

	Bharat Heavy Electricals Limited, Piping Centre, Chennai Technical Delivery Conditions for Carbon Steel Butt welded Fittings and Forgings including Flanges, Matching Piece conforming to SA234WPB and SA105 Project: NPCIL Kudankulam-KKNPP Unit 3&4 -2x1000 MWe	TDG :7430:002 Rev:01 Dt : 28.07.2020 Page 1 of 7
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Records of Revision : 00 :- Issue date : 07.07.2020 - Fresh Issue

: 01 :- Issue date : 28.07.2020 - Revised to include other system requirements.

1.0 SCOPE

- 1.1 This Technical Delivery Conditions specify the requirements for Carbon Steel Butt Welded fittings and forgings including flanges, matching pieces etc conforming to ASME SA 234 WPB and SA105.
- 1.2 The fittings and forgings of PEB system are intended for Nuclear Piping and the general method of manufacturing and testing shall be as per ASME Sec III Sub Section NC.

2.0 RAW MATERIAL

Steel shall be made by one or more of the following processes: Open hearth, electric furnace or basic-oxygen. Steel made by Acid Bessemer process shall not be acceptable.

All fittings shall be of seamless/welded construction as specified in the Drawing/Purchase order. Raw materials used for manufacturing of seamless fittings shall be seamless pipes or forgings only.

The raw material used for fittings shall meet the respective specification. The test certificate shall be furnished with Traceability.

Carbon content shall be Max: 0.25%

3.0 MANUFACTURING REQUIREMENTS

3.1 Manufacturing Process:

Process of Manufacture shall confirm to applicable standards.

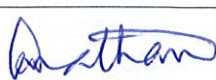
Seamless Fittings:-

- A) Tees & Reducers : Up to 80mm thickness: Formed Type.
Above 80mm thickness Formed or Forged type.
- B) Elbows : Formed type for all thickness

Welded Fittings: Supplied only if indicated in P.O and shall be of **Two-Half construction**.

Pipe made from plate and long seam welded shall not be used as a starting material.

- 3.2 Forged items including Flanges ordered to this TDG shall be forged to the nearest shape before matching to final dimensions as per respective drawings.

 J Nanthini Dy.Mgr/QA Prepared By	 R. Prabha AGM/MM 	 C. Vaithianathan AGM/Engg.DTG &MS 	 K V Ramani AGM/Quality & BE Approved By
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Technical Delivery Conditions for Carbon Steel Butt welded Fittings and Forgings including Flanges, Matching Piece conforming to SA234WPB and SA105

TDG :7430:002 Rev:01
Dt : 28.07.2020
Page 2 of 7

Project: NPCIL Kudankulam-KKNPP Unit 3&4 -2x1000 MWe

- 3.3 Blooms / Billets used for forgings (Side length, Dia $\geq$ 50 mm) shall be UT tested as per SA388 and acceptance norms shall be ASME Sec VIII. Div.2. Cl 3.3.4.
- 3.4 NPCIL approved brand of electrodes shall be used. (Refer Annexure 1).
All bare electrodes and fluxes shall be selected as per ASME Section II C.

All weld metal shall have equal or better mechanical properties than the parent metal.

All electrodes and fluxes shall be properly baked/dried as per manufacturer's recommendation before use. Only dry flux shall be used.

3.5 Heat Treatment and NDE requirements :

All Raw material / Starting material shall be Heat treated as below

a) CS – Normalised

NDE - UT requirement : If UT is not done on the Raw material, the same shall be done by the fitting manufacturer before forming / fabrication.

