BS EN 16230-2:2016

BSI Standards Publication

Leisure karts

Part 2: Safety requirements for karting facilities

bsi.

National foreword

This British Standard is the UK implementation of EN 16230-2:2016.

The UK participation in its preparation was entrusted to Technical Committee AGE/6, Agricultural tractors and forestry machinery.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Published by BSI Standards Limited 2016

ISBN 978 0 580 86631 9

ICS 43.100; 97.220.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2016.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16230-2

November 2016

ICS 43.100; 97.220.10

English Version

Leisure karts - Part 2: Safety requirements for karting facilities

Karts de loisir - Partie 2 : Prescriptions de sécurité relatives aux installations de karting

Freizeitkarts - Teil 2: Sicherheitstechnische Anforderungen für Kartbahnen

This European Standard was approved by CEN on 20 August 2016.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

European foreword ... **4**

Introduction ... **5**

1 Scope ... **6**

2 Normative references ... **7**

3 Terms and definitions ... **7**

4 Classification ... **9**
4.1 Slow track ... **9**
4.2 Fast track ... **9**

5 Safety requirements ... **9**
5.1 General ... **9**
5.2 Pits ... **10**
5.2.1 Requirements ... **10**
5.2.2 Access pits to track ... **10**
5.2.3 Access track to pits ... **10**
5.2.4 Parking area ... **10**
5.2.5 Pit dimensions ... **10**
5.3 Track ... **11**
5.3.1 Maximum number of karts in use on the track at the same time ... **11**
5.3.2 Track Width ... **11**
5.3.3 Track surfacing ... **12**
5.4 Physical control measures ... **12**
5.4.1 Principle ... **12**
5.4.2 Final control measures, track barriers and protection ... **12**
5.5 Track management and control ... **13**
5.6 Spectators' area ... **13**
5.6.1 General ... **13**
5.6.2 Driver information/briefing ... **13**
5.6.3 Driver APE ... **14**
5.7 Light levels in normal operation ... **15**
5.8 Safety lighting ... **15**
5.9 Air quality ... **15**
5.10 Noise reduction ... **15**
5.11 Fuelling and loading ... **16**
5.11.1 General ... **16**
5.11.2 Petrol refuelling ... **16**
5.11.3 LPG refuelling ... **16**
5.11.4 Gas or natural gas, respectively ... **16**
5.12 Track rules ... **17**
5.13 Briefing of drivers ... **17**
5.14 Karting for 6 and 7 years old ... **18**
5.15 Signage and markings ... **19**
5.15.1 Markings ... **19**
5.15.2 Signage ... **19**

6 Track staff training ... **19**

7 Testing **20**
7.1 Visibility of the track signals and marshals **20**
7.2 Assessment of the route **20**
8 Inspection and maintenance **20**
9 Other remarks **21**
9.1 General **21**
9.2 Compatibility warnings **21**
10 Environmental Aspects **21**
Annex A (informative) **Example of risk assessment procedure** **22**
Annex B (informative) **Environmental checklist** **26**
Annex C (informative) **A–deviations** **27**
Bibliography **29**

European foreword

This document (EN 16230-2:2016) has been prepared by Technical Committee CEN/TC 354 “Non-type approved light motorized vehicles for the transportation of persons and goods and related facilities”, the secretariat of which is held by AFNOR.

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 May 2017, and conflicting national standards shall be withdrawn at the latest by May 2017.

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.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Karting facilities come in a wide range of types. Such a wide range implies a gradation of the safety requirements, considering the specific level of hazards.

On the basis of regular risk assessment, karting facilities operators should take reasonable measures to ensure the safety of users taking into consideration the risks as well as the restrictions imposed by technical and commercial factors.

Karting facilities operators should also consider EN 16230-1:2013+A1:2014, when carrying out risk assessments.

This European Standard includes requirements, guidance and notes. While compliance with requirements is mandatory, guidance, which can be used in accordance with a risk assessment and notes, gives additional information and/or explanations.

1 Scope

This European Standard is applicable for karting facilities, as defined in 3.1 below, relating to karts that are not intended to be used on public roads.

This European Standard applies to:

— operation of leisure karts only;

— operation of karts propelled by a combustion engine, including LPG (liquefied petroleum gas) combustion engines;

— operation of karts used on indoor and outdoor tracks, permanent or temporary;

— operation of karts used on supervised tracks designed for leisure karting, with a permanent hard surface (such as asphalt, concrete, timber and steel);

This part 2 does not consider the use of karts on ice or snow.

This European Standard does not apply to:

— operation of karts used for competition organized by and under the responsibility of Commission International of Karting (CIK), Federation International of Automobile (FIA) and/or ASN (a national automobile club or other national body recognized by the FIA as sole holder of sporting power in a country), 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;

— operation of karts designed exclusively for competition and toys;

— operation of cross country karts;

— operation of karts with two or more seats;

— operation of karts used on tracks not mentioned above (such as mud, earth);

— operation of karts used in amusement parks.

The requirements related to the hazards of electrical propulsion are not covered in this European Standard. Other than when the hazards of electrical propulsion dictate the operational standards herein are applicable to electrical carts.

This European Standard 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.

This document is the part 2 covering track design and operation referred to in the scope of part 1.

This document serves to provide guidance for circuit operators regarding the safe operation of karting facilities. It does not remove the participants' responsibility for their own safety, nor does it remove the overriding principle that motorsport, due to its very nature, can be dangerous.

