



सत्यमेव जयते

भारत सरकार – रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन

Government of India - Ministry of Railways
RESEARCH DESIGNS & STANDARDS ORGANISATION

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**Item specific guidelines for vendor approval / extension of
approval for manufacture of AT welding portions and
execution of AT rail joints**

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A. ITEM SPECIFIC GUIDELINES FOR VENDOR APPROVAL/ EXTENSION OF APPROVAL FOR MANUFACTURE OF ALUMINO-THERMIC (AT) WELDING PORTIONS AND EXECUTION OF AT RAIL JOINTS

- 1.0** The policy for according approval and up-gradation to the manufacturers of A.T. welding portions and execution of welded joints is as under :
- 2.0** Initially, the firm will approach RDSO through 'On-line vendor registration system' available at www.rdsoga.org/qacv for approval of their firm for manufacturing of AT portions and welding of rail joints. The firm will apply through online vendor registration system to RDSO duly filling up all the details required in the proforma and uploading the mandatory documents. The proforma and documents submitted by the firm, shall be scrutinized for adequacy of plants and equipments. Thereafter firm's premises will be visited for verification of various details as given in the proforma.

The vendor will be accorded clearance for development of AT welding technique after capacity and technical capability assessment of manufacturing and testing facilities available in the firm premises, are found satisfactory.

3.0 ENLISTMENT OF FIRMS IN PART II:

The firm would be brought in the list of "Part II firms" for a particular welding technique for a period of five year after fulfillment of the following stipulations with regard to development of welding technique as given in Indian Railway Standard Specification for fusion welding of rails by Alumino-Thermic Process, IRST-19-2012 or latest along with latest correction slips and other norms laid down in 'General Guidelines for Vendor Development (Latest Revision)' issued by Track Design Dte. :

- (i) Laboratory Evaluation being satisfactory
- (ii) Fatigue testing being satisfactory
- (iii) Successful completion of field trials.

3.1 In addition, the vendor should fulfill following requirements also :

3.1.1 The vendor should possess valid digital signature and submit the following details:

- i) Name of the Certifying Authority
- ii) ID of the holder of Digital Certificate
- iii) Date of issue of Digital Certificate
- iv) Validity of Digital Certificate

It is mandatory for all the vendors to obtain digital signature certificate and get registered with IREPS at <http://www.ireps.gov.in>.

3.1.2 ISO: 9001:2000 Certification:

Vendor shall possess a valid ISO 9001:2000 certificate for his works address, for manufacture and supply of AT portion.

3.2 When any technique qualifies for the process upgradation as per para 15 of IRS-T-19-2012 the firm may be provisionally approved in part- II for two years for a particular welding technique.

The execution and evaluation of field trial joints as per para 14 shall be undertaken post approval i.e. after the provisional approval has been granted to the up-graded technique based on evaluation as per para 15.2 of IRS-T-19-2012. The approval shall be reviewed on fulfillment of GMT/Duration criteria for trial joints as prescribed in para 14.1 and the performance of trial joints as per para 14.2 & 14.3 of the IRS-T-19-2012.

4.0 UP-GRADATION OF FIRMS FROM PART II TO PART I:

The firm would be considered for up-gradation to the list of Part I firms for that particular welding technique after fulfillment of following conditions and other norms laid down as detailed in General Guidelines for Vendor Approval (Latest Revision) issued by QA Civil Directorate:

- i) The firm has been on approval list in Part II category for a period of two year.
- ii) Approval of the QAP by RDSO.
- iii) Possessing of a valid ISO 9001:2000 certificate for his works address, for manufacture and supply of AT portion.
- iv) Having supplied/executed minimum quantity including supply of AT portion and execution of AT welds for various rail section/chemistry

52 Kg 90UTS	60 Kg 90UTS	60 Kg HH	52 Kg 72UTS	90R 72UTS	75R 72UTS	60 Kg 90UTS 75mm	52 Kg 90UTS 75mm	60Kg /52Kg Comb
1000	1000	500	1000	1000	500	100	100	100

- (v) The vendor should have supplied minimum specified quantity of material (as given in above para) as a Part-II vendor, and which shall have
 - a) To be in service for a minimum period of one year. Or
 - b) 15 months from the date of issue of last inspection certificate (completing the minimum specified quantity).