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Bharat Heavy Electricals Limited, Piping Centre, Chennai

Technical Delivery Conditions for Carbon Steel Butt welded Fittings and Forgings including Flanges, Matching Piece conforming to SA234WPB and SA105

Project: NPCIL Kudankulam-KKNPP Unit 3&4 -2x1000 MWe

TDG :7430:002 Rev:01
Dt : 28.07.2020
Page 3 of 7

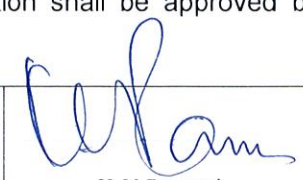
For Welded Fittings – Post Weld Heat treatment	PWHT shall be done as indicated below.		
	Material	Heat Treatment Temp, °C	Soaking time
	CS- WPB-W If weld thk>19mm	595-635	2.5 min per mm of weld thk; Minimum 30minutes.
Forgings including Flanges, Matching piece etc.	SA 105 – Normalized.		
NDE (for all sizes) – All formed, forged and welded fittings and forgings :	MT (100%) - Procedure - As per ASTM E709. No linear indications are acceptable.		
NDE – UT - All formed, forged fittings and forgings : For OD >= 200mm or W.T >= 6mm	If made from Pipe & Tube – Shall be done as per - ASTM E 213 with longitudinal notch of 5% wall thickness with max. 1.5mm and min. 0.3mm. Actual measured notch depth to be specified in Test Certificate.		
	If made from Forging - Shall be as per - ASTM A 388 In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4. Actual measured notch depth to be specified in Test Certificate.		
NDE – RT for Welded fittings	RT (100%) - Acceptance norm shall be UW 51 of ASME Sec VIII DIV-1.		
NDE for Bevel Ends	100% MT- Procedure - As per ASTM E709. No linear indications are acceptable		
Hardness	Base material Hardness for WPB – 197 HBW max. SA105 – as per specn. Weld Hardness for WPB (Weld&HAZ) – 238 HBW max. Minimum 10% of the ordered item. Hardness value to be mentioned in the Test Certificate.		
Dimension	Dimensions shall be as per ASME B16.9 / ASME B16.5 / GOST 12821/ ASME B16.11 or as per Engineering drawing indicated in Purchase order . The ends of reducers shall have a straight portion of Minimum 13mm.		

4.0 MECHANICAL TESTS

4.1 Mechanical Test : Mechanical tests as per applicable material specification

- Test samples shall be tested in the Heat treatment of fitting delivered condition.
- Tensile Test*:- One sample of each specification, heat, heat treatment lot and size shall be subjected to Tension Test as per applicable standard.
- Product analysis – one / heat / heat treatment lot / size.

4.2 In case of welded fittings, WPS, PQR & welder qualification shall be approved by BHEL/NPCIL, prior to start of welding.

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5.0 WORKMANSHIP & REPAIR

Clean conditions shall be maintained at all stages of machining, fabrication, inspection, storing, handling, and packing. Best workmanship as per Industry standards shall be adhered in the manufacturing and supply.

All items shall have smooth, workman like finish, and to be free from scale & defects like laps, seams, folds, cracks, etc.. Weld spatter, Cleats, Sharp corners, projections and indentations shall be removed.

Surface defects can be removed by mechanical means and defective areas smoothly dressed up with the adjacent surface. Minimum dimension after repair shall meet drawing / Specification. Repairs by fusion welding are prohibited.

Number of weld repairs at the same spot shall be restricted to maximum two by NPCIL approved procedure. All repaired welds shall be re-examined and re-tested as per the requirements of original weld and shall meet the requirements of the same.

Internal & External weld profile of Welded fittings shall be ground smooth to make it suitable for application of Coating (done at Site).

Weld finish requirements and Edge preparation shall be as per Engineering Drawing.

Flatness on curved surfaces of fittings shall be limited to 6% of nominal OD.

Thickness: Outer Diameter & Transition: Variation shall be merged smooth to min 1:4 taper.

7.0 PAINTING, COLOR CODING & MARKING

7.1 All fittings (CS) shall be **painted** on the external surface as given below (unless otherwise specified):

Surface preparation : Blast cleaning

Primer : One coat of Inorganic Zinc Silicate primer ; DFT = 70 microns min

Total DFT = 70 microns min

The internal surface shall be protected with rust preventive coating or rust inhibitor

7.2 **COLOUR CODING:** All fittings shall be colour coded circumferentially at all ends as given below:

Material Specification	Colour Code
SA234WPB	Red
SA105	Blue

7.3 **MARKING :** a) The fittings despatched to **BHEL Stores** shall be **paint stencilled & hard punched** with the following details.

