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Energy efficiency of industrial trucks - Test methods - Part 1: General (ISO 23308-1:2025)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 11/25

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EN ISO 23308-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2025

ICS 53.060

Supersedes EN 16796-1:2016

English Version

**Energy efficiency of industrial trucks - Test methods - Part
1: General (ISO 23308-1:2025)**

Efficacité énergétique des chariots de manutention -
Méthodes d'essai - Partie 1: Généralités (ISO 23308-
1:2025)

Energieeffizienz von Flurförderzeugen - Prüfverfahren
- Teil 1: Allgemeines (ISO 23308-1:2025)

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European foreword

This document (EN ISO 23308-1:2025) has been prepared by Technical Committee ISO/TC 110 "Industrial trucks " in collaboration with Technical Committee CEN/TC 150 "Industrial Trucks - Safety" the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by December 2025, and conflicting national standards shall be withdrawn at the latest by December 2025.

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

This document supersedes EN 16796-1:2016.

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Endorsement notice

The text of ISO 23308-1:2025 has been approved by CEN as EN ISO 23308-1:2025 without any modification.



International Standard

ISO 23308-1

Energy efficiency of industrial trucks — Test methods —

Part 1: General

*Efficacité énergétique des chariots de manutention — Méthodes
d'essai —*

Partie 1: Généralités

**Second edition
2025-06**

ISO 23308-1:2025(en)



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ISO 23308-1:2025(en)**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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 110, *Industrial trucks*, Subcommittee SC 5, *Sustainability*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 150, *Industrial trucks – Safety*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 23308-1:2020), which has been technically revised.

The main changes are as follows:

- the list of truck types in the Scope truck types has been adapted to align with ISO 5053-1;
- the normative references have been updated;
- in [6.1](#), a reference to the relevant part of the ISO 23308 series has been added.

A list of all parts in the ISO 23308 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The ISO 23308 series deals with the energy efficiency of industrial trucks including batteries and battery chargers.

This document contains the procedures to determine the efficiency of trucks, traction batteries and battery chargers. The other parts of the ISO 23308 series provide specific test cycles for different truck types.

NOTE The test cycles are based on the VDI 2198 guideline.^[1] This guideline was widely accepted by industry and was used to measure the energy consumption of electric industrial trucks and internal combustion (IC) industrial trucks. The guideline has been in place since 1996 and it is widely used. This approach provides procedures for the evaluation of the energy efficiency of trucks by comparison.

[Annex C](#) of this document includes information on calculation of the greenhouse gas equivalent.

The content of this document is of relevance for the following stakeholder groups:

- machine manufacturers (small, medium and large enterprises);
- market surveillance authorities;
- machine users (small, medium and large enterprises);
- service providers, for example for consulting activities.

These stakeholder groups have been given the opportunity to take part in the drafting process of this document. The machines concerned are indicated in the scope of this document. This document provides specifications for testing. The machine instruction handbook includes information for the user, such as energy consumption.

Typical users of this document are technical experts involved in testing and/or simulation or calculation of the energy consumption of industrial trucks in the scope of this document.

Energy efficiency of industrial trucks — Test methods —

Part 1: General

1 Scope

This document specifies general test criteria and requirements to measure the energy consumption for self-propelled industrial trucks (hereinafter referred to as trucks) during operation. For electric trucks, the efficiency of the battery and the battery charger is included.

ISO 23308-2, ISO 23308-3, ISO 23308-4 and ISO 23308-6 contain additional, truck-specific requirements which build on those expressed in this document.

This document is applicable to the in-use phase of the product life cycle.

It applies to the following truck types as defined in ISO 5053-1:

- counterbalance lift truck;
- articulated counterbalance lift truck;
- reach truck (with retractable mast or fork arm carriage);
- straddle truck;
- pallet-stacking truck;
- pallet truck;
- platform and stillage truck;
- end-controlled pallet truck;
- order-picking truck;
- centre-controlled order-picking truck;
- towing tractor;
- pushing tractor;
- burden and personnel carrier;
- lorry-mounted truck;
- towing and stacking tractor;
- side-loading truck (one side only);
- variable-reach container handler;
- counterbalance container handler;
- lateral-stacking truck (both sides);
- lateral-stacking truck (three sides);

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- multi-directional lift truck;
- variable-reach truck;
- platform truck;
- double-stacker;
- rough-terrain truck;
- rough-terrain variable-reach truck;
- slewing rough-terrain variable-reach truck;
- stacking high-lift straddle carrier.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3691-1:2011/Amd 1:2020, *Industrial trucks — Safety requirements and verification — Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks*

ISO 3691-2:2023, *Industrial trucks — Safety requirements and verification — Part 2: Self-propelled variable-reach trucks*

ISO 5053-1, *Industrial trucks — Vocabulary — Part 1: Types of industrial trucks*

ISO 15500-1, *Road vehicles — Compressed natural gas (CNG) fuel system components — Part 1: General requirements and definitions*

ISO 3411, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope*

IEC 60254-1, *Lead acid traction batteries — Part 1: General requirements and methods of tests*

IEC 62620:2014/Amd 1:2023, *Secondary cells and batteries containing alkaline or other non-acid electrolytes — Secondary lithium cells and batteries for use in industrial applications*

EN 589, *Automotive fuels — LPG — Requirements and test methods*

EN 590, *Automotive fuels — Diesel — Requirements and test methods*

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