Československý Lloyd spol. s r.o.
Pobřežní 3/620, 18600 Praha 8
Inspection Body No. 4007 acredited by ČIA acc. to ČSN EN ISO/IEC 17020

Range of welding procedure qualification

Report No.: 8605214-WPQR (HD-PQR-01)

Manufacturer: **Guangzhou Heda Shelves Co., Ltd.**
2nd Floor,No.183, Ting Yuan Road, Xin Gang Dong Road, Haizhu District, Guangzhou City, Guangdong Province

Standard: **ISO 15614-1:2017 (level 2)**
Additional requirements:

	Test piece	**Range of qualification**
Welding Process (EN ISO 4063)	135 - MAG welding with solid wire electrode	135 - MAG welding with solid wire electrode
Degree of mechanization	partially mechanized welding	partially mechanized welding
Type of joint and weld	FW P sl	T-joint, Fillet Weld P/P, ss, nb, bs, mb, sl, ml
Single-run / multi-run	Single-run	Single-run + Multi-run
Parent material, group(s) and sub-group(s) (CEN ISO/TR 15608)	Plate 1: Q235B (GB / T 3274:2017) Sub-group 1.1, ISO/TR 15608 Plate 2: Q235B (GB / T 3274:2017) Sub-group 1.1, ISO/TR 15608	Group 1 (equal or lower specified yield strength steel)
Parent material thickness (mm)	t_1= 2.00; t_2= 2.00	$t_{1,2}$ from 1,4 to 4,0
Deposit thickness (mm)	N/A	---
Throat thickness of fillet weld a (mm)	3.0	from 1,5 to 3,0
Outside pipe / branch diameter (mm)	---	---
Branch angle α (°)	N/A	---
Welding Position (EN ISO 6947)	PB	All positions except vertical downwards positions.
Filler material designation	AWS A5.18 ER70S-6	Filler materials cover other filler materials as long as, according to the designation in the appropriate international standard for the filler material, they have equivalent mechanical properties, same type of covering or flux core, same nominal chemical composition and the same or lower hydrogen content.
Filler material make	Shandong Juli Welding Co., Ltd.	No restriction
Filler material size	1.0 mm	No restriction
Shielding Gas (EN ISO 14175:2008)	M21 Ar 100 % CO2 %	M21 (CO_2 20%) +/- 20%
Designation of backing gas (EN ISO 14175:2008)	N/A	---
Flux	---	---
Type of welding current and polarity	DC +	DC +
Transfer mode	Global transfer	Spray, pulse and globular transfer
Heat input (kJ/mm)	0.725~0.750	---
Preheat Temperature (°C)	Room temperature	Room temperature
Interpass temperature (°C)	N/A	N/A
Post heating / PWHT	No	---
Other information	Single-wire system.	

A welding procedure test according to this document prepared by a manufacturer is valid for welding in workshops or sites when the manufacturer who performed the welding procedure test retains complete responsibility for all welding carried out to it. Change outside of above stated range requires new welding procedure qualification.

Place: Prague 2025-08-13 **Assessor: Renata Ausficírová**

European Federation for Welding, Joining and Cutting
EWT
Bc. Renata Ausficírová
CZ/EWT/24028
Issue: 17/10/2024
Personnel Qualification System

validation code **1800D461-C08** Confirm validity of the certificate with this code at **www.cslloyd.com**

Enclosure - number of pages: 12

WELDING PROCEDURE QUALIFICATION RECORD

Report No.: 8605214-WPQR (F 801) (HD-PQR-01)

Inspection Body: **Czechoslovak Lloyd spol. s.r.o., Pobřežní 620/3, 186 00 Prague 8 - Karlín**
Inspection Body No. 4007 accredited by CAI acc. to ISO/IEC 17020, issues this report according to Inspection procedure T-101, Enclosure No. 10

Manufacturer: **Guangzhou Heda Shelves Co., Ltd.**
2nd Floor,No.183, Ting Yuan Road, Xin Gang Dong Road, Haizhu District
Guangzhou City, Guangdong Province

Applied standards (codes):
EN ISO 15607
ISO 15614-1:2017 (level 2)

Date of welding:
2025-07-10

Manufacurer ref. No.:
HD-pWPS-01

Welder:
Zhang Zhijian

Standard of Parent material 1
GB / T 3274:2017 - Hot-rolled Plates, Sheets and Strips of Carbon Structural Steels and High Strength Low Alloy Structural Steels