2 Normative references

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

EN 1838, *Lighting applications - Emergency lighting*

EN 12193, *Light and lighting - Sports lighting*

EN 16230-1:2013+A1:2014, *Leisure karts - Part 1: Safety requirements and test methods for karts*

UNECE 22, *Regulation No. 22; Uniform provisions concerning the approval of protective helmets and their visors for drivers and passengers of motor cycles and mopeds*

3 Terms and definitions

For the purposes of this document terms and definitions given in EN 16230-1:2013+A1:2014 and the following apply.

3.1
karting facility
area including kart track, paddock, pits, briefing area, garage/workshop and other facilities directly related to the karting on the track

3.2
karting facilities operator
designated person/organization responsible for the operation of the karting facilities in terms of health and safety

3.3
mechanical/technical staff
trained and competent persons responsible for the maintenance of the technical equipment

Note 1 to entry: E. g. Mechanics.

3.4
kart track operations staff
trained and competent persons responsible for the safe supervision of participants on the track and pits

Note 1 to entry: E. g. race directors and marshals.

3.5
pits
clearly defined area with restricted access to and from track where karts are parked and drivers join and leave karts

3.5.1
pit entrance
clearly defined access to pits from tracks

3.5.2
pit exit
clearly defined access to tracks from pits

3.6
barrier
means by which track is defined offering impact absorption and/or kart deflection so as to minimise the risk to drivers

3.7
kart track
defined area within which kart can be driven up to the deemed maximum speed of the track concerned

3.8
paddock
outdoor area used for the storage and maintenance of karts, which may also be used for other ancillary purposes

3.9
garage
workshop
indoor, enclosed space used for the storage and maintenance of karts

3.10
briefing area
area or room used to brief participants before driving a kart

3.11
public area
other area of the karting facilities where the public have unrestricted access

3.12
run off area
area separating the edge of the track from the final stop barrier

3.13
control measure
3.13.1
physical kart control measure
physical measure taken to restrict kart movement not dependent on driver action

Note 1 to entry: Such measures include but are not confined to barriers, tyre walls, chicanes, gravel traps etc.

3.13.2
final physical kart control measure
physical measure taken to ensure karts remain within defined areas not dependent on driver action

3.13.3
interim physical kart control measure
physical measure taken to impede kart progress so as to prevent contact with or reduce the impact speed on contact with final physical kart control measures

3.14
marshal
person employed and trained in operator track procedures and in dealing with incidents that can reasonably be expected to occur within the confines of the track and pits

3.15
short-cut
physical feature of a track designed to provide faster access for staff to recover and remove karts as required

Note 1 to entry: Although it offers access from one part of the track to another, it is constructed to appear to be a continuous barrier, discouraging use other than by staff.

3.16
outdoor track
karting facility where the kart track is open to the weather elements (or conditions)

3.17
indoor track
karting facility in which the kart track is covered and enclosed

3.18
appropriate protection equipment
APE
suitable crash helmet, racesuit and gloves

4 Classification

4.1 Slow track

Track designed and operated to minimize risk of driving karts up to 70 km/h.

4.2 Fast track

Track designed and operated to minimize risk of driving karts up to 110 km/h.

5 Safety requirements

5.1 General

Prior to first opening to the public, after any major technical modification or after one or more incidents or accidents the karting facilities operator shall ensure that a specific risk assessment or review thereof is carried out. An example of a risk assessment procedure is provided in Annex A. Kart safety is dependent on five critical factors:

— manufacture of kart;

— kart selection;

— operation;

— driver briefing and information; and

— driver responsibility.

The karting operation shall be designed and managed such as to minimize risk to the participants. Such risk cannot be completely eliminated from the kart sporting environment.

The track shall have appropriate barriers minimising the probability of and/or risk arising from a participant driving against walls, pillars or other obstacles. The operation shall comprise the following areas:

— pits;

— track;

— paddocks and/or garages.

5.2 Pits

5.2.1 Requirements

All drivers shall access the pits from the public areas solely on the instruction of staff and join a kart promptly. On return to the pits, drivers shall leave the karts on staff instruction and leave the pits promptly.

The karts shall enter the track from the pits and shall be able to return to the pits again after the end of the ride. The pits shall provide sufficient free space for the number of karts in use.

5.2.2 Access pits to track

The karts shall enter the track in the general direction of traffic flow. The track risk assessment shall consider the risks arising from entering the track and specify procedures to minimize those risks.

5.2.3 Access track to pits

The entrance to the pits shall be located at a position where unhindered exit from the track is possible.

Drivers should not exceed walking speed to ensure the safety of the marshals and other drivers in the pits. The design of the pits entrance can assist in these objectives by the provision of speed calming measures, e.g.:

— construction of a chicane within the pit lane to avoid straight line access;

— stop-box;

— electronic measures;

— pit entrance gate.

The entrance area shall be kept clear to permit drivers to leave the track and enter the pits at any time. Should calming measures include the use of a pit entrance gate, alternative safe areas shall be available for drivers to access in an emergency.

5.2.4 Parking area

Procedures shall be in place to ensure that unoccupied karts cannot roll directly to the track.

5.2.5 Pit dimensions

The minimum dimensions of the pits shall be such as to permit the free flow of karts to and from the track and drivers to and from the karts without requiring re-arrangement of parked karts.

The assessment of necessary pits dimensions shall take into account the following:

— maximum number of karts accommodated;

— the length/width of the used karts;

— the number of possible parallel formation rows;

— adequate driver access; and

— adequate marshal work space.

