



Under jurisdiction of Dhanbad Court & Jharkhand
High Court only

Bharat Coking Coal Limited
(A Subsidiary of Coal India Limited)

Website: www.bccl.gov.in

Office of the General Manager
Materials Management
Department

Level-III, Commercial Block,
Koyla Bhawan, Dhanbad-826005
Phone: 0326-2230181
Fax No.: 0326-2230183

SUPPLY/PURCHASE ORDER

BY REGD.POST/SPEED POST

Ref. No: BCCL/PUR/712020/ PVC Belting /12-13/263

Dt. 30.03.2013

To
M/s Fenner Conveyor Belting Pvt Ltd
Madurai- dindigul main road
Nagari, Vadipatti Taluk
Madurai- 625 221
Tamilnadu
FAX: 0452 2464204

E-mail:- fcf.india@fenner.com
Vendor Code:- New- 1/19/M/T/005
Old- 829007

Sub:- Our Tender Enquiry No. BCCL/PUR/712020/ PVC Belting /12-13/18 dated 12.06.2012 opened on 13.07.2012 & price bid opened on 25.10.2012.

Ref:-Your Offer no FCB/PVC/2011-12 dated 03.07.2012 and subsequent correspondences on the above subject your last e-mail dated 25.03.2013.

Dear Sirs,

With reference to the above, we for and on behalf of BCCL hereby place **PURCHASE ORDER** on you for supply of PVC Belting at the following price, terms and conditions:

1. SCOPE OF SUPPLY:-

SN	Description	Qty. (Mtrs)	Basic Unit Rate	Extended Value
1	800 mm width belt Type- 3 as per specification of NIT	7000.00	1239.00	86,73,000.00
2	1000 mm width belt Type- 5 as per specification of NIT	3000.00	1640.00	49,20,000.00
	E.D. & Cess @ 12.36 %			16,80,094.80
	Sub Total			1,52,73,094.80
	CST @ 2 %			3,05,461.90
	Packing & Forwarding, Transit Insurance, Freight and other charges			Inclusive
	Sub Total			1,55,78,556.70
	CMPDIL Inspection charge @ 0.80%			1,24,628.45
	Service Tax on Ins. Charge @ 12.36%			15,404.08
	Total Contractual Value			1,57,18,589.23

Total Contractual Value: The Total Contractual value will be Rs. 1,57,18,589.23 (Rupees One Crore Fifty Seven Lakh Eighteen Thousand Five Hundred Eighty nine and paisa twenty three) only on F.O.R. destination basis inclusive of Inspection charges.

2. Technical Specification for PVC Conveyor Belting will be as per Annexure “A”.

TERMS & CONDITIONS:

1. **Payment Terms:** 100% within 21 days of receipt and acceptance of the materials by the consignee or from the date of receipt of Bills, whichever is later.

2. **Bank Details:**

1	VENDOR/SUPPLIER/CONTRACTOR/CUSTOMER'S NAME & ADDRESS: (With Telephone No. & Fax No.)	FENNER CONVEYOR BELTING PRIVATE LIMITED MADURAI DINDIGUL MAIN ROAD, NAGARI, VADIPATTI TALUK, MADURAI - 625 021
2	PARTICULARS OF BANK ACCOUNT:	44655100000046
	A. BANK NAME:	IDBI BANK LIMITED
	B. BRANCH NAME: (Including RTGS Code)	MADURAI BRANCH IDKL0000388
	ADDRESS:	SPECIALIZED CORPORATE BRANCH, LIC BUILDING, FIRST FLOOR, 3, WEST MARRET STREET, OPP. TO RAILWAY STATION, MADURAI - 625001
	C. 9-DIGIT CODE NUMBER OF THE BANK & BRANCH (Appearing on MICR Cheque issued on the Bank) Or 5-DIGIT Code Number of SBI	625259003
	D. ACCOUNT TYPE: (S.B. Account/Current Account Or Cash Credit with Code 10/11/13)	CASH CREDIT ACCOUNT
	E. LEDGER NO./LEDGER FOLIO NUMBER:	
	F. ACCOUNT NUMBER (CORE BANKING) & STYLE OF ACCOUNT (As appearing on the Cheque Book)	44655100000046

3. **PRICE:** FIRM & On F.O.R. Destination basis

4. **E.D.:** To be paid at actual on documentary evidence. Quoted rate indicated above.

5. **CST:** Will be paid extra at the rate applicable at the time of supply. Quoted rate indicated above.

