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**EN 1501-4:2023, IDT**  
(ICS 17.140.30; 43.160)

**SINGAPORE STANDARD**

**Refuse collection vehicles – General  
requirements and safety requirements**

**– Part 4: Noise test code for refuse collection vehicles**

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## **National Foreword**

This Singapore Standard was prepared by the Working Group on Waste Collection and Transportation Management set up by the Technical Committee on Circularity of Materials under the purview of the Environment and Resources Standards Committee.

This standard is a revision of SS EN 1501-4:2016. It is an identical adoption of EN 1501-4:2023, “Refuse collection vehicles – General requirements and safety requirements – Part 4: Noise test code for refuse collection vehicles”, and it is adopted with permission of CEN, Rue de la Science 23 B - 1040 Brussels.

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 1501-4**

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English Version

**Refuse collection vehicles - General requirements and  
safety requirements - Part 4: Noise test code for refuse  
collection vehicles**

Véhicules de collecte de déchets - Exigences générales  
et exigences de sécurité - Partie 4 : Code d'essai  
acoustique des véhicules de collecte des déchets

Abfallsammelfahrzeuge - Allgemeine Anforderungen  
und Sicherheitsanforderungen - Teil 4:  
Geräuschprüfverfahren für Abfallsammelfahrzeuge

This European Standard was approved by CEN on 17 April 2023.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



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EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN 1501-4:2023) has been prepared by Technical Committee CEN/TC 183 “Waste management”, the secretariat of which is held by DIN.

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 November 2023, and conflicting national standards shall be withdrawn at the latest by November 2023.

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 1501-4:2007.

EN 1501 consists of the following parts under the general title Refuse collection vehicles — General requirements and safety requirements:

- Part 1: Rear loaded refuse collection vehicles;
- Part 2: Side loaded refuse collection vehicles;
- Part 3: Front loaded refuse collection vehicles;
- Part 4: Noise test code for refuse collection vehicles (this part);
- Part 5: Lifting devices for refuse collection vehicles.

This document provides a means for the determination and declaration of noise emission by refuse collection vehicles (RCVs) falling within the scope of the standards of the EN 1501 series. The determination of noise emission values is a prerequisite for a manufacturer to assess the noise reduction obtained at the design stage.

In comparison with the previous edition, the following technical modifications have been made:

- This revision of the original standard EN 1501-4:2007 specifies a new test procedure for determining the sound power level. The vehicle is not tested in the loaded condition as before, as the test is carried out without refuse containers and refuse material. Since many different refuse containers are used in the EU and RCVs are loaded with many different refuse materials, the experts of CEN/TC183/WG2 have agreed that in a standardized noise measurement for RCVs, refuse containers and refuse material cannot be taken into account. In order to give the user a clear picture of the noise behaviour of RCVs, and since the EN 1501 series refers purely to RCVs, this standard only deals with the noise behaviour of RCVs itself. The noise behaviour of waste collection containers can mainly be influenced by design and construction under the responsibility of the container manufacturer. With this new method, the sound power level is not only measured during the loading process when the vehicle is stationary, as before, but also while the RCV approaches the loading point and leaves it after loading. This is intended to reflect future noise reductions through the use of alternative drive systems.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## Introduction

This European Standard provides a procedure for the measurement and calculation of sound power emitted by RCVs thus enabling manufacturers and importers to mark and certify rear loaded, side loaded and front loaded RCVs.

The RCV work cycle for the measurement of the emission sound pressure levels at the working stations ( $L_{PA}$ ) differs from the work cycle of the newly specified measurement of sound power level ( $L_{WA}$ ), since the  $L_{WA}$  is measured while the refuse collection vehicle (RCV) approaches the loading point and leaves it after loading, whereby the  $L_{PA}$  is only measured stationary at the loading point. However, experience has shown that the noise emission due to the travelling RCV have no significant effects to the emission sound pressure levels at the working stations.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document.

This document is a type-C standard as stated in EN ISO 12100:2010.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

## 1 Scope

This document provides all of the information required in order to perform efficiently, and in standardized conditions, the determination, the declaration and the verification of noise emission values of refuse collection vehicles.

The document ensures the reproducibility of the determination of noise emission values within the limits established for the accuracy grade of the basic standard used to determine noise emission values.

This document specifies the noise measurement conditions for the types of RCVs defined and described in the standards of the EN 1501:2021 series.

This document applies to machines which are manufactured after the date of approval of this document by CEN.

Noise emissions of mobile waste and recycling containers are excluded.

## 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.

EN 1501-1:2021, *Refuse collection vehicles — General requirements and safety requirements — Part 1: Rear loaded refuse collection vehicles*

EN 1501-2:2021, *Refuse collection vehicles — General requirements and safety requirements — Part 2: Side loaded refuse collection vehicles*

EN 1501-3:2021, *Refuse collection vehicles — General requirements and safety requirements — Part 3: Front loaded refuse collection vehicles*

EN 1501-5:2021, *Refuse collection vehicles — General requirements and safety requirements — Part 5: Lifting devices for refuse collection vehicles*

EN ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*