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**MANUAL FOR  
WIRE ROPES AS PER  
INDIAN STANDARD SPECIFICATIONS  
( 1855,1856,2266,2365,2581,2762,13156 )**

**(First Issue)**



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## FOREWORD

This is the first issue of a comprehensive manual for exclusive use of BIS inspection personnel engaged in the inspection and certification of products manufactured in accordance with Indian Standards. The scope of this manual covers wire ropes conforming to the various Indian Standards, their manufacture, quality conformance inspection, sampling and testing.

The objectives for preparation of such manuals are :

- a) To bring uniformity in inspection procedures
- b) To remove any ambiguity in interpretations
- c) To help the consumers get certified materials meeting their requirements
- d) As a safety item, ensure complete conformance to the specifications, thereby meeting the statutory regulations, as for example, for use in mines, hoists, elevators etc.,
- e) To save on the inspection time and cost
- f) To help the manufacturers in standardizing their product range , minimize rejection and thereby effect requisite cost control and economy

Wire ropes industry is one of the earliest founded, to meet the growing needs of basic industries like mining, shipping, reinforced electrical conductors for transmission, transportation, etc. Starting with coconut fibre ropes used for lashing , mooring and anchoring, to jute fibre, for multifarious usages, on to ‘ Manila’ ropes and with the rapid industrialization leading to oil exploration, coal mining and drilling for other ores and minerals, the introduction of steel wires, the demand for wire ropes has grown many folds. With the change in the needs, the designing of ropes also underwent major changes, in the construction of the core, overlay, weight requirements etc. Natural fibre cores have led to hard polythene/ poly- propylene strands ( NYLON) ropes.

The figures in subsequent pages illustrate the different types of wire ropes as per the Indian Standard Specifications.

To understand the constructional details for designing a wire rope , the following terminology should be clearly understood.

Rope diameter, length , Lay type and direction, tensile designation, type of core and strands

The manual has been divided into following sections :

Section I	Product Description
Section II	Specifications
Section III	Manufacture and Controls
Section IV	Inspection & Testing - Methods of Test - Test Equipment
Section V	Criteria for Certification
Section VI	Annexes

The inspection personnel should thoroughly familiarize themselves with the manual and its contents to facilitate an objective and impartial inspection.

**THIS DOCUMENT IS INTENDED FOR INTERNAL USE BY BIS INSPECTING OFFICERS WHO SHOULD HOWEVER DO NOT TREAT SUCH DOCUMENT AS REPLACEMENT FOR REFERRED STANDARDS OR THAT OF RELEVANT SCHEME FOR TESTING AND INSPECTION (STI). STANDARDS AND OTHER DOCUMENTS ( STI ETC.) REFERRED ARE AS APPLICABLE AT THE TIME OF PREPARATION OF MANUAL HOWEVER, LATEST STANDARDS/OTHER DOCUMENTS AS IMPLEMENTED SHALL BE REFERRED.**

## SECTION I

### BRIEF DESCRIPTION OF PRODUCTS

Wire ropes are composite construction of strands of fibre or steel or both, bunched to form a core surrounded by stranded and twisted cores. A wire rope is designated by the over all diameter, the number of strands, number of wires per strand, the cores, the type of lay and the length etc.

Therefore a typical order or technical enquiry should comprise of the following :

- a) Dimensions- Diameter and length of rope
- b) Details of construction - Number of strands  
Number of cores  
Number of strands per core,  
Direction and type of Lay  
Type of core  
Type of construction

Tensile designation

- c) The intended purpose of use
- d) The fittings required

The Glossary of Terms relating to Wire ropes are covered in the Indian Standard IS 2363 : 1977 'Glossary of Terms relating to wire ropes ( *first revision*)'. The IS 6594:2001 'Technical Supply Conditions for Steel Wire ropes and Strands ( *Second Revision*)' is an important adjunct to this manual.

