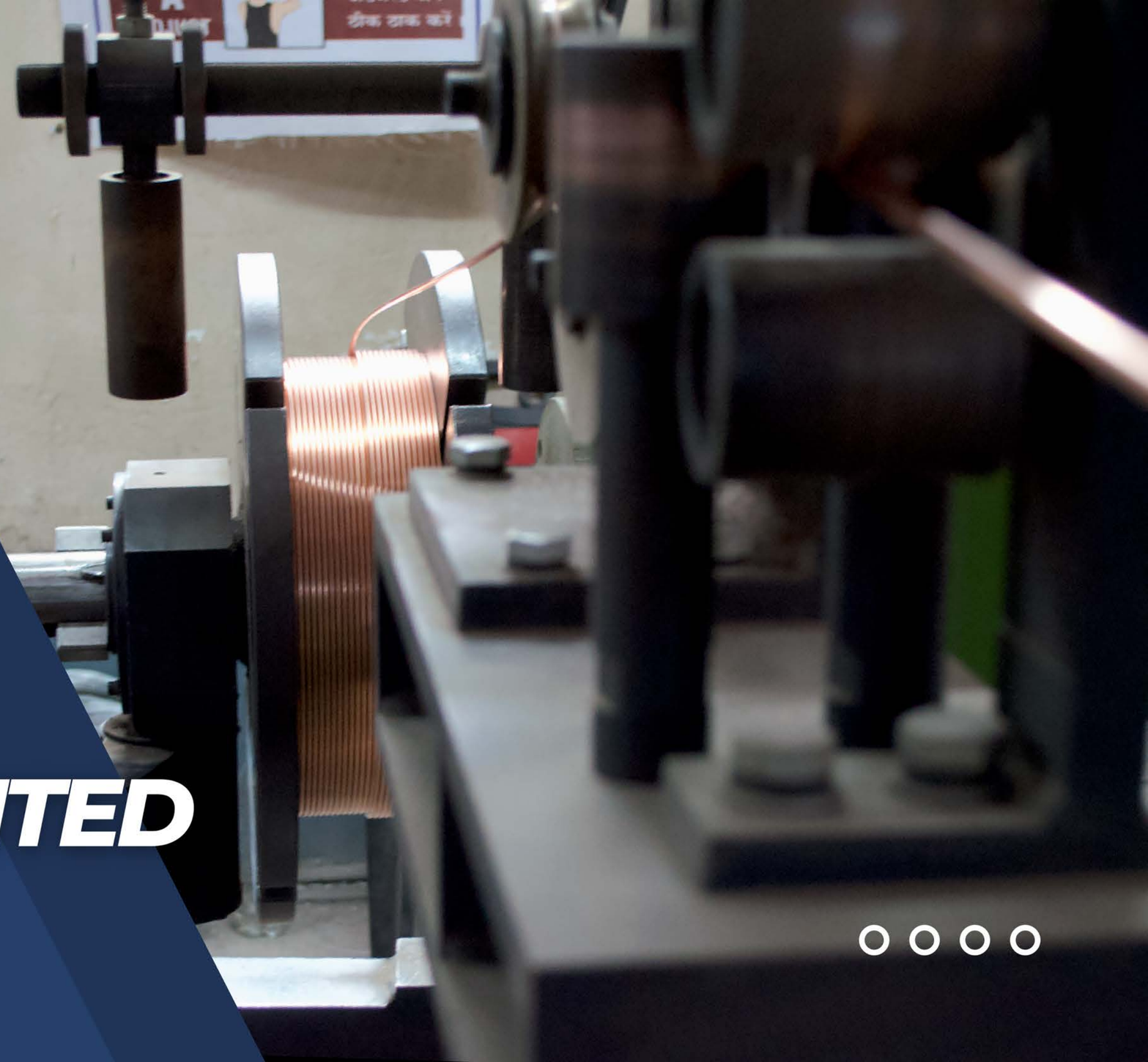
PRECISION GROUP

PRECISION WELDARC LIMITED



COMPANY PROFILE

Precision Weldarc Ltd, an ISO 9001:2015 Certified company, is a well-known manufacturer and exporter of Submerged Arc Welding wire, SAW Flux, and MIG wire. We have manufacturing units in Kolkata and Akola (under the name Precision Weldcon LLP). Our corporate office is located in Kolkata.

