

---

---

**Earth-moving machinery — Engine test  
code — Net power**

*Engins de terrassement — Code d'essai des moteurs — Puissance  
nette*

iTeh Standards  
(<https://standards.itih.ai>)  
Document Preview

[ISO 9249:2007](https://standards.itih.ai/catalog/standards/iso/c4fef413-5562-49ec-a0f6-2bd11b26eb2a/iso-9249-2007)

<https://standards.itih.ai/catalog/standards/iso/c4fef413-5562-49ec-a0f6-2bd11b26eb2a/iso-9249-2007>



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

**iTeh Standards**  
**(<https://standards.iteh.ai>)**  
**Document Preview**

[ISO 9249:2007](https://standards.iteh.ai/catalog/standards/iso/c4fe413-5562-49ec-a0f6-2bd11b26eb2a/iso-9249-2007)

<https://standards.iteh.ai/catalog/standards/iso/c4fe413-5562-49ec-a0f6-2bd11b26eb2a/iso-9249-2007>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 9249 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 1, *Test methods relating to machine performance*.

This third edition cancels and replaces the second edition (ISO 9249:1997), which has been technically revised. It also incorporates the Technical Corrigendum ISO 9249:1997/Cor 1:1999.

iteh Standards  
(<https://standards.iteh.ai/>)  
Document Preview

[ISO 9249:2007](#)

<https://standards.iteh.ai/catalog/standards/iso/c4fe1413-5562-49ec-a0f6-2bd11b26eb2a/iso-9249-2007>

## Introduction

This International Standard is intended to be applied in conjunction with the “core” standard, ISO 15550, in order to define the net power ratings for earth-moving machinery where relevant equipment and accessories that absorb engine power (fan, pumps, air compressors and so forth) are deducted from the engine power rating. The “satellite” standard is therefore not a stand-alone document but is intended to be completed by the requirements laid down in ISO 15550.

ISO 15550 contains the requirements that are common to all engine applications, whereas this International Standard contains only those requirements that are necessary to tailor power measurement and declaration to suit the particular engine application defined in its Scope.

The relationship between this International Standard and ISO 14396 is explained in Annex A.

# iTeh Standards (<https://standards.iteh.ai>) Document Preview

[ISO 9249:2007](https://standards.iteh.ai/catalog/standards/iso/c4fe413-5562-49ec-a0f6-2bd11b26eb2a/iso-9249-2007)

<https://standards.iteh.ai/catalog/standards/iso/c4fe413-5562-49ec-a0f6-2bd11b26eb2a/iso-9249-2007>

# Earth-moving machinery — Engine test code — Net power

## 1 Scope

This International Standard specifies a method for testing the net power of internal combustion engines intended for the propulsion of earth-moving machinery as defined in ISO 6165. It is intended to provide a standardized means of reporting net power values to the end user of the earth-moving machines. It is applicable to

- a) RIC spark- or compression-ignition engines but excluding free piston engines,
- b) rotary piston engines.

These engines may be naturally aspirated or pressure-charged using either a mechanical pressure-charger or a turbocharger.

**NOTE** This International Standard is a companion standard to ISO 14396. The principle differences between the two is the fitting of certain cooling equipment and pressure-charging equipment auxiliaries (fans) for the test. It is possible to deduct the power requirements of equipment and auxiliaries from the engine ratings of ISO 14396 by test or calculation methods. See Annex A for the preferred calculation method for obtaining the net power ratings according to this International Standard. Both the test and the calculation method comply with this International Standard.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6165, *Earth-moving machinery — Basic types — Identification and terms and definitions*

ISO 14396, *Reciprocating internal combustion engines — Determination and method for the measurement of engine power — Additional requirements for exhaust emission tests in accordance with ISO 8178*

ISO 15550:2002, *Internal combustion engines — Determination and method for the measurement of engine power — General requirements*

## 3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the symbols and abbreviated terms given in ISO 15550 and the following terms and definitions apply.

### 3.1

#### **declared engine speed**

engine speed corresponding to the declared power

**NOTE** In some applications, the declared engine speed is named “rated speed”.

[ISO 15550:2002, definition 3.2.4]

**3.2  
declared power**  
value of the power, declared by the manufacturer, which an engine will deliver under a given set of circumstances

NOTE In some applications, the declared power is named "rated power".

[ISO 15550:2002, definition 3.3.1]

**3.3  
engine adjustment**  
physical procedure of modifying an engine for the purpose of adapting it to deliver a power adjusted to a different set of ambient conditions, such as by moving the limiting fuel stop, re-matching the turbocharger, changing the fuel injection timing or other physical changes

NOTE Once the modifications have been completed the engine is an adjusted engine.

[ISO 15550:2002, definition 3.2.1]

**3.4  
engine speed**  
number of revolutions of the crankshaft in a given period of time

[ISO 2710-1:2000, definition 11.1]

**3.5  
fuel delivery**  
metered volume (mass) of fuel delivered by a fuel injection system during one working cycle

NOTE Adapted from ISO 7876-1:1990, definition 10.24.

**3.6  
load**  
general term describing the magnitude of the "power" or "torque" demanded from the engine by its driven machinery and usually expressed relative to a declared power or torque

NOTE The term "load" is physically imprecise and should be avoided. For quantitative purposes the terms "power" or "torque" should be used, instead of "load", together with a statement of speed.

[ISO 15550:2002, definition 3.3.11]

**3.7  
net power**  
power obtained on a test bed at the end of the crankshaft or its equivalent, at the corresponding engine speed, with the equipment and auxiliaries listed in ISO 15550:2002, Table 1, column 2, and required in column 3 (fitted for engine net power test)

NOTE 1 If the power measurement can only be carried out with a mounted gearbox, the losses in the gearbox should be added to the measured power to give the net engine power.

NOTE 2 Adapted from ISO 15550:2002, definition 3.3.3.1.

**3.8  
net torque**  
torque transmitted on a test bed at the end of the crankshaft or its equivalent, at the corresponding engine speed, with the equipment and auxiliaries listed in ISO 15550:2002, Table 1, column 2, and required in column 3 (fitted for engine net power test)

NOTE Adapted from ISO 15550:2002, definition 3.3.12.