1) PO Number 2) Supplier's emblem/code 3) Size & Specification 4) Heat Number 5) Running Serial number for the P.O. quantity 6) Inspector's seal

b) In case of fittings dispatched directly to project site as **DTS**, material code shall be replaced with DU code (14-digit work order du detail) as given by purchase during

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DTS advice. All other details shall be hard punched & stencilled as above.

7.4 Any other Marking & Identification which is not mentioned above Sl. No: 7.3 shall be as per Enquiry/P.O.

7.5 Paint or Ink for marking shall not contain any harmful metal or metallic salts such as zinc, lead or copper which cause corrosive attack ordinarily or in service.

8.0 PACKING AND END PROTECTION:

Machined ends of the fittings shall be well protected using end caps and fittings shall be suitably packed in box / crate to avoid transit & other damages.

9.0 QUALITY PLAN

Vendor shall furnish Manufacturing Quality Plan and the same shall be approved by Customer NPCIL.

10.0 INSPECTION & CERTIFICATION

10.1 For fittings of PEB system, Supplier's Quality System shall meet the requirements of NCA-3800. However, Quality system Certificate (QSC) for material organization from ASME Society is not mandatory.

10.2 Inspection shall be by BHEL and Customer – NPCIL as per the Approved Quality Plan.

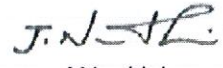
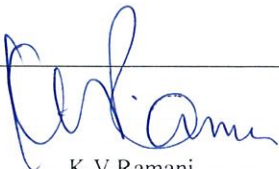
10.3 Three original test certificates typed in English shall be submitted along with the inspection report. The test certificate shall furnish the following details.

- BHEL P.O Number & Amendment Number(if any)
- BHEL P.O. Serial Number
- Test Certificate number
- Specification, grade with year of code, size, quantity
- Heat / Melt number
- Starting material details with traceability
- Steel making process
- Ladle Analysis of Raw Material and product analysis of fitting.
- Heat Treatment Chart details with actual temperature and soaking time
- Mechanical properties
- Detailed NDT reports for MPI, RT, UT (UT reports in soft copy + hard copy) with reference norm, acceptance standard and Test results as applicable. Actual measured UT notch depth to be specified in Test Certificate.
- Hardness test report
- Dimensional report
- Painting details

10.4 Mill test certificate for Raw material (Billet/Bloom/Tube&Pipe /Plate).

11.0 AUDIT CHECKS AT BHEL

BHEL reserves the right to carry out audit checks for Chemistry, HT condition, Mechanical test and NDT on fittings. **Supplies found defective during check at BHEL are liable for rejection.**

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Bharat Heavy Electricals Limited, Piping Centre, Chennai

Technical Delivery Conditions for Carbon Steel Butt welded Fittings and Forgings including Flanges, Matching Piece conforming to SA234WPB and SA105

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TDG :7430:002 Rev:01

Dt : 28.07.2020

Page 6 of 7

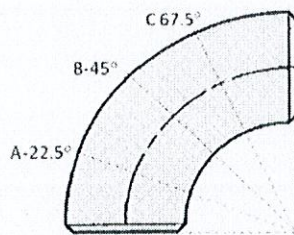
THICKNESS MEASUREMENT REPORT FOR ELBOW

PO Number:

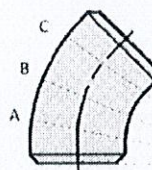
Work order/Du:

Heat no:

Size:



90° Elbow



Less than 90°

Measurement (Extrodus) points

Angle	A	B	C
90	22.50°	45.00°	67.50°
60	15.00°	30.00°	45.00°
45	11.25°	22.50°	33.75°
30	NA	15.00°	NA

Description of item :
Material Spec :
Material Code :

No	Wall thickness at ends		Wall Thickness at angle			Remarks
	End 1	End 2	A	B	C	
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						