Standard of Parent material 2
GB / T 3274:2017 - Hot-rolled Plates, Sheets and Strips of Carbon Structural Steels and High Strength Low Alloy Structural Steels

Welding Procedure Qualification Record

Welding Process (EN ISO 4063)	135 - MAG welding with solid wire electrode	Mechanization degree	partially mechanized welding
Parent Metal group	Plate 1 (GB / T 3274:2017) Q235B Sub-group 1.1, ISO/TR 15608 Plate 2 (GB / T 3274:2017) Q235B Sub-group 1.1, ISO/TR 15608	Outside diameter tube	
Filler Metal Group	AWS A5.18 ER70S-6 Shandong Juli Welding Co., Ltd.	Thickness	Plate 1: 2.00 mm Plate 2: 2.00 mm
Filler material size	1.0 mm	Deposit thickness	N/A mm
Joint type	FW P sl	Single-run / multi-run	Single-run
Branch angle α (°)	α=N/A °	Throat thickness of fillet weld a	a=3.0 mm
Welding Position (EN ISO 6947)	PB	Shielding Gas (EN ISO 14175:2008)	M21 Ar 100 % + CO_2 N/A %
Heat input (kJ/mm)	0.725~0.750	Backing Gas (EN ISO 14175:2008)	N/A
Preheat Temperature	Room temperature	Flux	N/A
Interpass temperature	N/A	Type of Welding current	DC/+
Post Weld Heat Treatment	No	Metal Transfer	Global transfer

List of Annexes

No.	Type	Document number/designation	Protocol issued on
1	pWPS	HD-pWPS-01	2025-07-05
2	Test weld record	Welding record-01	2025-07-10
3	Parent material certificate	Z43032142005	2025-01-17
4	Filler material certificate	25010105	2024-12-31
5	VT Report	GDHD-2025NDT(BG)-001-VT	2025-07-24
6	PT Report / MT Report	GDHD-2025NDT(BG)-001-PT	2025-07-24
7	DT Report	BW-LS-25072511	2025-07-25

We declare that the above mentioned parameters has been applied during the welding procedure

Place: Prague **Date of issue : 2025-08-13** **Inspector: Walter Yang, IWE**

Walter Yang

validation code **1800D461-C08** Confirm validity of the certificate with this code at **www.cslloyd.com**

TEST RESULTS

Visual test (EN ISO 17637)	Satisfactory (EN ISO 5817 - B)
Penetrant test (EN ISO 3452-1)	Satisfactory (EN ISO 5817 - B) (EN ISO 23277 - level 2X)
Magnetic test (EN ISO 17638)	Not required (EN ISO 5817 - B) (EN ISO 23278 - level 2X)
Radiographic Test (EN ISO 17636-1)	Not required (EN ISO 5817 - B) (EN ISO 10675-1 - level 1)

TENSILE TEST (EN ISO 4136) **NOT REQUIRED**

BEND TEST (EN ISO 5173) **NOT REQUIRED**

IMPACT TEST (EN ISO 9016) **NOT REQUIRED**

CHEMICAL COMPOSITION (%) **NOT REQUIRED**

HARDNESS TEST HV 10 (EN ISO 9015-1) **NOT REQUIRED**

TEXTURE EXAMINATION (EN ISO 17639)

No.	Magnification	Etchant	Texture		Texture Assessment	Foto Report
			Macro	Micro		
1	20.0 x	4% Nitric acid alcohol solution	acceptable	N/A	Passed (EN IS0 5817 Level B) No imperfections	Report No.BW-LS-25072511

General note
N/A

The results of the approval tests are in accordance with the specification and are acceptable.

Place: Prague **Date of issue : 2025-08-13** **Inspector: Walter Yang, IWE**

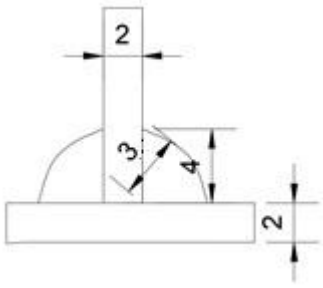
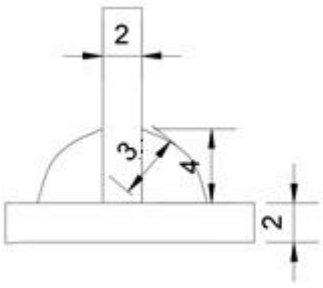
Walter Yang

validation code **1800D461-C08** Confirm validity of the certificate with this code at **www.cslloyd.com**

