

Enquiry items along with quantities:

It. no.	Size & Item description	Technical requirement	Quantity in Meter (Maximum)
1	1.5mm tk X 30mm O/D.	Cooler tubes (Bars) Unplated as per BHEL specification BP10195 Rev11. Tubes Shall be supplied in cut to length size as per annexure-T.	240977
TOTAL			240977 Meter

Quantity variation as per below:

For item 1 - Supplies quantity are to be restricted between 240977 meter & 218027 meter.

Pre-qualification criteria:

S. No.	Description of pre-qualification requirement	Vendor's Response	
		Complied (YES/NO)	Supporting Documents required to accept compliance
1	Bidders may be either Manufacturers or dealer / reseller / channel partner / distributor etc.		Valid certificate of being original manufacturer/ OEM or valid Authorization dealer/vendor certificate from Manufacturer or approved distributor of Manufacturer (Sub-dealer certificate of authorized dealer / distributor etc. of manufacturer shall also be acceptable). All the necessary correlation for TC to be properly established and endorsed.
2	Offers of those parties will be considered who or their Manufacturer has supplied atleast one PO of "Cooler Tubes/ ERW Tubes/ Seamless Steel Tubes" of similar kind in last 7 years from date of tender opening.		Relevant Unpriced PO copy along with proof of supply (invoice copy / SRV / CRAC / Completion certificate) to be submitted.
3	Bidders must accept the Technical requirement (Annexure-T) & BHEL standard specification BP10195 Rev11.		Bidder to give their confirmation Pointwise of Clause S.No. 1 to 7 of Technical Requirement (Annexure-T).

Note:

1. Compliance to above Pre-qualification requirements are mandatory. In the absence of compliance of above requirement Bidder's Offer is liable to be rejected.
2. Offers of vendors who are on BHEL MISCC/unit/corporate level hold or banned/debarred, will not be considered.
3. BHEL reserve the right to accept the offer in part or in full or cancel the tender enquiry without assigning any reason
4. BHEL has right to verify information / confirmation furnished by asking additional documents, proof etc.
5. All T&C shall be governed as per GeM Standard T&C. In case of discrepancies, T&C mentioned as above will be considered.

ALL THE ABOVE POINT WISE PRE-QUALIFICATION REQUIREMENT ARE TO BE NECESSARILY ACCEPTED BY THE BIDDERS FOR THEIR OFFERS TO BE CONSIDERED FAILING WHICH OFFERS SHALL BE REJECTED.

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INTEGRITY PACT**Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract(s) for COOLER TUBES (BARE) UNPLATED SIZE 1.5MM TK X 30MM OD AS PER SPEC. 6P10195 REV 11 & ANNEXURE B.T. 240977MEX hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint panel of Independent External Monitor(s) (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
 - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during participation in the tender process and during the contract execution.

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- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and shall await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process, terminate the contract, if already awarded, exclude from future business dealings and/ or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- 4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above, the Bidder(s)/ Contractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.

Section 5 - Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years (to be reckoned from date of bid submission) with any other company in any country conforming to the anti-corruption approach in India that could justify his exclusion from the tender process. The date of such transgression, for the purpose of disclosure by the bidders in this regard, would be the date on which cognizance of the said transgression was taken by the competent authority. The transgression(s), for which cognizance was taken even before the said period of three years, but are pending conclusion, shall also be reported by the bidders.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Suspension of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)

- 6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.
- 6.2 In case of a joint venture, all the partners of the joint venture should sign the Integrity Pact. In case of Sub-contracting, the Principal Contractor shall be solely responsible for the adherence to the provisions of IP by the sub-contractor(s).
- 6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact on receipt of any complaint by them from the bidder(s).
- 8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as /Top Secret are not to be disclosed.
- 8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.