5.3 Track

5.3.1 Maximum number of karts in use on the track at the same time

The maximum number of karts depends on the length and type of the track. This maximum shall be in accordance with Table 1.

Table 1 — Maximum number of karts in use on the track at the same time

Slow Track	one kart per 20 m of track length (maximum 25 karts per track)
Fast track	Kart type B: a) one kart per 20 m of track length (maximum 25 karts per track) **or** b) one kart per 33 m of track length
	Kart type C1 and C2: one kart per 33 m of track length

A risk assessment may determine a different maximum number of karts. Factors to be considered should include experience of drivers (see Table 3), nature of event, track design and number of track staff.

Where the calculation of the maximum does not produce a whole number, the result shall be rounded to the nearest whole number.

5.3.2 Track Width

5.3.2.1 Slow Track

The track shall have a minimum width of 5 m.

NOTE This minimum width is based on the maximum total width of the kart of 1 500 mm according to EN 16230–1:2013+A1:2014, Table 3.

Restrictions down to a minimum width of 4 m are permitted. Such restrictions shall not exceed 10 % of the total track length and shall be subject to risk assessment for each such restriction.

A safety margin is not required between the edge of the track and the final stop barrier.

5.3.2.2 Fast Track

The combined width of the track, its verges and any run off area shall have a minimum width of 8 m on straights and more on other sections depending on the following factors: potential speed, width of the track, degree of turn, track surface and potential weather conditions, camber, topography and sight

lines and the potential number of karts on the track. Other factors may also be appropriate dependent on local conditions.

The track shall have a minimum width of 6 m. Restrictions down to a minimum width of 5 m is permitted. Such restrictions shall not exceed 20 % of the total track length and shall be subject to risk assessment for each such restriction. Factors to be considered would include:

a) nature and size of verges and run off area;

b) width between opposing lanes;

c) other control measures.

A safety margin is required between the edge of the track and the final stop barrier.

5.3.3 Track surfacing

The track surfacing (excluding kerbs) shall have a compact, plane and continuous surface.

5.4 Physical control measures

5.4.1 Principle

In addition to final control measures, it may also be appropriate to apply interim control measures designed to reduce speed and impact on the final control measure.

5.4.2 Final control measures, track barriers and protection

There shall be no sharp edges on barriers. Protrusions inhibiting the deflecting effect shall be avoided.

The track barrier system shall be designed such that interacting with the karts surround protection, the risk of the kart lifting and mounting or crossing the barrier is minimised. Barrier facing surfaces shall therefore be perpendicular to the track's surface.

Where appropriate, particularly with floating sections of barrier, the addition of a fixture to the bottom of the barrier designed to slide under the kart surround protection on contact could reduce the risk of the barrier lifting and trapping the kart and driver.

For the track barrier, materials shall be used which are able to minimize the risk of injury by either absorbing or deflecting energy produced by an impact. Where impact absorption is achieved by movement of a barrier such movement shall not be such as to create a significant alternative hazard.

When using individual elements, these shall be positively linked to one another. Track barriers and deflection systems shall be continuous and shall start directly above the surface of the track except that gaps in the barrier may be required for safety reasons, emergency exits or operational reasons. Such gaps shall not be greater than necessary for purpose and in any case sufficiently narrow to prevent the ingress of a kart. Any such gap shall be designed to minimize the risk of head-on impact and maximize deflection. Where short-cuts are used they shall be staggered against the direction of flow to discourage use by customers.

Where barriers divide two lanes, the height of the barrier shall prevent the kart crossing the barrier without restricting of driver sight lines.

Barriers shall be appropriate for the section of track where they are used. Each section of the track shall therefore be subject to a risk assessment to determine the probability and potential outcome of an impact. Among the factors to be considered in this risk assessment are potential speed, width of the track, degree of turn, track surface and potential weather conditions, camber, topography and sight lines and the potential number of karts on the track. Other factors may also be appropriate dependant on local conditions.

Barriers shall be appropriate for the potential impact. In high-speed areas, interim kart control measures may be necessary to reduce final impact speed.

Barriers have at least one of two characteristics: impact absorption; deflection; or both. Which of these is used and in what combination should be determined by the nature and probability of the incidents assessed as potentially occurring at each point of the track.

Examples of impact absorption materials are tyres, foam or other materials compressing under pressure. Floating barriers that move on impact are also impact absorption barriers.

Examples of deflection barriers are belting, stop boards, pods, polypropylene tube or boards.

An example of combination barrier is tyres faced with polypropylene boards.

Materials used for barrier facing surfaces shall be durable and retain their properties after frequent and repeated impact.

The barrier facing surfaces shall be fixed by means of carriage bolts or similar and shall be smooth or flush.

Fixing elements shall have a deflecting effect and shall not protrude by more than 8 mm from the surface.

Where using integrated barrier and kart surround protection made out of plastic, the barrier and kart elements shall be properly aligned with each other.

Structures, such as pillars, protrusions, etc. within 1 m of the barrier surface adjoining track shall be padded or protected to a height of at least 1,5 m.

5.5 Track management and control

Permanent monitoring of the track shall be carried out whenever the track is in use. The number of staff required for each type of event shall be determined by risk assessment. Marshals and race directors shall be able to communicate with each other at all times. Where visual communication is impaired or impossible, alternative methods such as radios shall be used.

5.6 Spectators' area

5.6.1 General

The spectators' areas shall be separated from the track and the pits, garage and workshops by physical barriers in order to rule out any hazards to the spectators. Such physical barriers shall also be protected against impact by karts.