5.0 EXTENSION OF APPROVAL:

5.1 Quality Audit - In order to remain on list of approved suppliers, all AT portions manufacturing firms in Part I/Part II list, Quality Audit shall be undertaken as per the provisions of General Guidelines for Vendor Development (Latest Revision) issued by QA Civil Directorate for AT portions and AT welding techniques for which the firms are approved. For down gradation/delisting of name of firms and reinstatement of status of vendor, the procedure given in 'General Guidelines for Vendor Approval' shall be followed.

5.2 The decision of Executive Director/Track or Executive Director/QA Civil RDSO shall be final regarding vendor status in Part I or Part II or delisting/down gradation/up-gradation etc.

B. SCHEDULE OF TECHNICAL REQUIREMENTS FOR MANUFACTURE & SUPPLY OF ALUMINO THERMIC (AT) WELDING PORTIONS AND EXECUTION OF ALUMINO THERMIC RAIL JOINTS

1.0 SCOPE:

This schedule covers the technical requirements for manufacturing & supplying of Alumino Thermic (AT) welding portions and execution of rail joints.

2.0 REQUIREMENTS FOR MANUFACTURING OF AT WELDING PORTION:

Vendors seeking approval/ extension of approval for manufacturing & supply of AT Portion and execution of AT rail joints, shall comply with all the requirements mentioned below:

- 2.1 The firm should have well illuminated and ventilated covered shed with sufficient height and space for various manufacturing activities i.e. roasting of ingredient in rotary kiln, weighing, sieving, automatic batching plant having adequate feeding channel including that for alloying element, portion mixing etc.
- 2.2 The firm should have separate identified areas for storing of different raw materials like Aluminum powder, nail chips, mill scale and other ingredients.
- 2.3 The firm should have a separate quality control laboratory for testing different parameters of Alumino Thermic Welding Portion like physical and chemical parameters.
- 2.4 The firm should have sufficient material handling facilities like trolleys, metallic trays etc.

3.0 MANUFACTURING FACILITIES:

The firm should have following machines/equipments:

- 3.1 The automatic weigh batching system should contain microprocessor controlled electronically operated weighing scales having adequate feeding channels for feeding ingredients of portion including alloying element. The unit shall be equipped with mixing machine which shall also be microprocessor controlled. The system should have provision for uninterrupted power supply for continuing the operation in case of power failure.
- 3.2 Kiln of adequate capacity for roasting the raw material namely mill scale and nail chips.
- 3.3 Electronically operated weighing machine of accuracy ± 0.5 gm for weighment.
- 3.4 Storage hoppers of adequate capacity for storing ingredients like roasted mill scale, roasted nail chip, Aluminium powder, and Ferro Manganese etc.
- 3.5 Elevator & Screw Conveyor for feeding the material to storage hoppers.
- 3.6 The entire working area should be covered by hoist.
- 3.7 Mechanically operated sieving facility for screening mill scale to get the required size of mill scale.
- 3.8 The firm should have facilities of dies for making auto thimble.
- 3.9 For Single Shot Crucible, the firm should have dies, press and oven for baking of crucible during crucible manufacture.

4 REQUIREMENTS FOR MAKING RAIL JOINTS:

Manufacturer shall have tools, plants and equipments as detailed at Annexure-I of this document.

5 TESTING FACILITIES:

Manufacturer shall have testing facilities as per Item B of Annexure-I. Requirements of some of the testing equipments are detailed below:

- 5.1 Microprocessor based duly calibrated *Class one or better* (as per Clause 7 of IS 1828 part I : 2005 or latest) Transverse Load Testing Machine of capacity 200T (min) equipped with servo control valve with facility for **load rate control** to facilitate operation of machine through a personal computer from a safe distance from location of machine. The machine should be calibrated from time to time by NABL Accredited laboratory. The salient features of machine shall be as per Annexure –II.
- 5.2 Firm shall have duly calibrated Brinell Hardness Testing machine equipped with inbuilt camera for capturing image of indentation and capable of displaying image and measuring its size in fully automatic mode along with provision for displaying hardness as well. The system should have facility of storage of image and test results with details of sample. The salient features of Machine shall be as per Annexure –III.
- 5.3 The firm should have vacuum emission charged couple device/photo multiplier tube, spectrometer with printing facility for chemical analysis of the product (executed welds). The firm shall also have chemical testing laboratory for chemical analysis of raw material which shall contain Carbon Sulphur determinator (strohlein apparatus), chemical balance, hot plate, muffle furnace (1100°C capacity), electric oven and hygrometer (Humidity Recorder) of suitable range. The product testing shall be done by in-house spectrometer.
The chemical laboratory shall be of appropriate size, well illuminated and ventilated.
- 5.4 Firm shall have Digital Ultrasonic Testing Equipment complying with Specification No. M&C/NDT/129/2005 or latest of M&C Directorate of RDSO. This shall be procured from RDSO approved sources. Operator shall also be duly trained and certified by RDSO. The firm shall have in house macro/micro examination facility which shall include but not limited to following – microscope of magnification up to 500 X, magnifying glass of 10X/20 X, required chemicals and heating facility for weld piece.
- 5.5 The firm shall have facility for magnetic crack detection test to detect surface cracks.
- 5.6 Firm shall have calibrated measuring instruments like vernier calipers, scales etc.
- 5.7 The vendor should have sand testing equipment like moisture teller, permeability meter, calibrated core hardness tester (scratch type), universal testing machine etc.