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- 8.5 The role of IEM is advisory and the advice of IEM is non-binding on the Organization. However, as IEMs are invariably persons with rich experience who have retired as senior functionaries of the government, their advice would help in proper implementation of the IP.
- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of the tendering process, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an examination, and submit their joint recommendations to the Management. In case the full panel is not available due to some unavoidable reasons, the available IEM(s) will conduct examination of the complaints. Consent of the IEM(s), who may not be available, shall be taken on record.
- 8.7 The IEMs shall examine all the representations/grievances/ complaints received by them from the bidders or their authorized representative related to any discrimination on account of lack of fair play in modes of procurement and bidding systems, tendering method, eligibility conditions, bid evaluation criteria, commercial terms & conditions, choice of technology/ specifications etc.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.
- 8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Principal should be looked into by the CVO of the Principal.
- 8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code / Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs.
- 8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.
- 8.13 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

- 9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.
- 9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.


Section 10 - Other Provisions

- 10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.
- 10.2 Changes and supplements as well as termination notices need to be made in writing.

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- 10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.
- 10.4 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 10.5 Only those bidders / contractors who have entered into this Integrity Pact with the Principal would be competent to participate in the bidding. In other words, entering into this Integrity Pact would be a preliminary qualification.
- 10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. If required, the Principal may adopt any mediation rules for this purpose. However, not more than five meetings shall be held for a particular dispute resolution. The fees/expenses on dispute resolution shall be equally shared by both the parties. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as per the terms & conditions of the Contract.


 अतुल कुमार / ATUL KUMAR
 परि. अभियंता (क्रय) / Sr. Engineer (Purchase)
 सी. एम. एम. - स्टील / CMM-Steel
 बी.एच.ई.एल., भोपाल / B.H.E.L., BHOPAL
 For & On behalf of the Principal
 (Office Seal)

 For & On behalf of the Bidder/ Contractor
 (Office Seal)

Place BHEL BHOPAL

Date 15.01.2026

Witness: 
 (Name & Address) Madhurendra Manderwal
BHEL BHOPAL

Witness: _____
 (Name & Address) _____

मधुरेन्द्र मंडार वाल
 MADHURENDRA MANDERWAL
 सच. महाप्रबंधक / DGM
 सा.प्र. विदेशी विनिर्मा एवं स्टील / C.M.M.-F.E. & STEEL
 बी.एच.ई.एल., भोपाल / B.H.E.L., BHOPAL

Clause on IP in the tenderIntegrity Pact (IP)

- (a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SI	IEM	Email
1.	Dr. Sarat Kumar Acharya, Ex-CMD, NLC	iem1@bhel.in
2.	Shri R. Mukundan, IRPS (Retd.)	iem2@bhel.in
3.	Shri Madan Lal Meena, IAS (Retd.)	iem3@bhel.in

- (b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
- (c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s):

(1)
 Name: ATUL KUMAR
 Deptt: CMM- STEEL
 Address: BHEL RIIPOL
 Phone: (Landline/ Mobile)
07552505421
 Email: ATUL_KUMAR@BHEL.IN
 Fax: —

(2)
 Name: MADHURENDRA MANDERLUAL
 Deptt: CMM- STEEL- FE
 Address: BHEL RIIPOL
 Phone: (Landline/ Mobile)
07552505210
 Email: MADHURENDRA@BHEL.IN
 Fax: —

DECLARATION (To be given by Bidder)

GeM Bid No.....

Item Description:

With reference to above reference bid, we M/s..... (Bidder's Name)
confirm/ declare the following.

1. Quoted Make/OEM name-.....
2. We are OEM or Reseller -
3. Valid OEM Authorization certificate with OEM's Contact Details attached (In case of reseller) - Yes /
NA
4. We confirm Nil deviation from GeM bid document (NIT).

Note:

1. OEM details such as name, designation, address, e-mail Id and Phone number required to be
furnished along with the technical bid. (also refer ATC clause).
2. Commercial Deviation/deviation in delivery shown separately or found hidden in the offer, will not be
taken cognizance of.

Signature of Authorized Signatory

Name:

Designation:

Contact No.:

Email:

Stamp / Seal of Firm

Annexure-4

Declaration Regarding MSE Category (to be given by Bidder)

In pursuant to the Public Procurement Policy for MSEs Order, 2012, I/We declare(s) that My/Our firm is(are) falling under the following MSE category and I/we shall submit documentary evidence/ Govt. Certificate etc. (UDYAM certificate) in support of the same along with the techno-commercial offer.

