

ISBN 978-0-626-28657-6

**SANS 50286-2:1992**

Edition 1 and nat. amdt 1

**EN 286-2:1992**

Edition 1

Any reference to SABS EN 286-2 is deemed  
to be a reference to this standard  
(Government Notice No. 1373 of 8 November 2002)

## **SOUTH AFRICAN NATIONAL STANDARD**

**Simple unfired pressure vessels designed to  
contain air or nitrogen**

**Part 2: Pressure vessels for air braking and  
auxiliary systems for motor vehicles and  
their trailers**

This national standard is the identical implementation of EN 286-2:1992, and is adopted with the permission of CEN, rue de Stassart 36, B-1050 Brussels.

---

Published by SABS Standards Division  
1 Dr Lategan Road Groenkloof ☒ Private Bag X191 Pretoria 0001  
Tel: +27 12 428 7911 Fax: +27 12 344 1568  
[www.sabs.co.za](http://www.sabs.co.za)  
© SABS

**SABS**

---

**SANS 50286-2:1992**

Edition 1 and nat. amdt 1

**EN 286-2:1992**

Edition 1

**Table of changes**

<b>Change No.</b>	<b>Date</b>	<b>Scope</b>
Nat. amdt 1	2007	Amended to change the designation from SABS to SANS, with no technical changes.

**National foreword**

This South African standard was approved by National Committee SABS TC 58, *Vessels and systems under pressure*, in accordance with procedures of the SABS Standards Division, in compliance with annex 3 of the WTO/TBT agreement.

This part of SANS 50286 was published in March 2007. This SANS edition is technically identical to the first SABS edition (SABS EN 286-2:1992).

**Reaffirmed and reprinted in March 2013.  
This document will be reviewed every five years  
and be reaffirmed, amended, revised or withdrawn.**

EUROPEAN STANDARD

EN 286-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 1992

---

UDC: 621.642.02-98:629.114:620.1

Descriptors: Road vehicles, trailers, braking systems, pressure vessels, compressed air, tanks, containers, steels, aluminium, computation, welded construction, manufacturing, tests, inspection, welded defects, marking

English version

## Simple unfired pressure vessels designed to contain air or nitrogen:

### Part 2: Pressure vessels for air braking and auxiliary systems for motor vehicles and their trailers

Réipients à pression simples, non soumis à la flamme, destinés à contenir de l'air ou de l'azote:

Partie 2: Réipients à pression pour circuits de freinage et circuits auxiliaires des véhicules routiers et leurs remorques

Einfache unbefeuerte Druckbehälter für Luft oder Stickstoff:

Teil 2: Druckbehälter für

Druckluftbremsanlagen und Hilfseinrichtungen in Kraftfahrzeugen und deren Anhängfahrzeugen

This European Standard was approved by CEN on 1992-09-28. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

## CEN

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

## Foreword

This Part of this European Standard was drawn up by CEN/TC 54 'Simple unfired pressure vessels', of which the secretariat is held by the United Kingdom.

This Part is one of a series of four. The other Parts are:

Part 1: Design, manufacture and testing

Part 3: Steel pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock

Part 4: Aluminium alloy pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 1993, and conflicting national standards shall be withdrawn at the latest by March 1993.

In accordance with the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

## Contents

	Page
Foreword	2
1 Scope	3
2 Normative references	3
3 Definitions and symbols	4
4 Materials	7
5 Determination of the wall thickness	7
6 Construction and fabrication	19
7 Qualification of welders, welding operators and welding inspectors	26
8 Qualification of welding procedures	26
9 Resistance to corrosion	26
10 Tests and certificates	27
11 Marking	33
12 Documentation to accompany the vessel	34
<b>Annexes</b>	
A (normative) Verification	35
B (normative) Declaration of conformity — Surveillance	35
C (normative) Design and manufacturing schedules	37
D (normative) Type examination	37
E (normative) Content of the manufacturing record	38
F (normative) <i>KV</i> requirements on plate and strip materials (steel)	38
G (informative) Essential safety requirements given in Directive 87/404/EEC	40

## 1 Scope

1.1 This Part of this European Standard applies to the design and manufacture of simple unfired serially made pressure vessels, herein after referred to as vessels, designed for air braking equipment and auxiliary systems for motor vehicles and their trailers, and which:

- a) include fabrication by welding;
- b) have a simple geometry enabling simple-to-use production procedures. This is achieved by either:
  - 1) a cylindrical shell of circular cross section closed by outwardly dished and/or flat ends having the same axis of revolution as the shell; or
  - 2) two dished ends having the same axis of revolution;
- c) have branches not larger in diameter than 0,5 of the diameter of the cylinder to which they are welded.

1.2 It applies to vessels intended to contain only compressed air, and which operate within the following constraints:

- a) subjected to an internal pressure greater than 0,5 bar;
- b) the parts and assemblies contributing to the strength of the vessel under pressure to be made either of non-alloy quality steel or of non-alloy aluminium or non-age hardening aluminium alloys;
- c) maximum working pressure 30 bar, the product of that pressure and the capacity of the vessel ( $PS \cdot V$ ) is greater than 50 bar litres and not exceeding 1500 bar litres;
- d) capacity not exceeding 150 litres;
- e) minimum working temperature not lower than  $-50\text{ }^{\circ}\text{C}$  and maximum working temperature not higher than  $100\text{ }^{\circ}\text{C}$ .

It does not apply to vessels specifically designed for nuclear use, to vessels specifically intended for installation in or the propulsion of ships and aircraft, or to fire extinguishers.

1.3 The essential safety requirements are given in annex G.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 287-1	Approval testing of welders - fusion welding - Part 1 : Steels
EN 287-2	Approval testing of welders - fusion welding - Part 2 : Aluminium and aluminium alloys
EN 288-1	Specification and approval of welding procedures for metallic materials - Part 1 : General rules for fusion welding
EN 288-3	Specification and approval of welding procedures for metallic materials - Part 3 : Welding procedure tests for arc welding of steels
EN 288-4	Specification and approval of welding procedures for metallic materials - Part 4 : Welding procedure tests for arc welding of aluminium and its alloys
EN 10002-1	Metallic materials - tensile testing - Part 1 : Method of test (at ambient temperature)
EN 10025	Hot rolled products of non-alloy structural steels - Technical delivery conditions (annex F only)
EN 10028-1	Flat products made of steels for pressure purposes - Part 1 : General requirements
EN 10028-2	Flat products made of steels for pressure purposes - Part 2 : Non-alloy and alloy steels with specified elevated temperature properties
EN 10207	Steels for simple pressure vessels - Technical delivery requirements for plates, strips and bars
EN 26520	Classification of imperfections in metallic fusion welds, with explanations
ISO 148	Steel-Charpy impact test (V-notch)
ISO 209-1	Wrought aluminium and aluminium alloys - Chemical composition and forms of products - Part 1 : Chemical composition