
Gokarti za prosti čas - 1. del: Varnostne zahteve in preskusne metode za gokarte

Leisure karts - Part 1: Safety requirements and test methods for karts

Freizeitkarts - Teil 1: Sicherheitstechnische Anforderungen und Prüfverfahren für Karts

Karts de loisir - Partie 1: Exigences de sécurité et méthodes d'essai relatives aux karts

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**Leisure karts - Part 1: Safety requirements and test
methods for karts**

Karts de loisir - Partie 1: Exigences de sécurité et
méthodes d'essai relatives aux karts

Freizeitkarts - Teil 1: Sicherheitstechnische
Anforderungen und Prüfverfahren für Karts

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 354.

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prEN 16230-1:2026 (E)**European foreword**

This document (prEN 16230-1:2026) has been prepared by Technical Committee CEN/TC "354", the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16230-1:2013+A1:2014.

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

- electric karts included in the Scope;
- requirements for electric powertrain for protection against incorrect action on control systems;
- requirements for the Rechargeable Electrical Energy Storage System;
- specific requirements for electrical powertrain;
- additional information for use linked to the electric propulsion system.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

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Introduction

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

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

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

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prEN 16230-1:2026 (E)**1 Scope**

This document is applicable for karts that are not intended to be used on public roads.

This document applies to:

- leisure karts only;
- karts propelled by a combustion engine, including LPG combustion engines;
- karts propelled by an electric powertrain where the working voltage is below 30 V AC rms and 60 V DC. The traction battery is a Li-ion battery or a lead acid battery;
- karts used on indoor and outdoor tracks, permanent or temporary;
- karts used on supervised tracks designed for leisure karting, with a sealed ground (such as asphalt, concrete, ice or snow).

This document does not apply to:

- karts used for competition organized by and under the responsibility of the CIK-FIA and/or ASN, ensuring through the granting of licenses by an ASN or one of its affiliated members as defined in the International Sporting code, compliance with the safety, sporting, disciplinary and technical rules of the CIK-FIA and/or ASN;
- karts designed exclusively for competition and toys;
- cross country karts;
- karts with two or more seats;
- karts used on tracks not mentioned above (such as mud, earth);
- karts used in amusement parks (refer to EN 13814-1:2019+A1:2024 [1] for these installations).

The requirements related to the hazards of swappable battery propulsion systems are not covered in this document.

The requirements related to whole-body vibration are not covered in this document.

This document specifies appropriate measures to eliminate or reduce the risks arising from significant hazards, hazardous situations and events (see Clause 6) during operation and maintenance of the karts, when carried out as intended by the manufacturer.

Safety in karting activities is dependent on a correct interaction between leisure karts and the track equipment and facilities. General recommendations for tracks to be used for leisure karting are included in this part of the standard.

This document is not applicable to karts that are manufactured before the date of publication of this document by CEN.

NOTE Specific requirements for tracks design and operation will be included in a future Part 2 of this standard.

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 50342-1:2015, *Lead-acid starter batteries - Part 1: General requirements and methods of test*

EN 60204-1:2018,¹ *Safety of machinery - Electrical equipment of machines - Part 1: General requirements*

EN 60335-2-29:2021,² *Household and similar electrical appliances - Safety - Part 2-29: Particular requirements for battery chargers*

EN 60529:1991,³ *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN IEC 61000-6-2:2019, *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments*

EN IEC 61000-6-4:2019, *Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments*

EN IEC 62619:2022, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications (IEC 62619:2022)*

EN ISO 3744:2026, *Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2025)*

EN ISO 5349-1:2001, *Mechanical vibration - Measurement and evaluation of human exposure to hand-transmitted vibration - Part 1: General requirements (ISO 5349-1:2001)*

EN ISO 8041-1:2017, *Human response to vibration - Measuring instrumentation - Part 1: General purpose vibration meters (ISO 8041-1:2017)*

EN ISO 8041-2:2021, *Human response to vibration - Measuring instrumentation - Part 2: Personal vibration exposure meters (ISO 8041-2:2021)*

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

EN ISO 13849-1:2023, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2023)*

IEC 60095-1:2018, *Lead-acid starter batteries - Part 1: General requirements and methods of test*

ISO 3864-1:2011, *Graphical symbols - Safety colours and safety signs - Part 1: Design principles for safety signs and safety markings*

ISO 3864-2:2016, *Graphical symbols - Safety colours and safety signs - Part 2: Design principles for product safety labels*

UN 38.3, *Testing for Lithium Batteries*

¹ As impacted by EN 60204-1:2018/A1:2025.