### Construction and Technical Requirements

To understand the construction and technical requirements of a wire rope the following definitions are important and are suitably explained by the accompanying illustrations.:

/ Illustration of a complete wire rope with details /

In the illustrated figure above, the legend is as follows :

#### DIMENSIONS

- 1. Length
- 2. Diameter ( in mm )

#### CONSTRUCTION

- 3. Number of Strands
- 4. Number of wires per strand
- 5. Wire placement
- 6. Direction of Lay
- 7. Type of Lay – Ordinary/ Lang
- 8. Type of core- Fibre ' CF ' / Steel Wire ' CWR '
- 9. Type of construction

TENSILE DESIGNATION - 1420 / 1570 / 1770 / 1960  
**ARRANGEMENTS OF WIRES IN STRAND**

The typical designation for a rope through connecting symbols is given below :  
The connecting symbols used are : ‘ - ’ ‘ / ’ ‘ : ’ ‘ + ’ ‘ x ’

Typical Illustration of construction is designated as :

9-9-1 or 12-6F-6-1	Single operation ( Equal or parallel Lay )
12/6-1 or 18/12/6-1	Multiple operation in the same direction ( Cross Lay )
12 : 6-1 or 18:12:6-1	Multiple operation in the same direction ( Contra lay )
6+6-6-1 or 14-7+7-7-1	Warrington Layer
6-1 or 12-F ( Fibre)	Centre Strand
6x19S-CF	General rope with one layer of strands; Core fibre – CF
11x7 : 6x7-CF	Rotation resistant , multiple operation ( 3 Layers) contra lay between outer layer and first layer of strands, fibre Core
18x 7 : 12 x7/6x7-CWS	Rotation resistant multiple operation ( 3 Layers) contra lay between outer layer and second layer and Cross Lay between Second and First lay- Core wire strand (CWS)

**INTENDED USAGE & ACCESSORIES REQUIRED** : Are to be given by the purchaser in his technical query / Purchase order to enable right selection/ supply by the manufacturer.

For example, as per IS 1855: 2003, Wire ropes for use in mines shall be of round, multi strand, rotation resistant or flattened strand type. The core can be of fibre or steel. The wire ropes for general purposes as per IS 2266 : 2002 specifies the type, construction, rope grades and the range of sizes.

Wire ropes can be supplied as black or galvanized depending upon customer requirements. Joints are also permitted depending upon the applications. Pre-formed wire ropes are generally used as they have superior flexibility and have better bending resistance.

***Protection of wires and ropes***

The wire ropes unless properly protected against oxidation tend to corrode fast and result in fatigue failures. Therefore the wires and the ropes are galvanized unless otherwise demanded. In order to reduce friction, wire ropes are well lubricated The lubrication requirement is dependent on the application of the wire rope. In case of ropes for general engineering purposes , the grease used shall be free from solvents, acidity, alkalinity, moisture or any other aromatic compound.

Fibre cores are normally of Manila ropes, jute fibre or any other suitable fibre. Of late, synthetic fibres ( popularly termed as ‘Nylon’ ) made of polythene, polypropylene etc are being used in place of natural fibres due to their easy availability and higher wear out capabilities.

### ***Major reasons of failure :***

Wire ropes are affected by heat, corrosion, fatigue or any other damages. The resultant effects are extension of strands, loss of surface metal, potential internal ruptures due to heat, loss of shape of rope and hence more friction losses. The improper jointing can also result in primitive failures.

Wire ropes acquire their characteristics due solely to the proper and correct manufacturing practices which comprise of proper selection of raw materials, heat treatment facilities, method of cleaning of scales after heat treatment, pickling, galvanizing (Hot dip / electro), core preparation and closing. Extra care is taken when natural cores of fibre are used in construction like proper storage under humidity controlled conditions,

### ***Choosing the right rope***

*The strength of a rope depends on diameter for a specific tensile designation of steel and type of construction.*

*Abrasive resistance- it is higher for ropes with larger diameter outer wires and hence should be preferred where potential for abrasive usage is higher.*

*Flexibility – is higher with larger number of wires/ strand and should be preferred where flexibility is required.*

*Preformed wires – are safer, easier, better workability, greater resistance for fatigue*

*Tensile designation - Greater the better for wear and tear.*

## SECTION I I

### INDIAN STANDARD SPECIFICATIONS FOR WIRE ROPES AND ACCESSORIES

#### **IS 1855 : 2003 Stranded Steel Wire Ropes For Winding and man-riding Haulages Mines – Specification**

This standard covers the general requirements for stranded steel wire ropes for winding and man riding haulages used in mines. The wires used shall conform to Grades 1,2 and 3 of IS 1835 :1976 - Round steel wires for ropes ( third revision). The cores can be of fibre or steel . The wire ropes shall be as far as possible joint free. However, if jointed, the total number shall not exceed 3 in any length of rope. The grade of ropes shall be 1420 ( only for multi strand rotation resistant) 1570, 1770 and 1960.