6. **CENVAT:** Coal has become the excisable commodity with effect from March 2011.

In order to get CENVAT credit, the following information must be contained in the invoice issued by the supplier for Revenue and Capital goods:

- Serial number of the invoice ,
- Registration number,
- Address of the concerned central excise division,
- Name of the consignee,
- Description of the goods,
- Classification of the goods,

- Time and date of removal,
- Mode of the transport and vehicle registration,
- Rate of duty,
- Quantity and value of goods and
- Duty payable thereon.

Following information must be contained in the said document for availing CENVAT credit on input service.

- Serial number,
- Name, address and registration no. of person providing taxable services,
- Name and address of the person receiving taxable services,
- Description, classification and value of taxable services provided or to be provided and Service tax payable thereon.

THE DESIRED INFORMATION FOR RAISING CENVAT INVOICE		
	<i>SUPPLIER</i>	<i>CONSIGNEE</i>
Name & Address Of Area:		Ekra Central Store, Block – II Area, BCCL, Nawagarh, Dhanbad, Jharkhand – 828306
Tin No.:		20821500736
JST No.:		KT – 651 (R)
CST No:		KT – 254 (C)
Circle / Sub		Katras Circle Katras
Service Tax Regd. No:		AAACB7934MST 009
Central Excise Duty Regd. No:		AAACB7934MEM 007
Range (Code):		Dhanbad - Code - 02
Division (Code)		Dhanbad - Code - 02
Commissionerate (Code):		Ranchi - Code - 87

7. Packing Forwarding, Freight & Insurance: Inclusive.

DELIVERY SCHEDULE: Commencing within 2 months or earlier with minimum of 2 km & 1 km for 800mm and 1000 mm respectively. Thereafter 3 km per month in assorted size. However, keeping in view of our urgency, earliest delivery will be appreciated. Delivery period to be reckoned from 10th day of placement of order.

Any increase in the rate of taxes & duties beyond delivery period will be to your account.

NOTE: Safe arrival of materials shall be your responsibility.

- 8. Performance Bank Guarantee** – PBG on schedule/Nationalized Bank in India valid for three months beyond the expiry of Guarantee/Warranty period for 10% value of the order (order value means FOR destination price including taxes, duties, transportation & insurance charges & other charges if any) shall have to submitted to MM Division, BCCL, Koyla Bhawan on or before commencement of supply. PBG may be submitted either for the entire order quantity at a time or each equipment wise/lot wise.
- 9. Security Money:** Not applicable being DGS&D Registered Firm.
- 10. Inspection:** Pre-dispatch inspection of each consignment shall be carried out by M/s. Central Mine Planning & Design Institute Ltd (CMPDIL), Ranchi/their Regional Office as per the terms and conditions indicated here under:
Pre-dispatch inspection shall be carried out by M/s. CMPDIL (the above firm) as per their methodology. The third Party Inspection shall include examination of raw material, test

certificate verification, continuous monitoring of quality assurance by manufacturer which will include regular and surprise visits. In brief, the scope and condition of inspection by M/s. CMPDIL will be as follows:

- Checking and approval of test procedures/quality assurance plans.
- Verification of records and documents of your works.
- Verification of documents and test certificate of bought out items and cross checks. You shall provide facilities for carrying out all necessary tests as required in the specification at your works else these will be carried out at an independent test house at your cost.
- Final testing and checking of materials as per specifications. M/s. CMPDIL will have full and free access to the premises of manufacturer during the process of manufacturing and during inspection activities.

Inspection fee @ 0.80% of total F.O.R. Destination price with service Tax of 12.36% is to be paid to M/s. CMPDIL along with inspection call letter payable by DD which will be reimbursed subsequently by BCCL together with consignment billing.

Minimum 7 calendar days notice shall be given by you to M/s. CMPDIL for arranging inspection within valid delivery period as per contract.

The ultimate responsibility for supply of correct materials as per requirement of relevant specification lies solely with you in spite of clearance/acceptance by inspection authority i.e. M/s. CMPDIL. The manufacturer will be required to replace the material free of cost if found defective/unserviceable/not according to relevant specifications.

The charges for third party inspection and the cost of materials that would be required for destructive tests, if any, shall be reimbursed by BCCL together with the consignment billing. Such cost shall be reimbursed only if it is duly certified by M/s. CMPDIL.

Please send inspection call to M/s. CMPDIL, Ranchi/ their Regional Office as indicated above

Final inspection shall be arranged by the consignee after receipt of the material at our destination.