6.0 QUALITY CONTROL REQUIREMENTS:

- 6.1 There should be a system to ensure the traceability of the product from raw material stage to finished product stage.
- 6.2 One graduate engineer in metallurgical engineering to head quality control wing for manufacturing and testing of portions.
- 6.3 The vendor should possess ISO: 9001:2000 version certification in respect of manufacture and supply of AT Portion for their works and same shall be covered in the certification.

- 6.4 The vendor shall maintain proper analysis (chemical/statistical) of raw material as and when received and testing of AT Portions.
- 6.5 The vendor shall possess specification Indian Railway Standard Specification for fusion welding of rails by Alumino-Thermic Process IRST-19-2012 or latest along with up-to-date correction slips, Manual for Fusion welding of Rail by Alumino Thermic process - 2012 or latest along with up to date correction slips, General Guidelines for vendor approval (latest), Item Specific Guidelines for vendor approval/ extension of approval for manufacture of AT welding portions and execution of AT rail joints (latest) and related IS/BS/ASTM standards.
- 6.6 The firm should have work instruction for manufacture of Alumino-Thermic portion.
- 6.7 The firm should have a quality manual indicating the extent of control over production and testing.
- 6.8 The firm shall possess quality assurance plan (QAP) for manufacture of AT portion detailing various aspects like-
- 6.8.1 Organization chart
 - 6.8.2 Process flow chart
 - 6.8.3 Provision regarding storage of raw material.
 - 6.8.4 Detail procedure in systematic manner about the manufacturing of portion. This procedure shall include from the arrival of raw material in the firm premises to dispatch of portion to Zonal Railways. All the activities included in the manufacturing shall be included in detail.
 - 6.8.5 Roasting temperature shall also be defined clearly in QAP and also thermal/digital thermometer (at least two Nos.) shall be used for monitoring the temperature during roasting.
 - 6.8.6 Various tests required to be carried out on raw material shall be included in QAP, this includes the detailed process of carrying out the wet analysis of raw materials, also various calculations involved during wet analysis and various assumptions made etc.
 - 6.8.7 The maintenance schedule of various machineries used during manufacturing of portion.
 - 6.8.8 The calibration details of machinery and plant /testing equipment shall be included in QAP along with their frequency and it must be ensured that the calibration is done within time.
 - 6.8.9 A checklist must be included in QAP in the form of YES/NO mentioning the different process of manufacturing of portion including testing of raw material. This checklist shall invariably be used during manufacturing of portion.
 - 6.8.10 Stage inspection details
 - 6.8.11 Various parameters to be maintained to ensure quality and process control
 - 6.8.12 Sampling stage, scale of sampling and inspection criteria
 - 6.8.13 Periodic calibration of testing and measuring instruments
 - 6.8.14 Disposal of rejected material.

The approved QAP must be a controlled document and a quality record of ISO quality control system of the vendor.

- 6.9 The firm shall submit supplementary QAP for the additional items developed which shall include various aspects as given below :
- 6.9.1 Process flow chart
 - 6.9.2 Various parameters to be maintained to ensure quality and process control
 - 6.9.3 Sampling stage, scale of sampling
 - 6.9.4 Details of machineries and equipment used
 - 6.9.5 Provision regarding storage of raw material.
 - 6.9.6 The maintenance schedule of various machineries used during manufacturing of portion.
 - 6.9.7 The calibration details of machinery and plant /testing equipment shall be included in QAP along with their frequency and it must be ensured that the calibration is done within time.

7.0 DOCUMENTATION:

7.1 **Manufacturing Process:** The firm should have a system for documentation of the following:

- 7.1.1 Incoming raw material register with TC reference of supplier as well as internal test results.
- 7.1.2 Stage inspection and test results.
- 7.1.3 Calibration records.
- 7.1.4 Weighment record of raw material, portion etc.
- 7.1.5 Month wise manufacturing records.
- 7.1.6 Disposal of rejected product and its month wise record.
- 7.1.7 Customer complaint registers showing cause of rejection and corrective action taken.