Type under MSE	SC Owned	ST Owned	Women Owned	Others (excluding SC/ST & Women Owned)
Micro				
Small				

(√ Tick whichever is applicable)

Note: If the bidder does not furnish the above in the tender, offer shall be processed construing that the bidder is not falling under MSE category.

Signature of Authorized Signatory

Name:

Designation:

Stamp / Seal of Firm

Declaration Regarding Conflict of Interest
(to be given by Bidder)

Conflict of interest would said to have occurred in the tender process and execution of the resultant contract, in case of any of the following situations:

- 1) If its personnel have a close personal, financial, or business relationship with any personnel of BHEL who are directly or indirectly related to the procurement or execution process of the contract, which can affect the decision of BHEL directly or indirectly.
- 2) The bidder (or his allied firm) provided services for the need assessment/ procurement planning of the Tender process in which it is participating.
- 3) Procurement of goods directly from the manufacturers/ suppliers shall be preferred. However, if the OEM/ Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. In case bids are received from both the manufacturer/ supplier and the agent, bid received from the agent shall be ignored. However, this shall not debar more than one Authorised distributor (with/ or without the OEM). from quoting equipment manufactured by an Original Equipment Manufacturer (OEM) in procurements under a Proprietary Article Certificate.
- 4) A bidder participates in more than one bid in this tender process. Participation in any capacity by a Bidder (including the participation of a Bidder as a partner/ JV member or sub-contractor in another bid or vice-versa) in more than one bid shall result in the disqualification of all bids in which he is a party. However, this does not limit the participation of an entity as a sub-contractor in more than one bid if he is not bidding independently in his own name or as a member of a JV.

I/We declares that I/We have read and understood the above aspects, and confirms that such conflict of interest does not exist and undertakes that I/We will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s), in this regard. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, I am /We are, found having indulged in above activities, the same will be considered as a violation of the tender conditions, and suitable action shall be taken by BHEL as per extant policies/ guidelines.

Signature of Authorized Signatory

Name:

Designation:

Stamp / Seal of Firm

MAKE IN INDIA format (to be filled by OeMs of the participating bidders)**BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL****MATERIAL MANAGEMENT – STEEL DIVISION**

For this Procurement, Government of India Public Procurement (Preference to Make in India), Order 2017 with its amendments and subsequent Orders issued by the respective nodal ministries shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT.

*As per the Provisions of this order, please submit a **self-certification complying with the conditions below on company letterhead duly signed by competent authority.***

I, hereby declare on behalf of M/s. that we are participating in the Enquiry No. floated by BHEL, Bhopal (MP), India and shall comply with following:

Public Procurement (Preference to Make in India), Order 2017 *with its amendments* and subsequent Orders issued by the respective nodal ministries shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT.

- (a) A supplier will be treated as “**Class-I Local Suppliers**”, if the items quoted by bidder have local content equal to or more than 50%.
- (b) ‘**Local Content**’ means the amount of value added in India, which shall be total value of item quoted (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, **in percent**.

We hereby certify that the quoted items offered by us against above Enquiry No. is having local content of..... %

Further, to certify that the local content % certified above is in line with definition of Local content given in point no 2 of Public Procurement (Preference to Make in India), Order 2017 dated 19.07.2024 and we qualify as Class —I. (Class-I/ CLASS-II/Non-Local supplier-fill in one which is applicable) local supplier. It is also certified that Repackaging/ Refurbishment/ Rebranding of imported products and the license fees/royalties paid/ technical charges paid out of India are not considered for calculation of local content and there is no such locally-sourced imported items.

The above declaration does not include services such as transportation, insurance, installation, commissioning, training and after sales service support like AME/CMC etc. as local value addition. We also understand, false declarations will be in breach of the Code of Integrity under Rule 175(1) (i) (h) of the General Finance Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Finance Rules along with such other actions as may be permissible under law.

We further confirm that details of location(s) in India at which the local value addition is made will be at

- a.
- b.

I hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

(.....)

For M/s.

