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भारतीय मानक **मसौदा**

साइकिल — मडगार्ड — विशिष्ट

(आई एस 6218 का दूसरा पुनरीक्षण *)*

Draft *Indian Standard*

BICYCLE — MUDGUARD — SPECIFICATION

(Second Revision of IS 6218 *)*

ICS 43.150

Bicycles Sectional Committee, TED 16 **Last date for receipt of comments is 09/08/2024**

FOREWORD
(*Adoption clause will be added later*)

This standard was initially issued in 1971 and revised in 2008. The present revision has been taken up with a view to incorporating the modifications found necessary as a result of experience gained on the use of this standard. Also, in this revision, the standard has been brought into the latest style and format of Indian Standard, and references to Indian Standards, wherever applicable have been updated. BIS certification marking clause has been modified to align with the revised *Bureau of Indian Standards Act*, 2016.

In this revision besides front mudguards of steel strip, mudguards of all suitable materials including that of aluminium alloy, reinforced polymer, titanium alloy, magnesium alloy, and synthetic resin/ plastic have been included.

Traditionally steel strips have been in use for the manufacturing of mudguards. New materials such as aluminium alloy, titanium alloy, magnesium alloy, and synthetic resin/ plastic mudguards plastic are also being used. Because of little knowledge and experience on these materials, complete specific requirements of materials have not been included. However, mudguards of any materials need to meet all requirements specified in this standard irrespective of the material. Material requirements for these materials may be included at a later date.

The composition of the Committee responsible for the formulation of this standard will be added later.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Notwithstanding what is stated in this standard, applicable National, State, and Local bodies regulations shall apply. In the case of exports, corresponding regulations of exporting countries shall apply.

Doc: TED 16 (23301)WC
IS 6218 : XXXX
June 2024

Draft *Indian Standard*

BICYCLES — MUDGUARDS — SPECIFICATION

(Second Revision)

1 SCOPE

This standard specifies requirements for bicycle front and rear mudguards suitable for being fitted in 'Young children's bicycles', 'Young adult bicycles', 'City and Trekking', 'Roadster', 'Sports light Roadster (SLR) bicycles', 'Mountain bicycles', 'Racing bicycles', 'BMX bicycles', and 'Electrically power-assisted bicycles (EPAC)'. The mudguards used for young children's bicycles are beyond the scope of this standard.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

IS No.	*Title*
513 Part 1: 2016	Cold Reduced Carbon Steel Sheet and Strip Part 1 Cold Forming and Drawing Purposes (*sixth revision*)
7078: 1973	Plastics used in instrument industry
10613: 2023	Cycles - Safety and performance requirements for bicycles (*third revision*)
DOC: TED 16 (23339)	Cycles — Electrically power-assisted cycles (EPAC) Part 1 Pedal-assisted bicycles (*under development*)

3 TERMS AND DEFINITIONS

For this standard, the terms and definitions are given in IS 10613 and DOC: TED 16 (23339) shall apply.

4 MATERIALS

The mudguards shall be manufactured from steel strips conforming to Grade CR1 of IS 513 (Part 1) or plastic conforming to IS 7078. For recycled plastic material, the mudguards shall be manufactured from at least 70 percent virgin material. For all other materials, the manufacturers can use any suitable material subject to its conformity with other requirements specified in this standard.

4 MANUFACTURE, WORKMANSHIP AND FINISH

4.1 The mudguards shall be not less than 50 mm wide and not less than 18 mm deep. The mudguards manufactured from steel strips shall be not less than 0.45 mm thick. For mudguards of other materials, manufacturers shall keep suitable thickness for ensuring its conformity with other requirements specified in this standard.

4.2 The length of the mudguards (*see* Fig.1).

4.3 The mudguards shall be free from manufacturing defects. These shall be thoroughly cleaned to be free from rust scale and oily substances.

4.4 The mudguards shall be free from rust, scale and oily substances. It shall be suitably pre-treated and plated or powder-coated or painted to give a glossy or matt finish. The finished mudguards shall be free from wrinkles, blisters, unevenness, scratch marks and other injurious defects.

4.5 For the mudguards made of non-metallic materials such as synthetic resin, painting/coating is optional.

4.6 The mudguards are not required to be fitted on BMX bicycles.

5 ACCPTANCE TESTS

All strength tests involving any plastic materials shall be pre-conditioned for two hours and tested at an ambient temperature of 23 °C ± 5 °C.

5.1 Warping Test

The warping of the metallic and synthetic resin mudguards shall lie within the respective limits indicated in Fig. 2 and Table 1.

