

ICS 97.220.40

CCS Y55



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 24429-2009

**Sports helmets - Safety requirements and testing methods for
sports helmets for cyclists and users of skateboards and roller
skates**

运动头盔 自行车、滑板、轮滑运动头盔的安全要求和试验方法

Issued on: September 30, 2009

Implemented on: July 1, 2010

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

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Foreword

Chapters 5, 6, 7.1, 8 of this standard are mandatory; and the rest are recommended. The main technical requirements and test methods of this standard adopt BS EN1078.1997 and F1447-

06.The terms of this standard correspond to the standard clauses adopted as follows: -

5.2.2 corresponds to

4.3 of BS EN1078.1997; -

5.2.3 corresponds to

4.86 of BS EN1078.1997; -

5.2.4 corresponds to

4.6.5 of BS EN1078.1997; -

5.2.5 corresponds to

10.2 of F1447-06; -

6.4 corresponds to

5.7 of BS EN1078.1997; -

6.5 corresponds to

5.6 of BS EN1078.1997; -

1 Scope

GB 24429-2009 is the Chinese national standard on sports helmets - safety requirements and testing methods for sports helmets for cyclists and users of skateboards and roller skates, in the field of domestic and commercial equipment, entertainment, sport. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 30 September 2009 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 July 2010. Classification: ICS 97.220.40, CCS Y55. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the terms and definitions, specifications, requirements, test methods, signs, packaging, transportation and storage, and product specifications for sports helmets for cyclists and users of skateboards and roller skates. This standard is mainly applicable to helmets for cyclists and users of skateboards and roller skates.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the

referenced document applies.

GB/T 10000 Human dimensions of Chinese adults

3 Terms and definitions

The following terms and definitions apply to this standard.

- 3.1 Sports helmet (hereinafter referred to as helmet) A device used to absorb impact energy and reduce accidental injury to the wearer's head during exercise.
- 3.2 Shell The outer structure of the helmet.
- 3.3 Cushion coat An adaptive cushion used to absorb impact energy.
- 3.4 Comfort pad A cushion that guarantees the comfort of head wearing.
- 3.5 Retention system A complete set of devices that securely hold the helmet on the head, including adjustments, straps, etc. that make the wearer more comfortable.
- 3.6 Strap A portion of the retention system, which is a strap that is fastened under the wearer's lower jaw to secure the helmet.

4 Specifications

The helmet is divided into four sizes according to GB/T 10000 and the size of the head circumference of the minor. large, medium, small, extra-small, as shown in Table 2.

5 Requirements

5.1 Structure The helmet is composed of a shell, a cushion coat, a comfort pad, a retention system, and the like.

5.1.1 Shell It shall meet the following requirements.

5.1.2 Cushion coat It shall meet the following requirements.

5.1.3 Comfort pad It shall meet the following requirements.

5.1.4 Retention system All parts of the retention system shall be safely and securely mounted on the helmet and meet the following requirements.

5.1.5 Protection range The helmet must cover the area above the ABCDEF line in Figure 3.

5.2 Performance

5.2.1 Helmet mass (including accessories) The mass of the helmet is. factory's nominal value ± 30 g.

5.2.2 Helmet vision The left and right horizontal fields of view are not less than 105° ; the

upper field of view is not less than 25°; the lower field of view is not less than 45°.

6 Test methods

6.1 Laboratory environmental conditions The temperature is $20\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$; the relative humidity is 25% ~ 75%.

6.3 Inspection of helmet mass

6.3.1 Inspection tools Weighing instruments which have a division value of not more than 5 g.

6.4 Inspection of helmet vision

6.4.1 Inspection device It consists of angle ruler, head model, head model fixing frame. The divisional value is 1°; the range can meet the requirements of 5.2.2.

6.6.1 Test device It consists of fixed frame, test head model, impact weight (quality

0.2 kg), scale, loading device (total mass

0.5 kg), simulated jaw device (width 87 mm ~ 90 mm), etc., as shown in Figure 7.

6.6.2 Test procedure

- a) Properly wear the helmet on the appropriate test head model according to 6.2.2c). Tie the strap through the simulated jaw and fasten it, so that the loading device (total mass 0.5 kg) is freely acting onto the wearing device for 30 s. Then determine the starting zero of the scale;
- b) After the stabilization, release the impact weight so that it falls freely from the height of $600\text{ mm} \pm 5\text{ mm}$ and hits the end stop;
- c) Use the scale to measure the dynamic maximum displacement of the simulated jaw device and the residual displacement at 2 min, which is the corresponding elongation of the retention system;

6.7 Test of energy absorption of helmet

6.7.1 Test device The test equipment consists of a collision test bench and an analytical recorder. It shall comply with the requirements of 5.2.5, 6.7.1.1, 6.7.4.1,

6.7.4.2 to ensure consistency of impact energy and impact effects.

6.7.4 Test procedure