5.6.2 Driver information/briefing

The karting facilities operator shall ensure that drivers are adequately informed as to the meaning of the flags and other track signals, as appropriate for the event (for information see Table 2).

Table 2 — Examples of rack signals

a)		Red flag/ Red light:	Driving operation stopped. All drivers shall immediately come to a safe stop. Utmost caution required.
b)		Yellow flag/ Yellow light:	Caution! Danger! Reduce speed immediately. Overtaking strictly prohibited.
c)		Blue flag/ Blue light:	Caution! One or more faster drivers approaching. Allow to overtake.
d)		Green flag/ Green light:	Track cleared.
e)		Black and White diagonal flag	Driver Warning.
f)		Black flag:	Driver shall proceed to the pits immediately.
g)		Chequered flag:	Driving over. Return to the pits. Slow down. No overtaking.

These flags may be replaced or supplemented by the use of other media such as boards.

Signal lights shall be positioned so as to be clearly visible in the drivers' line of sight and may need to be padded in accordance with 5.4.2.

Where alternatives are used, they shall not conflict with or create confusion by comparison with the above recognized meanings.

5.6.3 Driver APE

Drivers shall wear a correctly-fitting full-face helmet with visor secured under the chin complying at least with the requirements specified in UNECE 22. Other competition-approved helmets may be used. Karting facilities operators should have regards to the recommendations of the kart manufacturer in respect of additional APE.

The use of an appropriate overall and gloves is strongly recommended, except in circumstances where a local risk assessment determines they are not required or create a hazard themselves. Among the factors to consider are:

a) psychological preparation for a potentially hazardous activity;

b) protection from abrasion and other items such as debris thrown up from the track surface;

c) protection from fuel spillage/leakage;

d) protection from entrapment caused by loose clothing, e.g. scarves, hoods, long hair etc.;

e) protection from burning on potentially hot areas of a kart, e.g. engine, exhaust;

f) risk of overheating affecting driver capability;

g) encumbrance of driver.

The drivers shall wear closed, low-heeled footwear. Shoelaces should be short and secured. Drivers shall not wear scarves or long shawls/kerchiefs.

5.7 Light levels in normal operation

During operation, the minimum light levels shall be in accordance with the Table 3:

Table 3 — Light levels in normal operation

Minimum level of light required	Minimum level of light required when using sodium or other technology	
a	b	Pit area
6 lx	10 lx	20 lx

The karting facilities operator shall ensure that the karting facilities comply with EN 12193.

5.8 Safety lighting

Emergency lighting shall comply with EN 1838.

5.9 Air quality

The karting facilities operator should ensure that the karting facilities comply with Directive 2008/50/EC.

5.10 Noise reduction

The karting facilities operator should ensure that the karting facilities comply with Directive 2003/10/EC.

NOTE Specific characteristic noise emission values of sound sources are listed in VDI 3770 [2].

5.11 Fuelling and loading

5.11.1 General

Fuel transportation and storage is subject to national regulation.

NOTE See also Directive 2009/30/EC.

5.11.2 Petrol refuelling

Refuelling shall be carried out before the start of the event, preferably with a cool engine in the open air.

Where outdoor refuelling or cool engine refuelling is not possible i.e. at an indoor Endurance or Grand Prix event then the following procedures shall be used. Engines shall be switched off during refuelling. When refuelling cannot be completed outside then the fuel shall be decanted via containers using an attached spout direct in to the fuel tank. The use of funnels shall be discouraged thus minimising petrol vapour spillage.

During a race meeting where refuelling is necessary, the kart shall be refuelled in a well ventilated dedicated area, away from the public, drivers or sources of ignition. Two marshals shall be in attendance during the refuelling procedure. They shall have the appropriate firefighting equipment to hand i.e. dry powder, foam or CO_2 extinguisher. Marshals responsible for refuelling shall have received training appropriate to the risks that they may encounter. Topics to be covered during training include: dealing with spillage, correct use of decanting containers, minimizing petrol vapour, correct use of fire extinguisher, drivers having to vacate the kart during refuelling, an awareness of hot parts of kart and potential sources of ignition and the need to take care of their own personal safety. No karts shall be refuelled outside the designated area during an event.

All surplus fuel shall be stored in a fire-resistant container in an area protected by a fixed barrier. When petrol containers are not in use or being stored overnight they shall be locked in a fire-resistant petrol store. In all cases it is the responsibility of the karting facilities operator to establish and implement current best practice.

5.11.3 LPG refuelling

Suppliers of bulk LPG shall carry out a full site survey before installation of a bulk LPG storage tank and ensure site suitability. Generally, it is necessary to site tank at least 3 m away from any building with ample access for bulk delivery tankers. Full training in operation and use is provided by the LPG supplier.

More information is available from local bulk LPG suppliers.

NOTE See also EN 589 [1].

5.11.4 Gas or natural gas, respectively

If liquefied petroleum gas cylinders are used, these shall be stored so as to be protected from shock or impact. Fenders shall be provided.

Valves shall be protected by means of protective collars.

The applicable legal provisions including the relevant technical rules shall be complied with.

5.12 Track rules

At each kart facility, easily readable track rules shall be positioned at a freely accessible place, visible for everyone. The track rules shall contain at least the following rules of conduct for the drivers' personal responsibility:

— instructions and signals given by the track personnel shall be obeyed unconditionally;

— drivers shall not drive under the influence of alcohol or drugs;

— driving against the rules is prohibited and may result in a driver ban;

— attention shall be drawn to driver responsibility for their own and others safety;

— attention shall be drawn to the physical demands of karting and medical consequences.

