

ICS 27.020

SANS 10219-1:2006

ISBN 0-626-17437-6

Edition 2

SOUTH AFRICAN NATIONAL STANDARD

**The determination of performance
(at net power) of industrial internal
combustion engines**

**Part 1: Standard reference conditions and
declarations of power, fuel consumption
and lubricating oil consumption**

Published by Standards South Africa
1 dr lategan road groenkloof ☒ private bag x191 pretoria 0001
tel: 012 428 7911 fax: 012 344 1568 international code +27 12
www.stansa.co.za
© Standards South Africa

standards
SouthAfrica
(a division of SABS)

SANS 10219-1:2006

Edition 2

Table of changes

Change No.	Date	Scope

Abstract

Specifies the standard reference conditions and the methods of declaring the power, fuel consumption and lubricating oil consumption of reciprocating internal combustion engines using liquid or gaseous fuels.

Keywords

fuel consumption, internal combustion engines, performance, performance testing, power (mechanics), testing conditions.

Acknowledgement

Standards South Africa wishes to acknowledge valuable assistance derived from publications of the International Organization for Standardization.

Foreword

This South African standard was approved by National Committee StanSA TC 5120.27, *Steering committee for construction of motor vehicles*, in accordance with procedures of Standards South Africa, in compliance with annex 3 of the WTO/TBT agreement.

This edition cancels and replaces edition 1 (SABS 0219-1:1988).

This standard is based on ISO 3046 (parts 1 to 6), *Reciprocating internal combustion engines – Performance*.

SANS 10219 consists of the following parts under the general title *The determination of performance (at net power) of industrial internal combustion engines*:

Part 1: Standard reference conditions and declarations of power, fuel consumption and lubricating oil consumption.

Part 2: Test methods.

Part 3: Test measurements.

Part 4: Speed governing.

Part 5: Torsional vibrations.

Part 6: Overspeed protection.

Annexes A to G are for information only.

Contents

	Page
Abstract	
Keywords	
Acknowledgement	
Foreword	
1 Scope	3
2 Normative references	3
3 Definitions	4
4 Units	5
5 Standard reference conditions	5
6 Auxiliaries	6
7 Declarations of power	6
8 Declarations of fuel consumption	8
9 Declarations of lubricating oil consumption	9
10 Adjustment of net brake power for ambient conditions	9
11 Adjustment of fuel consumption for ambient conditions	11
12 Information to be supplied by the customer	12
13 Information to be supplied by the engine manufacturer	13
Annex A (informative) Examples of auxiliaries which may be fitted	15
Annex B (informative) Determination of the power adjustment factor (α)	17
Annex C (informative) Determination of the fuel consumption adjustment factor (β)	18
Annex D (informative) Determination of the ratio of indicated power (k)	19
Annex E (informative) Determination of dry air pressure ratio	21
Annex F (informative) Determination of water vapour pressure	22
Annex G (informative) Examples of calculation of power and fuel consumption adjustment	23

SANS 10219-1:2006
Edition 2

This page is intentionally left blank

The determination of performance (at net power) of industrial internal combustion engines

Part 1:

Standard reference conditions and declarations of power, fuel consumption and lubricating oil consumption

1 Scope

1.1 This part of SANS 10219 specifies the standard reference conditions and the methods of declaring the power, fuel consumption and lubricating oil consumption of reciprocating internal combustion engines that use liquid or gaseous fuels.

1.2 This part of SANS 10219 covers reciprocating internal combustion engines for land, rail-traction and marine use, excluding engines used to propel agricultural tractors, road vehicles and aircraft.

1.3 This part of SANS 10219 may be applied to engines used to propel road construction and earthmoving machines, industrial trucks and for other applications where no suitable standard for these engines exist.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of SANS 10219. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this part of SANS 10219 are encouraged to take steps to ensure the use of the most recent editions of the standards indicated below. Information on currently valid national and international standards can be obtained from Standards South Africa.

ISO 1000, *SI units and recommendations for the use of their multiples and of certain other units.*

ISO 1204, *Reciprocating internal combustion engines – Designation of the direction of rotation and of cylinders and valves in cylinder heads, and definition of right-hand and left-hand in-line engines and locations on an engine.*

ISO 2710-1, *Reciprocating internal combustion engines – Vocabulary – Part 1: Terms for engine design and operation.*

ISO 2710-2, *Reciprocating internal combustion engines – Vocabulary – Part 2: Terms for engine maintenance.*

SANS 10219-2, *Determination of performance (at net power) of industrial internal combustion engines – Part 2: Test methods.*

SANS 10219-4, *Determination of performance (at net power) of industrial internal combustion engines – Part 4: Speed governing.*

SANS 10219-6, *Determination of performance (at net power) of industrial internal combustion engines – Part 6: Overspeed protection.*