The purchaser shall, at its discretion, have the right to test the ordered material in a Government Test House or in a test house nominated by the purchaser. In case of failure of the material after testing the cost of tests as well as of the material shall have to be borne by the supplier.

11. **Transit Insurance** – Shall be arranged and covered by you for safe arrival of the materials to the consignee end at your cost and risk.

12. **PENALTY FOR FAILURE TO SUPPLY IN TIME:** The delivery of stores stipulated in Purchase order shall be deemed to be of the essence of the contract and delivery of the stores must be completed by the date specified. No materials should be supplied beyond the specified delivery period, unless specific approval has been obtained from the purchaser.

In the event of failure to deliver the stores within the stipulated date/ period in accordance with the samples and/or specification mentioned in the supply order, and in the event of breach of any terms and conditions mentioned in the supply order. Bharat Coking Coal Limited reserves the right:

a) To recover from successful tenderer, as agreed liquidated damages, a sum not less than 0.5% (half percentage) of the price of the stores which successful tenderer has not been able to supply (for this purpose part of a unit supplied will not be considered) as aforesaid for each week or part of a week during which the delivery of such stores may be in arrears limited to 10%. Where felt necessary the limit of 10% can be increased to 15% at the discretion of Head of the Materials Management Division.

- b) To purchase elsewhere, after due notice to the successful tenderer on the account and at the risk of the defaulting supplier the stores not supplied or others of a similar description without canceling the supply order in respect of consignment not yet due for supply or
- c) To cancel the supply order or a portion thereof, and if so desired to purchase the store at the risk and cost of the defaulting supplier and also
- d) To extend the period of delivery with or without penalty as may be considered fit and proper. The penalty, if imposed shall not be more than the agreed liquidated damages referred to in clause (a) above.
- e) To encash any Bank guarantee which is available for recovery of the penalty or
- f) To forfeit the security deposit full or in part.
- g) Whenever under the contract a sum of money is recoverable from and payable by the supplier, BCCL shall be entitled to recover such sum by appropriating, in part or whole by deducting any sum or which at any time thereafter may be due to the successful tenderer in this or any other contract with Bharat Coking Coal Ltd. or any subsidiary of Coal India Ltd. Should this sum be not sufficient to cover the full amount recoverable, the successful tenderer shall pay BCCL on demand the remaining amount. The supplier shall not be entitled to any gain under this clause.

13. PRICE FALL CLAUSE.

- i) The prices charged for the stores supplied under the contract by the supplier shall in no event exceed the lowest price at which the supplier offer to sell the stores of identical description to any other organization from date of offer till completion of supply under the contract.
- ii) If at any time during the said period the supplier offers lower sale price of such stores to any other organization at a price lower than the price chargeable under this contract, the supplier shall forthwith notify such reduction or sale to the consignee concerned under intimation to CGM(MM), Bharat Coking Coal Limited, Commercial Block, Level -III, Koyla Bhawan, Koyla Nagar, Dhanbad and the price payable under the contract for the stores supplied after the date of coming into force of such reduction or sale, shall stand correspondingly reduced. The above stipulated will not, however apply to exports by the supplier.

- 14. Submission of Bills:** Pre-receipted stamped original bill for 100% value in four copies along with, delivery Challan in original, Guarantee/ Warranty certificate, pre-dispatch inspection certificate and other relevant documents as per supply order, etc should be submitted to the Paying Authority through Consignee only.

15. Guarantee /Warranty:

Materials supplied should be guaranteed for a period of 12(twelve) months from the date of fitment or 18 months from the date of receipt and acceptance at consignee end whichever is earlier against any manufacturing defects / workmanship / inferior quality. Any defect observed on this account shall be attended within 07 days from the date of receipt of report and replace the materials within 21 days free of cost.

- 16. Packing:** Consignment shall be supplied in suitable standard proper packing.

17. Force Majeure Clause:

If the execution of the supply order is delayed beyond the period stipulated in the supply order as a result of out-break of hostilities, declaration of an embargo / curfew or blockade or fire, flood, acts of nature or any other contingency beyond the supplier's control due to act of God then BCCL may allow such additional time by extending the delivery period, as it considers to be justified by the circumstances of the case and its decision shall be final.