预焊接工艺规程 (PWPS)

地点 Location：广东佛山
焊接工艺 Manufacture's Welding Procedure：HD-pWPS-01
文件编号 Reference No.：
工艺评定编号 WPAR No.：HD-PQR-01
制造商 Manufacturer：广东禾达智能装备有限公司
焊工姓名 Welder's Name：张志坚
焊接方法 Welding Process：135
焊接设备 Welding Equipment：/
接头型式 Joint Type：P BW
焊接准备 (简图)* Weld Preparation Details (Sketch)*：

评定或检测机构 Examiner or test body ：CS Lloyd
坡口制备和清理
Method of preparation and cleaning ：去氧化皮、去油污 Remove the oxidized skin and greasy dirt
母材牌号 Parent material specification：
GB/T 3274-2017 Q235B
母材厚度 Material Thickness (mm)：2
尺寸 Dimension (mm)：
焊接位置 Welding Position：PB

接头形式 Joint Design	焊接顺序 Welding Sequences
	

焊接工艺参数 Welding Details：

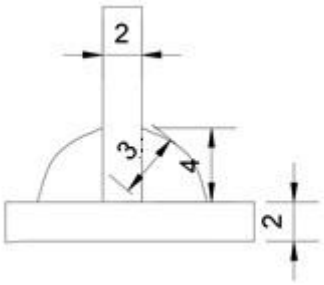
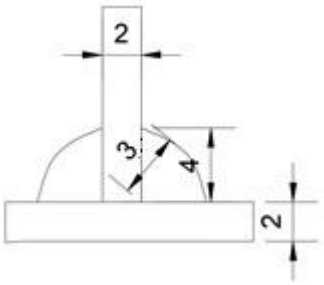
焊道 Run	焊接方法 Process	焊材规格 Size of Filler Metal	电流强度 Current [A]	电弧电压 Voltage [V]	电流种类/极性 Type of current/Polarity	保护气 Shielding gas (L/Min)	焊接速度 Travel Speed*(mm/s)	热输入 Heat input* （KJ/mm）
Side-A	135	ϕ1.0	140~160	18-22	DCEP	15~20	5~6	0.336~0.563
Side-B	135	ϕ1.0	140~160	18-22	DCEP	15~20	5~6	0.336~0.563

焊丝牌号和商标
Filler metal classification and trade name:
ER70S-6 聚力焊材
烘培或干燥 Any Special Baking or Drying：/
气体/焊剂 Gas/Flux
保护 Shielding：80%Ar+20%CO2
根部 Backing：/
气体流量 Gas Flow Rate
保护 Shielding：15-20L/min
根部 Backing：/
钨极类型/尺寸 Tungsten electrode type/size：/
清根/垫板 Details of Back Gouging/backing：/
预热温度 Preheat temperature：/
层间温度 Interpass temperature：/
焊后热处理 Post-weld heat treatment：/
时间，温度，方法
Time, Temperature, Method ：/
加热和冷却速率*
Heating and cooling rates：/
制造厂 Manufacturer
广东禾达智能装备有限公司
姓名、日期、签名 Name, date and signature

例如：摆动 (最大熔宽)
e.g. Weaving (maximum width of run)：
/
摆动： 摆幅，频率，停留时间
Oscillation: amplitude, frequency, dwell time
/
脉冲焊 Pulse welding details：/
伸出长度
Contact tube-to-workpiece distance ：20mm
等离子焊 Plasma welding details：/
焊枪角度 Torch angle：/

Test Weld Record
according to EN ISO 15614-1

Place:	Guangzhou Guangdong	Examination Body:	CS Lloyd
pWPS no.:	HD-pWPS-01	Method of preparation and cleaning:	Grind & Brush
WPQR no.:	8605214-WPQR	Marking of the basic material:	GB/T 3274-2017 Q235B ISO/TR 15608 Gr.1.1
Producer:	Guangzhou Heda Shelves Co., Ltd.	Welding method:	EN ISO 4063-135-Partly automatic
Name of the welder:	Zhang Zhijian	Thickness of the basic material (mm):	2
Type of joints and welds:	FW	The outer diameter (mm):	
Details weld preparation (draft) *:	sl	Welding position:	EN ISO 6947-PB

Details of the weld	Weld Beads laying
	

Technical parametres:

Weld bead	Welding method.	Diameter of the filler (mm)	Current (A)	Voltage (V)	Type of current / polarity, metal transfer	~~Speed of the filler~~ (~~m.min.~~$^{-1}$) Interpass temperature	Welding speed (mm/s)	Thermal power (kJ.mm^{-1})
Side A-1	*135*	**Φ** *1.0*	*150*	*20*	*DCEP-Globular*	/	*3.2*	*0.750*
Side B-1	*135*	**Φ** *1.0*	*148*	*19*	*DCEP-Globular*	/	*3.1*	*0.725*

Test Weld Record according to EN ISO 15614 - 1

Designation of additional material and its brand: *Shandong Juli Welding Co., Ltd.*
AWS A5.18 ER70S-6

Special drying at elevated temperature or drying:

~~Identification of gas~~ / flux - a shielding:
~~- root shielding:~~ *EN ISO 14175 M21 80%Ar+20%CO2 18L/min*
The flow rate of the gas a shielding:
- root shielding:

Type / size of the tungsten electrode:

Details on gouging / backing:

Preheating temperature:

Interpass temperature:

Additional heating (temperature, time):

Maintenance preheating temperature (temperature, time):

Heat treatment after welding and / or aging Temperature, time, method:
- The rate of heating and cooling:

* Additional information, such as:
Oscillation (maximum bead width):

Oscillation (amplitude, frequency, delay):

Details pulse welding:

Distance power beam from the workpiece:

Details of plasma welding:

The angle of inclination of the torch:

* If it is required

Manufacturer (date, name, signature):
长志坚 2025.07.10

Inspection Organization (date, name, signature):
Walter Yang 2025.07.10

产品质量证明书
INSPECTION CERTIFICATE

涟钢 LY STEEL 注册商标

本企业通过ISO9001质量管理体系认证
The enterprise has passed ISO9001 Quality Management System certification

湖南华菱涟源钢铁有限公司
HUNAN VALIN LIANYUAN IRON&STEEL CO.,LTD.

QSP/Y 12-15.3

地址：湖南省娄底市黄泥塘 邮编:417009
ADDRESS: HUANG NI TANG, LOUDI , HUNAN PROVINCE, CHINA Code: 417009
质量咨询电话：0738-8664538
Quality Issue TEL
销售咨询电话：0738-8664303 8665406
Sales TEL

产品名称 Product	热轧钢带	等级 Class	一等品	合约号 Contract No.	H512917	证明书号 Certificate No.	A12025031200007
订货单位 Customer	上海华菱湘钢国际贸易有限公司			商务合同号 Business Contract No.		码单号 Stacking No.	H205013521
收货单位 Purchaser	广州市神山郭塘经济发展公司			终到站（港） Destination	郭塘	运输方式 Transported By	铁路代运
标准 Specification	GB/T 3274-2017			承运商 Carrier		车（船）号 Vehicle/Ship No.	1585448
牌号 Grade	Q235B			交货状态 Delivered Status	AR-热轧	生产日期 Date Of Manufacture	2025-03-10
加工用途 Purpose	结构用			认证 Certification		签发日期 Date Of Issue	2025-03-12

序号 No.	冶炼号 Heat No.	钢卷号 Coil No.	捆包号 Pack No.	钢板号 Shee No.	规格 Dimensions 厚度 Thickness	宽度 Width	长度 Length	张数 Sheets	重量 Weight	化学成分 Chemical Compositon % (1=×10 2=×100 3=×1000 4=×10000) C	Si	Mn	P	S	Cu	Cr	Ni	As	Al	Als	N	拉伸试验 Tensile Test 方向	屈服 Y.S. ReH	抗拉 T.S. Rm	屈强比	伸长率 EL A	弯曲 Bend 180° d= a	结果	冲击试验 Impact Test 方向 厚度	温度	吸收能量 /J Absorbed Energy 1	2	3	Avg	硬度 Hardness
					mm				Kg	2	3	2	3	3	3	3	3	3	3	3	3	OR*	Mpa		Y.S/T.S	%		RE*	OR*	°C					
1	25341900	25Z01787800			2	1250	Coil		21750	18	89	27	24	1	35	43	18	6				T	370	482		28	1.5	完好								
2	25222235	25Z01788000			2	1250	Coil		22205	19	88	24	18	2	37	35	15	6				T	364	476		29	1.5	完好								

本页重量 Weight Of This Page	43955 Kg	总计 Total	43955 Kg	总件数 Num	2	Piece(s)		探伤等级 F.D. Level		