5.13 Briefing of drivers

All drivers shall be briefed on the following before driving:

a) karting may be unsuitable for people with some physical and medical conditions;

b) kart controls and safe and considerate driving;

c) warning of residual risks i.e. motor sport is dangerous, medical restrictions;

d) track rules (see 5.12) and driving direction;

e) communication of information to drivers; flags and lights; other signs and their meanings;

f) behaviour in case of an incident i.e. stay in kart, wait for marshal instruction;

g) how to correctly use APE;

h) control of driver behaviour during session e.g. karting is non-contact;

i) item that are prohibited to drivers e.g. scarves, long hair outside of APE;

j) risks posed by the kart, e.g. hot surfaces;

k) special features of the track and any weather related issues; and

l) extraordinary physical and mental strain associated with driving a kart.

Karting facilities operators need to be aware of any particular factors that need to be addressed with the particular customer, e.g. for children, drivers with reduced abilities, language issues.

It is the responsibility of the karting facilities operator to evaluate (E) the driver's ability to drive the kart regarding age, size and weight, medical restrictions, and provide training (T) whenever necessary according to EN 16230-1:2013+A1:2014, Table 6. For ease of reference, the table is shown below.

Table 4 — Type of kart – Minimum age / Training (T) and / or evaluation (E)

Speed/ Minimum age	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	Older
30 km/h	E + T	E + T	E	E	E	E	E	E	E	E	E
45 km/h	—	E + T	E	E	E	E	E	E	E	E	E
65 km/h	—	E + T	E + T	E + T	E + T	E + T	E	E	E	E	E
70 km/h	—	—	—	—	—	E + T	E + T	E	E	E	E
80 km/h	—	—	—	—	—	E + T	E + T	E	E	E	E
90 km/h	—	—	—	—	—	—	—	E + T	E + T	E + T	E + T
110 km/h	—	—	—	—	—	—	—	—	—	E + T	E + T

If the kart is used outside the parameters of Table 4, a specific risk assessment shall be carried out by the track operator.

Drivers under the age of 14 years old should not drive with adults on the same track. Subject to the requirements of Table 4 above, an exception could be made if all persons attending the session were from the same group or family and a risk assessment demonstrates safe practice.

5.14 Karting for 6 and 7 years old

Additional procedures and practices are essential to manage karting for cadets aged 6 or 7 years old, particularly when driving for the very first time. Before driving outside the confined training area described in b) below training shall be given to this age group. The training shall contain at least the following:

a) The basic training to be provided before the child is permitted on the track shall include the correct operation of the steering wheel, brake pedal and throttle pedal, as well as basic track procedures and requirements.

b) The basic training briefing shall be short and concise to avoid overloading the child. The child should demonstrate his/her understanding of the controls by operating them, both before the engine is started and again with the engine running. This process should take place in a confined area with good energy-absorbing barriers so that the risks of driver injury arising from driver error are minimised.

c) Basic training in flag communication shall be restricted to just two flags initially. Additional flags can be introduced as the child progresses, gaining experience and confidence. See remarks on briefing in b) above.

d) A policy of zero tolerance shall be applied. If the child is unable to learn and demonstrate the basic requirements of driving a kart in the controlled area he/she shall not be permitted to continue training. If necessary repeat training may be required before a trainee can progress to driving on the regular track.

e) The safety of the child trainee is paramount. Pressure from the child or others to increase potential kart speed and progress to competitive driving shall be disregarded.

f) Competitive driving shall not be permitted until competence has been established. Only time trials are permitted as competition: head to head racing is not allowed.

g) Staff employed for the training and supervision of karting for this age group shall be specifically trained in the additional procedures required. Such additional training shall be noted in the marshal training records referred to in Clause 6.

5.15 Signage and markings

5.15.1 Markings

If not already clearly defined by barriers, the track should be clearly marked by a single unbroken white line to define the edge of usable track surface.

5.15.2 Signage

5.15.2.1 Circuit

“Motorsport can be dangerous” signs shall be displayed at the entrance of the circuit and in all relevant spectator areas.

Areas to which the public do not have access shall have “Prohibited Area” signs displayed.

Signage explaining the meaning of flags, lights and signboards used for driver communication during driving on the track should be displayed in an area where drivers gather before and during an event and can reasonably be expected to see and read their contents.

A plan of the track and the surrounding area shall be displayed close to the driver access to the pits. This shall show the layout of the track, the pit area, marshal posts, fire extinguisher locations as well as fire exits and first aid posts. If warning flags and signs are not explained elsewhere they shall be included on this plan.

5.15.2.2 Track, pits and workshop

All entrances/access points to the track, pits and workshop shall display signs stating “No Unauthorised Entry”.

The entry/access from the track to the pits shall display an arrow and a sign "Pit Entry".

“No Smoking” signs shall be displayed.

5.15.2.3 National health, safety and fire regulations

National health, safety and fire regulations signage shall be displayed as required.

6 Track staff training

Before starting work, new staff shall be trained by the track operator regarding the operation of the kart facility and the special operational dangers associated with their work or the measures to be taken in cases of accidents and faults, respectively. The induction training shall be completed before a marshal can be employed on the kart facilities unsupervised. Induction and subsequent training shall be recorded in a suitable log, signed by an authorized person. Training should be repeated and reinforced at appropriate intervals.