² As impacted by EN 60335-2-29:2021/A1:2021 and EN 60335-2-29:2021/A11:2024.

³ As impacted by EN 60529:1991/corrigendum May 1993, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/A2:2013/AC:2019-02 and EN 60529:1991/AC:2016-12.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

kart

multilane motor driven sports equipment, with four wheels not set in a straight line, two wheels of which are powered and the other two serving as control, and without suspension

3.2

leisure karting

organized activity, offering leisure services in karting including leisure competition

3.3

leisure kart

kart intended and designed for leisure karting activities

3.4

all around protection

device made of one or several parts encircling the kart and meant to protect the driver and the kart from external impacts, so as to eliminate the risk of wheel to kart contact

3.5

evaluation

assessment of the ability of a person to drive

3.6

training

teaching process by which a driver is brought to an appropriate level of driving standard for the session or event they are participating in

3.7

track

sealed ground consisting of a series of loops and straights that are continuous, designed and operated to provide safe driving of karts and located in an area of land or building that is separated from the public by a barrier

3.8

slow track

track designed and operated to provide safe driving of karts up to 70 km/h

3.9

fast track

track designed and operated to provide safe driving of karts up to 110 km/h

3.10**Liquified Petroleum Gas****LPG**

mixture of propane and butane which is suitable as power fuel for combustion engines and fluid at room temperature and overpressure

3.11**Rechargeable Electrical Energy Storage System****REESS**

rechargeable energy storage system that provides electric energy for electrical propulsion

Note 1 to entry: This energy storage system can also provide energy to auxiliary unit.

3.12**working voltage**

highest value of an electrical circuit voltage root-mean-square (rms), which may occur between any conductive parts in open circuit conditions or under normal operating condition

4 Classification

Leisure karting covers a wide range of activities on indoor and outdoor tracks, and can be used by drivers of different age, size, weight and experience.

For the purpose of this document, different types of karts have been defined. Table 1 defines the major design parameters to be taken as a reference by the kart manufacturer for each kart type.

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Table 1 — Type of kart – Manufacturer's design parameters

Kart type	Slow track kart ^a Maximum speed (km/h)	Fast track kart ^a Maximum speed (km/h)	Maximum power at the crankshaft (kW ^b)	Reference parameters for crash test only ^c		
				Reference height of driver (ergonomics minimum size ranges for given type) (mm)	Reference weight of driver (kg)	Reference dummy ^d
Kart type A1 (baby ^e)	30	30	3,5	1 150 (- 100 / + 100) ^f	22 (- 5 / + 10) ^f	
Kart type A2 (mini)	45	65	5,15	1 350 (- 150 / + 150) ^f	32 (- 10 / + 18) ^f	5 th percentile female
Kart type B (adult)	70	80	10,3	1 700 (- 250 / + 250) ^f	1 700 (- 250 / + 250) ^f	95 th percentile male
Kart type C1 (adult)	70	90	16,9	1 700 (- 250 / + 250) ^f	78 (- 38 / + 23) ^g	95 th percentile male
Kart type C2 (adult)	70	110	22,1	1 700 (- 250 / + 250) ^f	78 (- 38 / + 23) ^g	95 th percentile male

NOTE See also Table 7 in 9.2.2.3.

^a Engineering design values; it is assumed that karts are used in conjunction with a track designed for their maximum speed. In some countries, specific regulations may apply regarding age, speed limitation, intended use or dedicated areas.