J. N. J. L.

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Dy. Mgr/QA

Prepared By

R. Prabha

R. Prabha
AGM/MM

Reviewed By

C. Vaithianathan

C. Vaithianathan
AGM/Engg, DTG & MS

K V Ramani

K V Ramani
AGM/Quality & BE

Approved By



Bharat Heavy Electricals Limited, Piping Centre, Chennai

Technical Delivery Conditions for Carbon Steel Butt welded Fittings and Forgings including Flanges, Matching Piece conforming to SA234WPB and SA105

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TDG :7430:002 Rev:01

Dt : 28.07.2020

Page 7 of 7

THICKNESS MEASUREMENT REPORT FOR TEE's

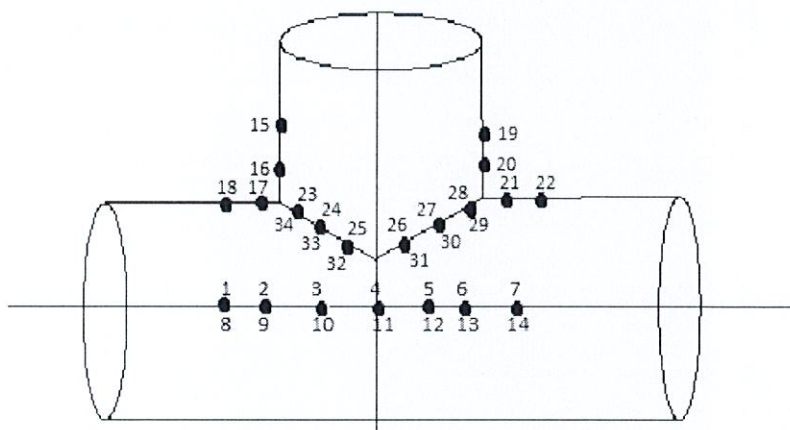
PO Number:

Description of Material:

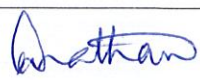
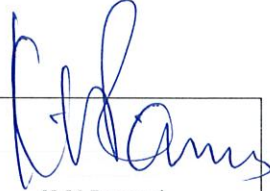
Size:

Material Spec.

Work order/Du:



Location	Thickness (mm)	Location	Thickness (mm)	Location	Thickness (mm)
1		13		24	
2		14		25	
3		15		26	
4		16		27	
5		17		28	
6		18		29	
7		19		30	
8		20		31	
9		21		32	
10		22		33	
11		23		34	
12		24			

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Prepared By	Reviewed By		Approved By

Annexure-1

न्यूक्लियर पावर कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)

NUCLEAR POWER CORPORATION OF INDIA LTD.
(A Government of India Enterprise)

गुणवत्ता आश्वासन निदेशालय

Directorate of Quality Assurance

नाभिकीय ऊर्जा भवन, अणुशक्तिनगर, मुंबई - 400 094

Nabhikiya Urja Bhavan, Anushaktinagar, Mumbai - 400 094.

CIN U4010MH1987GOI149458



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संख्या No. NPCIL/02500/QAD/M/2018 /6

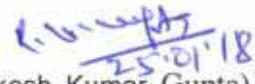
तिथि Date: January 25, 2018

विषय **Sub:** List of approved brands of welding consumables

The lists of approved brands of welding consumables for use on NPCIL jobs as on 25-01-2018 are enclosed herewith.

- 1) List of Approved Carbon Steel & Low Alloy Steel Welding Electrodes (2 Sheets).
- 2) List of Approved Stainless Steel & other Ni Alloy Electrodes (2 Sheets).
- 3) List of Approved Brands of Wire and Wire Flux Combination (1 Sheet).

The approvals are granted in conformance to the requirements stipulated in latest edition of ASME Section II Part C. However, batch qualification wherever called for in specific cases, will have to be carried out separately.


