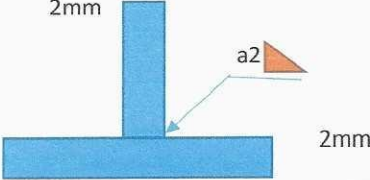
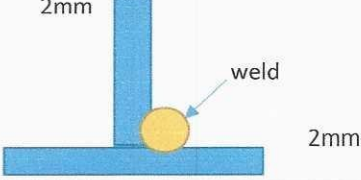


WELDING PROCEDURE SPECIFICATION (WPS)

As per ISO 15609-1:2019

Welding procedure specification	JP/WPS/01	Method of preparation and cleaning:	Wire brushing/Grinding
WPQR No.:	JP/WPQR/01	Parent material specification:	ISO TR 15608: Gr 1.1 (S235JR)
Manufacturer:	Jayam Precision No.19, Vijayalakshmi layout, Manancherri, Pallavaram Main Road, Kundrathur, Chennai- 600069	Material thickness (mm):	2+2
Mode of metal transfer	Short Circuit	Outside pipe diameter (mm):	-
Joint type and weld type:	Tee Joint and Fillet weld	Welding Position:	PB

Weld preparation details (Sketch)*:

Joint design	Welding sequences
	

Welding details

Run	Welding process	Size of filler material	Current A	Voltage V	Type of current / polarity	Wire feed speed, mm/min	Run out length/ Travels speed mm/sec	Heat input*KJ/mm
1	MAG-135	0.8mm	140-150	18 - 20	DCEP	3.0 - 4.0	3.50	0.69

Filler material designation and make:		EN ISO 14341-A/AWS A 5.18 : ER 70S-6 and make: RASI		
Any special baking or drying:		-	Other information, *e.g.:	-
Designation Gas/flux:	Shielding	ISO 14175-C1 (100% CO2)	Weaving(maximum width of run):	2-3 mm
	Backing	-		
Gas flow rate:	Shielding	15-18 LPM		
	Backing	-		
Tungsten electrode type/size:		-	Pulse welding details:	-
Details of back gauging/backing:		-	Distance contact tube/workpiece:	5-8mm
Preheat temperature:		Room Temperature	Plasma welding details:	-
Interpass Temperature:		-	Torch angle:	40°-50°
Post heating		-		
Pre-heat maintenance temperature:		-		
Post-weld heat treatment and or Ageing::		-		
(Time, temperature, method:				
heating and cooling rates*):				

Manufacturer
(Name,date and signature)

Date :10-08-2022

*If required

Examiner

Ajay Kumar

International Welding Technologist (IWT), ISO 9712- L2(VT,PT)

Ajay Kumar

B.E (Metallurgy), M.Tech (NDT)

IIW Certified-International Welding Technologist

(Diploma No: IN/IWT/51500785)

ASNT Level-II (RT,UT,MT,PT&VT)

ISO 9712 Level-II (PT)

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)

Welding procedure qualification- Test certificate (ISO 15614-1:2019)

Manufacturer's WPQR no.:	JP/WPQR/01	Examiner
Manufacturer:	Jayam Precision	
Address:	No.19, Vijayalakshmi layout, Manancherri, Pallavaram Main Road, Kundrathur, Chennai- 600069	Ajay Kumar
Code /testing standard:	EN ISO 15614 -1:2019	International Welding Technologist-IWT,ISO 9712-L2(VT,PT)
Level:	2	
Date of welding	02-07-2022	