- 18. Consignee:** Depot Officer, Ekra Central Stores., P.O:- Banskjora (Sijua), Dhanbad, Jharkhand, India (Phone NO:-0326-2330350)

- 19. Paying Authority:** GM (F) MM Div, Koyla Bhawan, Koyla Nagar, Dhanbad.
- 20. Issue of Road Permit:** Road Permit if required may be obtained directly from the Consignee under intimation to this office.
- 21. All disputes are subject to Dhanbad Court and Jharkhand High Court**
ALL OTHER TERMS & CONDITIONS AND TECHNICAL SPECIFICATIONS
ALONG WITH SCOPE OF SUPPLY WILL BE STRICTLY AS PER OUR NIT.

This contract is concluded with the issuance of this order. We are enclosing 2 copies of the Purchase order, one of which should be returned to us duly stamped and signed.
This issues with the approval of the Competent Authority.

Yours faithfully,
For & on behalf of Bharat Coking Coal Ltd

(M. Mehta)
AM (MM)

(A. K. Choudhary)
CM (MM)

INDENT REFERENCE

Indent no. and Date	Budget Certification Details.
<u>Indent</u> <u>No:</u> BCCL/CGM(E&M)/F- C.Indent/11-12/121 dated 28.12.2011 <u>IR Ref No:</u> 712020 dated 04.05.2012	<u>e-BC No:</u> i. 93 dated 31.07.2012 for Rs 1.07 Crores (One Crore Seven Lakhs only) ii. BCCL/C&B/Cap/12-13/2/P&M/HQ/12/211/453 eBC dated 05.03.2013 for 50,18,589.23 (Rupees Fifty Lakh Eighteen Thousand Five Hundred Eighty Nine and paisa twenty three only) <u>e-FC No:</u> i. 203 dated 19.03.2013 for Rs 1.07 Crores only ii. 204 dated 19.03.2013 for Rs 50,18,589.23

Copy to:

1. Depot Officer, Ekra Central Stores.: Beltings covered in subject order will be issued as per release order issued by CGM (E&M), BCCL
2. GM (F) MM Div, Koyla Bhawan.
3. CGM (E & M) , Koyla Bhawan , Dhanbad
4. CGM(E&M), CMPDIL, Gondwana Place, Kanke Road, Ranchi
5. SM (Tech Cell), MM Div, Koyla Bhawan.
6. Master File/Office Copy.
7. GM (MM), CCL / NCL / WCL/ SECL / MCL / ECL /CMPDIL.
8. Shri Ashok Kumar Chakraborty, (Retd Judge), BB 69, Sector-I, Salt Lake, Kolkata-700064

AM (MM)

CM (MM)

ANNEXURE “A”

SCOPE FOR SUPPLY:

Description	Quantity
800 mm/Type-3	7.0 km
1000 mm/Type-5	3.0 km

TECHNICAL SPECIFICATION OF ANTISTATIC FIRE RESISTANT PVC CONVEYOR BELTING FOR UNDERGROUND COAL MINE

1.0 SCOPE

This specification covers the manufacture and supply of DGMS APPROVED PVC Antistatic fire resistant belting of required size and length for use in Underground Coal mines.

2.0 APPLICABLE STANDARD

The belting shall be designed and manufactured, unless otherwise specified, in accordance with the latest revision of IS:3181 Standard.

3.0 ENVIRONMENTAL & DUTY CONDITIONS:

The belting shall be of heavy duty type, capable of handling lumpy coal containing shall be suitable for round the clock operation in underground coal mining environment laden with dust and humidity. The Conveyor may be semi covered or uncovered on the surface run. The belting shall therefore, be suitable for extra environmental condition i.e. exposure to open sun and rain, temperature variation from 5 degree to 50 degree Celsius and relative humidity up to 98%. (Maximum temp. & humidity will occur at the same time)

4.0 CONSTRUCTIONAL FEATURES

The belting shall be designed and constructed such that it gives smooth service under the stipulated working conditions. The belting shall primarily consist of plies of woven fabric or be of solid woven construction and shall be impregnated with fire resistant compound and have a fire resistant cover, the whole being fused or vulcanized together in a uniform manner in accordance with best manufacturing practices. The belt edges shall be completely sealed against ingress of moisture. The belting in general shall have following constructional features:

4.1 FABRIC

Any natural or synthetic fiber or combination thereof may be used for carcass and the reinforcement, provided the test requirements are complied with. The fabric used shall be evenly and firmly woven and shall be free from foreign matter and such defects as knots, folds, lumps and irregularities of twist as is normal in the best manufacturing practices.