7.2 Execution of Weld:

7.2.1 The firm shall have a separate QAP for execution of AT Joints, detailing various aspects like:

- 7.2.1.1 Organization Chart
- 7.2.1.2 Quality checks to be exercised
- 7.2.1.3 Sampling of welds to check quality of welds.
- 7.2.1.4 Periodicity of training/refresher courses of welders

7.2.2 The firm shall maintain documentation related to execution of welds as indicated below :

- 7.2.2.1 Details of joints executed by individual welders indicating date, location, rail section, portion no., technique used USFD test result etc.
- 7.2.2.2 Details of welders employed with validity of competency certificate, welder code, type of technique for which approved etc.
- 7.2.2.3 Document supporting implementation of approved QAP on manufacturing of AT Portion and execution of rail joints.
- 7.2.2.4 Weld-wise record of joints failed during acceptance tests and thereafter including other reported deficiencies in the quality.

Note - The compliance of items in 7.2 shall be checked periodically by various official of RDSO during specified visits and not necessarily during quality audit.

8.0 PACKING:

The firm should have adequate packing arrangement for portion like moisture proof bag of polyethylene of good quality heavy duty bag made of new cloth to IS: 187 and wooden/heavy duty corrugated card board /metallic container approved by RDSO.

9.0 STORAGE OF PORTIONS:

- 9.1 Stores should be dry, well ventilated, and where required lighting, power and running water should be available. In all cases building construction should be in compliance with the FIRE regulations applicable to the substances being stored. Consideration shall also be given to the relevant regulations issued in this respect. The appropriate notices should be displayed where materials such as Thermit Portions are stored.
- 9.2 Portions should be stored in a secure, non-combustible building. While it is preferable that they should be stored separately, they may be stored with other non inflammable materials, such as equipment and small tools, mould, luting sand in sealed bags, etc- in which case ideally they should be segregated. The store should be dry with ventilation to prevent excess humidity or dampness, and should be designated as a non-smoking area, with no naked flames.
- 9.3 Portion must not be stored in the same building where explosive or flammable items (e.g. fuel, fuel gases, igniters) are also stored.

- 9.4 The sealed boxes must not be opened until immediately prior to use. Any spillages should be immediately swept up and the material disposed in accordance with safety data sheets. Steel shovels should not be used on concrete floors, which might create a spark.
- 9.5 Proper notices should be displayed inside and outside the building together with the standard warning sign, which should read “Metallic Powder in case of fire **DO NOT USE WATER**”.
- 9.6 The Local Fire Brigade should be informed of exact location of store and nature of contents. Only dry powder extinguishers of appropriate class should be used in the proximity of thermit powders.

10.0 INSPECTION AREA:

The vendor shall have minimum inspection area preferably of size 12m X 6m for preparation of joints with adequate headspace, well illuminated and ventilated.

Annexure-I

**MINIMUM FACILITIES & MACHINERIES REQUIRED FOR MANUFACTURE OF
ALUMINO-THERMIC PORTIONS & WELDING OF RAIL JOINTS**

S.No.	Description	Minimum Quantity
A. Manufacturing Machinery details		
1	Automatic weigh batcher (Para 3.0 of Part B)	One No.
2	Rotary Kiln (Para 3.0 of Part B with provision of measuring temperature at two places by thermocouple & displayed on digital thermometer)	One No.
3	Power hacksaw	Two Nos.
4	Surface grinder	One No.
5	Weighing facility (Para 3.0 of Part B)	Two Nos.
6	Sieving facility	One No.
7	Temperature measuring device	One No.
8	Portion mixer	One No.
B. Physical Testing facilities details		
1	Transverse testing machine (200 T Min) (Annexure – I)	One No.
2	Brinell hardness machine (3000 Kg) (Annexure – II)	One No.
3	Digital Ultrasonic rail/AT Weld tester (RDSO approved)	One No.
4	Magnetic crack detection test equipment	One No.
5	Macro/Micro examination i) Digital Microscope with printing facility/PC based microscope (500X magnification) ii) Magnifying glass of 10X/20 X magnification	One No. One No.
6.	Vernier Calipers	One no.
7.	Scale (30cm)	One no.
C. Chemical Testing facilities details		
1	Carbon Sulphur determination apparatus	One No.
2	Chemical balance	One No.
3	Hot Plates	One No.
4	Muffle furnace	One No.
5	Barometer	One No.
6	Hydrometer	One No.
7	Water distillation Plant	One No.
8.	Hygrometer	One No.
9.	Spectrometer: should have vacuum emission CCD/PMT spectrometer with printing facility.	One No.
D1. Details of Preheating system (At least one system out of the three mentioned must be available with the manufacturer)		
1	Pressure tanks with pressure gauge complete	5 Nos.
2	Vaporizers (Burner) complete	5 Nos.
3	Nozzle prickers	10 Nos.
4	Nozzle keys	5 Nos.
5	Vaporizer stand	5 Nos.
6	Goose neck attachment to vaporizer	10 Nos.
D2. Compressed Air Petrol Preheating		
1	Suitable compressor system	2 Nos.
2	Torch (burner) complete	2 Nos.
3	Torch (burner) keys	2 Nos.
4	Torch burner stand	2 Nos.
5	Goose neck attachment to vaporizer	2 Nos.
D3 Oxy-LPG Preheating		
1	Oxy-LPG torch burner	2 Nos.