Refer Table 1 & 2 of IS 1855

#### **IS 1856 : 2005 Steel Wire ropes for Haulage purposes.**

The specification is covering the general requirements except for man riding purposes like lifts and escalators. The three grades recommended are tensile designation of 1570,1770 and 1960. The diameter of ropes covered range from 8,13 to 40 mm. Where fibre core is used it shall be of soft jute fibre.

Refer Table 1 & 4 of IS 1856

#### **IS 2266: 2002 Steel Wire ropes for General Engineering Purposes – Specification**

specifies steel wire ropes for use in cranes, excavators and other general engineering purposes. The tensile designated are 1570,1770 and 1960 . The type of ropes shall be round, oval and flattened. The oval type is restricted to sizes from 8 to 40 mm. The flattened strand is for special applications and ranges from 13 to 48 mm sizes.

Refer Tables 1, 12 & 13

#### **IS 2365: 1977 Specification for Steel wire Suspension ropes for lifts, escalators and hoists**

This standard specifies the steel wire ropes for suspension purposes predominantly used for lifts, escalators and hoists. The ropes cannot be used for winding purposes in mines. The core shall be only of fibre. Joints are permitted only in case of wires of 0.5 mm diameter or smaller.

Refer Tables 1 & 4 of IS 2365



**IS 2581: 2002 Round Strand galvanized steel wire ropes for shipping purposes- Specification ( Fourth revision )** (derived from ISO/R 346:1963 - Ship building details- Galvanized Steel wire ropes )

This standard is meant for round steel wire ropes, galvanized exclusively for shipping purposes. Wire ropes are used extensively standing, rigging, mooring, towing hawser, cargo gearing and also life boat drops The types covered are both round stranded, multi-strand rotation resistant types with both fibre and steel cores. The size range from 8mm to 52 mm for round steel strands with the rope grades of 1420 and 1570 designation. However, for multi strand ropes only 1570 tensile designation is specified and the size range is restricted to 8mm to 40 mm, the cores can be both fibre and steel.

Refer Table 2 & 10

**IS 2762 : 1982 Specification for wire rope slings and sling legs ( First revision)**

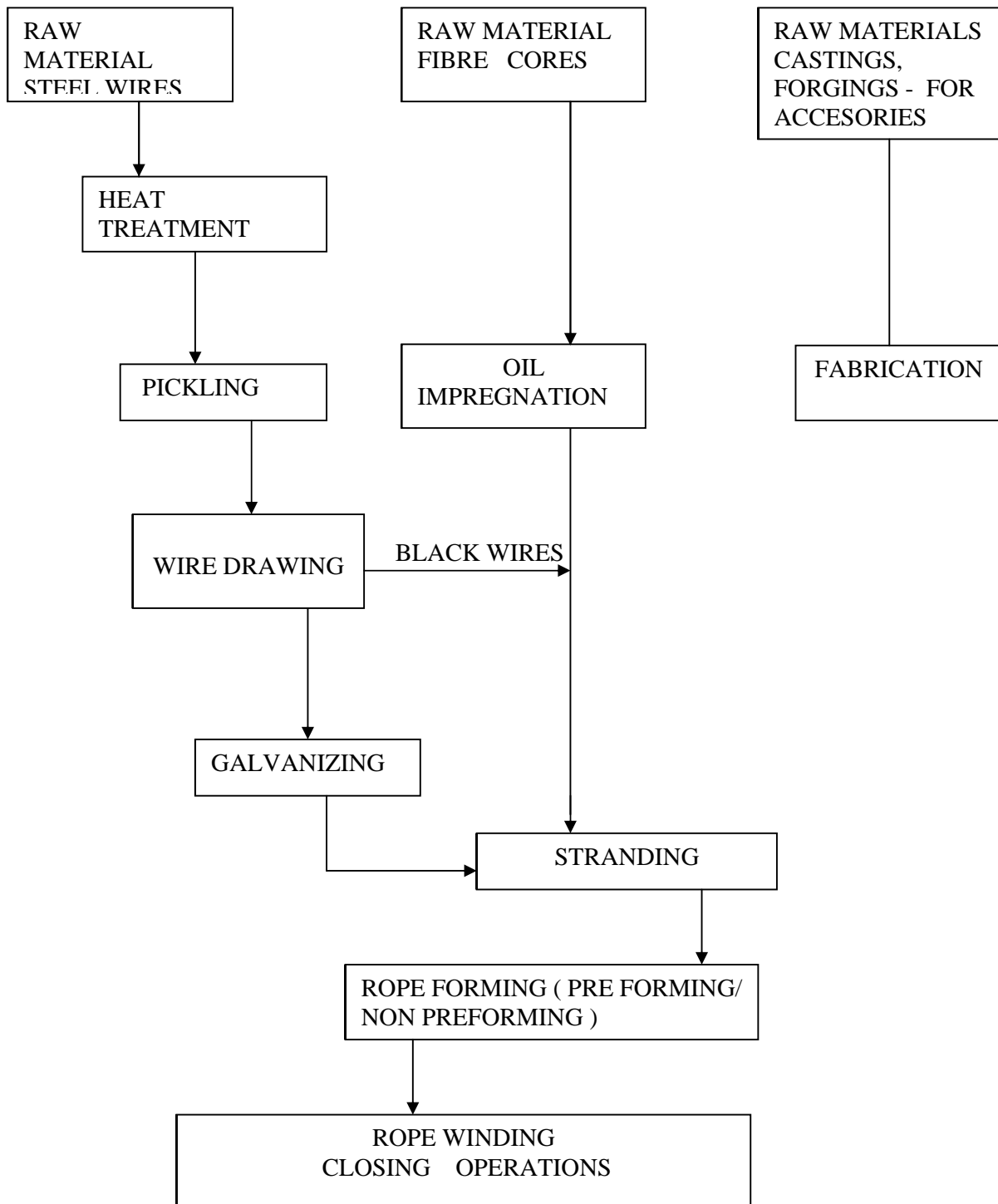
The above Indian Standard – specifies dimensions, constructions loading, tests for two, three and four leg slings for use with wire ropes of nominal diameter ranging from 8 mm to 44 mm. The sling legs of single part spliced, double part spliced and endless and double part, Grommet types are covered by this Indian Standard.

