

检 测 报 告

TEST REPORT

报告编号 (Report No.): UTS25010140M32

报告日期 (Report Date): 2025/02/25

委托单位/Client : 联恒工业 (天津) 有限公司

Lianheng Industry(TianJin) CO.,Ltd

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City, Baodi District, Tianjin

以下测试样品由申请人提供及确认:

The following sample(s) was/were submitted and identified on behalf of the client as:

样品名称/Sample Name : STAHL MBN 51251- CR440Y780T-DP-GI50/50-U

材 质/Material : STAHL MBN 51251- CR440Y780T-DP-GI50/50-U

零 件 号/Part number : A1786225701

A1786225801

厚 度/Thickness : 1.5mm

接样日期/Receiving Date : 2025/02/09



签

Approved by

审

Reviewed by

编

Prepared by

制

金颖

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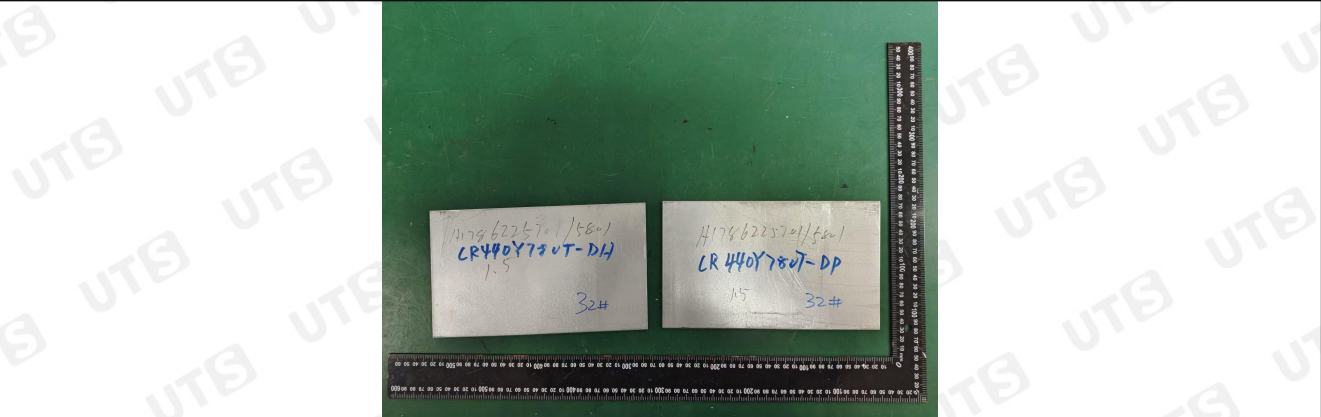
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结果总结/Summary of Result(s):

样品名称 Sample Name	项目 Item(s)	判定 Determine	页码 Page Number
STAHL MBN 51251- CR440Y780T-DP-GI 50/50-U	化学元素 Chemical element	符合/PASS	3-4
	机械性能 Mechanical performance	符合/PASS	4-5
	n 值 n value	符合/PASS	6-8
	锌层厚度 Zinc thickness	符合/PASS	8-9
	锌层双面质量 Zinc layer double-sided quality	符合/PASS	10

来样状态/Sample Status(s):



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一、化学元素/Chemical element

1、测试标准/Test standard

MBN 51251 2023-12

DIN EN ISO 14284

2、测试日期/Test Date

2025/02/21

3、测试仪器/Test Equipment

设备名称 Test Equipment	设备编号 Equipment Number	校准有效期 Calibration Period of Validity
直读光谱仪 Optical emission spectrometer	M-1-527	2025/05/03

4、测试条件/Test Condition

环境温度/Environment Temperature : (23±5)°C

环境湿度/Environment Humidity : ≤70%RH

5、测试结果/Test Result(s)

样品编号 Sample No.	测试项目 Test Items	质量分数 Mass Fraction	判定依据 Judgment Basis	结果 Result	判定 Determine
32-1	C	%	≤0.18	0.163	符合 PASS
	Si		≤0.80	0.418	
	Mn		≤2.50	1.952	
	P		≤0.050	0.010	
	S		≤0.010	0.0010	
	Al		0.015~1.00	0.688	
	Ti+Nb		≤0.15	0.0072	
	Cr+Mo		≤1.40	0.1938	
	B		≤0.005	0.0008	
	Cu		≤0.20	0.011	

备注: 判定限值依客户要求。

Note: The limit value is determined according to customer requirements.