Particulars	Test piece	Range of Qualification
Test piece		
Product form:	Plate	Plate
Welding process(es):	MAG-135	
	Welding processes used	
	No.1	No.2
Process	MAG-135	-
Deposited metal thickness(mm):		
Type of joint and weld:	Tee Joint and Fillet weld	Tee Joint and Fillet weld
Parent material group(s) and sub-group(s):	ISO TR 15608: Gr 1.1 (S235JR)	ISO TR 15608: Gr 1.1 -1.1
Parent material thickness (mm):	2.0	1.4 - 4.0
Throat thickness(mm)	a2	1.50 - 3.0
Single layer/multi-run	sl	sl
Outside pipe diameter (mm)	-	-
Filler material designation :	EN ISO 14341-A, AWS A5.18 : ER70S-6	EN ISO 14341-A, AWS A5.18 : ER70S-6
Filler material make:	RASI	Compatible
Filler material size:	0.8	Compatible
Designation of shielding gas/flux:	ISO 14175-C1 (100% CO ₂)	ISO 14175-C1 (100% CO ₂)
Designation of backing gas:	-	-
Type of welding current and polarity:	DCEP	DCEP
Transfer mode:	-	-
Heat input: KJ/mm	0.69	0.69±25%
Welding positions:	PB	All positions except PG and JL045
Preheat temperature:	Room Temperature	Compatible
Interpass Temperature:	-	-
Post heating	-	-
Post-weld heat treatment:	-	-
Other information	-	-

We confirm that the statements in this record are correct and that the test pieces were prepared, welded, tested and have fulfilled the requirements in accordance with ISO 15614-1:2019

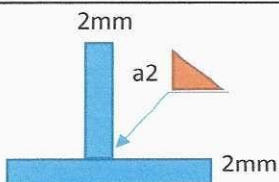
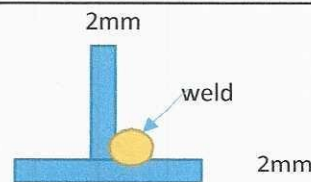
Location	Date of issue	
Chennai	10-08-2022	International Welding Technologist (IWT), ISO 9712- L2(VT,PT)

Ajay Kumar
 B.E (Metallurgy), M.Tech (NDT)
 IIW Certified-International Welding Technologist
 (Diploma No: IN/IWT/51500785)
 ASNT Level-II (RT,UT,MT,PT&VT)
 ISO 9712 Level-II (PT)

RECORD OF WELD TEST

Location:	Chennai	Examiner	
Manufacturer's WPS no.:	JP/WPS/01	Ajay Kumar	
Manufacturer's WPQR no.:	JP/WPQR/01	International Welding Technologist (IWT)	
Manufacturer:	Jayam Precision No.19, Vijayalakshmi layout, Manancherri, Pallavaram Main Road, Kundrathur, Chennai- 600069	Method of preparation and cleaning:	Wire brushing/Grinding
Welder's/operator's name:	M. BALU	Parent material specification:	ISO TR 15608: Gr 1.1 (S235JR)
Joint type and weld:	Tee Joint and Fillet weld	Material thickness (mm):	2.0+2.0
		Outside pipe diameter (mm):	-
		Welding Position:	PB

Weld preparation details (Sketch)*:

Joint design	Welding sequences
	

Welding details

Run	Welding process	Size of filler material	Current A	Voltage V	Type of current / polarity	Wire feed speed, mm/min	Run out length/ Travels speed mm/sec	Heat input*, KJ/mm
1	MAG-135	0.8mm	150	20	DCEP	4.0	3.50	0.69
Filler material designation and make:			EN ISO 14341-A, AWS A 5.18 : ER 70S-6 and make: RASI					
Any special baking or drying:			-			Other information, *e.g.:		
Gas/flux- shielding			ISO 14175-C1 (100% CO ₂)			Weaving(maximum width of run):		
Backing:			-			Oscillation: amplitude, frequency, dwell time		
Gas flow rate- shielding			18 LPM			Pulse welding details:		
Backing:			-			Distance contact tube/workpiece:		
Tungsten electrode type/size:			-			Plasma welding details:		
Details of back gauging/backing:			-			Torch angle:		
Preheat temperature:			ambient shop floor temperature					
Interpass Temperature:			-					
Post heating			-					
Post-weld heat treatment(PWHT):			-					
(Time, temperature, method:			-					
heating and cooling rates*):			-					

Manufacturer	Examiner
(Name,date and signature)	
Date: 02-07-2022	Ajay Kumar
*If required	International Welding Technologist (IWT), ISO 9712- L2(VT,PT)

Ajay Kumar
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 ASNT Level-II (RT,UT,MT,PT&VT)
 ISO 9712 Level-II (PT)