**IS 13156 : 1991 Sheave pulley blocks for wire ropes – Specification**

Pulley blocks for wire ropes form an integral component in the usage of wire ropes. The above Indian Standard covers the requirements of single, double and triple sheave pulley blocks of nominal sheave sizes from 160 mm to 320 mm dia suitable for wire ropes of nominal dia from 12 to 22 mm. While specifying the blocks the working load has to be properly calculated . The standard specifies safe and working load of 40 k N per single part.

### SECTION III

#### MANUFACTURE OF WIRE ROPES & SLINGS



## SECTION IV

### INSPECTION & TESTING - METHODS OF TEST – TEST EQUIPMENT

The stages of Inspection for processing of wire ropes are listed below :

<b>Raw Materials :</b>	<b>Quality of Steel wire</b> used before wire drawing – Diameter, length and mass, tensile designation [ IS 1835:1976 Round Steel wire for ropes ( Third revision) with 2 Amendments ]  <b>Quality of Fibre</b> – Natural / synthetic, diameter, tensile ( IS 1804 : 2004 Steel Wire ropes – Fibre Main Cores- Specification ) Natural fibre – Jute, Manila, Sisal Man- Made fibre - Polythene or poly propylene Checking for : Maximum yarn stress for main cores ( Soft/ hard (Polythene/ Polypropylene ) Core lubrication, lay length, water soluble acids, salt , Nominal dia and runnage  <b>Lubricants for wire ropes and fibre cores</b> – Specification ( Conformance to IS 9182 (Part 1 to 3 ) – Part 1 Lubricants for fibre cores of wire ropes )
<b>Heat Treatment</b>	Annealing Temperatures, time and duration of soaking ,
<b>Pickling</b>	Concentration of bath – acid/alkaline, water wash temperature of bath, time duration Sampling for tensile testing
<b>Wire drawing</b>	Diameter, number of draws , final diameter
<b>Stranding</b>	No. of wires, No. of strands, Core formation, rope formation, Stranding speed - rotation of feeding drums- checking for diameter of core, diameter of the ropes during construction Type of Lay ( Ordinary / Lang ), direction of lay,
<b>Winding ( clearing )</b>	Final diameter of the ropes, preformed/ non preformed

## SECTION IV

## TEST EQUIPMENT & TEST S

The various test Equipment required are :

### **Tensile testing machine of right capacity-**

For individual wires - Amsler's Tensile tester, Horizontal tensile tester  
For the Wire rope - Grips of varying sizes depending on the range of manufacture  
Core testing, minimum breaking force determination

**Torsion and Bend tests** – Torsion and reverse bend tests – suitable fixtures and grips/  
holding devices

### **Dimensions**

Diameters of round steel wires, cores and finished ropes - Vernier calipers, Micrometers,  
Snaps, fabricated outside calipers