4.2 BREAKING STRENGTH AND ELONGATION OF BELTS

The minimum longitudinal and transverse breaking strength, elongation and tear strength of the finished belting shall not be less than the values given in Table-1:

TABLE-1

Belt Type	Designation	Breaking Strength (Minimum)		Elongation at break (Minimum)		Tear Strength
		Longitudinal KN/m	Transverse KN/m	Longitudinal (%)	Transverse (%)	Minimum KN
5	5000	875	352	15	18	1.18

4.2.1 Elongation at reference load in longitudinal direction (wrap) shall not be greater than 4%

4.3 BELT LENGTH

The total length of belting shall be not less than the specified length. The tolerance on length on individual rolls shall be within (+) 2% and (-) 0.5%. However, the last roll length may be non-standard depending upon total order quantity against each belt specification with tolerance of (+)2% / (-)0.5%.

4.4 BELT WIDTH

The width of the belting shall be within (+) 2% to (-)0% of specified nominal belt width.

4.5 BELT EDGES

4.5.1 The edges of the belting shall be completely sealed by fire resistant compound – (Not applicable for Solid Woven Belts).

4.5.2 Where the edge cover material is manufactured and applied separately (its width shall not be more than 5 mm) to produce good adhesion, it shall be fused or vulcanized to the edges of the surface covers and the fabric. (Not applicable for Solid Woven Belts)

4.6 BELT THICKNESS

The mean belt thickness and derived carcass thickness shall not be less than those specified in the Technical Parameters at Para 9.0. The difference between any two measurements taken shall not exceed 1 mm for a belt of which the mean belt thickness does not exceed 10mm or 10% of the mean belt thickness for a belt of which the mean thickness exceeds 10 mm.

4.7 COVER THICKNESS

The cover thickness for both carrying and non-carrying side, unless otherwise specified, shall not be less than 0.8 mm for Belt up to Type-4. For Belt Type-5 and above the cover thickness for both carrying side, unless otherwise specified, shall not be less than 1.0 mm.

4.8 JOINT IN FABRIC

There shall be no longitudinal and transverse joint in solid woven carcass.

4.9 FREEDOM FROM DEFECTS

The belting shall be straight when rolled out flat. The surface and edges of finished belting shall be free from blisters, pitting and other surface defects and shall be completely sealed against the ingress of moisture by fire resistant compound.

4.10 ADHESION

4.10.1 Adhesion between cover and carcass.

The mean adhesion between cover and carcass plies shall not be less than 3.15 KN/m. The lower of the two minimum values of force from the two tests shall not be less than 2.60 KN/m when measured in accordance with IS: 3181 (Latest).

4.10.2 Adhesion between adjacent plies

The mean adhesion between adjacent plies shall not be less than 3.50 KN/m. The lower of the two minimum values of force from the two tests shall not be less than 2.60 KN/m when measured in accordance with IS: 3181(Latest)

4.10.3 Edge strip adhesion

The adhesion between the edge strip and the edge of the belt shall not be less than 2.6 KN/m of belt thickness when measured in accordance with IS: 3181(Latest).

Details are specified in the technical parameters of PVC Belt indicated below.

4.11 ELECTRICAL RESISTANCE:

The electrical resistance on both the upper and lower surface of the belting shall not greater than 3×10^8 Ohms when measured in accordance with IS: 3181(Latest)

4.12 FIRE RESISTANCE

4.12.1 Routine Test

4.12.11.1 Spirit Burner Test

After being held in a flame for 30 seconds, all visible flame and glow must disappear within the following time, when measured in accordance with IS: 3181 (Latest).

With outer covers	3 Seconds
With outer covers removed	5 Seconds

4.12.2 Type Test

4.12.2.1 Drum Friction Test

There shall not be any visible sign of flame or glow on any part of any one of the test pieces of belting during drum friction test or after each test piece breaks. The temperature of the surface of drum during each test shall not exceed 325 degree Celsius.

4.12.2.2 Propane burner Test

The belting subjected to propane burner test shall be self extinguishing after removal of the propane flame and a minimum of 250 mm long full width portion on each test piece shall remain undamaged at the completion of the test.

4.12.3.1 The above type tests shall be from the British Coal or any other alternative sources and type test certificates along with report will be submitted for review.

Whenever required by purchaser or his authorised representative arrangement will be made for drum friction for random check.