(Seal & Sign)

TECHNICAL REQUIREMENT (ANNEXURE-T)

Cooler Tubes (Bare) unplated size 1.5 mm thickness x 30 mm OD (Qty-2,29,502 Meters)

- (1) Cooler Tubes (Bare) to be supplied as per BHEL Bhopal standard BP10195 Rev. 11.
- (2) Precision Steel Tubes is required for application as Cooler Tubes in Motors/Alternators with 30 mm OD x 1.5 mm wall thickness. Tolerance acceptable in OD is +/-10% of Wall thickness tolerance i.e. **Outer Diameter of Tube must be in range of 29.85 mm to 30.15 mm only.**
- (3) Only One Vendor is required for supply of above Cooler Tubes. Rate to be quoted in Rs. Per Meter (Inclusive of GST).
- (4) Mill Test Certificate in Original
OR
Test certificate duly cleared by NABL approved Lab covering all Mechanical & Chemical properties must be submitted alongwith supply as per BHEL Bhopal standard BP10195 Rev. 11.
- (5) Bundling and packaging of tubes to be done as specified in BHEL Bhopal plant standard BP10195 Rev. 11.
- (6) For the ease of unloading by Cranes, each bundle of tubes should be properly & strongly tied by means of Cable Ties/ Other ties.
- (7) Vendor have to supply size-wise quantities (in Nos./Meters) of tubes within 90 days from PO date as per detailed table below. Early delivery is acceptable to us.
- (8) Size and respective quantities are tentative only and may differ as per current shop requirement. However, total quantity (Length in Meters) is fixed as per tender quantity. Vendor has to take confirmation from BHEL before start of production. Any change in size/quantity will be intimated to the vendor at the time of confirmation to vendor.

S.No.	Tube Length (in mm)	Total Quantity (in Nos.)	Total Quantity (in Meters)	Priority-1 for Dispatch (in Meters)	Priority-2 for Dispatch (in Meters)
1	1296	1700	2203	0	2203
2	1356	2000	2712	0	2712
3	1526	3000	4578	0	4578
4	1666	6000	9996	0	9996
5	1686	6000	10116	0	10116
6	1840	20400	37536	37536	0
7	1866	54000	100764	55980	44784
8	1956	1200	2347	0	2347
9	2040	8000	16320	0	16320
10	2385	18000	42930	21465	21465
Total		1,20,300	2,29,502	1,14,981	1,14,521



TSD 6206 A

PLANT PURCHASING SPECIFICATION BHOPAL

BP 10195

Rev. No. 11

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**SUPERSEDES
BP 10195 Rev. 10**

WELDED AND SIZED PRECISION STEEL TUBE NORMALISED

1. GENERAL:

This specification governs the quality of welded and sized precision steel tubes normalized.

2. APPLICATION:

Cooler tubes of motors.

3. CONDITION OF DELIVERY:

Tubes shall be welded, sized and normalized, tubes shall be supplied with plain ends, and shall be cut at right angles to the tube axis, and shall be free from burrs. Tubes shall be supplied in random lengths, or in fixed lengths as specified in order. Tubes shall be supplied with a surface protection by painting the tubes to BP 067 41 72.

NOTE: In case unpainted tubes are to be supplied the tubes shall be given clear TRP coating (Black TRP is not acceptable) to avoid corrosion during transit / storage.

4. COMPLIANCE WITH NATIONAL STANDARDS:

There is no Indian Standard covering this type of material.

5. DIMENSIONS AND TOLERANCES:

5.1 Sizes:

Our order shall clearly state the outside diameter & wall thickness of the tube required. Tubes shall be supplied in random lengths of 5 to 7 meters unless exact lengths are called for.

Revision :
Reviewed & brought up to date.

Issued by :
STANDARDS AND MATERIALS GROUP
TECHNICAL SERVICES DEPARTMENT

Rev.11

Date: 12.03.2022

Date of first issue Feb. 1984

5.2 Tolerances:

5.2.1 Outside Diameter: Tube about 20 mm up to 30 mm \pm 10% of tube thickness. This Permissible deviation includes eccentricity.

5.2.2 Straightness: 0.25% of the measured length, between the tube and a straight line (chord) connecting two arbitrarily chosen points 1000mm apart.

5.2.3 Lengths:

Random Lengths: Upto 10% of the ordered quantity may be supplied in the form of Under lengths \geq 2 meters, & these are made into separate bundles.
Fixed Lengths: as specified on the order.