Track staff should be trained on the following:

a) general responsibility for the safety of the public;

b) personal safety;

c) main points of driver briefing;

d) kart safety inspection and kart manufacturer's manual;

e) additional safety precautions for children;

f) fire safety procedure and equipment;

g) refuelling and spillage problems;

h) manual handling of karts and fuel containers;

i) driver safety/seating position (driver can reach pedals without stretching);

j) safety zones on circuit;

k) first Aid and Accident procedures and reporting arrangements;

l) major incident procedure.

7 Testing

7.1 Visibility of the track signals and marshals

The practical testing of the ability of drivers to see track signals and marshals in accordance with 5.4 and 5.6.2 shall be achieved either by a competent driver driving a kart around the track and checking or by measurement.

7.2 Assessment of the route

Assessment of the route in accordance with the requirements given in 5.1 is performed by driving along the route.

8 Inspection and maintenance

Prior to commencing operation and regularly thereafter the following shall be done:

a) inspection of track and surface and repair as necessary prior to each day's use track;

b) check of integrity of barrier systems and repair as necessary prior to each day's use track;

c) routine maintenance and testing of all safety equipment in accordance with manufacturer's instructions;

d) routine maintenance of karts in accordance with manufacturer's instructions;

e) daily visual inspection and testing of karts;

f) inspection of Appropriate Protective Equipment prior to use;

g) record results of the inspection and remedial actions.

9 Other remarks

9.1 General

Further regulations regarding occupational health and safety remain unaffected by this European Standard.

9.2 Compatibility warnings

It is the responsibility of the karting facilities operator to ensure compatibility of kart, kart speed, circuit design and barrier system.

It is the responsibility of karting facilities operator to ensure that karts of different model (including all-around protection and absorption system) are compatible.

10 Environmental Aspects

While the disposal of used tyres and oil is covered by regulation the karting facilities operator should also be aware of the environmental and ecological consequences of his actions. Without compromising safety, lighting and other energy use should not be excessive nor should it give rise to unnecessary light pollution. Use of toxic cleaning materials should be minimised and any residues disposed of safely.

Annex A
(informative)

Example of risk assessment procedure

The aim of the risk assessment is to examine the aspects of the karting facility that could possibly harm people. It should:

a) evaluate the severity and probability of the hazards;

b) establish the necessary precautions;

c) check what precautions have been taken, and act if necessary.

The necessary steps in a risk assessment are:

d) identifying the hazards;

e) deciding who might be harmed, and how;

f) assessing the risk;

g) take appropriate actions (eliminate or reduce it, or protect who could be harmed);

h) preparing procedures and instructions;

i) distributing them;

j) training the staff;

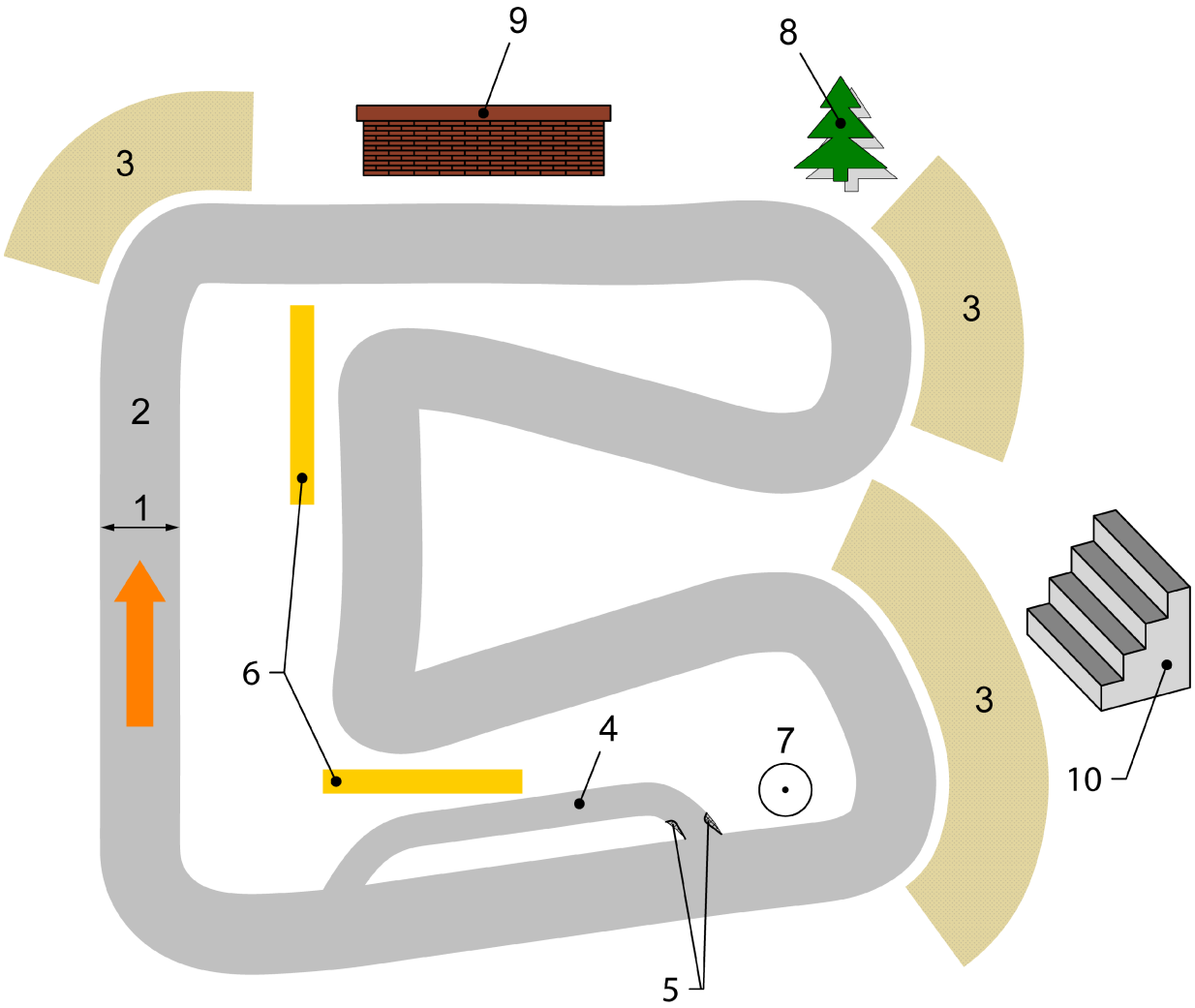
k) recording the findings;