SAW WIRE

10,000MT per annum manufactured at its Kolkata Unit

MIG WIRE

30,000MT per annum manufactured at its Akola Unit

SAW FLUX

25,000MT per annum importered and sold all across India

SUBMERGED ARC WELDING WIRE

*We are proud to introduce ourselves as the **largest manufacturers** of SAW wire in India*

PWL	SAW 1	Classification : AWS A5.17, EL-8/EL 12 DIN 8557-S1			
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.04-0.10	0.35-0.60	0.03 max.	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit
Mechanical Properties + Typical values
Tensile Strength (Mpa) 480
Yield Strength (Mpa) 400
Elongation % 27

PWL	SAW 2	Classification : AWS A5.17, EM12K DIN 8557-S2			
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.04-0.12	0.90-1.20	0.15 max.	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit
Mechanical Properties + Typical values
Tensile Strength (Mpa) 500
Yield Strength (Mpa) 425
Elongation % 27
Impact at –20 C 47J

PWL	SAW 3	Classification : AWS A5.17, EM12K DIN 8557-S2Si			
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.07-0.12	0.80-1.20	0.15-0.35	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit
Mechanical Properties + Typical values
Tensile Strength (Mpa) 520
Yield Strength (Mpa) 420
Elongation % 27
Impact at –20 C 47J

PWL	SAW 4	Classification : AWS A5.17, EM12K DIN 8557-S3Si			
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.09-0.13	1.50-1.80	0.20-0.30	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit
Mechanical Properties + Typical values
Tensile Strength (Mpa) 550
Yield Strength (Mpa) 440
Elongation % 27
Impact at –20 C 47J

PWL	SAW 5	Classification : AWS A5.17, EH14 DIN 8557-S4			
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.10- 0.15	1.75-2.20	0.10	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit
Mechanical Properties + Typical values
Tensile Strength (Mpa) 570
Yield Strength (Mpa) 480
Elongation % 27
Impact at –40 C 35J

PWL	SAW 7	Classification : AWS A5.23 EA2 DIN – S2Mo					
Chemical Analysis of Wire (%) :							
C	Mn	Si	MO	S	P	Cu	
0.08-0.15	0.95-1.20	0.20max	0.45-0.65	0.03 max.	0.03 max.	0.35 max.	

Typical Mechanical Analysis of weld deposit
Mechanical Properties + Typical values
Tensile Strength (Mpa) 600
Yield Strength (Mpa) 520
Elongation % 27
Impact at –40 C 40J

GAS METAL ARC WELDING WIRE (GMAW)

*Our state-of-the-art **fully online** Akola Plant manufactures one of the best quality wires available in the market*

PWL **MIG 1**	Classification : AWS 5.18, ER70S6 DIN 8559-SG1				
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.06-0.12	1.00-1.30	0.50-0.70	0.02 max.	0.02 max.	0.30 max.
Typical Mechanical Analysis of weld deposit					
Tensile strength (N/mm^2) 530					
Yield strength (N/mm^2) 430					
Elongation % A5d 26(>22%)					
Impact properties (CVN) at –20 C 80 J (>47J)					

PWL **MIG 2**	Classification : AWS 5.18, ER70S6 DIN 8559-SG2				
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.06-0.15	1.40-1.85	0.80-1.15	0.02 max.	0.02 max.	0.30 max.
Typical Mechanical Analysis of weld deposit					
Tensile strength (N/mm^2) 570 min					
Yield strength (N/mm^2) 470 min					
Elongation % A5d 26(>22%)					
Impact properties CVN at –40 C 55 J (>47J)					

SUBMERGED ARC WELDING FLUX

*PWL supplies **25,000 MT** of SAW Flux per annum to all major pipe manufacturers*

PWL 8101 SPECIAL	Classification : AWS A5.17, F7A0-EL8, F7A2-EM12K

Chemical Composition of Flux :					
SiO2+TiO2	CaO+MgO	Al2+MnO	CaF2	S	P
25-35	15-25	30-40	5-15	<0.06	<0.08