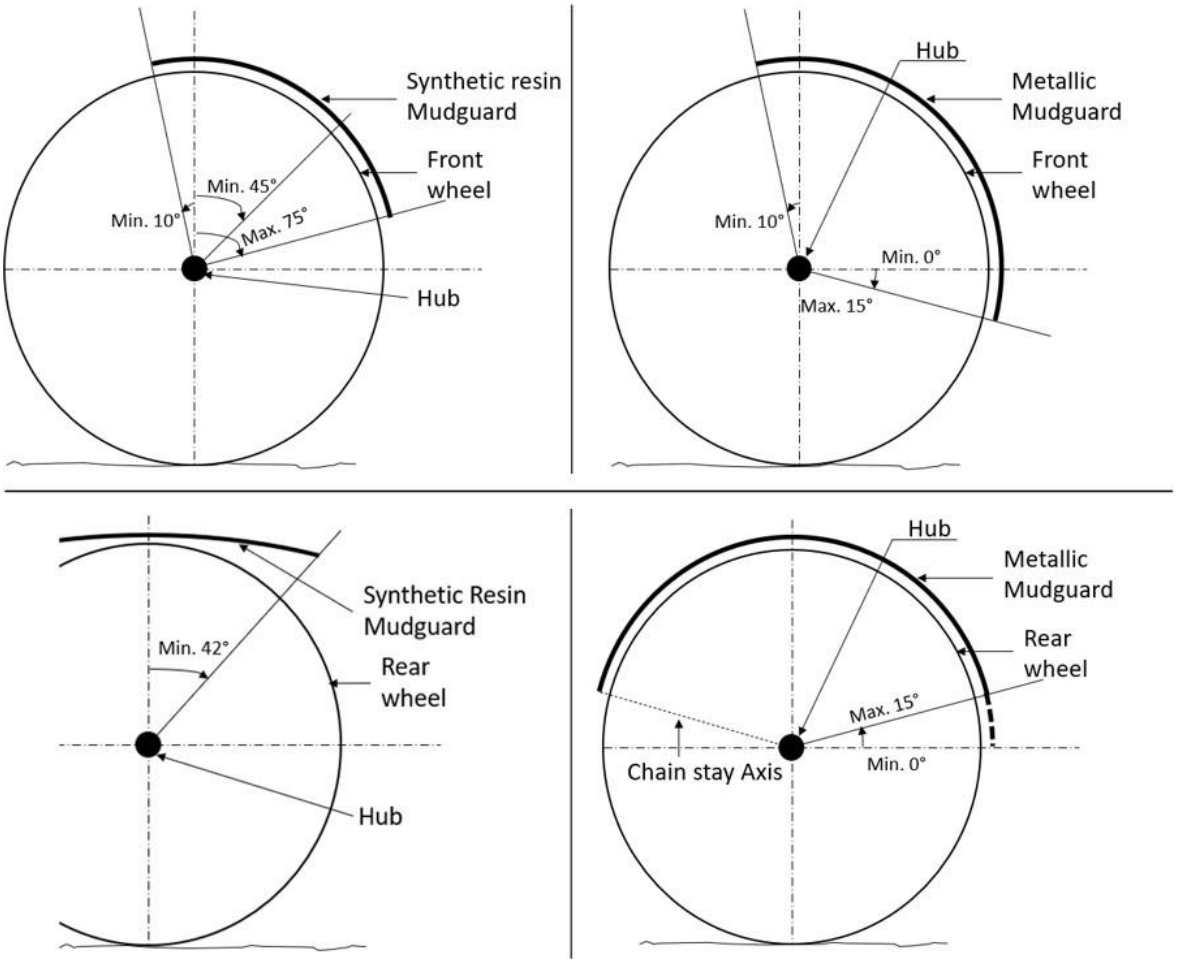


FIG. 1 LENTH OF THE MUDGUARDS

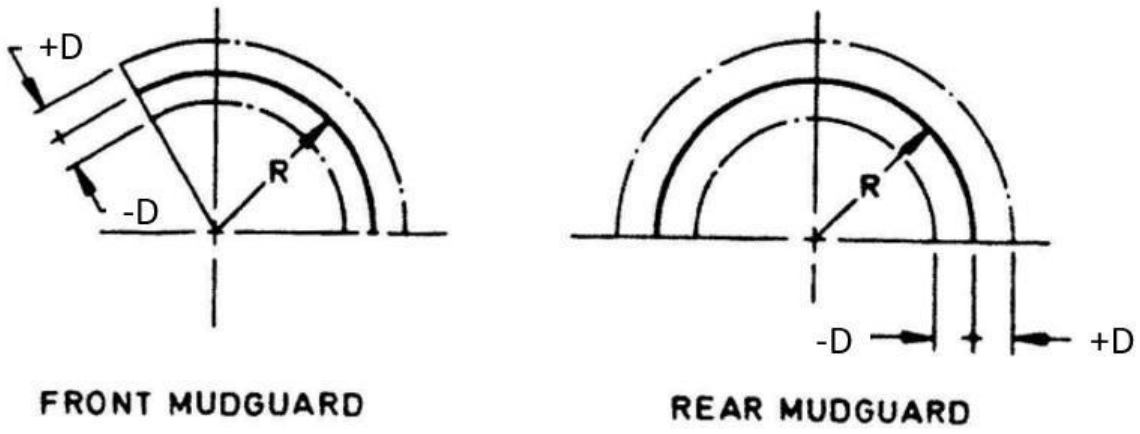


FIG. 2 WARPING LIMITS FOR BICYCLES MUDGUARDS

TABLE 1 WARPING LIMITS ON CIRCULARITY OF THE ARC
(*Clause* 5.2)

Sl No.	Material	Front mudguard	Rear mudguard
(1)	(2)	(3)	(4)
i)	Metallic (mm)	± 4	± 7
ii)	Synthetic Resin (mm)	± 10	± 15

5.2 Strength Test

For 'Young adult bicycles', 'City and Trekking', 'Roadster', 'SLR bicycles', 'Mountain bicycles', and 'Racing bicycles', the mudguard shall pass the test as specified in **5.2** of IS 10613. For EPAC bicycles, the mudguard shall pass the test as specified in **4.3.11** of DOC: TED 16 (XXXX1).

5.3 Cold Resistant Test

For synthetic resin or plastic mudguards, a circular arc sample of length 200 mm cut along its arc length is subjected to an impact test. The sample is required to be preconditioned ~~in a cold chamber at -20°C ± 2°C~~ for 2 h. The sample shall be subjected to test immediately after taking out from the cold chamber. A suggestive test apparatus (*see* Fig. 3). The test involves a steel ball of 5 kg (in mass) falling from a height of 500 mm and striking the sample through an Indenter/mandrel. After the test, there shall be no breakage in the sample. This test does not apply to metallic mudguards.