Length – Metre scales, measuring tapes,

**Weighing balances** – for mass calculations as per Tables specified in ISS,

### **Classification of Tests**

The tests for completed wire rope and stranded can be categorized into routine and type tests:

The routine test on completed wire ropes is the Breaking force test while the Type test carried out to prove the design would include tests for material, size, construction, core, length, mass, minimum breaking force, lay, freedom from defects, and performing. The rope manufacturer shall ensure that the wire manufactured meets the requirements of the standard with regard to tensile, torsion, reverse bend, and where appropriate, galvanizing tests. The test results shall be available for the purchaser at the manufacturer's premises.

*If a destruction test is desired by the purchaser, test facilities as per Annex B of IS 6594:2001 shall be made available.*

### **Calibration of test equipment and Gauges**

Calibration of the testing equipment and gauges is an important activity for which facilities as far as possible should be in-house. Where gauges and tools can be calibrated by outside agencies care must be taken to ensure that the agency is approved for such activity under the national accreditation System operated by National Accreditation Board for Laboratories (NABL) of the Directorate of Science & Technology, New Delhi.

**Tensile Testing Equipment** is generally calibrated once a year. The proving ring used for calibration should be calibrated before use and duly certified by the national testing,

approving agency. National physical Laboratory, New Delhi (NPL) has the requisite facilities for calibrating the master proving ring gauge for calibration by the supplier of the tensile testing machine. The calibration of the machine for testing purposes, is done by the supplier while installation and commissioning of the testing equipment. For the purpose of the calibration of the tensile tester in house, if carried out, it is necessary to get the supplied ring also calibrated once in three years.

The proving ring is to be maintained in a cool and dry place to avoid exposure to temperature/humidity variations. The tensile testing equipment, if fitted with a computer for generation of results, through graphical analysis should, preferably be kept in a dust free, airconditioned room. The lubrication of the fixed supports ( frame ), moving arm, hydraulic circuits, pressure gauges etc. should be checked before every usage of the machine.

The grips are to be identified as per the sizes and maintained properly. In many organizations, the testing equipment is maintained under an Annual maintenance Contract by the Original Equipment suppliers.

**Measuring Gauges** - Vernier Calipers, Micrometers, dial gauges, snap gauges, measuring tape and scales are also to be calibrated periodically. The recommended non production equipment is once in a year. It varies with the usage of the gauge. As in the case of in house calibration if calibrated and certified masters exist, they may be used for secondary calibration of the gauges in- house.

Care through lubrication, dry and clean cloth for wiping etc. to be taken for proper maintenance of the measuring gauges.

If outsourced, the calibration certificate issued by the calibrating agency will indicate the errors, accuracy and the limits of uncertainty. Fabricated gauges if any, shall also be checked for their accuracy of measurement.

Renowned suppliers of Tensile testing equipment are : Blue Star, FIE , Avery and KMI. 'Mitutoyo' is the well known brand for verniers, micrometers and dial gauges.

The calibrating agencies for all laboratory mechanical, electrical and electronic equipment are the NPL and NTH. The measuring gauges and instruments can be calibrated at Central Machine Tool Institute, ( CMTI) Bangalore.

## SECTION V

### CERTIFICATION CRITERIA

*The criteria for certification and operation is detailed in the Operating Manual for Product Certification 2004 ( Fifth Revision ). Reference shall be made to the Manual by the Auditors while carrying out Certification activities.*

*For certification of wire ropes manufactured by an enterprise, with the Standard mark issued by BIS, it is mandatory to comply with the following requirements before submission of the application form to BIS .*

*While carrying out the preliminary visit the auditor shall fill up the appropriate proforma issued by CMD. For a proper inspection, it is preferable to have a checklist prepared before hand by the technical auditor.*

**Manufacturing Facilities-** The **layout** should be such that the whole production is carried out simultaneously and uniformly without any hindrance

For a wire rope manufacture, **procurement** of right **raw materials** is imperative. Steel wires , fibre for core, lubricants should be from, preferably, BIS certified sources. If not, facilities for testing on them on receipt should be established.

**Wire drawing and stranding machines , pickling tanks, annealing and lubrication facilities should be ensured.** The wires, if to be supplied after coating, **galvanizing facilities** should be established.