Mechanical Properties of Deposit Metal :					
Accompanied Wire	Y.S. MPA	T.S. MPA	Elongation %	CHARPY-V Impact test (J)°C	
				0	-20
F6A0 EL8	>400	350-450	27	>50	>27
F7A2 EM12K	>400	415-550	28	>70	>50

PWL 7101	Classification : AWS A5.17, F7A4-EM12K, F7A4-EH14 AWS A5.23, F8A2-EA2

Chemical Composition of Flux :					
SiO2+TiO2	CaO+MgO	Al2+MnO	CaF2	S	P
14-24	25-36	20-30	16-26	<0.06	<0.08

Mechanical Properties of Deposit Metal :						
Accompanied Wire	Y.S. MPA	T.S. MPA	Elongation %	CHARPY-V Impact test (J)°C		
				-20	-40	-50
F7A4 EM12K	485	560	27	>70	>40	-
F7A4 EH14	510	600	25	>80	>60	>30
F8A2 EA2	525	610	24	>100	>60	>35

PWL 5101	Classification : AWS A5.17, F6AZ-EL8, F6AZ-EM12K

Chemical Composition of Flux :					
SiO2+TiO2		Al2O3+MnO	CaF2	S	P
25-35		50-60	3-10	<0.06	<0.08

Mechanical Properties of Deposit Metal :				
Accompanied Wire	Y.S. MPA	T.S. MPA	Elongation %	CHARPY-V Impact test (J)°C
				-0
F6AZ EL8	>330	415-550	27	>27
F6AZ EM12K	>330	425-550	27	>27

Wire Manufacturing Process

PURCHASE

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INSPECTION OF IN COMING MATERIALS

STORE ISSUE (APPROVED RAW MATERIAL)

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WIRE DRAWING
5.50MM – 4.90MM – 4.30MM – 3.85MM – 3.35MM – 3.05MM – 2.70MM

PROCESS INSPECTION

↓

ACID PICKLING

PROCESS INSPECTION

↓

WASHING

↓

COPPER COATING

PROCESS INSPECTION

↓

WASHING

↓

FINAL DRAWING

DIMENSION CHECKING

↓

DRUMING IN 600-700 KGS

PROCESS INSPECTION

↓

DRUM PACKING

↓

STORING

↓

DISPATCH

Raw Material Inspection

- High quality Wire Rod
  - We only use the highest quality of wire rod for TATA or JSW
- Testing
  - Random Chemical and Physical testing is performed on material from every heat
- Labeling
  - All wire rods are labeled properly and kept at our stockyard to ensure that there is no mixup

WIRE DRAWING

In this process, the wire rod is descaled and drawn out to the appropriate thickness

Steps of wire drawing:

- The wire rod is placed in the stripper
- A mechanical descaling machine removes surface scaling
- It passes through several die boxes, each of which slightly reduces its diameter (20% reduction per die)
- Each die box is filled with drawing powder PL456 for smooth drawing
- Each die box and the subsequent drum is water-cooled to prevent overheating
- The final drawn wire is spooled in a bobbin and is ready for the next stage

