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(Reaffirmed 1996)

भारतीय मानक

सीमेंट–भरण के लिए रबड़ के होज — विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

RUBBER HOSE FOR CEMENT GROUTING — SPECIFICATION

(Second Revision)

UDC 621·643·3 [678·4] : 666·946·7

BUREAU OF INDIAN STANDARDS
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Price Group 2

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards on 4 April 1990, after the draft finalized by the Rubber Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

The hoses covered under this standard are used for cement grouting suitable for working pressure up to 1 MPa.

This standard was first published in 1969 and revised in 1982. Two types of construction were amalgamated in first revision.

In this second revision requirements for tensile strength, accelerated ageing and adhesion strength have been modified. Further, requirements for increase in diameter and length at proof pressure have been included.

The committee considered it desirable to include abrasion resistance test. However, no requirement is being included in the present revision of the standard due to inadequate data. Investigations in this regard are in progress and requirement for this test may be included in the standard at a later date.

This standard contains clause **4.2.3** which calls for an agreement between the purchaser and the supplier.

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 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

RUBBER HOSE FOR CEMENT GROUTING — SPECIFICATION

(Second Revision)

1 SCOPE

1.1 This standard prescribes the requirements, methods of sampling and test for cement grouting hose of rubber with textile reinforcement for a working pressure up to 1 MPa.

2 REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
443 : 1975	Methods of sampling and test for rubber hoses (*second revision*)
3400 (Part 5) : 1986	Methods of test for vulcanized rubbers: Part 5 Adhesion of rubber to textile fabrics (*second revision*)
7503 (Part 1) : 1988	Glossary of terms used in rubber industry: Part 1 Definitions of basic terms (*first revision*)
7503 (Part 3) : 1988	Glossary of terms used in rubber industry: Part 3 Definitions relating to properties and testing (*first revision*)
7503 (Part 5) : 1988	Glossary of terms used in rubber industry: Part 5 Definitions relating to products — Hoses (*first revision*)

3 TERMINOLOGY

3.1 For the purpose of this standard the definitions given in IS 7503 (Part 1) : 1988; IS 7503 (Part 3) : 1988; and IS 7503 (Part 5) : 1988 shall supply.

4 REQUIREMENTS

4.1 Construction

4.1.1 *Lining*

A rubber inner lining, smooth in bore.

4.1.2 *Reinforcement*

The reinforcement shall be of woven, braided or spirally wound textile material of natural or synthetic fibre.

4.1.3 *Braided Copper Wire*

One copper wire braid comprising number of strands and of minimum breaking load of 9 kg shall be incorporated in one of the plies to provide electrical continuity along the whole length of the hose. In case, two copper wires are used, the minimum composite breaking load shall be 9 kg.

4.1.4 *Cover*

The cover shall be made of a suitable rubber compound resistant to abrasion and weather. The cover may have a cloth marked finish.

The lining and cover of hose shall be uniform in thickness, reasonably concentric and free from air blisters, porosity and splits.

4.2 Dimensions and Tolerances

4.2.1 *Bore Size*

The bore sizes when measured according to the method prescribed in **4.2.1.2** of IS 443 : 1975 shall be as given in Table 1.

Table 1 Nominal Bore Size with Tolerances

Sl No.	Nominal Bore Size mm	Tolerance on Nominal Bore Size mm
(1)	(2)	(3)
i)	25·0	± 1·25
ii)	31·5	± 1·25
iii)	38·0	± 1·50
iv)	50·0	± 1·50
v)	63·0	± 1·50
vi)	75·0	± 2·00

4.2.2 *Lining and Cover Thickness*

The thickness of lining shall not be less than 6·3 mm and that of cover not less

than 1·5 mm when measured according to the method prescribed in **4.2.2** of IS 443 : 1975.

4.2.3 *Length*

The minimum nominal length of the hose shall be 15 metres, or as agreed to between the purchaser and the supplier.

4.2.3.1 The tolerance on hose length shall be ± 1 percent.

4.3 Requirement of physical tests on finished hose.

4.3.1 The requirements of physical tests on finished hose shall be as given in Table 2.

4.4 Performance Requirements

4.4.1 The performance requirements for finished hose shall be as given in Table 3.

5 MARKING

5.1 Each length of the hose shall be indelibly marked adjacent to each end with:

a) Indication of the source of manufacture, and denomination of the hose; and

b) Month and year of manufacture.

6 SAMPLING AND CRITERIA FOR CONFORMITY

6.1 For the purpose of ascertaining the conformity of hoses in a consignment to this specification, the scale of sampling and the criteria for conformity shall be as prescribed in **3** of IS 443 : 1975.

7 TIME LAPSE BETWEEN RECEIPT OF MATERIAL AND TESTING

7.1 For all test purposes, the minimum time between vulcanization and testing shall be 16 h.

7.1.1 For product tests, whenever possible the time between vulcanization and testing should not exceed 4 months. In other cases, tests shall be made within 2 months from the date of receipt of the product by the customer.

Table 2 Physical Requirements for Finished Hose

(*Clause* 4.3.1)

Sl No.	Characteristic	Requirement		Test Specimen	Method of Test, Ref to Clause of IS 443 : 1975
		Lining	Cover		
(1)	(2)	(3)	(4)	(5)	(6)
i)	Tensile strength MPa, *Min*	14·0	10·0	Test piece cut from hose	5
ii)	Elongation at break, percent, *Min*	500	300	Test piece cut from hose	5
iii)	*Accelerated Ageing*				
	a) Change in tensile strength, percent of the original value, *Max*	± 25	± 25	Test piece cut from hose	6 72 h+2 h at 70 ± 1°C
	b) Change in elongation at break, percent of the original value	+ 10 − 30	+ 10 − 30	Test piece cut from hose	6 72 h+2h at 70 ± 1°C

Table 3 Performance Requirements

(*Clause* 4.4.1)

Sl No.	Characteristic	Requirement	Test Specimen	Method of Test
(1)	(2)	(3)	(4)	(5)
i)	Adhesion between hose components:			
	a) lining to reinforcements			
	b) between reinforcements			
	c) reinforcement to outer cover			
	By machine method kN/m, *Min*	2·0	Test piece cut from the hose	IS 3400 (Part 5) : 1986
ii)	Hydrostatic test pressure:	No leakage or other sign of weakness at 2 MPa for one minute	Full length of hose	**8.3** of IS 443 : 1975 (*see* Note 1)
iii)	Maximum increase in diameter at proof pressure, percent	± 10	Full length of hose	**8.5** of IS 443 : 1975
iv)	Maximum increase in length at proof pressure, percent	± 8	Full length of hose	**8.5** of IS 443 : 1975
v)	Burst pressure MPa, *Min*	4	Short length cut from the hose	**8.2** of IS 443 : 1975
vi)	Electrical continuity test	No loss of electrical continuity	Full length of hose	(*see* Note 2)

NOTES

1 This test should be carried out at the factory. If the hose is offered at places other than the factory, manufacturer's certificate should be accepted.

2 A suitable method of determining electrical continuity is by the use of a 4·5 V battery and 3·5 V, 0·3 A test bulb. A dimly lighted bulb is sufficient to indicate satisfactory continuity.

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