5.0 MARKING

The belt shall be clearly marked on the carrying side. The character height shall be not less than 30 mm. The marking shall be repeated at a maximum longitudinal spacing of 10 meters, at approximately 100 mm from the left and right edges of the belting alternatively unless specified in DGMS approval.

The following identification marks shall be applied on the carrying side/ thicker cover side of belting:

- . Manufacturer's identification.
- . Belt Type
- . Color
- . Cover thickness of carrying and running side.
- . Mark/batch No.
- . Indian Standard Number
- . Month and Year of manufacture
- . Any other markings as stipulated in DGMS approval.

6.0 QUALITY ASSURANCE SYSTEM:

The manufacturer shall establish and maintain a quality assurance system to the satisfaction of the Purchaser. The system shall ensure that the manufactured products meet the requirements of specification.

Purchaser shall have the right to inspect the manufacturer's quality assurance system at any stage during manufacturing.

7.0 SAMPLIUNG AND TESTING

7.1 SAMPLING

Depending upon the length of conveyor belting of the same characteristics(i.e. type,width etc) the sample shall be drawn in accordance with Table-II. Each sample shall be full belt width and not less than 600 mm long.

TABLE-II

Length	No. of Samples
Up to 500m	1
501 m to 1000 m	2
1001 m to 2000 m	3
2001 m to 3500 m	4
3501 m to 5000 m	5
5001 m to 7000 m	6
7001 m to 10000 m	7

The sample shall not be tested within two days after the manufacture of belting.

7.2 RETEST AND REJECTION

Should a sample fail to comply the specify test requirements, two additional samples shall be drawn and tested after conditioning them in standard atmosphere of 65 (+/-) 5% relative humidity and 27 degree (+/-) 2 degree C temperature for 3 days before testing. In case of either of these two samples failing to comply with the test requirements, the supply shall be rejected. If both the samples pass the tests, the supply shall be accepted. All tests shall be in accordance with IS: 3181 (latest) incorporating latest revision.

7.3 TESTING

7.3.1 The following test shall be performed on sampled lbelting in the presence of purchaser or his authorized representative.

- Belt Width
- Belt thickness
- Cover thickness (Top and Bottom)
- Breaking load (KN/m) in longitudinal (wrap) and transverse (weft) direction.
- Elongation at reference load (10% breaking load) in longitudinal (wrap) direction.
- Elongation at brake at longitudinal (wrap) and transverse (weft) direction.
- Tear strength.
- Adhesion between cover and carcass.
- Electrical Resistance.
- Spirit Burner test for the fire resistance.
- Drum friction test for random check whenever required by purchaser or his authorised representative.

7.3.2 Apart from the above, the following test shall be performed in case of plied construction belting or when edge cover is manufactured and applied separately in the form of strip.

- Edge adhesion
- Adhesion between adjacent plies.

7.3.3 For each type of belting at least one troughability test will be carried out in the presence of the purchaser or his authorized representative in accordance with IS:1891 (Part-I), latest. The troughability shall not be less than 0.11.

8.0 TEST AND INSPECTION

8.1 The purchaser or his authorized representative shall have the right to carry out inspection during manufacture and before dispatch. Such inspection shall not, in case of any defect noticed later, entitle the supplier to plead that inspection has been done by the purchaser and absolve them of the obligation. Necessary facilities shall be provided by the supplier to the purchaser to carry out such inspection.

8.2 The test and inspection shall be carried out in the presence of the manufacturer, as per IS: 3181 (latest) and other relevant BS and International Standards for which all facilities shall be provided by the manufacturer at his own cost.

8.3 The manufacturer shall also make available to the purchaser's inspecting personnel all the relevant standards and codes of practice for manufacture, inspection and testing of the material/product/equipment. The manufacturer shall also make available a set of meters, gauges, instruments, testing equipment etc. as may be required for testing and inspection to check that the products comply with this specification.

TECHNICAL SPECIFICATION OF ANTISTATIC FIRE RESISTANT PVC CONVEYOR BELTING FOR UNDERGROUND COAL MINE

1.0 SCOPE

This specification covers the manufacture and supply of DGMS APPROVED PVC Antistatic fire resistant belting of required size and length for use in Underground Coal mines.

2.0 APPLICABLE STANDARD

The belting shall be designed and manufactured, unless otherwise specified, in accordance with the latest revision of IS:3181 Standard.