TEST RESULTS

Manufacturer's WPQR no.:	JP/WPQR/01	Examiner
Visual:	JP/VT-PT - 01	
Penetrant/magnetic particle testing*:	JP/VT-PT - 01	Ajay Kumar T
Radiographic testing*	NA	International Welding Technologist-IWT,ISO 9712-L2(PT)
Ultrasonic testing*	NA	
Temperature :	NA	

Tensile Tests: NA

Type/no.	Re (Mpa)	Rm(Mpa)	A % on	Z %	Fracture location	Remarks

Bend Test: NA

			Former diameter : 4T			
Type/no.	Bend angle	Elongation*	Results			

Macroscopic examination	Satisfactory, Attached					

Impact test*: NA

Type:		Size:			Requirements:	
Notch ocation/direction	Temp ° C	Values			Average	Remarks
		1	2	3		

Hardness Test*(type/load): NA	NA
-------------------------------	----

Parent metal:	
HAZ:	
Weld metal:	

Other tests:	---
Remarks:	---

Tests carried out in accordance with the requirements of	ISO 15614-1: 2019
Laboratory report reference no.:	Attached
Test results were acceptable/not acceptable	Acceptable
Test carried out in the presence of	Examiner

* If required

Examiner
Ajay kumar

International Welding Technologist (IWT), ISO 9712- L2(VT, PT)

Ajay Kumar
 B.E (Metallurgy), M.Tech (NDT)
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 ISO 9712 Level-II (PT)

WELDER'S QUALIFICATION TEST CERTIFICATE

WELDER'S CERTIFICATE (As per ISO 9606-1:2017)

Designation (s):	ISO 9606-1 135 P FW FM1 S t2.0 PB sl		
WPS - Reference :	JP/WPS/01	Examiner	
Welder's name:	M. BALU		
Identification	JP/WPQ/01	Ajay Kumar	
Method of identification:	ID Card	International Welding Technologist	
Employer:	Jayam Precision No.19, Vijayalakshmi layout, Manancherri, Pallavaram Main Road, Kundrathur, Chennai- 600069		
Code /testing standard:	ISO 9606-1 :2017		
Job knowledge:	Acceptable		
Date of welding	02-07-2022		

Ajay Kumar
 B.E (Metallurgy), M.Tech (NDT)
 IIW Certified-International Welding Technologist
 (Diploma No: IN/IWT/51500785)
 ASNT Level-II (RT,UT,MT,PT&VT)
 ISO 9712 Level-II (PT)

	Test Piece	Range of Qualification
Welding process(es):	MAG-135	MAG-135
Transfer mode	Short Circuit	All Mode
Product type (plate or pipe)	Plate- P	Plate- P
Type of weld:	Tee Joint- Fillet Weld	Tee Joint- Fillet Weld
Parent material group(s)	ISO TR 15608: Gr 1.1 (S235JR)	Equivalent
Filler material group(s)	FM1	FM1, FM2
Filler material (Designation)	EN ISO 14341-A, AWS A5.18 : ER70S-6	EN ISO 14341-A, AWS A5.18 : ER70S-6
Shielding gas	ISO 14175-C1 (100% CO ₂)	ISO 14175-C1 (100% CO ₂)
Auxiliaries	-	-
Type of current and polarity	DCEP	DCEP
Material thickness (mm)	2.0	2.0 - 4.0
Deposited thickness (mm)	-	-
Outside pipe diameter (mm)	-	-
Welding position	PB	PA,PB
Weld details	-	-
Multi layer / single layer	sl	sl

Type of test		Performed and accepted		Not Tested	Name of examiner	
Visual testing		Yes		-	 Ajay Kumar International Welding Technologist Ajay Kumar B.E (Metallurgy), M. Tech (NDT) IIW Certified-International Welding Technologist (Diploma No: IN/IWT/51500785) ASNT Level-II (RT,UT,MT,PT&VT) ISO 9712 Level-II (PT)	
Radiography testing		-		Yes		
Fracture test		-		Yes		
Bend test		-		Yes		
Notch tensile testing		-		Yes		
Macroscopic examination		Yes		-		
Place :	Chennai	Date of issue:	10.08.2022			
Revalidation	Valid until	Revalidation	Valid until		Revalidation	Valid until
	-	9.3 b)	02-07-2024		9.2	02-01-2023