The **finishing on reels/ drums , preforming etc.** should be ensured. The **storage** facilities in a covered godown, marking of conforming products, storage of rejected material etc. shall be ensured

**Quality Assurance - In process** controls have to be strictly complied with by way of **sampling, inspection and testing** during each stage of manufacture. For raw materials if accompanied by test certificates , samples can be drawn at random and tested . For example, steel wires can be tested for dimensions, hardness and tensile designations.

**Visual inspection** for checking **freedom from any defects** should be done for each and every coil received. Chemical testing for lubricant may also be carried out in any outside laboratory as a verification of the claims of the supplier.

**A laboratory shall be maintained, suitably equipped and staffed where different tests given in the specification shall be carried out in accordance with the methods specified.**

The laboratory personnel should be experienced, competent, trained in testing a safety product like wire ropes. Any change of personnel should be immediately informed to the Bureau, to enable it to decide on the course of action to be taken.

The subjective **tests** for a wire rope include checking of wires for hardness, dimensions, construction details, the type and direction of lay, tensile strength, torsion and reverse bend tests for wires, galvanizing tests on coated wires. The **rope** shall be checked for visual checks, **freedom from defects, size, mass of rope, preforming, core tensile strength and joints.**

**Grant of Licence** - Depending on the successful completion of preliminary visit and approval by the technical auditor, the samples drawn by him during the processing would be tested in an independent laboratory. As far as possible **the facilities available with the BIS laboratories shall be utilized for testing the applicant sample**. The conformance to the requirements of the specification indicated by the laboratory testing enables an applicant to obtain the certification mark licence.

### **SCHEME OF TESTING & INSPECTION ( ST&I)**

For each type of wire rope, a scheme of testing and Inspection has been established by BIS, which would have to be agreed and maintained during the process by the licensee. A written consent is to be obtained before hand in this regard. Whenever an amendment is issued to the **ST& I**, the same shall be implemented by the wire rope licensee.

### **MARKING FEE**

A royalty **fee** for using the standard mark of BIS has to be paid by the wire rope licensee which varies according to the production of certified quantity during a year. To compute the fee payable, it is obligatory to furnish quarterly details in a prescribed format by the licensee to BIS.

**Renewal** of a licence is subjected to the satisfactory review of performance of the licensee. Apart from passing of samples during factory audits by the BIS, the samples drawn during the inspection in an outside laboratory, market samples drawn from the purchasers of the product decide the review to renew the continuation of the licence for a further period. Feed back from actual users is also considered while reviewing the performance.

A mandatory item for use in mines, any complaint of certified material is to be considered on priority and actions for preventive measures are to be initiated with detailed investigation on the nature of complaint . A root cause analysis is to be carried out to prevent recurrence and also any occurrence later.

*If the performance is not satisfactory during the year, BIS would initiate actions to defer/ cancel the licence,, pending review, with appropriate actions.*

## **CERTIFICATE OF TEST**

*With each coil or reel of completed wire rope the manufacturer shall supply a certificate of Test as per Annex C of IS 6594 : 2001 Duly certified and signed by the competent person , this certificate will cover the following :*

*Certificate No., Reel/ Coil No., Name and address of the manufacturer, particulars of rope, grade of rope, date of test, breaking force ( Aggregate/Actual), name and address of test house making the test and examination, any other details.*



## LIST OF VALID LICENCES

( As on 1 Dec 2005)

### **IS 1855 : 2003 Stranded Steel Wire Ropes For Winding and man-riding Haulages Mines – Specification**

Sl. No	CM/L NO.	LICENSEE
1.	0062931	Usha Martin Limited ( Wires & Wire rope Division) Ranchi, Jharkand
2.	7002140	Bharat Wire ropes Limited Ratan Industrial Estate LBS Marg, Bhandup (MH)

### **IS 1856 : 1977 Steel Wire ropes for Haulage purposes.**

1.	1018933	Vishaka wire ropes Auto Nagar, Vishakapatnam
2.	1668669	Usha Martin (wires&wire rope Div) Ranchi, Jharkand
3.	2180038	Tatanagar wire ropes (P) ltd., Industrial area, Adityapur Jamshedpur
4.	5077565	Miki Wire ropes pvt. Ltd Mahilong, Ranchi
5.	1953567	Bharat Wire Ropes Ltd, Rattan Ind. Estate Bhandup,Bombay