备注 Remarks	RE*=结果(Result)， OR*=方向(Orientation)， T=横向(Transverse)， L=纵向(Longitudinal)。
声 明 Declaration	兹证明此材料系用转炉冶炼，经连铸、热轧至成品，经检验各项质量指标符合规范要求。

Surveyor:

Witnessed By

Cert No:

Test Date:

质量负责人 Quality Manager

发货人 Consignment	高伟	提货人 Consignee		打印人 Issued By		打印日期 Date of Print	2025-03-12 00:26:15

湖南华菱涟源钢铁有限公司 产品质量检验专用章

QUALITY CERTIFICATE
质 量 证 明 书

EN 10204 3.1

山东聚力焊接材料有限公司
SHAN DONG JULI WELDING CO., LTD.
电话：86-0534-2367325 传真：86-0534-2367525
TEL：86-0534-2367525 FAX：86-0534-2367525
中国山东省德州市晶华大道北首 3888 号
NO.3888 NORTH OF JINGHUA ROAD
DEZHOU CITY, PRV.SHANDONG,CHINA

中国认可 检测 TESTING CNAS L9896

Commodity 品 名	Trade mark 牌 号	Size 规 格	Lot No. 批 号	Weight（Ton）重量（吨）	Mfg. Date 制造日期	Applied rules or standards issuance 适 用 规 范	Date of issue 发行日期	Certificate 证明书编号
CO2 气保护实心焊丝	JL-ER50-6	1.0mm	403799		2024.12.31	GB/T8110 G49A3C1/M21S6 AWS A5.18 ER70S-6 EN ISO 14341-A:G42 3 C1/M21 3Si1	2025.01.01	25010105

Chemical Composition 化 学 成 分 (%)

Element 元 素	C	Mn	Si	P	S	Cu	Ni	Cr	Mo	V	Al	Ti+Zr
Specification 规 范	0.06-0.14	1.40-1.60	0.80-1.00	≤0.025	≤0.025	≤0.35	≤0.15	≤0.15	≤0.15	≤0.03	≤0.02	≤0.15
Test Result 测 试 值	0.072	1.43	0.80	0.012	0.013	0.111	0.012	0.020	0.010	0.008	0.010	0.011

	Deposited Metal Mechanical Properties 熔敷金属机械性能							Mercury diffusion hydrogen content 熔敷扩散氢含量水银法（ml/100g）	Welding Parameter 焊 接 工 艺 参 数(推荐)			X-RAY X 射线探伤
	Tensile Strength 抗拉强度 R_mMPa	Yield Strength 屈服强度 $R_{p0.2}$MPa	Elongation 伸长率 A %	Absorbed Energy 冲击吸收功 J	Post-weld Heat Treatment 焊后热处理	Longitudinal Bend Test of Deposited Metal 纵向弯曲			Type of current 电流种类	Ampere 电流 A	Shielding Gas Flow 保护气体量 L/min	
Requirement 标 准	500-640	≥420	≥20	≥27(-30°C)	AW 焊态	面弯	背弯	≤7	DCEP 直流反接	70-230	CO_2 18~25 或 80%Ar+20% CO_2 18~25	I级
Test Result 测 试 值	571	462	27	94/106/111 均值 104		合格	合格	3.21				I级

Remarks：This company had passed the ISO9001Quality System Certificate.
备 注:本公司通过 ISO9001 质量体系认证
We Hereby Certify That This Report Is Correct And That All Test Results Are In Compliance With The Specification Described Herein。
兹证明此报告结果皆正确并符合适用规范之要求。

产品认证：	CCS:3YS ABS:3YSA/4YSA CWB: B-G 49A 3 C1 S6 DB:G 42 4 C1/M21 3Si1 CE:A-G 42 4C1/M21 3Si1 LR:3YSH15 RINA:3YS TUV: G 42 4 C1/M21 3Si1

备注 Remarks 表面质量 Surface Quality：合格 OK	Prepared 编制： 杨平	Reviewed 审核：	Approved 批准： 冯素英

ISO 9001 Registered Quality Management System

241118120850

无 损 检 测 报 告

Non Destructive Testing Report

产品名称：焊接试样

Part name. Welding Specimen

产品型号：

Description. 350*150*T2mm

报告编号：

Report No. GDHD-2025NDT(BG)-001

报告日期：

Date: 2025.07.24

委托单位：

广东禾达智能装备有限公司

Customer: Guangzhou Heda Shelves Co., Ltd.