WELDER'S QUALIFICATION TEST CERTIFICATE

WELDER'S CERTIFICATE (As per ISO 9606-1:2017)

Designation (s):	ISO 9606-1 135 P FW FM1 S t2.0 PB sl		
WPS - Reference :	JP/WPS/01	Examiner	 
Welder's name:	M. BALU		
Identification	JP/WPQ/01	Ajay Kumar	
Method of identification:	ID Card	International Welding Technologist	
Employer:	Jayam Precision No.19, Vijayalakshmi layout, Manancherri, Pallavaram Main Road, Kundrathur, Chennai- 600069	Ajay Kumar B.E (Metallurgy), M.Tech (NDT) IIW Certified-International Welding Technologist (Diploma No: IN/IWT/51500785) ASNT Level-II (RT,UT,MT,PT&VT) ISO 9712 Level-II (PT)	
Code /testing standard:	ISO 9606-1 :2017		
Job knowledge:	Acceptable		
Date of welding	02-07-2022		

Revalidation for qualification by examiner for the following 2 years (refer 9.3b)

Confirmation of the validity by examiner for the following 6 months [refer 9.2]

Date	Signature	Position or title
02-01-2023	Ajay kumar	Examiner
02-07-2023	Ajay kumar	Examiner
02-01-2024	Ajay kumar	Examiner
02-07-2024	Ajay kumar	Examiner



Ajay Kumar
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ASNT Level-II (RT,UT,MT,PT&VT)
ISO 9712 Level-II (PT)

VISUAL TEST (VT) AND PENETRANT TEST (PT) REPORT

Company Name JAYAM PRECISION No.19, Vijayalakshmi layout, Manancherri, Pallavaram Main Road, Kundarthur, Chennai- 600069		VT-PT Report No.: JP/VT-PT/01	
Job Description/Weld Coupon details Tee joint - Fillet weld	Welder's Name : M. BALU	Welder's Id JP/WPS/01	JP/WPG/01
Date of Inspection 04-07-2022	WPS NO. JP/WPS/01		
VT:ACCEPTANCE STANDARD ISO 5817: Level -B : Quality Levels for Imperfections; PT: Prepared according to - ISO 3452-1			

Sl.No	Imperfection	Ref No.	NDT Inspections remarks
1	Crack surface	ISO 6520-1 1.1 100	VT OK PT OK
2	Crater Crack	1.2 104	OK OK
3	Internal Crack	2.1 100	-- --
4	Macro Cracks	2.2 1001	-- --
5	Haz Crack	1.1 100	-- --
6	Toe Crack	1.1 100	OK OK
7	Surface Porosity	1.3 2017	OK OK
8	Root Porosity	1.18 516	-- --
9	Gas Pore Internal	2.3 2011	-- --
10	Internal Uniformly Porosity	2.3 2012	-- --
11	Internal Clustered	2.4 2013	-- --
12	Linear Porosity	2.5 2014	OK OK
13	Elongated Cavity	2.6 2015	-- --
14	Worm Holes	2.6 2016	-- --
15	End Crater	1.4 2025	OK OK
16	Crater Pipe Internal	2.8 2024	-- --
17	Lack of Fusion	1.5 401	-- --
18	Micro Lack of Fusion	1.5 401	-- --
19	Incomplete Fusion	2.12 401	-- --
20	Lack of Side Wall Fusion	2.12 4011	-- --
21	Lack of Inner run Fusion	2.12 4012	-- --
22	Lack of Root Fusion	2.12 4013	-- --
23	Incomplete Root Penetration	1.6 4021	-- --
24	Lack of Penetration	2.13 402	-- --
25	Continuous Undercut	1.7 5011	OK OK
26	Intermittent Undercut	1.7 5012	OK OK