(Rakesh Kumar Gupta)
Associate Director (QA)

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Directorate of Quality Assurance

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1) LIST OF APPROVED CARBON STEEL & LOW ALLOY STEEL WELDING ELECTRODES (2 pages)

As on 25-01-2018

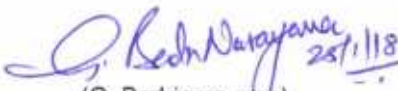
Sr. No.	Manufacturers	Brand name	AWS No.	Valid up to
1.	ADOR Welding Ltd., Silvassa	SUPABASE X PLUS	E7018	FEB2019
2.	ADOR Welding Ltd., Silvassa	MOLYTEN	E7018-A1	APR2020
3.	ADOR Welding Ltd., Silvassa	TENALLOY Z PLUS	E7018-1	JUN2022
4.	ADOR Welding Ltd., Silvassa	CHROMOTEN	E8018 B2	APR2020
5.	ADOR Welding Ltd., Silvassa	CHROMOTEN-C	E9018 B3	APR2020
6.	D&H SECHERON, Indore	MOLYTHERME	E7018-A1	JUN2022
7.	D&H SECHERON, Indore	MEDIO	E6013	JUN2020
8.	D&H SECHERON, Indore	EXOBEL	E6013	JUN2020
9.	D&H SECHERON, Indore	SUPER THERME	E7018	JUN2020
10.	D&H SECHERON, Indore	SUPER THERME(SPL)	E7018-1	SEP2018
11.	D&H India Ltd., Indore	SUPER -LH (SPL)	E7018-1 (DCEP Only)	FEB2021
12.	D&H India Ltd., Indore	STANDARD	E6013	FEB2021
13.	D&H India Ltd., Indore	SUPER LH	E7018 (DCEP Only)	FEB2021
14.	D&H India Ltd., Indore	SUPER -CR-1	E8018 B2	DEC2020
15.	D&H India Ltd., Indore	SUPER -CR-2	E9018 B3	DEC2020
16.	ESAB INDIA LTD, AMBATTUR, CHENNAI	ESAB 28	E6013	SEP2018
17.	ESAB INDIA LTD, AMBATTUR, CHENNAI	ESAB 36H	E7018	SEP2018
18.	ESAB INDIA LTD, AMBATTUR, CHENNAI	ESAB 36H(SPL)	E7018-1	SEP2018
19.	ESAB INDIA LTD, AMBATTUR, CHENNAI	ESAB PIPEWELD 6010R	E6010	SEP2018
20.	HONAVAR ELECTRODES, THANE	REGULAR S	E6013	JAN2020
21.	HONAVAR ELECTRODES, THANE	ULTIMATE - 18	E7018	JAN2020
22.	HONAVAR ELECTRODES, THANE	ULTIMATE - 18 SPL	E7018-1	JAN2020
23.	MAILAM INDIA LTD., PUDUCHERRY	MAILARC -13R	E6013	SEP2020
24.	MAILAM INDIA LTD., PUDUCHERRY	MAILARC -18	E7018	SEP2020
25.	MAILAM INDIA LTD., PUDUCHERRY	MAILARC -18 PLUS	E7018-1	SEP2020
26.	MAILAM INDIA LTD., PUDUCHERRY	MAILARC -1 CR	E8018-B2	DEC2018
27.	MAILAM INDIA LTD., PUDUCHERRY	MAILARC -2 CR	E9018-B3	DEC2018
28.	ROYAL ARC ELECTRODES, VASAI	ROYAL THERME	E7018	SEP2018
29.	ROYAL ARC ELECTRODES, VASAI	ROYAL S	E6013	SEP2018
30.	ROYAL ARC ELECTRODES, VASAI	ROYAL THERM SPL	E7018-1	SEP2021
31.	ROYAL ARC ELECTRODES, VASAI	ROYAL THERM MOLY	E7018-A1	FEB2018*
32.	ROYAL ARC ELECTRODES, VASAI	ROYAL CHROM 1	E8018-B2	NOV2017*
33.	ROYAL ARC ELECTRODES, VASAI	ROYAL CHROM 2	E9018-B3	NOV2017*
34.	RAJ KESARI ELECTRODES, UDAIPUR	SUPERLET 18	E7018	AUG2022
35.	RAJ KESARI ELECTRODES, UDAIPUR	SUPERLET 18 (SPL.)	E7018-1	AUG2022
36.	RAJ KESARI ELECTRODES, UDAIPUR	RAJCORD 13S	E6013	AUG2022
37.	RAJRATNA ELECTRODES, AHMEDABAD	RATNA 7018	E7018	FEB2018*