S.No.	Description	Minimum Quantity
2	Oxygen cylinder with pressure Gauge	2 Nos.
3	LPG cylinder with pressure gauge	2 Nos.
4	Torch burner stand	2 Nos.
5	Connecting hose pipe	4 Nos.
E. Other Equipments		
1	Crucible complete-Crucible shell & crucible lining	6 Nos.
2	Crucible caps	6 Nos.
3	Crucible forks	6 Nos.
4	Crucible stands	6 Nos.
5	Crucible rings	6 Nos.
6	Mould pressure (clamp)	12 sets.
7	Cleaning rod round	2 sets
8	Tapping rod	2 Nos.
9	Straight edge 1m long	2 Nos.
10	Straight edge 10cm. long	2 Nos.
11	Aluminum/steel rod for thermal plugging	4 Nos.
12	Leather washers for pump	4 Nos.
13	Gap gauges for height gauge	2 Nos.
14	Filler gauge	2 Nos.
15	Tools for punching the marking	2 sets
16	Mould shoes	6 Pairs
17	Stop watch	1 No.
18	Pyrometer for measurement of rail temperature	1 No.
19	First aid box filled with medicines bandages, cotton etc.	1 No.
20	Mirror 150 x 100mm with handle	2 Nos.
i)	Hot sets (chisels) (for Emergency use only)	2 Nos.
ii)	Funnel tin (for pouring petrol)	1 No.
iii)	Adjustable spanner	1 No.
iv)	Hammer 1 Kg	1 No.
v)	Sledgehammer double pane 5 kg.	2 No.
vi)	Steel wire brush	2 No.
vii)	Blue goggles	2 pairs
viii)	Paint brush 50mm	1 No.
ix)	Slag container (bowl)	12 pairs
x)	Asbestos gloves	4 pairs
xi)	Hose clips	4 nos
xii)	Pliers	1 no
xiii)	Rail file 350x40x6mm (for Emergency use only)	4 nos
22	Weld trimmer (Cutter)	1 No.
23	Insulation hood for control cooling (for 110 UTS rail welding)	1 No.
24	Rail profile guided grinding trolley (Grinding wheel)	1 No.
25	Pattern	1 no. for each rail section
26	Sand Muller	1 No.
27	CO ₂ gassing facility	1 No.
28	Electric oven for drying the moulds /Auto tapping thimble/ One shot crucible	1 No.
29	Core-hardness tester (scratch type) duly calibrated	1 No.
30	Moisture teller	1 No.
31	Permeability meter	1 No.
32	Compressive Strength testing machine	1 No.
33.	Die for preparation of Automatic tapping thimble body	1 No.
34.	Die for preparation of One shot crucible body (sand)*	1 No.

* For vendors developing the AT welding technique with One shot crucible.