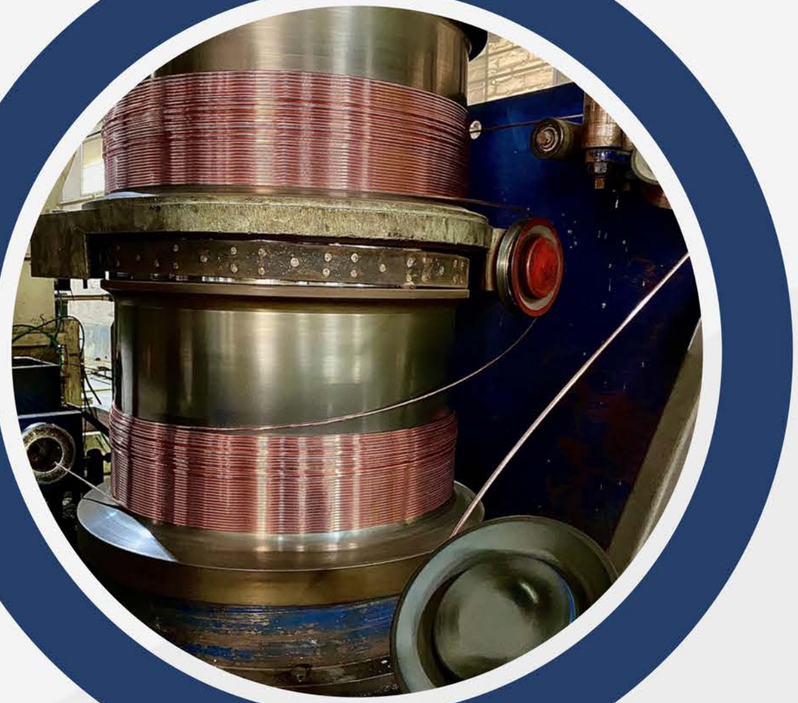
PENULTIMATE DRAWING

- The bobbin from the last stage goes through a penultimate drawing
- Drawing powder PL7001 is used along with water cooling of die and drum
- Drawn wire goes through mechanical degreaser and is ready for acid pickling

ACID PICKLING

- Wire is passed through hot water tank (60-70°C) and controlled air pressure
- Cleaned wire is passed 4 times through an acid tank with 12-20% Sulphuric Acid at 60-70°C
- Wire is washed in running cold water

COPPER COATING & FINAL DRAW



- Wire is passed through the copper coating tank at 40-50°C.
- Tank mixture:
  - 60kg SC001 Copper Powder
  - 120kg Sulphuric Acid
- Wire is rotated 4 times inside the Copper tank
- Copper coated wire is washed in running water
- 3kg of RC001 copper powder and 1kg of H_2SO_4 is added to the tank after every 1000kg of wire production
- Wire is then passed through a lubrication tank for prevention of oxidation of nascent wire surface
- The lubricated wire goes through the final draw to achieve the exact diameter and surface finish
- The diameter of the finish wire is checked twice per shift and the die is changed everytime the tolerance of +0.05mm is exceded
- Use of cotton gloves is a must to prevent surface contamination

TESTING

The following test are conducted per drum/bobbin

- Chemical
  - 25cms of wire is cut and weighted before immersing it in 25% Ammonia Solution with 1-3 cc of hydrogen peroxide.
  - It is allowed to rest for 1hr till all the copper is dissolved and the solution turns blue
  - The wire is washed and dried in a hot air oven
  - The weight of the wire is measured again and difference in wt. is used to calculate Copper percentage

PACKING OPTIONS

SAW Wire

- Drum:
  - 300KG - 18 Inch drum
  - 600kg - 34 inch drum
  - 650kg - 36 inch drum
- Ring (Layer winding):
  - 25kg
  - 27kg
- Bobbin (Layer winding):
  - 250 - 300kg

GMAW Wire

- Drum:
  - 600kg - 34 inch drum
  - 650kg - 36 inch drum
- Spool:
  - 15 kg - 34 inch drum
- Bobbin (Layer winding):
  - 250 - 300kg

SAW Flux

- Bags:
  - 25 kg

DRUM PACKING

- Outside of the mandrel, inside of the drum, and base are covered with plastic sheet to avoid corrosion
- Drum is placed under the dead block machine that ensures:
  - Wire falls in a dead cast manner
  - There are no internal entanglements
- One round of wire is cut from the first and last drum everyday for testing of cast and helix of the wire
- Once approved by the Q.C manager, each drum is weight and left to cool for 24 hrs
- A small silica gel bag is put inside each drum, the top is covered with a polythene sheet and ply-board, and closed using screw flange in an airtight manner.
- The above method ensures corrosion and rust free packaging and storage.