3.0 ENVIRONMENTAL & DUTY CONDITIONS:

The belting shall be of heavy duty type; capable of handling lumpy coal containing shale and suitable for round the clock operation in underground coal mining environment laden with dust and humidity. The Conveyor may be semi covered or uncovered on the surface run. The belting shall therefore, be suitable for extra environmental condition i.e. exposure to open sun and rain, temperature variation from 5 degree to 50 degree Celsius and relative humidity up to 98% (Maximum temp. & humidity will occur at the same time).

4.0 CONSTRUCTIONAL FEATURES

Solid woven construction and shall be impregnated with fire resistant anti static compound having fire resistant anti static covers, the whole being fused in uniform manner in accordance with best manufacturing practices. The belt edges shall be completely sealed against ingress of moisture. The belting should be designed and constructed to give smooth service under stipulated working conditions.

4.1 FABRIC

Any natural or synthetic fiber or combination thereof may be used for carcass and the reinforcement, provided the test requirements are complied with. The fabric used shall be evenly and firmly woven and shall be free from foreign matter and such defects as knots, folds, lumps and irregularities of twist as is normal in the best manufacturing practices.

4.2 BREAKING STRENGTH AND ELONGATION OF BELTS

The minimum longitudinal and transverse breaking strength, elongation and tear strength of the finished belting shall not be less than the values given in Table-1:

TABLE-1

Belt Type	Designation	Breaking Strength (Minimum)		Elongation at break (Minimum)		Tear Strength
		Longitudinal KN/m	Transverse KN/m	Longitudinal (%)	Transverse (%)	Minimum KN
3	3500	610	265	17	18	1.09

4.2.1 Elongation at reference load in longitudinal direction (wrap) shall not be greater than 4%

4.3 BELT LENGTH

The total length of belting shall be not less than the specified length. The tolerance on length on individual rolls shall be within (+) 2% and (-) 0.5%. The last roll length supplied will be such that the total supplied quantity will add up to the total ordered quantity.

4.4 BELT WIDTH

The width of the belting shall be within (+) 2% to (-) 0% of specified nominal belt width.

4.5 BELT EDGES

4.5.1 The carcass construction of the belting is solid woven in nature. Edge forms an integral part which is completely sealed by fire resistant compound.

4.5.2 Where the edge cover material is manufactured and applied separately (its width shall not be more than 5 mm) to produce good adhesion, it shall be fused or vulcanized to the edges of the surface covers and the fabric. (Does not arise for Solid Woven Belts)

4.6 BELT THICKNESS

The mean belt thickness and derived carcass thickness shall not be less than those specified by the bidder. The difference between any two measurements taken shall not exceed 1 mm for a belt of which the mean belt thickness does not exceed 10mm or 10% of the mean belt thickness for a belt of which the mean thickness exceeds 10 mm.

4.7 COVER THICKNESS

The cover thickness for both carrying and non-carrying side, unless otherwise specified, shall not be less than 0.8 mm for Belt up to Type-4. For Belt Type-5 and above the cover thickness for both carrying & non-carrying side, unless otherwise specified, shall not be less than 1.0 mm.

4.8 JOINT IN FABRIC

The ordered belting is solid woven and therefore there will be no transverse and longitudinal joints in the carcass.

4.9 FREEDOM FROM DEFECTS

The belting shall be straight when rolled out flat. The surface and edges of finished belting shall be free from blisters, pitting and other surface defects and shall be completely sealed against the ingress of moisture by fire resistant compound.

4.10 ADHESION

4.10.1 Adhesion between cover and carcass.

The mean adhesion between cover and carcass shall not be less than 3.150 KN/m. The lower of the two minimum values of force from the two tests shall not be less than 2.60 KN/m when measured in accordance with IS: 3181 (Latest).

4.10.2 Adhesion between adjacent plies

Not Applicable for solid woven belts.

4.10.3 Edge strip adhesion

Not Applicable for solid woven belts.

4.11 ELECTRICAL RESISTANCE:

The electrical resistance on both the upper and lower surface of the belting shall not be greater than 3×10^8 Ohms when measured in accordance with IS: 3181 (Latest)

4.12 FIRE RESISTANCE

4.12.1 Routine Test

4.12.1.1 Spirit Burner Test

After being held in a flame for 30 seconds, all visible flame and glow must disappear within the following time, when measured in accordance with IS: 3181 (Latest).

With outer covers	3 Seconds
With outer covers removed	5 Seconds

4.12.2 Type Test

4.12.2.1 Drum Friction Test

There shall not be any visible sign of flame or glow on any part of any one of the test pieces of belting during drum friction test or after each test piece breaks. The temperature of the surface of drum during each test shall not exceed 325 degree Celsius.