浙江和星检测科技有限公司

Zhejiang Hexing Testing Technology co.,Ltd

地址：温州经济技术开发区滨海二道656号综合楼第四层402室 邮编：32525

Add:Room 408, 4th Floor, Comprehensive Building, No. 658,Binhai Erdao,Postal code: 32525 Wenzhou Economic and Technological Development Zone

电话：0577-86358816 传真：0577-86358816

Tel: 0577-86358816 Fax: 0577-86358816

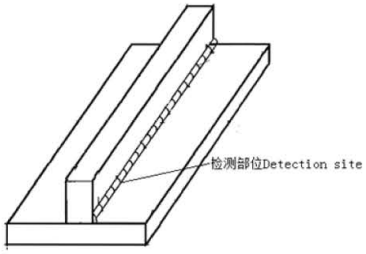
目视检测报告

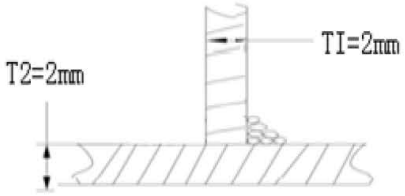
Visual Inspection Report

报告编号 Report number：GDHD-2025NDT(BG)-001-VT　　第 1 页 共 2 页

委托单位 Entrusting Unit	广东禾达智能装备有限公司/Guangzhou Heda Shelves Co.,Ltd.			委托编号 Delegate Number	GDHD20250724-01
工程名称 Project Name	焊接试样 Welding Specimen			部件名称 Part Name	角焊试样 Corner welding specimen
部件编号 Part Number	HD-PQR-01& WPQ-01	材质 Texture Of Material	Q235B;ISO/TR 15608-Group 1.1	检测部位 Detection Site	焊缝及热影响区 Weld seam& HAZ
焊接型式 Welding Type	FW sl,135	焊工 Welder Name	张志坚 Zhang Zhijian	检测时机 Test Timing	焊后 After welding
样品规格（mm） Sample Specifications	350*150*T2	环境温度 Ambient Temperature	20℃	检测比例 Detection Ratio	100%
观察方法 Observation Method	目视 Visual	检测标准 Testing Standard	EN ISO 17637:2016	验收标准 Acceptance Criteria	EN ISO 5817:2023-level B

检测示意图 Sketch Map：





被检测部位情况
Tested Area Conditiong

序号 Serial Number	焊缝编号 Weld No	表面缺陷性质 Surface defect property								检测结果 Testing result
		裂纹 Crack	咬边 Undercut	未焊满 Incomplete welding	气孔 Porosity	夹渣 Solid inclusion	飞溅 Spatter	焊瘤 Overlap	其他 Other	
1	HD-PQR-01& WPQ-01	/	/	/	/	/	/	/	/	合格 OK

检测结果说明：

1. 测试结果符合 EN ISO 5817：2023-Level B 级标准规定，结果合格。Test results in line with EN ISO 5817：2023-Level Bstandards, the results of qualified。

2. 本测试数据及报告仅对试验样品负责。The test data and reports are only responsible for the test samples。

3. 委托方声明试样依据 EN ISO 15614-1:2017 标准进行制备。The client declares that the specimens were fabricated in accordance with EN ISO 15614-1:2017。

报告人 Operator（Level） 日期 Date：2025.07.24	审核人 Auditor（Level） 日期 Date：2025.07.24
批准人 Authorizer（Level） 日期 Date：2025.07.24	（检验检测专用章） (Dedicated InspectionStamp)

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无 损 检 测 报 告

Non Destructive Testing Report

产品名称：焊接试样

Part name. Welding Specimen

产品型号：

Description. 350*150*T2mm

报告编号：

Report No. GDHD-2025NDT(BG)-001

报告日期：

Date: 2025.07.24

委托单位：

广东禾达智能装备有限公司

Customer: Guangzhou Heda Shelves Co., Ltd.

