



**PRODUCT MANUAL FOR
CONVEYOR BELTS- FIRE RESISTANT CONVEYOR BELTING FOR
UNDERGROUND MINES AND SUCH OTHER HAZARDOUS
APPLICATIONS
ACCORDING TO IS 3181: 1992**

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 license/certificate.

1.	Product	:	IS 3181: 1992
	Title	:	Conveyor belts — Fire Resistant Conveyor Belting for Underground Mines and such other Hazardous Applications
	No. of Amendments	:	One
2.	Sampling Guidelines:		
a)	Raw material	:	-
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	12 mtr Length
3.	List of Test Equipment	:	Please refer ANNEX – B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	Possible tests in a day :	:	Please refer ANNEX – D
6.	Scope of the Licence :	:	Please refer ANNEX – E

ANNEX--A

GROUPING GUIDELINES

1. “Fire Resistant Conveyor Belting for use in underground mines and such other hazardous applications” covered in IS 3181:1992 is classified into different Belt Types (Type 1/ Type 2/ Type 3/ Type 4/ Type 5/ Type 6/ Type 8) according to its physical properties.
2. Considering the above, following Groups have been formed for GOL/Inclusion:

Group	Belt Type	Remark
I	1, 2 & 3	Sample of highest Belt type from each group and of any width shall be tested to cover the entire varieties in the group. For Propane Burner Test, the sample requirements as per <i>Annexure H-2</i> of IS 3181:1992 shall also be followed.
II	4 & 5	
III	6 & 8	

3. The manufacturer shall declare the Types and Width of the Conveyor Belt they intend to cover in the Licence.
4. The Scope of Licence may be restricted based on the Manufacturing and testing capabilities of the manufacturer.
5. During the operation of Licence, it shall be ensured that all the varieties covered in the Licence are tested in rotation, to the extent possible.

ANNEX--B**List of Test Equipment***Major test equipment required to test as per the Indian Standard*

Sr No	Tests used in with clause reference	Test equipment
1.	Length, Cl.5	Length measuring counter
2.	Width, Cl. 6	Measuring Tape
3.	Belt and Caracas thickness, Cl. 7, Annex A	Thickness Gauge, Bullion Weight
4.	Cover thickness, Cl. 8, Annex A	Optical Micrometer
5.	Full thickness breaking strength and elongation, Cl. 11, Annex B	Tensile testing Machine, Sample Cutting Die, Measuring Scale
6.	Tear Strength (Cl. 12) and Adhesion (Cl.13), Annex B	Autographic tensile testing machine
7.	Electrical Resistance, Cl. 14 , Annex E	Insulation, Measuring Tape, Brass contact piece (Cylinder & Ring), Polythene Base Sheet, Metal Foil, Fuller's earth (B.P. Grade), Distilled Water, Soft Soap, Anhydrous Polythelene Glycol, Digital Stop Watch
8.	Drum friction test Cl. 15.1	Testing Machine as per IS 3181, Anemometer, Air current supplier, Digital temperature controller, Measuring tape
9.	Spirit Burner test, Cl. 15.2, Annex G	Flame test apparatus as per Annex G, Spirit Burner, fuel, Mechanically driven band facer (60 grit Al ₂ O ₃ or SiO ₂ min 100 mm width), Sample Cutting Die
10.	Conditioning of test specimen as per Cl.11, Cl. 12, Cl. 13	Humidity chamber

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 equipment.

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

3. LABELLING AND MARKING – As per Clause 16 of IS 3181: 1992.

4. CONTROL UNIT – A roll of belting produced from a machine in continuous process 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.

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	Levels of Control		
Clause	Requirement	Test Methods		Required (R) or Sub-contracting permitted (S)	No. of Sample	Frequency	Remarks
		Clause	Reference				
2	Construction	2	IS 3181	R	Each belting	--	-
3	Fabric	3	IS 3181	R	Each Lot		
5	Length	5	IS 3181	R	One	Each Control Unit	
6	Width	6	IS 3181	R	One	Each Control Unit	
7	Belt and Carcass thickness	7.1, 7.2, Annex A	IS 3181	R	One	Each Control Unit	
8	Cover thickness	8, Annex A	IS 3181	R	One	Each Control Unit	
9	Joints in fabric	9.1, 9.2	IS 3181	R	One	Each Control Unit	
10	Freedom from defects	10	IS 3181	R	One	Each Control Unit	

11	Breaking strength and Elongation	11.1, Annex B	IS 3181	R	One	Every 15 th Control Unit	
	Elongation at reference load	11.2, Annex B	IS 3181	R	One		
12	Tear strength	12, Annex C	IS 3181	R	One	Every 15 th Control Unit	
13	Adhesion	13.1, 13.2, Annex D	IS 3181	R	One	Every 15 th Control Unit	
14	Electrical Resistance	14, Annex E	IS 3181	R	One	Each Control Unit	
15	Drum Friction Test	15.1, Annexure F	IS 3181	S	One	Once in two years	Sample shall be tested in such a way that all types are covered in rotation
	Spirit Burner Flame Test	15.2, Annexure G	IS 3181	R	One	Each control unit	
	Propane Burner Test	15.3, Annexure H	IS 3181	S	One	Once in two years	Sample shall be tested in such a way that all types are covered in rotation

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: 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

Possible tests in a day

- i) Length (Cl. 5)
- ii) Width (Cl. 6)
- iii) Belt and Carcass thickness (Cl. 7)
- iv) Cover thickness (Cl. 8)
- v) Electrical resistance (Cl. 14)
- vi) Drum friction test (Cl. 15.1)
- vii) Spirit Burner Flame test (Cl. 15.2)
- viii) Propane Burner test (Cl. 15.3)

ANNEX E

Scope of Licence

“Licence is granted to use Standard Mark as per IS 3181: 1992 with the following scope:

Name of the product	Conveyor belts — Fire Resistant Conveyor Belting for Underground Mines and such other Hazardous Applications
Type	
Width	