l) reviewing the assessment.

The risk assessment has to be dated and signed by the karting facilities operator.

General safety instructions about the karting track layout and operating procedures conditions of use (track, buildings, personnel, karts) are given in Figure A.1.

A template for a risk assessment record and an example for a risk assessment record are shown in Table A.1 and Table A.2.



Key

1 track width
2 track surface
3 run-off area
4 pit stop area
5 a chicane on entrance to pits area to slow approaching karts
6 protection to separate different lanes
7 marshal post to be protected
8 trees, poles (e.g. lamp) other solid obstacles (requiring barrier protection)
9 walls, building boundaries (requiring barrier protection)
10 grand stands (requiring barrier protection)

Figure A.1 — Concerns of risks related to track requirements

Table A.1 — Risk assessment record

<table>
<tr><td colspan="2">Risk assessment record
RA Sheet … of …</td><td colspan="3">Activity: ……</td><td>Date:
……</td></tr>
<tr><td>Hazard</td><td>Hazard outcome</td><td>Severity X probability = risk rating</td><td colspan="2">Appropriate controls or controls in use</td><td>Residual risk</td></tr>
<tr><td></td><td></td><td></td><td colspan="2"></td><td></td></tr>
<tr><td colspan="3" rowspan="6">Final assessment:

Assessment Prepared by:
Print Name:
Sign:</td><td>Severity</td><td>Probability</td><td>Rating</td></tr>
<tr><td>1. Negligible</td><td>1. Very rare</td><td>1 – 7</td></tr>
<tr><td>2. Minor</td><td>2. Remote</td><td>Low</td></tr>
<tr><td>3. Notifiable</td><td>3. Occasional</td><td>8 – 16</td></tr>
<tr><td>4. Major</td><td>4. Regular</td><td>Medium</td></tr>
<tr><td>5. Fatality</td><td>5. Frequent</td><td>18 – 36</td></tr>
<tr><td></td><td>6. Multi-fatal</td><td>6. Almost certain</td><td>High</td></tr>
</table>

Table A.2 — Example for a risk assessment record

Risk assessment record		Activity: ADDRESS (Enter Address)		Date:
RA	Sheet 1 of 4	Entering and Leaving the Car Parks		.....
Hazard	Hazard outcome	Severity X probability = risk rating	Appropriate controls or controls in use	Residual risk
Vehicle movement	Struck by moving vehicle. Vehicle goes out of control	Fatality (5) x Remote (2) = 10	All drivers to adhere to statutory speed limits and the highway code. Car park spaces, entrance and leaving directions to be clearly identified. Be aware of pedestrians when reversing	Low
		Minor (2) x Occasional (3) = 6		Low
Car Park at Stadiums	Vehicle damage		Congested car park. Reduce number of vehicles or find more parking space.	
		Multi-fatal(6) x Regular (4) = 24		Low
Falling asleep at the wheel	Serious injury, death		Permission must be sought from Director of Safety for each period where driving /work period exceeds 12 h in Company cars..	

Final assessment:	Severity	Probability	Rating
Risk is acceptable if control measures are followed	1. Negligible	1. Very rare	1 – 7
	2. Minor	2. Remote	Low
Assessment Prepared by:	3. Notifiable	3. Occasional	8 – 16
Print Name:	4. Major	4. Regular	Medium
Sign:	5. Fatality	5. Frequent	18 – 36
	6. Multi-fatal	6. Almost certain	High

Annex B
(informative)

Environmental checklist

Document number (if available):	Title of standard:	TC/SC/WG number:
Work item number (if available):	Version of the environmental checklist:	Date of last modification of the environmental checklist:

Environmental Issue	**Stages of the life cycle**		
	Use		
	Use	**Maintenance and repair**	**Use of additional products**
Inputs			
Materials			
Water			
Energy			
Land			
Outputs			
Emissions to air			
Discharges to water			
Discharges to soil			
Waste			
Noise, vibration, radiation, heat			
Other relevant aspects			
Risk to the environment from accidents or unintended use			
Customer information			
Comments:			

Annex C
(informative)

A–deviations

A- deviation: National deviation due to regulations, the alteration of which is for the time being outside the competence of the CEN/CENELEC member.

This European Standard does not fall under any Directive of the EC. In the relevant CEN/CENELEC countries, these A-deviations are valid instead of the provisions of the European Standard until they have been removed.