## IS 2266: 2002 Steel Wire ropes for General Engineering Purposes – Specification

1.	6265066	Vishaka Wire ropes, Auto Nagar, Vishakapatnam (AP)
2.	2213431	Vikrant Wire ropes (P) Ltd., Bhilai, Durg, (MP)
3.	7181570	Mayur Wires (P) Ltd Mokshi,Savli Baroda, Gujarat
4.	9121562	Navin Steel Industries GT road, Mohtli Kangra (HP)
5.	8323367	Asahi Steel Industries Khassra 429/2 Hamdipur, Delhi
6.	0176239	Usha Martin Ltd, (Wires & Wire ropes Division) Ranchi, Jharkand
7.	6211346	Aradhya Wire ropes (P) Ltd, Averegere, Davangere, Karnataka
8.	8190071	Orient Wire ropes Industrial Area, Sanver road, Indore ( MP)
9.	1285956	Bharat Wire ropes Ltd., LBS Marg. Sonapur Bhandup ( MH)
10.	7215056	DP Wire Products Minerva Industrial Estate Opposite Rallis Wolf Mulund (W), Bombay (MH)
11.	7424166	Desh Wire products ( P) Ltd MIDC, Malgaon Talsinnar, Nashik ( MH)

- |     |         |   |
|-----|---------|---|
| 12. | 9167287 | Usha Martin Ltd,<br>Dharamshala road,<br>Hoshiarpur,Punjab        |
| 13. | 8669306 | Mahadevi Industries<br>Loni, Ghaziabad (UP)                       |
| 14. | 5647556 | Suniti Technologies Ltd,<br>Saral Digh, Barol<br>24 Parganas (WB) |
| 15. | 7190369 | Orion Ropes Pvt. Ltd.,<br>MIDC, Avadhan,<br>Dhule, Maharashtra    |

**IS 2365: 1977 Specification For Steel Wire suspension Ropes for Lifts, Elevators  
And Hoists ( *First revision* )**

- |    |         |  |
|----|---------|--|
| 1. | 1668568 | Usha Martin Limited<br>Ranchi, Jharkand                  |
| 2. | 6472879 | Aradhya Wire ropes<br>Averegere,<br>Davangere- Karnataka |
| 3. | 8322163 | Orient Wire ropes<br>Sanwer road,<br>Indore (MP)         |

**IS 2581: 2002 Round Strand Galvanized Steel Wire Ropes For Shipping Purposes  
- Specification**

- |    |         |  |
|----|---------|--|
| 1. | 1668467 | Usha Martin Ltd<br>( Wires & Wire rope Division)<br>Ranchi, Jharkand |
| 2. | 7257476 | Bharat wires ropes<br>Sonapur, Bhandur ,<br>Maharashtra              |

**APPROVED LABORATORIES FOR TESTING WIRE ROPES**

<b>IS NO. SAMPLE</b>	<b>APPROVED LAB</b>	<b>TESTING CHARGES</b>	<b>QTY.OF</b>
1855	Central Laboratory, BIS	Rs.2175 ( 29 h @ Rs.75/h) *	3m
1856	Central Laboratory, BIS	Rs.2100 ( 28 @ Rs. 75/h) *	3m
	Central Mining Research Instt, Dhanbad	-Similar-	
2266	Central Laboratory ,BIS NRO Lab, Mohali, Chandigarh	Rs.2175 ( 29h @ Rs.75/h) *	3m
	Central Mining Research Instt, Dhanbad	-Similar-	
2365	Central Laboratory, BIS	Rs. 1875 ( 25 h @ Rs.75/h)	3m
2581	Central Laboratory, BIS	Rs.2175 ( 29h @Rs.75/h) *	3m

\* Charges for testing Fibre core as per IS 1804 and the lubricant as per IS 6594 will be extra

**SCHEDULE OF MARKING FEES**

<b>IS NO &amp;YR</b>	<b>UNIT (Tonne)</b>	<b>SCALE OF UNIT</b>	<b>MARKING FEE (RS)</b>	<b>SLAB 1,2,3/ QTY/RATE</b>
1855: 2003	ONE	SS	20 000	1/ALL/ 14.4 2&3 - NIL
		LS	27 000	
1856: 1977	ONE	SS	20 000	1/ ALL/ 14.4 2&3 - NIL
		LS	27 000	
2266: 2002	ONE	SS	20 000	1/ ALL/ 14.4 2&3 - NIL
		LS	27 000	
2365: 1977	ONE	SS	26 000	1/ALL/ 28.8 2&3 - NIL
		LS	33 000	
2581: 2002	ONE	SS	20 000	1/ ALL/ 28.8 2&3 - NIL
		LS	27 000	