Sl.no	Imperfection	Ref No.	NDT Inspections remarks
27	Shrinkage Groove	ISO 6520-1 1.8 5013	VT -- PT --
28	Shrinkage Cavity	2.7 202	-- --
29	Excess weld Metal	1.9 502	OK OK
30	Excessive convexity fillet weld	1.10 503	OK OK
31	Excess Penetration	1.11 504	-- --
32	Incorrect weld Toe	1.12 505	-- --
33	Overlap	1.13 506	-- --
34	Sagging	1.14 509	-- --
35	Incompletely Fillet Groove-Underfill	1.14 511	OK OK
36	Burn through	1.15 510	OK OK
37	Unequal Leg Length	1.16 512	-- --
38	Root Concavity	1.17 515	-- --
39	Poor restart	1.19 517	OK OK
40	Insufficient Throat	1.20 5213	OK OK
41	Excessive Throat	1.21 5214	OK OK
42	Stray Arc	1.22 601	-- --
43	Spatter	1.23 602	OK OK
44	Solid Inclusions	2.9 300	-- --
44	Copper Inclusions	2.11 3042	-- --
a	Metallie Inclusions other than copper	2.10 304	-- --
45	Slag Inclusions	2.9 301	-- --
46	Flux Inclusions	2.9 302	-- --
47	Oxide Inclusions	2.9 303	-- --
48	Linear Misalignment	3.1 507	-- --
49	Angular Misalignment	3.2 508	-- --
50	Incorrect root Gap (fillet)	3.3 617	OK OK

Test Result:- Acceptable ☒ Not Acceptable ☐	
Inspected By Ajay Kumar	



BUREAU VERITAS
Certification No.
Ind18.7533U/Q



Chemical & Metallurgical Services

T.S.No.63,A SIDCO Industrial Estate, Ekkaduthangal, Chennai - 600 032, Tamilnadu, INDIA.
Phone : 91-44-2225 3863, 044 - 2225 2944, Mobile : 9445067918
E-Mail : cmslab81@gmail.com / Website : www.cmslab.org



TC-5039

TEST CERTIFICATE

Page: 1 of 1

Test Report No. : CMS/ULR-TC503922000002359F Report Date :03-08-2022
Party's Name & Address : M/s. Jayam Precision
No. 19, Vijayalakshmi Layout, Manancherri, Pallavaram Main Road,
Kundrathur, Chennai-600069.
Party's Ref : Letter Dated. 02-08-2022.
No. of Samples : 2Nos. Date of Receipt of Sample : 03-08-2022
Nature of Test : Macro Test Date of Testing :03-08-2022
Test Method : ISO 17639
Enclosures : Nil

TEST RESULTS

Sample Details

Welding Test

Welding Process	Thickness	Type of Joint	Welding Position	WPS No.	Welder ID.	Welder Name
MAG-135	2 mm	FW	PB	JP/WPS/01	JP/WPQ/01	M.BALU

Material Grade: MS S235JR

Macro Examination



Test	Result	Requirement as per EN ISO 15614-1-2019
Macro Examination:	The weld metal & HAZ surface shows free from cracks & complete fusion. Remarks:- Passes the test	Etchant: HCL+H2O Visual Examination of the cross section of the weld metal &HAZ shall show (i) Free from cracks (ii) Complete fusion

Remarks:- The above sample conforms to EN ISO 15614-1-2019 in respect to the tested Mechanical Properties.

****END****



Sanjay Kumar Sahu
(Lab - Incharge)
Authorised Signatory

Recognised & Approved Laboratory by Airports Authority of India Ltd., Steel Authority of India Ltd., Rail India Technical & Economic Services Ltd., Defence Establishments, National & International Third Party Inspection Agencies & Many other State & Central Government Establishments.

Note:- This report relates only to the particular Sample submitted for test Any correction not attested shall invalidate this certificate Sample will be destroyed after 15 days from the date of issue of certificate unless instructed otherwise Any complaints about this report should be communicated in writing within 7 days of the issue of this report This report should not be reproduced wholly or in parts and cannot be used as evidence in a court of law and shall not be used in advertising media without prior permission in writing Sample descriptions is not verified in all case and is given as described by the customers Samples are not drawn by us unless otherwise stated. # Marks are not covered under NABL scope.

Scope of NABL Accreditation:- Chemical Analysis of Metals & alloys - spectro & Wet analysis, Metallography, Mechanical Tests, Corrosion Tests, Paint testing, Compression test of Concrete cubes, Bricks, Springs, Physical Testing of Rubber, etc.,