G. Sachin Narayana
25/1/18

Sr. No.	Manufacturers	Brand name	AWS No.	Valid up to
38.	RAJRATNA ELECTRODES, AHMEDABAD	RATNA 7018 SPL.	E7018-1	MAR2020
39.	SUPERON SCHWEISSTECHNIK INDIA LTD. DELHI	GARANT MO	E7018-A1	SEP2020
40.	SUPERON SCHWEISSTECHNIK INDIA LTD. DELHI	SUPERCITO	E7018	SEP2019
41.	SUPERON SCHWEISSTECHNIK INDIA LTD. DELHI	SUPERCITO 7018-S	E7018-1	SEP2019
42.	SUPERON SCHWEISSTECHNIK INDIA LTD. DELHI	OVERCORD S	E6013	SEP2019
43.	SUPERON SCHWEISSTECHNIK INDIA LTD., DELHI	SUPER CROMO 1B	E8018-B2	DEC2020
44.	SUPERON SCHWEISSTECHNIK INDIA LTD., DELHI	SUPER CROMO 2B	E9018-B3	DEC2020
45.	VIJEY ELECTRODES & WIRES PVT. LTD., CHENNAI	VJ 6013 X	E6013	SEP2020
46.	VIJEY ELECTRODES & WIRES PVT. LTD., CHENNAI	VJ 7018	E7018	SEP2020
47.	VIJEY ELECTRODES & WIRES PVT. LTD., CHENNAI	VJ 7018 - 1	E7018-1	SEP2020
48.	WELD FAST ELECTRODES, NAGPUR	WELDFAST LH 18	E-7018	MAR2020
49.	WELD FAST ELECTRODES, NAGPUR	WELDFAST LH-18-1	E-7018-1	MAR2020
50.	WELD FAST ELECTRODES, NAGPUR	WELDFAST CROMO 0500	E7018-A1	JAN2018*
51.	WELD FAST ELECTRODES, NAGPUR	WELDFAST CROMO 1500	E8018-B2	JAN2018*
52.	WELD FAST ELECTRODES, NAGPUR	WELDFAST CROMO 2251	E9018-B3	JAN2018*

The approvals are granted in conformance to the requirements stipulated in latest edition of ASME Section II Part C. However, batch qualification wherever called for in specific cases, will have to be carried out separately.

Note: * Indicates renewal of approval is under progress


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AD (QA), QA Analysis & Gr.3

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2) LIST OF APPROVED STAINLESS STEEL & OTHER NI ALLOY ELECTRODES (2 Pages)