4.12.2.2 Propane burner Test

The belting subjected to propane burner test shall be self extinguishing after removal of the propane flame and a minimum of 250 mm long full width portion on each test piece shall remain undamaged at the completion of the test.

4.12.3.1 The above type tests shall be from the British Coal or any other alternative sources and type test certificates along with report will be submitted for review.

Whenever required by purchaser or his authorised representative arrangement will be made for drum friction for random check.

5.0 MARKING

The belt shall be clearly marked on the carrying side. The character height shall be not less than 20 mm. The marking shall be repeated at a maximum longitudinal spacing of 10 meters, at approximately 100 mm from the left and right edges of the belting alternatively unless specified in DGMS approval.

The following identification marks shall be applied on the carrying side/ thicker cover side of belting:

- . Manufacturer's identification
- . Belt Type
- . Color
- . Cover thickness of carrying and running side
- . Mark/batch No
- . Indian Standard Number
- . Month and Year of manufacture
- . Any other markings as stipulated in DGMS approval

6.0 QUALITY ASSURANCE SYSTEM:

The manufacturer shall establish and maintain a quality assurance system to the satisfaction of the Purchaser. The system shall ensure that the manufactured products meet the requirements of specification.

Purchaser shall have the right to inspect the manufacturer's quality assurance system at any stage during manufacturing.

7.0 SAMPLIUNG AND TESTING

7.1 SAMPLING

Depending upon the length of conveyor belting of the same characteristics (i.e. type, width etc) the sample shall be drawn in accordance with Table-II. Each sample shall be full belt width and not less than 600 mm long.

TABLE-II

Length	No. of Samples
Up to 500m	1
501 m to 1000 m	2
1001 m to 2000 m	3
2001 m to 3500 m	4
3501 m to 5000 m	5
5001 m to 7000 m	6
7001 m to 10000 m	7

The sample shall not be tested within two days after the manufacture of belting.

7.2 RETEST AND REJECTION

Should a sample fail to comply the specified test requirements, two additional samples shall be drawn and tested after conditioning them in standard atmosphere of 65 (+/-) 5% relative humidity and 27 degree (+/-) 2 degree C temperature for 3 days before testing. In case of

either of these two samples failing to comply with the test requirements, the supply shall be rejected. If both the samples pass the tests, the supply shall be accepted. All tests shall be in accordance with IS: 3181 (latest) incorporating latest revision.

7.3 TESTING

7.3.1 The following test shall be performed on sampled belting in the presence of purchaser or his authorized representative.

- Belt Width
- Belt thickness
- Cover thickness (Top and Bottom)
- Breaking load (KN/m) in longitudinal (wrap) and transverse (weft) direction.
- Elongation at reference load (10% breaking load) in longitudinal (wrap) direction.
- Elongation at brake at longitudinal (wrap) and transverse (weft) direction.
- Tear strength.
- Adhesion between cover and carcass.
- Electrical Resistance.
- Spirit Burner test for the fire resistance.
- Drum friction test for random check whenever required by purchaser or his authorised representative.

7.3.2 Apart from the above, the following test shall be performed in case of plied construction belting or when edge cover is manufactured and applied separately in the form of strip.

- Edge adhesion
- Adhesion between adjacent plies

Not Applicable for solid woven belts.

7.3.3 For each type of belting at least one troughability test will be carried out in the presence of the purchaser or his authorized representative in accordance with IS:1891 (Part-I), latest. The troughability shall not be less than 0.11.

8.0 TEST AND INSPECTION

8.1 The purchaser or his authorized representative shall have the right to carry out inspection during manufacture and before dispatch. Such inspection shall not, in case of any defect noticed later, entitle the supplier to plead that inspection has been done by the purchaser and absolve them of the obligation. Necessary facilities shall be provided by the supplier to the purchaser to carry out such inspection.

8.2 The test and inspection shall be carried out in the presence of the manufacturer, as per IS: 3181 (latest) and other relevant BS and International Standards for which all facilities shall be provided by the manufacturer at his own cost.

8.3 The manufacturer shall also make available to the purchaser's inspecting personnel all the relevant standards and codes of practice for manufacture, inspection and testing of the material/product/equipment. The manufacturer shall also make available a set of meters, gauges, instruments, testing equipment etc. as may be required for testing and inspection to check that the products comply with this specification