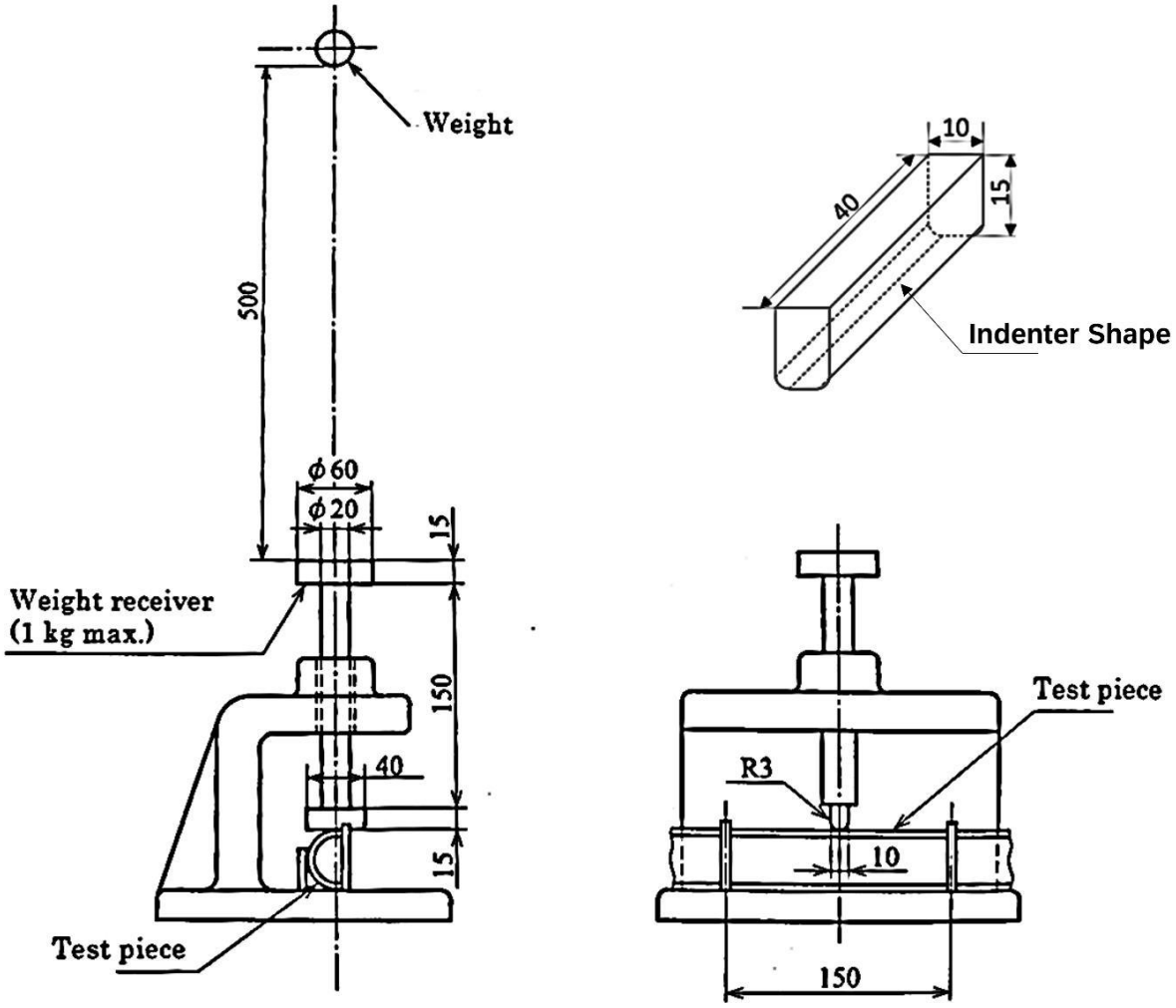
5.4 Test of Finish

5.4.1 *Physical test*

A solid steel ball measuring 13 mm in diameter shall be dropped from a height of 1.5 m on any painted, powder-coated or plated portion of the mudguard. The painted, powder-coated or plated portion where the steel ball strikes the mudguard sample shall withstand the Impact without any sign of tear or peeling off.

5.4.2 *Chemical test*

Painted, powder-coated or plated mudguards shall be tested according to one of the applicable tests as described in Table 2. After the test, in case of painted surface, the paint shall not soften, peel off or show any colour change. In case of powder-coating or plating, it shall not have any adhesion loss, blisters or flaking on an area more than 3mm on either side from X-cut.



All dimensions in millimetres

FIG. 3 IMPACT TEST SET-UP FOR SYNTHETIC RESIN MUDGUARD

TABLE 2 CHEMICAL TESTS
(*Clause* 5.4.2)

Sl. No.	Test/Test conditions/Suitability	Dip Coating Teat	Salt Spray Test	
			Neutral Salt Spray (NSS)	Copper-accelerated Acetic acid Salt Spray (CASS)
(1)	(2)	(3)	(4)	(5)
i)	Temperature	Black enamel paint 80°C	(35 ± 2) °C	(50 ± 2) °C
ii)		other enamel paints 60°C		
iii)	Concentration of Salt Solution	5% NaCl	5% NaCl	5% NaCl
iv)	pH (Solution)	6.5 to 7.2	6.5 to 7.2	3.1 to 3.3
v)	Test duration	1 h	96[1)] h	168[1)] h
vi)	Recovery period	Nil	1 h	1 h
vii)	Air Pressure	Atmospheric Pressure	70 to 170 kPa	70 to 170 kPa

viii)	Suitability [2)]	Painted, Coating with metals and their alloys, Metallic coatings (Anodic & Cathodic)	Coating with metals and their alloys, Metallic coatings (Anodic & Cathodic), Conversion coatings Anodic oxide coatings.	Copper + Nickel + Chromium coatings, Nickel + Chromium coatings, Anode coating on Aluminium.

[1)] Subject to agreement between customer and manufacturer, the duration of salt spray test both for NSS and CASS can be 2, 6, 24, 48, 96, 168, 240, 480, 720 or 1000 h. Wherever there is no such agreement, the duration of the test indicated in Table 3, shall apply.

[2)] In-case of suitability of more than one test, only one test as per manufacturer and supplier agreement shall be done.

5.5 Toxicity Test

All items which come into intimate contact with the rider shall comply with the toxicity requirements as specified in Annex B of IS 10613.

6 MARKING

The mudguards shall bear the source of manufacturer’s name, initials or registered trade-mark and country of origin. The manufacturer's lot number/batch number shall also be marked suitably.

6.1 BIS Certification Marking

Each mudguard may also be marked with the Standard Mark.

6.1.1 The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed there under, and the products may be marked with the Standard Mark.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

BICYCLES SECTIONAL COMMITTEE, TED 16

Will be added Later