Annexure –II**TECHNICAL SPECIFICATION FOR TRANSVERSE LOAD TESTING MACHINE
(Class1 or better as per IS:1828 Part I: 2005)**

- Capacity Not less than : 2000 KN
- Accuracy (Force measurement) : +/-0.5 % or better of indicated Force in the range of 40 kN to 2000 kN
- Accuracy of Displacement/ Deflection Measurement : 0.5 mm
- Maximum Clearance for Bending Test(Height of Rail that can be accommodated in machine) : 300mm

Automatic control modes	<ul style="list-style-type: none"> - Load rate control - Stress rate control
Data entry	<ul style="list-style-type: none"> - Identification code - Preload in KN - Test termination load/displacement - Test speed - Selection of unit
Data output	<ul style="list-style-type: none"> - Peak load - Max. deformation at peak load - Absorbed energy by the specimen from the start Of the test through to the end of the test Load Versus Deflection
Control options	<ul style="list-style-type: none"> - Manual control - Control form PC through software - Test speed for loading - Load level for displacement logging reset to Zero - Termination load
Interfacing facility	<ul style="list-style-type: none"> - PC & Printer (for test data & results and statistics)

CONTROL:

Servo Hydraulic Control Valve providing nearly uniform Load control with facility of operation through computer panel located at a distance from Transverse Load Testing Unit.

MEASUREMENT:

1. PC Based measurement with dedicated Software

Feature:

- Real Time (Online) graph
- Digital Display of Current Test values
- Zoom
- Data Tracking
- Test Report for Transverse/Bending Test
- Report File Management.
- SPC Program with Fall Diagram.

2. Additional Facility in Software:

The software system should be capable of preserving the Load Deflection diagram in computer memory. The software should facilitate auto incorporation of date and time of testing from computer memory and this data should be ineditable.

Annexure – III**Technical Specification for computerized Brinell Hardness Tester Capacity 3000Kgs****1. Description:**

Computerized Brinell Hardness Testing Machine with Load Capacity of 3000 Kgs.

Having camera to capture image of indentation with minimum following features -

- Indentation Image with auto date and time from system
- Identification mark of Sample under Testing
- Measurement of Hardness in Auto and Semi Auto mode along with manual measurement.
- Saved Image can be used for rechecking hardness of sample afterwards.
- PC based compatible with windows features

2. Purpose:

To take hardness on ferrous on Brinell Scale.

3. Technical Requirement:

S.No.	Description	Units	Requirement
1.	Total loads	Kgf	3000
2.	Magnification of object	-	2X and higher
3.	Max. Test height	mm	410
4.	Scale least count	mm	.01
5	Measurement range	mm	1-6
6	Indentor	mm	10

4. Additional Facility in Software

The software system should be capable of preserving the indentation image in computer memory. The software should facilitate auto incorporation of date and time of testing from computer memory and this data should be in-editable.

5. Other Requirements:

NABL certified standard blocks with hardness range of 200 to 360 BHN

**C. PROFORMA FOR TECHNICAL CAPABILITY ASSESSMENT/QUALITY AUDIT FOR
MANUFACTURE AND SUPPLY OF ALUMINO THERMIC WELDING PORTIONS**
(To be filled in by the firm in triplicate. Attach extra sheets wherever necessary)

1. SECTION-1: GENERAL INFORMATION

- 1.1 Name of the firm
- 1.2 Address
- (a) Head Office
- (b) Works
- (c) Location of works Km.
From Railway Station
- 1.3 Factory Area (Sq. m)
- 1.1.1 Covered
- 1.1.2 Uncovered
- 1.1.3 Is the factory site in your name or on rental basis?
Support with documents.
- 1.1.4 Telephone No.
- (i) Head Office
- (ii) Works
- 1.1.5 FAX No.
- (i) Head Office
- (ii) Works
- 1.1.6 E- mail address of the firm:
- 1.4 SSIC/NSIC Registration No (Enclose Copy)
- 1.5 Copies of the following documents to be enclosed:
- Proof of ownership of Factory
 - Factory licence
 - Latest electricity bill
- 1.6 Power availability (KVA)
- (a) General allotted capacity
- (b) Standby generator and its capacity, If available.
- (c) Name the party / person in whose name the power is sanctioned and your agreement with the part / person. (Support with documents)
- 1.7 Name of any other units located in the above premises.
- 1.8 Man Power Management:
- (a) Managerial staff
- (b) Shop floor Engineers / Supervisors
(Their Nos. with their qualifications and service experience)
- (c) Laboratory In-charge whether full time or part time.

Indicate their names, qualifications and service experience.

- (d) Inspection & quality control staff,
Give their name, qualifications and service experience.
- (e) Workmen
 - i) Highly skilled
 - ii) Semi-skilled
 - iii) Un-skilled.

