IS : 5079 - 1969

Indian Standard

SPECIFICATION FOR RUBBER VALVE-TUBING FOR CYCLE TUBE VALVES

UDC 678·4-462 : 629·118·3·012·556·1

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 1

Price Rs 2·00

July 1969

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0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 16 April 1969, after the draft finalized by the Rubber Products Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard is one of a series of Indian Standards on cycle rubber components. A specification (IS : 532-1964*) covering cycle tube valves has already been published. This standard prescribes the requirements for rubber tubings used on these valves.

0.3 This standard contains clauses **3.1** and **6.1** which call for agreement between the purchaser and the supplier.

0.4 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 : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard prescribes the requirements, methods of sampling and test for rubber valve-tubing used on cycle tube valve.

2. REQUIREMENTS

2.1 Dimensions and Tolerances — The requirements for outside diameter, internal bore and wall thickness of rubber valve-tubing when tested according to **6.1** shall be as follows:

Outside diameter	3·0 to 3·5 mm
Internal bore	2·0 to 2·3 mm
Wall thickness, *Min*	0·5 mm

2.2 Tension Set — The tension set of a representative sample of the rubber valve-tubings when tested according to the method prescribed in **6.2** shall not be more than 15 percent.

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*Specification for bicycle tube valves (*revised*).

†Rules for rounding off numerical values (*revised*).

2.3 Accelerated Ageing — Representative samples of rubber valve-tubings after ageing for 72 h at 70° ± 1°C shall withstand being stretched to six times of original length without breaking or showing any sign of crack (*see* **6.3**).

2.4 Workmanship and Finish — The valve-tubing shall be of vulcanized rubber. The surface of the tubing shall be smooth and non-tacky and free from blisters, pitting, gritty matter and other visible defects.

3. PACKING

3.1 The valve-tubing shall be packed as agreed to between the purchaser and the supplier.

3.1.1 The valve-tubing may be wound round on cardboard spools and put in cardboard boxes, each box containing 0·5 kg tubing. These boxes may further be packed in wooden boxes or crates.

4. MARKING

4.1 Each package shall be clearly marked with nomenclature and quantity of the contents, manufacturer's name and trade-mark, if any.

4.1.1 The package containing the valve-tubing may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING AND CRITERIA FOR CONFORMITY

5.1 For the purpose of ascertaining conformity of the valve-tubings in a consignment to this specification, the scale of sampling and criteria for conformity shall be as prescribed in Appendix A.

6. TEST METHODS

6.0 Unless otherwise agreed to between the purchaser and the supplier, all tests shall be carried out within three months from the date of receipt of the material by the purchaser.

6.1 Outside Diameter, Internal Bore and Thickness — Cut across a 2 mm length at right angles to the length and 1 m away from any end of

the spool or length. Determine the diameter, internal bore and thickness of the valve-tubing with the help of a travelling microscope or projector as agreed to between the purchaser and the supplier.

6.1.1 Test at least three test pieces for different samples.

6.2 Tension Set — The test for tension set shall be carried out as follows.

6.2.1 *Apparatus* — Any suitable apparatus, capable of subjecting test pieces to constant elongation, may be used. Care shall be taken to ensure that the test piece does not slowly creep out of grips.

6.2.2 *Temperature of Test* — The test shall be carried out at 27° ± 2°C (*see* IS : 196-1966*).

6.2.3 *Procedure* — Stamp reference marks 25 mm apart on the tube. Fix the tube in the apparatus and elongate to the point of rupture. Note the percentage of elongation at break. Stretch a fresh test piece to 75 percent of elongation at break.

6.2.4 *Results* — Express the change in length as percentage of the initial length between the reference marks.

6.3 Accelerated Ageing — Subject at least three test pieces of rubber valve-tubing to ageing in an air-oven at a temperature of 70° ± 1°C for 72 h in accordance with the method prescribed in IS : 3400 (Part IV)-1965†. Remove the test pieces from the oven and maintain at a temperature of 27° ± 2°C for a minimum period of 24 h before subjecting them to the stretching. Stretch the aged valve-tubings to 6 times their original lengths. Examine the rubber valve-tubings for any rupture or crack.

APPENDIX A

(*Clause* 5.1)

SAMPLING AND CRITERIA FOR CONFORMITY FOR RUBBER VALVE-TUBING

A-1. SAMPLING

A-1.0 The object of testing by the purchaser is to ensure conformity of the product to the specification requirements, whereas testing by the manufacturer during production is meant to ensure uniformity by reducing fluctuations in quality to the minimum. When adequate inspection is carried out by the manufacturer, the records of test results for various characteristics will be readily available for scrutiny by the purchaser. If the purchaser is satisfied, he may test only a small number of samples as a recheck. One such scheme for use by the purchaser is given below which assumes that manufacturer had been exercising proper process control and had been inspecting the entire length of the valve-tubing before spooling.

*Atmospheric conditions for testing (*revised*).

†Methods of test for vulcanized rubbers : Part IV Accelerated ageing.

A-1.1 Scale of Sampling

A-1.1.1 *Lot* — In any consignment all the spools of valve-tubing produced under essentially similar conditions of manufacture (such as those from a single batch of rubber compound, a single vulcanizing process, etc) shall be grouped together to constitute a lot.

A-1.1.2 Tests for judging the conformity of material to the requirements of this specification shall be carried out for each lot separately. The number of spools to be selected for this purpose shall be in accordance with col 1 and 2 of Table 1.

A-1.1.3 The number of spools required to be selected shall be taken at random from the spools in the lot. For this purpose a suitable number of crates or boxes in the lot shall be chosen first. From each an equal number of spools shall be selected at random so as to make up the desired number of spools as indicated in col 2 of Table 1.

TABLE 1 SCALE OF SAMPLING

Number of Spools in the Lot	Number of Spools to be Selected
(1)	(2)
Up to 10	2
11 „ 25	3
26 „ 50	4
51 „ 100	5
101 and above	6

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 The entire length of valve-tubing in each of the selected spools shall be examined for workmanship and finish as described in **2.4**. The spool shall be passed for further testing only if it had been found satisfactory in workmanship and finish throughout its length.

A-2.2 If a spool has been found satisfactory in **A-2.1** in respect of workmanship and finish, it shall be tested for all the other requirements of this specification in accordance with the methods of test laid down for the purpose. A spool shall be considered as satisfactory in respect of the requirements tested, if it has passed each of the tests carried out on it.

A-2.3 The lot shall be declared as conforming to the requirements of this specification if all the selected spools have been satisfactory in **A-2.1** as well as in **A-2.2**.