^b Measured according to a generally acknowledged standardized method, e.g. ISO 15550, SAE J1349.

^c These parameters do not indicate maximum or minimum driver height or weight of drivers permitted to use the karts.

^d Hybrid III type dummies used for the crash test as described in B.3.

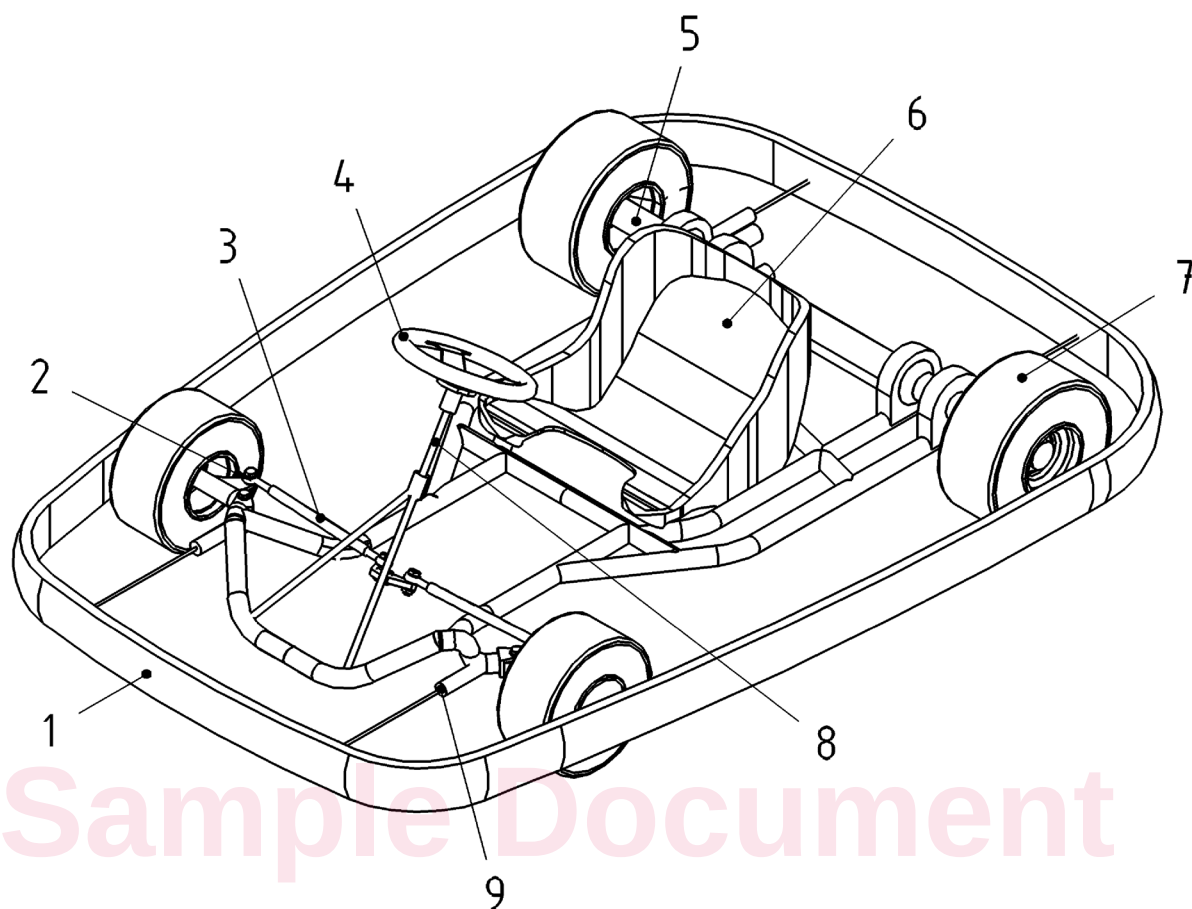
^e Smallest category of a kart.

^f Range specified according to the relevant 50th percentile dummy.

^g Upper tolerance specified according to the 95th percentile male dummy.