5.2.4 Tube Ends: Tubes shall be parted as accurately as possible, right angles to the axis of the tube. The tube ends (ID & OD) shall be free from burrs.

6.0 MANUFACTURE:

The tubes to be manufactured from open hearth, electric or basic oxygen steel.
Tubes shall not be manually welded.

7.0 HEAT TREATMENT:

Tubes shall be supplied in the normalized condition.

8.0 SURFACE CONDITION:

Tubes shall be cleanly finished, free from scale. The tubes shall have a smooth surface suitable for painting. Any surface defects or the removal of such defects must not cause the wall thickness going below the min. the peak to Valley height, "RZ" in the longitudinal direction on the outside surface shall be \leq 25 Microns, for tubes less the 120mm OD or less then 6mm wall thickness. The peak to Valley heights cannot be ensured in the region of the weld.

9.0 CHEMICAL COMPOSITION:

The ladle analysis of the steel shall be as follows:

Element	Percent (max)
Carbon	0.17
Phosphorous	0.05
Sulphur	0.05

NOTE: Slight departures from the ladle analysis are permissible provided the properties of the steel are not there by affected.



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10.0 TEST SAMPLES:

Tube made from the same steel grade, and of the same dimensions are to be divided into batches of 200 tubes. Remainders of between 20 & 200 tubes shall constitute a complete batch. One tube per batch so constituted, shall be selected at random for testing of tensile test, flattening test & drift expanding test.

11. MECHANICAL PROPERTIES:

11.1 TENSILE:

When tested sample shall show the following properties.

Tensile strength	340 - 470 N/mm ²
Yield stress	235 N/mm ² Minimum*
Elongation on 5.65√SO GL	25% Minimum

Note:

1. The yield stress can be lower by 10 N/mm², from the min. specified value, When the outside diameter & wall thickness of the tubes are $\leq 30\text{mm}$ and 3mm respectively.
2. The strip specimen from the tube shall be taken from a part tube circumference which is free from weld seam.

11.2 FLATTENING TEST:

In this test the specimen or the end of the tubes must be compressed to such an extent that a defined distance "H" is obtained between the two pressure plates.

This distance is defined as follows:

$$H = \frac{[(1 + c) \times S]}{[c + (S/d_A)]}$$

Where: S = is the wall thickness in mm.

da = is the outside diameter of the tube in mm.

c = is a constant.

A value of 0.09 must be used for "c". During testing, the specimen must not exhibit any unallowable defects attributable to inadequate deformability.



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11.3 DRIFT EXPANDING TEST:

The tubes shall be expanded by means of taper drift having an included Angle of 45° until the outside diameter of expanded end exceeds the original outside diameter by 10% when subjected to this test the tube shall show no sign of cracking.

12. LEAK TEST (Optional):

When specified, on the order, the tubes shall be subjected to a leak test, by means of an internal pressure test using water. Our order shall clearly specify the test pressure to be applied and minimum time period for the same.

13. RETESTS:

If the specimen selected fails in the test specified in Cl.11, two other tubes shall be selected from the same batch both of which have to satisfy the test to the batch to be accepted.

14. SURFACE PROTECTION:

The tubes shall be given a surface protection, both inside & outside by painting in accordance with plant standard BP 067 41 72.

15. TEST CERTIFICATE:

Unless otherwise specified, three copies of test certificates shall be supplied. In addition, the supplier shall ensure to enclose one copy of test certificate along with their dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information: -

BHEL Reference:

BP 10195 (Rev.11): Welded and Sized Precision Steel Tube Normalized.

Our order No.

Supplier's References:

Name

Batch No.

Results of Tests:

Results of chemical, Mechanical & surface protection test called for in this specification.



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16. PACKING AND MARKING:

Each tube shall be plugged at both the ends by means of tight fitting end caps. The tube shall be suitably packed in crates to prevent damage in the straightness of the tubes & corrosion during the transit.

Each bundle/package shall bear the following information:

BP10195: Welded and Sized Precision Steel Tube Normalized.

Our Order No.

Identification No.

Size & Weight.

Supplier's Name.