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6、测试照片/Test Photo(s)



测试设备/Test equipment(M-1-527)

二、机械性能/Mechanical performance

1、测试标准/Test standard

MBN 51251 2023-12 6.1

DIN EN ISO 6892-1:2019

DIN EN ISO 10113

2、测试日期/Test Date

2025/02/19

3、测试仪器/Test Equipment

设备名称 Test Equipment	设备编号 Equipment Number	校准有效期 Calibration Period of Validity
游标卡尺 Vernier caliper	M-1-081	2025/11/20
万能试验机 Universal testing machine	M-1-004	2025/04/29

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4、测试条件/Test Condition

环境温度/Environment Temperature : (23±5)℃

环境湿度/Environment Humidity : ≤70%RH

应力速率/Stress Rate : 10 MPa/s

原始标距/Original Distance : 80 mm

样品来源/Sample Source : 制样/Sample preparation

制样方向/Sample Preparation Direction : 送样长度方向/Sample length direction

5、测试结果/Test Result(s)

样品编号 Sample No.	测试项目 Test Items	单位 Unit	判定依据 Judgment Basis	结果 Result	判定 Determine
32-2-1	抗拉强度 R_m Tensile Strength R_m	MPa	780~900	888	符合 PASS
	屈服强度 $R_{p0.2}$ Yield Strength $R_{p0.2}$	MPa	440~550	512	
	断后伸长率 A_{80mm} Percentage Elongation after Fracture A_{80mm}	%	≥14	21.0	

备注：判定限值依客户要求。

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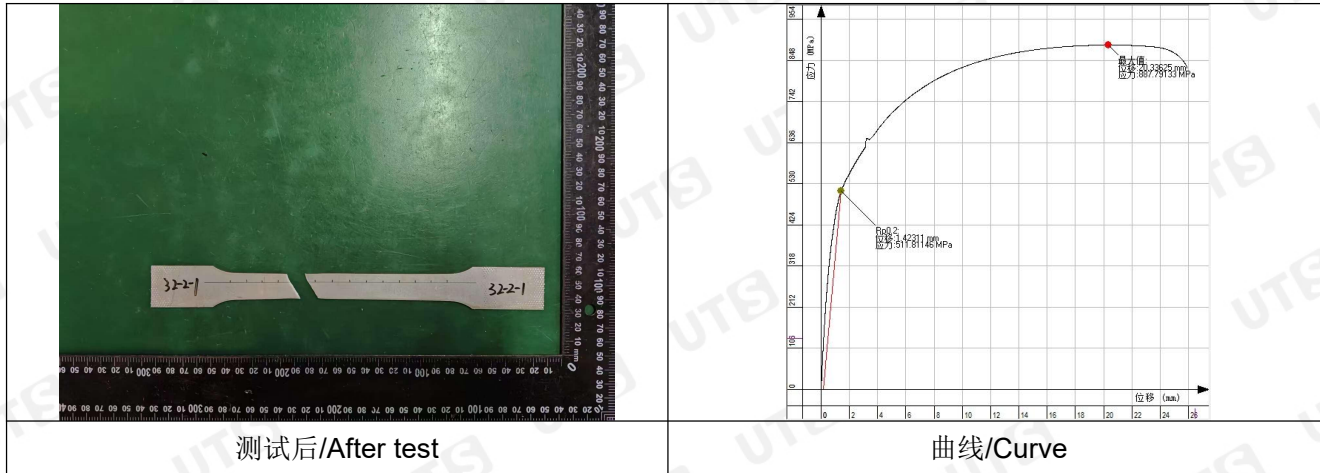
6、测试照片/Test Photo(s)



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三、 n 值/ n value

1、测试标准/Test standard

MBN 51251 2023-12 6.1

DIN EN ISO 6892-1:2019

DIN EN ISO 10113

2、测试日期/Test Date

2025/02/19

3、测试仪器/Test Equipment

设备名称 Test Equipment	设备编号 Equipment Number	校准有效期 Calibration Period of Validity
游标卡尺 Vernier caliper	M-1-081	2025/11/20
万能试验机 Universal testing machine	M-1-004	2025/04/29

4、测试条件/Test Condition

环境温度/Environment Temperature : $(23 \pm 5)^{\circ}\text{C}$ 环境湿度/Environment Humidity : $\leq 70\% \text{RH}$