5 Description of the kart

The main components of the karts are described in Figure 1.



Key

- | | |
|---|--------------------------|
| 1 | all around protection |
| 2 | stub axle |
| 3 | track rods |
| 4 | steering wheel |
| 5 | rear train |
| 6 | seat |
| 7 | wheel |
| 8 | steering axle |
| 9 | energy absorption device |

Figure 1 — Names of the components of the kart

6 List of significant hazards

Table 2 below contains all significant hazards, hazardous situations and events, as they are dealt with in this document, and identified by risk assessment as significant for the karts within the scope of this standard and which require action to eliminate or reduce the risk.

Table 2 — List of significant hazards

Subclauses	Danger zone or source of hazard	Type of hazard	Relevant clause of the standard
6.1	Mechanical hazards		
6.1.1	Protection of the kart	Wheel to wheel, or plastic/metal to wheel contact leading to a “launching” type of roll over	7.3.1 Kart protection
		Karts “climbing” one on the other	7.3.1 Kart protection
		Crash situations leading to high forces on the driver	7.3.1 Kart protection
6.1.2	Seat	Falling on the side under centrifugal forces	7.3.2 Seat
		Non efficient braking due to bad position of the driver	
		Lack of control due to bad driving position	
		Falling aside under lateral crash	
6.1.3	Brake system mechanical Brake system hydraulic	Crash situation resulting from a failure of brake systems	7.3.3 Brake system performance 7.4.1 Brake system controls
6.1.4	Steering system	Crash situation resulting from a failure of steering system	
	Steering wheel	Projection of the driver against the steering wheel, resulting from a frontal crash	7.4.2 Steering wheel
6.1.5	Stub axle	Crash situation resulting from a failure of a stub axle	7.5 Protection against break up during operation – stub axle
6.1.6	Sharp edges (whole kart)	Injuries due to sharp edges under: — normal situations — crash situations	7.6 Protection against sharp and edges angles
6.1.7	Rotating elements Rear axle Transmission Brake disk	Hair entanglement in moving parts, especially in rear axle	7.7 Protection against rotating parts
		Loose (floating) clothes entanglement in rotating parts	
		Risk of inadvertent contact of the body of the driver (e.g. hand) with rotating parts	9.4 Signs (pictogram), written warnings

Subclauses	Danger zone or source of hazard	Type of hazard	Relevant clause of the standard
6.1.8	Stability	Flip over of the kart resulting from excessive grip	7.11 Wheels and tyres
6.1.9	Crushing	Unattended movement of the kart, e.g. while charging	
6.2	Electrical hazards		
	Starter batteries and/or 2 nd systems and/or REESS batteries, if any	Fire caused by short circuits	7.18 Starter batteries and 2 nd systems (not propulsion)
		Electrical risks of the power source (charger)	7.18 Starter batteries and 2 nd systems (not propulsion)
6.3	Thermal hazard		
	All high temperature components	Burns due to inadvertent contacts with hot parts	7.8 Protection against hot surfaces
	Thermal hazards arising from the incorrect usage of the battery: outside of manufacturer's parameters, mechanical impact, etc.	The REESS shall not be part of the all-around protection. The REESS shall be encapsulated by the all-around protection. Components of the electric powertrain shall have protection (e.g. fuses, transistors, etc.) which shall prevent a short circuit situation.	7.3.1.5 Additional requirements for REESS 7.13.1 Specific requirements for electrical powertrain - general
6.4	Noise		
	Whole kart	Risk for the driver, due to close source of noise	7.15 Noise
		Risk for other persons than the driver due to fleet of karts	7.15 Noise
6.5	Vibrations hazards		
	Whole kart	Risk for the driver, due to sources of vibration	7.16 Vibrations hazards
6.6	Material / substance hazards		7.3 Materials and products
6.6.1	Fuel system Fuel tank Fuel line	Fire or explosion due to damage on fuel system after impacts	7.14.1 Fuel system
		Fire or explosion due to filling	7.14.2 Fuel lines