浙江和星检测科技有限公司

Zhejiang Hexing Testing Technology co.,Ltd

地址：温州经济技术开发区滨海二道656号综合楼第四层402室 邮编：32525

Add:Room 408, 4th Floor, Comprehensive Building, No. 658,Binhai Erdao,Postal code: 32525 Wenzhou Economic and Technological Development Zone

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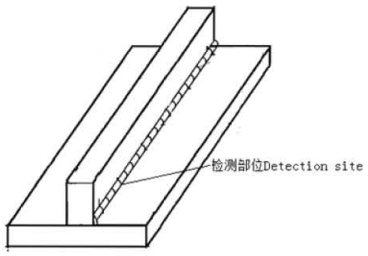
渗透检测报告

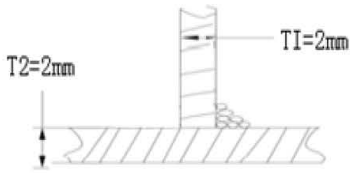
Penetration test report

报告编号 Report number：GDHD-2025NDT(BG)-001-PT　　第 2 页 共 2 页

委托单位 Entrusting Unit	广东禾达智能装备有限公司/Guangzhou Heda Shelves Co.,Ltd.			委托编号 Delegate Number	GDHD20250724-01
工程名称 Project Name	焊接试样 Welding Specimen			部件名称 Part Name	角焊试样 Corner welding specimen
部件编号 Part Number	HD-PQR-01&WPQ-01	材质 Texture Of Material	GB/T 3274-2017 Q235B	材料组别 Material group	ISO/TR 15608-Group 1.1
焊接型式 Welding Type	FW sl,135	焊工 Welder Name	张志坚 Zhang Zhijian	检测部位 Detection Site	焊缝及热影响区 Weld seam & HAZ
检测时机 Test Timing	焊后 After Welding	样品规格（mm） Sample Specifications	350*150*T2	环境温度 Ambient Temperature	20℃
检测比例 Testingratio	100%	渗透剂型号 Penetrant Type	DPT-5	清洗剂型号 leaning Agent Model	DPT-5
显像剂型号 Developer Type	DPT-5	施加方法 Application Method	喷涂 Spray	清洗方法 Cleaning Method	擦洗 Scrub
渗透时间 Penetration Time	≥10min	显像时间 Imaging Time	15min	观察亮度 Observed Brightness	>1000lx
观察方法 Observation Method	目视 Visual	检测标准 Testing Standard	EN ISO 3452-1:2013	验收标准 Acceptance Criteria	EN ISO 5817: 2023-Level B EN ISO 23277:2015 Level 2

检测示意图 Sketch Map：





焊缝(工件)部位编号 Welding Part No.	缺陷编号 Defect No.	缺陷类型 Defect Type	缺陷位置 Defect Location	缺陷显示尺寸 Defect Display Size(mm)	缺陷处理方式及结果 Defect Treatment Methods And Results				检测结果 Testing Result	备注 Remarks
					打磨后复检 After Grinding		补焊后 Welding Repair			
					性质 Nature	尺寸 Size mm	性质 Nature	尺寸 Size mm		
HD-PQR-01&WPQ-01	/	/	/	/	/	/	/	/	合格 OK	/

检测结果说明：

1. 测试结果符合 EN ISO 5817: 2023-Level B、EN ISO 23277:2015 Level 2 标准规定，结果合格。Test results in line with EN ISO 5817: 2023-Level B、EN ISO 23277:2015 Level 2standards, the results of qualified。
2. 本测试数据及报告仅对试验样品负责。The test data and reports are only responsible for the test samples。
3. 委托方声明试样依据 EN ISO 15614-1:2017 标准进行制备。The client declares that the specimens were fabricated in accordance with EN ISO 15614-1:2017。

报告人 Operator（Level） PT-Ⅱ 日期 Date：2025.07.24	审核人 Auditor（Level） PT-Ⅱ 日期 Date：2025.07.24
批准人 Authorizer（Level） PT-Ⅱ 日期 Date：2025.07.24	（检验检测专用章） (Dedicated InspcctionStamp)

中国认可
国际互认
检测
TESTING
CNAS L18715

博瓦测控
boowa measurement and Control

检 测 报 告

Test Report

委托单位 Entrust unit	广东禾达智能装备有限公司 Guangzhou Heda Shelves Co., Ltd.
报告编号 Report Number	BW-LS-25072511
样品名称 Sample Name	产品焊接试样 Product Welding Specimen
检测项目 Test Project	宏观金相 Macroscopic Metallography

报告日期：2025.07.25

Report date:

浙江博瓦测控技术有限公司

Zhejiang boowa measurement and Control Technology Co., Ltd

注意事项

Announcements

1.报告应有“检测专用章”，否则无效。

The report should have a "special seal for testing", otherwise it is invalid.

