sustainability/regulations/ecdirect/page12658.html

Information Leaflet on Simple Pressure Vessels

[www.msi.gov.cy/.../\\$file/Information%20leaflet%20for%20Simple%20Pressure%20Vessels-](http://www.msi.gov.cy/.../$file/Information%20leaflet%20for%20Simple%20Pressure%20Vessels-)

Guide to SPV Directive

www.cys.mcit.gov.cy/eu/hello/SPV_guide.pdf

Summary List of Harmonised Standards – SPV Directive

www.msi.gov.cy/mlsi/dli/dli.nsf/All