FRANCE: The French Sports code and particularly articles R331-18 to R331-45 were published with this codification, in the official Journal of the French Republic of July 25th, 2007. (The resolution result of the French decree N° 2006-554 of May 16th, 2006.)

1. The Article R331-19 relating that *"In the field where delegation has been received, the sports federations mentioned in article L.131-16, enact the technical rules which are applicable to the sports events mentioned in article R.331-18. In the other fields, the technical and security rules and regulations which are applicable are enacted by a joint decree established by the home secretary and the minister in charge of sports."*

2. The Article R331-35 relating that "*All circuits that hold competitions, trials, training, or demonstrations must receive prior approval for the application of the following sub section. (…) The security rules concerning this type of activity are defined by the technical and security regulations foreseen in article R.331-19. A joint ministerial decree, founded by the home secretary and the sports minister, determines the requirements and terms under which an approval may be requested by a circuit."*

Consequently, the requirements of the standard will have to be supplemented, in France, by the dispositions of the Technical and Safety Rules (Règles Techniques de Sécurité, RTS) of the French Federation of Automobile Sport (Fédération Française du Sport Automobile, FFSA):

Art 5.2 – Pits / **See Title II, Appendix A of RTS**

Art 5.3 – Track/ **See Title II, Appendix A, Appendix B and Appendix C of RTS**

Art 5.4 – Physical control measures/ **See Title I and I-B of RTS**

Art 5.5 - Track Management and control/ **See Title I and I-B of RTS**

Art 5.6 – Spectator's area / **See Title II, Appendix A, Appendix B and Appendix of RTS**

Art 6 – Track Staff Training/ **See Art Title I and I-B of RTS**

Art 7 – Testing/ **See Art Title I and I-B of RTS**

The French Sports code, and particularly articles L212-1 and next, were published in the official Journal of the French Republic. The Article L212-1 relating that:

"I.- Only the persons who can, against remuneration, teach, animate, or supervise a physical or sports activity or coach it's members as a full time or secondary occupation, be it all year around or seasonally, as long as the regulations of the fourth indent of the present article as well as article L. 212-2 of this code are respected and who have the necessary degree or professional qualifying certification ;

1° Guarantying the skills of the holder, when it comes to the security of those who are playing and the third parties in a specific sports activity.

2° And registered in the national reparatory of professional certifications under the conditions foreseen in the article L 335-6 II of the education code.

May also practice against remuneration, the mentioned duties in the first above indent, persons who are studying for the degree, professional title or certificate to become qualified as per the prescriptions 1° and 2° under the rules foreseen by the receipt conditions of the degree, certificate, or professional title.

II.-The mentioned degree of the I may be an admitted foreign degree or an equivalency.

III.-The layout of the I applies as of the registration for the degrees, professional titles or qualifying certificates which respond to the conditions foreseen in the paragraphs I and II, during the registration.

IV.-The persons who will have acquired before the mentioned registration period of paragraph III and are in accordance with the current legislation, obtained the right to practice against remuneration one of the mentioned functions of the paragraph I maintain this right.

V.-The State Council determines with a by-law the conditions of the present article. It particularly determines the terms under which the list of paragraph III is established."

Moreover, the prerogative of the instructor of karting are fixed by the ordonnance of august 22nd, 2003, was published in the official Journal of the French Republic of September 5th, 2003.

Consequently, the requirements of the standard will have to be supplemented, in France, by the dispositions of this part of the code:

Art 5.13 Briefing of drivers/ **See also Art Title I and I-B of RTS**

Art 5.14 – Karting for 6 and 7 years old/ **See also Art Title I and I-B of RTS**

Bibliography

[1] EN 589, *Automotive fuels – LPG - Requirements and test methods*

[2] VDI 3770, *Characteristic noise emission values of sound sources - Facilities for recreational and sporting activities*

[3] Directive 2009/30/EC, DIRECTIVE 2009/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC, Available from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0088:0113:EN:PDF

[4] Directive 2003/10/EC, DIRECTIVE 2003/10/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 February 2003 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise), (viewed 2013-09-11) Available from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:042:0038:0044:EN:PDF

[5] Directive 2008/50/EC, DIRECTIVE 2008/50/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2008 on ambient air quality and cleaner air for Europe, (viewed 2013-09-11) Available from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:0044:EN:PDF

This page deliberately left blank

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Copyright in BSI publications

All the content in BSI publications, including British Standards, is the property of and copyrighted by BSI or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use.

Save for the provisions below, you may not transfer, share or disseminate any portion of the standard to any other person. You may not adapt, distribute, commercially exploit, or publicly display the standard or any portion thereof in any manner whatsoever without BSI's prior written consent.

Storing and using standards

Standards purchased in soft copy format:

- A British Standard purchased in soft copy format is licensed to a sole named user for personal or internal company use only.
- The standard may be stored on more than 1 device provided that it is accessible by the sole named user only and that only 1 copy is accessed at any one time.
- A single paper copy may be printed for personal or internal company use only.

Standards purchased in hard copy format:

- A British Standard purchased in hard copy format is for personal or internal company use only.
- It may not be further reproduced – in any format – to create an additional copy. This includes scanning of the document.

If you need more than 1 copy of the document, or if you wish to share the document on an internal network, you can save money by choosing a subscription product (see 'Subscriptions').

Reproducing extracts

For permission to reproduce content from BSI publications contact the BSI Copyright & Licensing team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email subscriptions@bsigroup.com.

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Useful Contacts

Customer Services
Tel: +44 345 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 345 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

bsi.