2.报告无实验员、审核人、签发人签字无效。

The report is invalid without the signature of the person who prepared, examined and approved it.

3.未经本中心实验室书面同意，不得部分复制本检测报告。

This test report shall not be partially reproduced without the written consent of the central laboratory.

4.报告涂改无效。

Reports altered are invalid.

5.对检测报告有异议，应于收到报告之日起十五日内，向本中心实验室提出，逾期不予受理。

Any objection to the test report shall be submitted to the central laboratory within 15 days upon receipt of the report.

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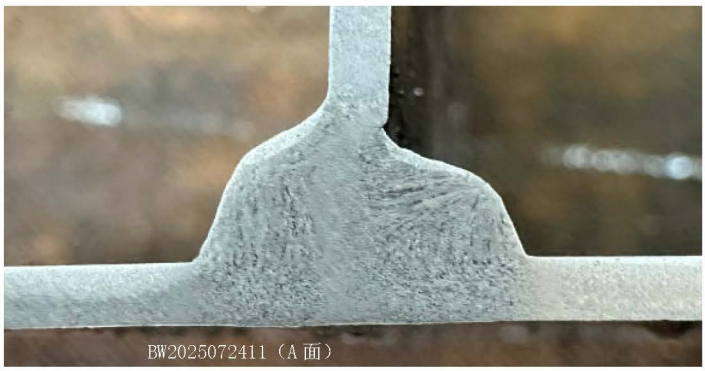
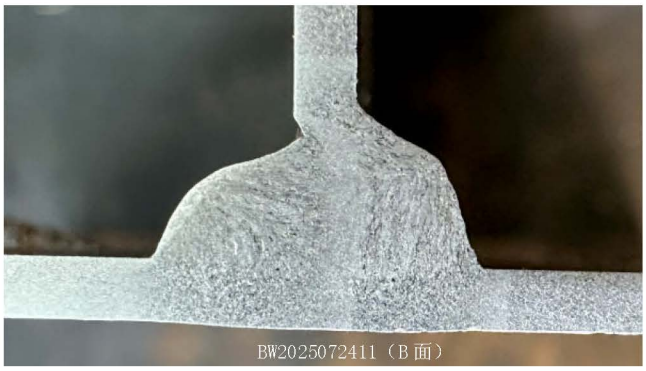
浙江博瓦测控技术有限公司
Zhejiang boowa measurement and Control Technology Co., Ltd
宏 观 金 相 测 试 报 告
Macroscopic Metallography Test Report

报告编号 Report Number: BW-LS-25072511

委托单位 Entrust Unit	广东禾达智能装备有限公司/Guangzhou Heda Shelves Co.,Ltd.			委托编号 Order Number	BW2025072411
来样规格（mm） Specification	350*300*T2			来样日期 To Sample Date	2025.07.24
来样编号/数量 Sample NO/Quantity	HD-PQR-01&WPQ-01	1 pc		材质 Material	GB/T 3274-2017 Q235B
母材组别 Material group	ISO/TR 15608-Group 1.1	焊工姓名 Welder Name	张志坚 Zhang Zhijian	焊接型式 Welding Type	FW sl,135
检测方法 Detection Method	ISO 17639:2022		验收标准 Acceptance Criteria	EN ISO 5817:2023-level B	
检测设备 Test Equipment	20X 放大镜 Magnifier		测试环境 Testing environment	22℃/75rh(%)	
腐蚀溶液 Corrosion solution	4%硝酸酒精溶液(4% Nitric Acid Alcohol Solution)				
腐蚀温度/时间（℃/s） Temperature/Time	室温 RT	≥10s	浸蚀方式 Etching method	表面擦拭 Surface wiping	

金相照片
Sample photos:





测试结果说明 Test results illustrate:

1. 腐蚀后试样在放大镜下观察，焊缝及热影响区无裂纹、无未融合等缺陷。After corrosion, the sample was observed under a magnifying glass, and there were no cracks or incomplete fusion defects in the weld seam and heat affected zone。

2. 样品信息由委托方提供。Sample Information Is Provided By Clienr。

3. 本测试数据及报告仅对试验样品负责。This Test Data And Report Are Responsible For The Test Sample Only。

4. 试样测试结果符合 EN ISO 5817:2023-level B 级标准要求。The test results of the sample meet the requirements of EN ISO 5817:2023 level B standard。

实验员 Experimenter		Audit 审核		签发 Certifier		检测专用章 日期:2025 年 07 月 25 日