Dead Cast and helix

DRUM PACKING

REELING & SPOOLING

- The finished wire is taken up in a bobbin with proper labeling of grade, size, heat no. and weight
- The bobbin is placed into the pay-off
- The appropriate ring/spool is placed in the reeling machine
- The wire size and desired weight is entered in the control panel
- The wire goes straight through a number of small killing rollers and the machine automatically reels the wire in a layer-wise manner.
- After reeling is complete, a sticker is placed inside the ring for identification
- An automatic packing machine wraps the wire with HDPE and Stetch film and another identification sticker is placed on the outside
- This method allows our wires to we stored for long periods of time without corrosion or rusting

QAP

DOC NO.: PWL/QC/06
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REV. NO.: 01
REV. DT.: 25-01-2016

PRECISION WELDARC LIMITED

QUALITY ASSURANCE PLAN FOR INSPECTION OF INCOMING MATERIALS

SL. NO.	PROCESS STAGE	CHECKING PARAMETER	NO. OF SAMPLE	SPECIFIED/ ACCEPTANCE NORMS	EQUIPMENT & METHOD USED	RECORDS	REMARKS
01	STORES	C %, Mn %, Si %, S% & P %.	12" Wire Rod is cut from each Heat No. to check.	AS PER ASTM E-350	Chemical & Burette, Pipette, Flask etc.	In-Process Inspection record/register. Doc. No. PWL/QC/03	Mgr.QC/Asst. Mgr. QC is responsible for checking & maintaining the records.
02		Strength	HCL-1ml	Strength 25%-35%			

DISPOSITION: Rejected materials are sent back to the supplier. Accepted materials are forwarded to Incoming Stores.
N.B.: Inspection of Incoming materials, if minimum 1 no. of sample failed then doubled sample shall be taken.

QUALITY ASSURANCE PLAN FOR FINAL INSPECTION

SL. NO.	PROCESS STAGE	CHECKING PARAMETER	NO. OF SAMPLE	SPECIFIED/ ACCEPTANCE NORMS	EQUIPMENT & METHOD USED	RECORDS	REMARKS
01	COPPER COATING WIRE DRAWING	Final Wire Diameter	Every 4 to 5 hrs.	Dia. :± 0.05 mm	Calibrated Micrometer	Inspection Register Book	Mgr.QC/Asst. Mgr. QC is
02	FINAL INSPECTION OF COPPER COATED WIRE	Coating Content,	Cut 6" of Copper Coated wire from each batch	Coating content 0.35 mm max. AS PER ASME SEC IIC 2015	Chemical Balance, Chemicals, Burette, Pipette etc.	Doc. No. PWL/QC/4A	responsible for checking & maintaining the records.

DISPOSITION: rejected products are returned for rework, if possible and accepted materials are sent to Finished Goods stores.

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REV. DT.: 25-01-2016

PRECISION WELDARC LIMITED

QUALITY ASSURANCE PLAN FOR INSPECTION OF IN-PROCESS

SL. NO.	PROCESS STAGE	CHECKING PARAMETER	NO. OF SAMPLE	SPECIFIED/ ACCEPTANCE NORMS	EQUIPMENT & METHOD USED	RECORDS	REMARKS
01	WIRE DRAWING SECTION	Required Diameter	Checking of diameter of wire twice a day at an interval of 4 to 5 hrs. Drafting of wire rod: 5.5→4.90→4.30→3.85→3.35→3.05→2.70 mm	±0.05 mm	Calibrated Micrometer	In-Process Inspection record/register. Doc. No. PWL/QC/04	Mgr.QC/Asst. Mgr. QC is responsible for checking & maintaining the records.
02	ACID BATH SECTION	% of HCL	Once in a day before start of production	HCL % - 0.25 to 0.35 Change/Top up Acid at the time of checking, if % of HCL is not within the permissible limit.	Chemicals, Burette, Pipette, Flask etc. Take 1 cc sample & add 10 to 15 ml DM Water & give methyl orange (0.04%) as indicator. Titrate with (N) Sodium Carbonate. Result should be =Burette Reading X 3.646 X100/116		
03	COPPER BATH SECTION	% Iron in Copper Bath	Once in a week	Iron- 4% max.	Chemicals, Burette, Pipette, Conical flask. Take 1 cc bath sample & add 10 cc DM water & then add 1 cc conc. H2SO4, Titrate with (N/10) KMnO4 until pink colour appear.(pink colour means Iron% =burette reading x .56		
04	COATING BATH SECTION	% of Copper % of H2SO4 in Copper Bath	Twice in day at a interval of 4 to 5 hrs.	CU %- 0.10 to 0.35 H2SO4- 4 to 6%	Chemicals & Burette, Pipette, Flask. CU%: Take 25 ml copper bath sample add NH4OH 1 to 2 ml, to make the solution just ammoniac, add Glacial Acetic acid 1 to 2 ml. Add Potassium Iodide (2 to 3 gm) Dark Brown titrate with 0.1 N Sodium Thiosulphate Solution, colour pale yellow. Add 100 ml. water add starch again titrate with Sodium Thiosulphate solution, colour fade (light blue) then add ammonium thiocyanate , reddish finally titrate with Sodium Thiosulphate, colour milky white. % CU = Total reading x 0.1 x 0.063 x 4	In-Process Inspection record/register. Doc. No. PWL/QC/04	Mgr.QC/Asst. Mgr. QC is responsible for checking & maintaining the records.
					Because we have taken 25 ml. sample. H2SO4 %: Take 10 ml copper bath sample, add 20 ml water & add 6 to 7 drops of Methyl Orange (0.04%) as indicator, titrate with Sodium Carbonate (N) Solution. H2S04%= Reading x 0.49		