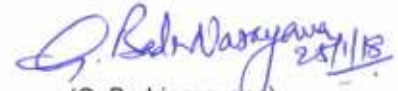
AS ON 25-01-2018

Sr. No.	MANUFACTURERS	BRAND NAME	AWS No.	VALID UPTO
1.	ADOR WELDING LTD., SILVASSA	BETANOX-DL	E 309L-16	SEP2020
2.	ADOR WELDING LTD., SILVASSA	SUPERINOX-2C	E 316-16	SEP2020
3.	ADOR WELDING LTD., SILVASSA	SUPERINOX-1C	E 308L-16	SEP2020
4.	D&H INDIA LTD., INDORE	SV-308L	E 308L-15	DEC2022
5.	D&H INDIA LTD., INDORE	SV-309L	E 309L-15	DEC2022
6.	D&H INDIA LTD., INDORE	CROMALLOY-B	E 308L-16	DEC2022
7.	D&H INDIA LTD., INDORE	CROMALLOY 309L	E 309L-16	DEC2020
8.	ADOR FONTECH, BENGALURU	LH 511	E Ni Cu7	OCT2020
9.	ADOR FONTECH, BENGALURU	LH 521	E Ni Cr Fe 3	OCT2020
10.	D&H SECHERON, INDORE	CRONITHERME 25/12	E 309-16	JUN2022
11.	D&H SECHERON, INDORE	RUTOX-D	E 316L-16	JUN2022
12.	D&H SECHERON, INDORE	BATOX-B	E 308L-15	JUN2020
13.	D&H SECHERON, INDORE	RUTOX-B	E 308L-16	JUN2020
14.	D&H SECHERON, INDORE	D&H 309L	E 309L-16	JAN2019
15.	D&H SECHERON, INDORE	D&H 1250	E NiCu-7	JAN2021
16.	D&H SECHERON, INDORE	D&H 1212NS	E NiCr Fe-3	JAN2021
17.	D&H SECHERON, INDORE	RUTOX-A	E 308-16	JAN2019
18.	D&H SECHERON, INDORE	RUTOX-A St	E 347-16	JAN2019
19.	D&H SECHERON, INDORE	RUTOX-Mo	E 316-16	JAN2019
20.	HONAVAR ELECTRODES, THANE	SILVER SHINE 308L-15	E 308L-15	SEP2018
21.	HONAVAR ELECTRODES, THANE	SILVER SHINE 308L	E 308L-16	SEP2019
22.	HONAVAR ELECTRODES, THANE	SILVER SHINE 309L	E 309L-16	SEP2019
23.	HONAVAR ELECTRODES, THANE	SILVER SHINE 316L	E 316L-16	NOV2018
24.	RAJRATNA ELECTRODES, AHMEDABAD	RATNA 308L	E 308L-16	MAR2020
25.	RAJRATNA ELECTRODES, AHMEDABAD	RATNA 316 L	E 316L-16	MAR2020
26.	SUPERON SCHWEISSTECHNIK INDIA LTD. DELHI	SUPER OPTIMAL 309L	E 309L-16	OCT2019
27.	SUPERON SCHWEISSTECHNIK INDIA LTD. DELHI	SUPER OPTIMAL 316L	E 316L-16	OCT2019
28.	SUPERON SCHWEISSTECHNIK INDIA LTD. DELHI	SUPER OPTIMAL 309 MoL	E 309MoL	OCT2019
29.	SUPERON SCHWEISSTECHNIK INDIA LTD. DELHI	SUPER STAINLESS 347	E 347-16	OCT2019
30.	SUPERON SCHWEISSTECHNIK INDIA LTD. DELHI	SUPER OPTIMAL 308L	E 308L-16	OCT2019
31.	MAILAM INDIA LTD., PUDUCHERRY	MAILEX-A	E 308-16	DEC2019
32.	MAILAM INDIA LTD., PUDUCHERRY	MAILEX-AL	E 308L-16	DEC2018
33.	MAILAM INDIA LTD., PUDUCHERRY	MAILEX-AL-15	E 308L-15	DEC2018

G. B. Narayanan
25/1/18

Sr. No.	MANUFACTURERS	BRAND NAME	AWS No.	VALID UPTO
34.	MAILAM INDIA LTD., PUDUCHERRY	MAILEX-25/12	E 309-16	DEC2018
35.	MAILAM INDIA LTD., PUDUCHERRY	MAILEX-25/12-L	E 309L-16	DEC2018
36.	MAILAM INDIA LTD., PUDUCHERRY	MAILEX-25/12-Mo	E 309 Mo-16	DEC2018
37.	MAILAM INDIA LTD., PUDUCHERRY	MAILEX Mo	E 316-16	DEC2018
38.	MAILAM INDIA LTD., PUDUCHERRY	MAILEX MoL	E 316L-16	DEC2018
39.	ROYAL ARC ELECTRODES, VASAI,	ROYAL 1C	E 308L-16	SEP2019
40.	ROYAL ARC ELECTRODES, VASAI,	ROYAL 2C	E 316L-16	SEP2019
41.	ROYAL ARC ELECTRODES, VASAI,	ROYAL-D2L	E 309L-16	SEP2019
42.	WELD FAST ELECTRODES, NAGPUR	WELDFAST 308L	E 308L-16	JAN2021
43.	WELD FAST ELECTRODES, NAGPUR	WELDFAST 316L	E 316L-16	JAN2021
44.	WELD FAST ELECTRODES, NAGPUR	WELDFAST 309L	E 309L-16	JAN2021
45.	WELD FAST ELECTRODES, NAGPUR	WELDFAST 309MoL	E 309LMo-16	JAN2021

The approvals are granted in conformance to the requirements stipulated in latest edition of ASME Section II Part C. However, batch qualification wherever called for in specific cases, will have to be carried out separately.