1.9 Whether ISO certificate or not (enclose details)

2 Brief Description of Factory/Works

- a) Total land area (in sq.meter)
- b) Total covered area (in sq.meter)
- c) Different sub units, if any
- d) Special feature , if any

3 Organisation (officers & staff)

3.1 Administrative /Managerial

S.No.	Name	Designation	Qualification	Experience
1				
2				
3				
4				
5				

3.2 Technical

S.No.	Name	Designation	Qualification	Experience
1				
2				
3				
4				
5				

3.3 Artisan/skilled. numbers

3.4 Unskilled. numbers

- 3.5 a) No. Of shift/per day
- b) No. Of hours/shift
- c) No. Of working day/week
- d) Weekly closed day

Name of sister concern, if any:

SECTION-II: TECHNICAL INFORMATION**(A) INFRASTRUCTURE FOR PRODUCTION :**

- 1.0 Description of different departments in the factory/work:
- 2.0 Functions of each department:
- 3.0 Detailed description of Machinery/Tools

S.No.	Name of Machine	No.	Date of commissioning	Manufacturer/ supplier's Detail including make, model and serial Number wherever applicable
1	Automatic Weigh Batcher			
2	Rotary Kiln			
3	Power hacksaw			
4	Surface grinder			
5	Weighing facility			
6	Sieving facility			
7	Temperature measuring device			
8	Portion mixture			
9	Any other facility			

- 4.0 Details of Thermic welding equipment

A1 Details of Preheating system (At least one system out of the three mentioned must be available with the manufacturer)		
1	Pressure tanks with pressure gauge complete	5 Nos.
2	Vaporizers (Burner) complete	5 Nos.
3	Nozzle prickers	10 Nos.
4	Nozzle keys	5 Nos.
5	Vaporizer stand	5 Nos.
6	Goose neck attachment to vaporizer	10 Nos.
A2 Compressed Air Petrol Preheating		
1	Suitable compressor system	2 Nos.
2	Torch (burner) complete	2 Nos.
3	Torch (burner) keys	2 Nos.
4	Torch burner stand	2 Nos.
5	Goose neck attachment to vaporizer	2 Nos.
1	Oxy-LPG torch burner	2 Nos.
2	Oxygen cylinder with pressure Gauge	2 Nos.
3	LPG cylinder with pressure gauge	2 Nos.
4	Torch burner stand	2 Nos.
5	Connecting hose pipe	4 Nos.
A3 Other Equipments		
1	Crucible complete-Crucible shell & crucible lining	6 Nos.
2	Crucible caps	6 Nos.
3	Crucible forks	6 Nos.
4	Crucible stands	6 Nos.
5	Crucible rings	6 Nos.
6	Mould pressure (clamp)	12 sets.

7	Cleaning rod round	2 sets
8	Tapping rod	2 Nos.
9	Straight edge 1m long	2 Nos.
10	Straight edge 10cm. long	2 Nos.
11	Aluminum/steel rod for thermal plugging	4 Nos.
12	Leather washers for pump	4 Nos.
13	Gap gauges for height gauge	2 Nos.
14	Filler gauge	2 Nos.
15	Tools for punching the marking	2 sets
16	Mould shoes	6 Pairs
17	Stop watch	1 No.
18	Pyrometer for measurement of rail temperature	1 No.
19	First aid box filled with medicines bandages, cotton etc.	1 No.
20	Mirror 150 x 100mm with handle	2 Nos.
A4	Tool Box Containing	
i)	Hot sets (chisels) (for Emergency use only)	2 Nos.
ii)	Funnel tin (for pouring petrol)	1 No.
iii)	Adjustable spanner	1 No.
iv)	Hammer 1 Kg	1 No.
v)	Sledge hammer double pane 5 kg.	2 No.
vi)	Steel wire brush	2 No.
vii)	Blue goggles	2 pairs
viii)	Paint brush 50mm	1 No.
ix)	Slag container (bowl)	12 pairs
x)	Asbestos gloves	4 pairs
xi)	Hose clips	4 nos
xii)	Pliers	1 no
xiii)	Rail file 350x40x6mm (for Emergency use only)	4 nos
22	Weld trimmer (Cutter)	1 No.
23	Insulation hood for control cooling (for 110 UTS rail welding)	1 No.
24	Rail profile guided grinding trolley (Grinding wheel)	1 No.
A5	Other facilities	
1	Pattern	1 no. for each rail section
2	Sand Muller	1 No.
3	CO2 gassing facility	1 No.
4	Electric oven for drying the moulds/ Auto tapping thimble/ One shot crucible	1 No.
5	Core-hardness tester (scratch type) duly calibrated	1 No.
6	Moisture teller	1 No.
7	Permeability meter	1 No.
8	Compressive Strength testing machine	1 No.
9	Die for preparation of Automatic tapping thimble body	1 No.
10	Die for preparation of One shot crucible body (sand)*	1 No.