DISPOSITION: Rework if possible or Non acceptable Materials Rejected and scrap. Accepted materials are forwarded to next stage of operation.
N.B. : In process Inspection if minimum 1 no, of sample failed then double sample shall be taken.

CLIENT LIST:

PIPE MILLS

1. JINDAL SAW LTD. (KOSI KALAN, BELLARY & SAMAGHOGHA)
2. ESSAR STEEL LTD. (HAZIRA)
3. WELSPUN CORP. LTD. (ANJAR, BHARUCH & MANDYA)
4. JCO GAS PIPE LTD.
5. MEGHA ENGINEERING & INFRASTRUCTURES LTD.
6. RATNAMANI METALS & TUBE LTD.
7. PSL LTD. (CHENNAI, VARSANA, VIZAG, JAIPUR)
8. SAIL (ROURKELA)
9. TOPWORTH PIPES & TUBES PVT. LTD.
10. MAN INDUSTRIES LTD.
11. WELSPUN CORP. LTD. (SAUDI ARABIA)
12. SURYA GLOBAL STEEL TUBES LTD.
13. UTAKARSH TUBES & PIPES LTD.
14. SKIPPER LIMITED

LPG CYLINDERS

1. SANGHVI CYLINDERS PVT. LTD.
2. HYDERABAD CYLIDERS LTD.
3. NORTH INDIA WIRES LTD.(LPG UNIT)
4. R.M. CYLINDERS LIMITED
5. MAURIA UDYOG LIMITED
6. CARBAC HOLDINGS PVT. LTD.
7. HALDIA PRECISION PVT. LTD.
8. T.K. GAS & GAS CYLINDERS LTD.- BANGLADESH

WIND MILL TOWERS

1. FEDDERS LLOYD CORP. LTD.
2. INOX WIND LIMITED
3. REGEN POWERTECH PVT. LTD.
4. VISHAL NIMRITI PVT. LTD.
5. CU BUILT ENGINEERS PVT. LTD.
6. SUYOG ENGINEERS PVT. LTD.
7. SAMRUDDHI INDUSTRIES

HEAVY DUTY FABRICATORS

1. JINDAL STEEL & POWER LTD.
2. EVERSENDAI - INDIA
3. PRATIBHA INDUSTRIES
4. BHILLAI ENGINEERING CORPORATION LTD.
5. BEEKAY ENGINEERING CORPORATION
6. KALYANI ALLOY CASTINGS LTD.
7. METAL FAB HIGHTECH PVT. LTD.
8. BHEL (BHOPAL, TRICHY & JAGDISHPUR)
9. NTPC LTD. (FARAKKA, WEST BENGAL)
10. ADANI GROUP
11. SUZLON STRUCTURES LTD.
12. ATMASTCO PVT. LTD.
13. SIMPLEX ENGINEERING & FOUNDARY WORKS P LTD.

WE ARE EXPORTING OUR RANGE OF PRODUCTS TO THAILAND, VIETNAM, OMAN & BANGLADESH.

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