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AD (QA), QA Analysis & Gr.3

NUCLEAR POWER CORPORATION OF INDIA LTD.

(A Government of India Enterprise)

Directorate of Quality Assurance

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3) LIST OF APPROVED BRANDS OF WIRE AND WIRE FLUX COMBINATION (1 Page)

AS ON 25-01-2018

Sr. No.	MANUFACTURERS	BRAND NAME	AWS No.	VALID UPTO
1.	ANAND ARC, THANE	ANAND TIG-308L	ER 308L	SEP2019
2.	ANAND ARC, THANE	ANAND TIG-309L	ER 309L	SEP2019
3.	ADOR FONTECH, MUMBAI	TIG 120	ER 308L	JUL2019
4.	ADOR FONTECH, MUMBAI	TIG 121	ER 316L	JUL2019
5.	ADOR FONTECH, MUMBAI	TIG 123	ER 309L	JUL2019
6.	ADOR FONTECH, MUMBAI	TIG 120S	ER 347	JUL2019
7.	ADOR FONTECH, MUMBAI	TIG 521	ER NiCr3	JUL2019
8.	ADOR WELDING LTD., SILVASSA	TIGFIL 70S-2	ER 70S-2	FEB2022
9.	ADOR WELDING LTD., SILVASSA	TIGFILL 90S-B3	ER 90SB3	JUL2019
10.	ADOR WELDING LTD., SILVASSA	TIGINOX-308L	ER 308L	SEP2020
11.	ADOR WELDING LTD., SILVASSA	TIGINOX-309L	ER309L	SEP2020
12.	ADOR WELDING LTD., SILVASSA	AUTOMIG 70-S6	ER 70S-6	APR2018
13.	ADOR WELDING LTD., SILVASSA	AUTOMELT-B71 AUTOMELT-EH 14 WIRE	F7A2-EH14	DEC2018
14.	DWEKAM ELECTRODES	MERGE ARC GRADE A	F7AZ/PZ-EL8	JUL2019
15.	DWEKAM ELECTRODES	MERGE ARC GRADE C	F7AZ/PZ- EH14	JUL2019
16.	D&H INDIA LTD., INDORE	SUPER TIG 308L	ER 308L	DEC2020
17.	D&H INDIA LTD., INDORE	SUPER TIG 309L	ER 309L	DEC2020
18.	D&H SECHERON, INDORE	FILLER WIRE FW 308L	ER 308L	FEB2021
19.	D&H SECHERON, INDORE	FILLER WIRE FW 309L	ER 309L	FEB2021
20.	D&H SECHERON, INDORE	F 70 S2	ER 70S-2	JUN2022
21.	RAJRATNA ELECTRODES, AHMEDABAD	RAAJTIG ER 308L	ER 308L	MAR2020
22.	RAJRATNA ELECTRODES, AHMEDABAD	RAAJTIG ER 316L	ER 316L	MAR2020
23.	VENUS WIRES, KHOPOLI	VENUS 308L	ER 308L	SEP2021
24.	VENUS WIRES, KHOPOLI	VENUS 316L	ER 309L	SEP2021
25.	VENUS WIRES, KHOPOLI	VENUS 309L	ER 316L	SEP2021
26.	VENUS WIRES, KHOPOLI	VENUS 347	ER 347	SEP2021
27.	WELD FAST ELECTRODES, NAGPUR	TIG FAST-3	ER 70S-2	JAN2021
28.	WELD FAST ELECTRODES, NAGPUR	MIG FAST-1	ER 70S-6	JAN2021

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