## LIST OF INDIAN STANDARDS RELEVANT TO WIRE ROPE SECTOR

Sl. No	IS No & Year	Title
1.	210 : 1978	Grey Iron Castings ( Third revision)
2.	549: 1974	Split pins ( Second revision)
3.	1570: 1961	Schedules for Wrought Steels for General Engineering Purposes
4.	1804: 1996	Steel Wire Ropes - Fibre Main Cores( Third revision)
5.	1835: 1976	Round Steel Wire ropes( Third revision)
6.	1855: 2003	Stranded Steel Wire ropes for Windings and Man – riding Haulages in mines – Specification ( Second revision)
7.	1856: 2005	Steel Wire ropes for haulage purposes- Specification ( Third revision)
8.	1875: 1978	Carbon steel billets, blooms, slabs and bars for forgings ( Fourth revision)
9.	2062: 1998	Structural steel ( Fifth revision)
10.	2266: 2002	Steel Wire ropes for general Engineering Purposes- Specification ( Fourth Revision) ( Derived from ISO 2408:1975 Steel wire ropes for general purposes- Characteristics )
11.	2315: 1975	Specification for thimbles for wire ropes ( First revision)
12.	2363: 1981	Glossary of Terms relating to wire ropes (First revision)
13.	2365: 1977	Specification for Steel wire Suspension ropes for lifts, escalators and hoists
14.	2581: 2002	Round Strand galvanized steel wire ropes for shipping purposes- Specification ( Fourth revision) (derived from ISO/R 346:1963 - Ship building details- Galvanized Steel wire ropes )
15.	2758: 1969	Specification for mild steel point hooks for use with wire ropes ( First revision)
16.	2759: 1969	Specification for higher tensile steel point hooks for use with wire rope thimbles

- |     |                      |  |
|-----|----------------------|--|
| 17. | 2760: 1972           | Specification for mild steel chain slings  |
| 18. | 2762: 1982           | Specification for wire rope slings and sling legs<br>( First revision)                       |
| 19. | 3121: 1981           | Rigging screws and stretching screws (First revision)  |
| 20. | 3815: 1969           | Point hooks with shanks for general engineering purposes                                     |
| 21. | 4218(Pt 3) :<br>1976 | ISO metric screw threads : Part 3 Basic dimensions<br>for design profiles ( First revision ) |
| 22. | 6498: 1971           | Glossary of terms – Pulley blocks  |
| 23. | 6594: 2001           | Technical supply conditions for steel wire ropes and<br>strands ( Second revision)           |
| 24. | 13156:1991           | Sheave pulley blocks for wire ropes – Specification  |
| 25. | 13917: 2003          | Stranded wire ropes for mine hoisting – Technical<br>Delivery requirements                   |

#### **TESTS AND TEST METHODS**

- |    |            |   |
|----|------------|---|
| 1. | 1608: 1995 | Mechanical testing of metals- Tensile Testing<br>( Second Revision)   |
| 2. | 1716: 1985 | Method for reverse bend test for metallic wire<br>( second revision )   |
| 3. | 1717: 1985 | Method for simple torsion testing for<br>wire ( second revision)  |
| 4. | 2633: 1986 | Methods for testing for the uniformity of coating on<br>zinc coated article ( second revision)  |
| 5. | 6745:1972  | Methods for determination of mass of zinc coating on<br>iron and steel articles   |
| 6. | 9182: 1993 | Part 1 Lubricants for fibre core of wire ropes<br>( first revision)<br>Part 2 Lubricants for wire strands and ropes<br>( Second Revision) |

## MANDATORY CERTIFICATION OF WIRE ROPES

### **IS 1855 : 2003 Stranded Steel Wire Ropes For Winding and man-riding Haulages Mines – Specification**

Reference to Regulation 157(4) of Coal Mines Regulations issued by Directorate General of Mines vide their circular No. 22 dated 23 April 1966 and implemented by Chief Inspectorate of Mines.

### **GAZETTE NOTIFICATION PORCEDURE**

In accordance with the BIS Rules and ( Certification ) Regulations, the following are to be notified in the Official Gazette.

- a) Standard mark in relation to each Indian standard
- b) Licences granted for use of the Standard mark
- c) Cancellation of licences, and
- d) Unit rate of marking fee for a product or process

While gazette notification for the standard mark and the marking fee rates shall be prepared by the central marks department the gazette notifications shall be prepared by the individual Branch office every month, consolidated by CMD and sent for gazetting under the signatures of Competent authority.

CMD shall maintain a register for recording the details and immediate gazetting .



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