* For vendors developing the AT welding technique with One shot crucible.

(B) QUALITY ASSURANCE:

- 1 Does Manufacturer possesses an established Quality Assurance Program? if yes, enclose a copy of it.
- 2 Details of quality assurance organization. Name of key personnel their qualifications, designation & position in over all management structure. (Explain with organizational chart if necessary).

3 Quality control & testing facility

3.1 Details of physical testing facilities

Sr.No.	Name of Machine	No.	Capacity	Date of commissioning	Manufacturer/supplier's Detail including make, model and serial Number wherever applicable
1	Transverse testing machine				
2	Brinell hardness				
3.	Digital Ultrasonic rail/AT weld tester (RDSO approved)				
4.	Magnetic crack Detector • Magnaflux				
5.	Macro/Micro Examination • Magnifying Glass of 10X and 20 x • Microscope of magnification up to 500X.				
6	Vernier Calipers				
7	Scale (30cm)				

3.2 Details of chemical analysis facilities

- a) Spectrometer (Details to be furnished):
- b) Carbon Sulphur determination apparatus
- c) Chemical balance
- d) Hot plates
- e) Muffle furnace
- f) Barometer
- g) Hydrometer
- h) Water distillation plant
- i) Hygrometer
- j) Any other laboratory equipment

3.2.1 Calibration status of testing equipments

SN	Description of Machine	Date of Calibration Done	Date Calibration due	Remarks
1				
2				
3				
4				
5				
6				
7				

(C) DETAILS OF RAW MATERIAL:

Sr.No.	Description of the raw material	Supplier's Name	Test certificate of supplier
1			
2			
3			
4			

(D) CO2 PRE-FABRICATED MOULD/AUTO TAPPING THIMBLE/ONE SHOT CRUCIBLE PREPARATION:

1.0 Equipments/machines required

S.No.	Description	No.	Capacity	Date of commissioning	Suppliers name & address
1	Pattern Equipment				
2	Sand Muller				
3	CO2 gassing facility				
4	Electric oven for drying the mould/ Auto tapping thimble / One shot crucible				
5	Core Hardness tester (scratch type) duly calibrated				
6	Core Shooter (optional)				
7	Moisture teller				
8	Permeability meter				
9	Compressive Strength testing machine				
10	Die for preparation of Automatic tapping thimble body				
11	Die for preparation of One shot crucible body (sand)*				

* For vendors developing the AT welding technique with One shot crucible.

2.0 Raw Material used:**3.0 Pattern of mould for different section of rails:**

**(E) DETAILS OF AT WELDING TECHNIQUES-USING TOP POURING METHOD
(Short preheating welding process):**

1. Parameters
 - 1.1 Rail section to be welded
 - 1.2 Type of rail
 - 1.3 Rail gap
 - 1.4 preheating time with preheating technique
 - 1.5 Reaction time & nature of reaction
 - 1.6 Type of mould
 - 1.7 colour of mould
 - 1.8 Rail face straightness before welding
 - 1.9 Rail end temperature after preheating
 - 1.10 Weight of portion
 - 1.11 Time lag between removal of burner & tapping of Thermit metal
 - 1.12 Mould waiting (opening) time
 - 1.13 Chipping time with use of trimmer
 - 1.14 Post weld treatment, if any
 - 1.15 weld metal chemistry from running rail top surface
 - 1.16 Reinforcement including weld metal dimensions
 - 1.17 details of transverse breaking load (in tons)-Rail section wise
 - 1.18 Details of load deflection (in mm)
 - 1.19 Details of HAZ & Macro examination
 - 1.20 Details of hardness values of parent rail weld metal & heat affected zone
 - 1.21 Any other information

(F) Declaration

- 4.1 We do hereby declare that the above particulars are correct and no discrepancy shall be found during actual investigation before and during execution of order on our firm.
- 4.2 Any change in the plant and machinery and change of place of office and of works site shall be brought to the notice of RDSO for clearance and approval.
- 4.3 We also declare that our concern has not been black-listed by Railway / Railway Board/RDSO for business with the Railways.
- 4.4 We hereby undertake that all our equipments for manufacturing and testing as listed above shall be maintained in good working order at all times.
- 4.5 We hereby declare that the contents and the instructions of latest "General Guidelines for Vendors Approval" effective from have been read and understood by us and our firm shall agree/abide by all the stipulations laid therein.

Signature
Name in full of Signing Authority

Place:
Date:

Stamp of the firm.