



**PRODUCT MANUAL FOR  
CONDUIT SYSTEMS FOR CABLE MANAGEMENT – PARTICULAR  
REQUIREMENTS – CONDUIT SYSTEMS BURIED UNDERGROUND  
ACCORDING TO IS 16205 (PART 24):2017**

*This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.*

1.	<b>Product</b>	:	IS 16205 (Part 24): 2017
	<b>Title</b>	:	Conduit Systems for Cable Management – Part 24 Particular Requirements – Conduit Systems Buried Underground
	<b>No. of Amendments</b>	:	0
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	Not applicable
b)	<b>Grouping guidelines</b>	:	Please refer ANNEX - A
c)	<b>Sample Size</b>	:	18 m (3m x 6 pcs)
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX - B
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX - C
5.	<b>Possible tests in a day:</b>		
			<ul style="list-style-type: none"> <li>• Dimension (Cl 8)</li> <li>• Construction (Cl 9)</li> <li>• Compression Test (Cl 10.2)</li> <li>• Impact Test (Cl 10.3)</li> <li>• Bending Test (Cl 10.4)</li> <li>• Fire Hazard (Cl 13.1.3)</li> </ul>
6.	<b>Scope of the Licence:</b>	:	Please refer ANNEX - D

**ANNEX-A**

**Grouping Guidelines**

1. The parameters as given below shall be considered for grouping of “Conduit Systems for Cable Management - Conduit Systems Buried Underground” as per IS 16205 (Part 24):2017 for the purpose of GoL/ CSoL:
  - i. Conduit Diameter
  - ii. Material – Metallic/ Non-metallic / Composite
  - iii. Resistance to Compression – Type 450 / Type 750
  - iv. Resistance to Impact – Light / Normal
  - v. Resistance to Bending – Rigid / Pliable
  - vi. Resistance to External Influence:
    - (a) Ingress Protection - Min. IP6X for protection against ingress of solid objects and Min. IPX7 for protection against ingress of water
    - (b) Resistance against Corrosion - Without protection/ With protection (classification 1, 2, 3, 4)
  - vii. Resistance to Flame Propagation – Non-flame propagating/ Flame propagating
2. Conduit systems with lowest and highest size having same other classifications as above shall be tested for covering the entire range.
3. The following relaxation may be given when a variety is tested for all the requirements:
  - i. If Type 750 is tested, Type 450 may also be covered.
  - ii. If conduit systems with superior degree of protection is tested, conduit systems with lower degree of protection may also be covered.
  - iii. With respect to resistance to Impact, if Normal (N) is tested, Light (L) may also be covered.
  - iv. With respect to Resistance to Corrosion, conduit systems having the most severe classification may be tested to include conduit systems with lower severity.
  - v. If non-flame propagating conduit systems is tested, flame propagating conduit systems may also be covered.
4. The Firm shall declare the varieties of conduit systems they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
5. During the operation of the Licence, BO shall ensure all the Varieties covered in the Licence are tested in rotation to the extent possible.

**ANNEX - B****LIST OF TEST EQUIPMENTS***Major test equipment required to test as per the Indian Standard*

<b>S. No.</b>	<b>Test Equipment</b>	<b>Tests used in with Clause Reference</b>
1.	Measuring tape, Vernier Calliper, Ring Gauges for checking outside diameter, Gauges for checking minimum inside diameter, Micrometer	Dimensions, Cl. 8
2.	Bending Test Apparatus as given in Fig 102, Steel ball	Bending test, Cl. 10.4
3.	Compression Test Apparatus	Compression test Cl. 10.2
4.	Impact Test Apparatus as given in Fig 101, Cold Chamber	Impact test Cl. 10.3
5.	Fire hazard Test Apparatus / Glow Wire Test Apparatus, Heating Cabinet, Bunsen burner, Stop Watch, Tissue paper, White pine wood board	Fire Hazard, Cl. 13
6.	Test means as per IS/IEC 60529	External influences, Cl.14
7.	Electromagnetic Compatibility test apparatus	Electromagnetic Compatibility Cl. 15
8.	Pottassium Ferricyanide, Ammonium persulphate, White Spirit with Kauri-butanol value of 35+5, sulphuric acid, Soft Cloth, Copper Sulphate and Distilled water, Sodium salt of an alkyl naphthalene sulphonic Acid	Resistance against corrosion test, Cl.14

*The above list is indicative only and may not be treated as exhaustive.*

**ANNEX C**

**Scheme of Inspection And Testing**

**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipments.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** - Information as per cl. 7 of IS 16205 (Part 24):2017 shall be clearly and indelibly marked at intervals of not more than 3 meters (preferably 1 meter along their lengths).

**4. CONTROL UNIT** – Continuous extrusion run of one machine of one size, one class and type of conduit from one extrusion compound up to a maximum of 24 hrs duration shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**6. REJECTIONS** – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl. No.	Requirement	Clause	Reference		No. of Sample	Frequency	Remarks
8	Dimension	8	IS 16205 (Part 24)	R	One	Every 4 hrs	In case of failure in any tests, twice the number of samples to be tested for that requirement. If failure reoccurs, entire lot may be rejected
9	Construction	9	IS 16205 (Part 24)	R	One	Every 4 hrs	
<b>10</b>	<b>Mechanical Properties</b>						
10.2	Compression Test	10.2	IS 16205 (Part 24)	R	One	Each Control Unit	
10.3	Impact Test	10.3	IS 16205 (Part 24)	R	One	Each Control Unit	
10.4	Bending Test	10.4	IS 16205 (Part 24)	R	One	Each Control Unit	
13	Fire Hazards	13.1.3	IS 16205 (Part 1)	R	One	Once in a Month for each type	
<b>14</b>	<b>External Influences</b>						
14	Degree of protection provided by enclosures	14.1	IS 16205 (Part 1)	S	One	Once in a Month for each type	
14	Resistance against corrosion	14.2	IS 16205 (Part 1)	S	One		

Note- 1: Number of specimens shall be as specified in the Standard for each test.

Note- 2: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note- 3: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

**ANNEX D****Scope of the Licence**

“Licence is granted to use Standard Mark as per IS 16205 (Part 24): 2017 with the following scope:	
Name of the Product	Conduit Systems for Cable Management – Conduit Systems Buried Underground
Nominal Sizes	
Material	Metallic/ Non-metallic / Composite
Resistance to Compression	Type 450 / Type 750
Resistance to Impact	Light / Normal
Resistance to Bending	Rigid / Pliable
Resistance to External Influence	<ul style="list-style-type: none"> <li>●Ingress Protection</li> <li>●Resistance against corrosion</li> </ul>
Resistance to Flame Propagation	Non-flame propagating/ Flame propagating