位移速度/Displacement velocity : 2mm/min

制样方向/Sample Preparation Direction : 送样长度方向/Sample length direction

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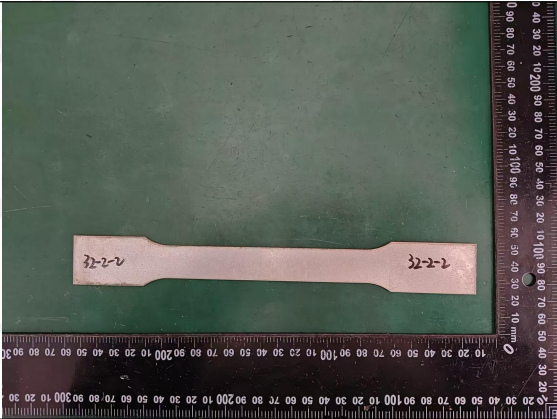
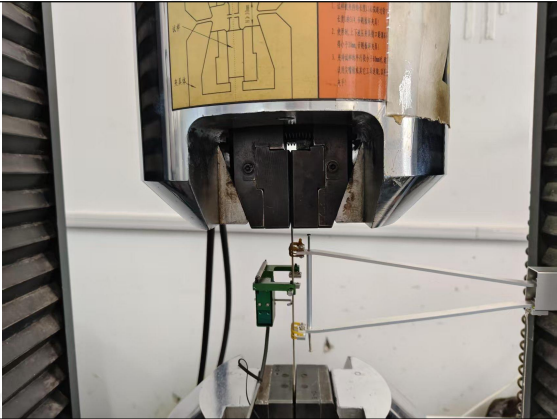
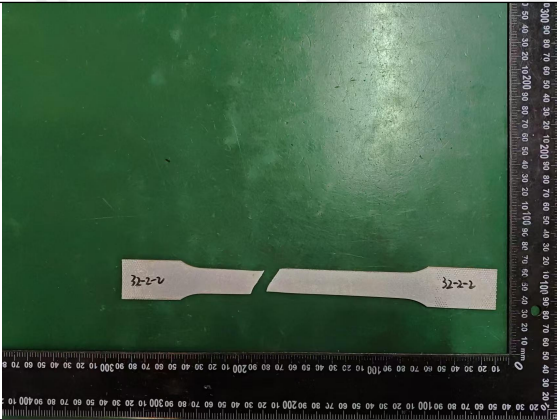
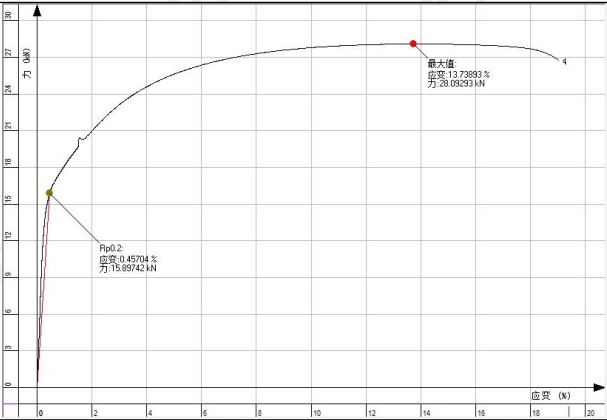
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5、测试结果/Test Result(s)

测试项目 Test Items	样品编号 Sample No.	判定依据 Judgment Basis	结果 Result	判定 Determine
n 值/n value(n ₄₋₆)	32-2-2	≥0.13	0.22	符合 PASS
n 值/n value(n _{10-Ag})	32-2-3	≥0.11	0.15	符合 PASS

备注：判定限值依客户要求。
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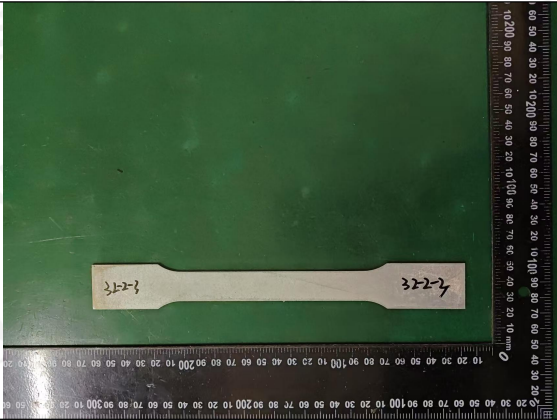
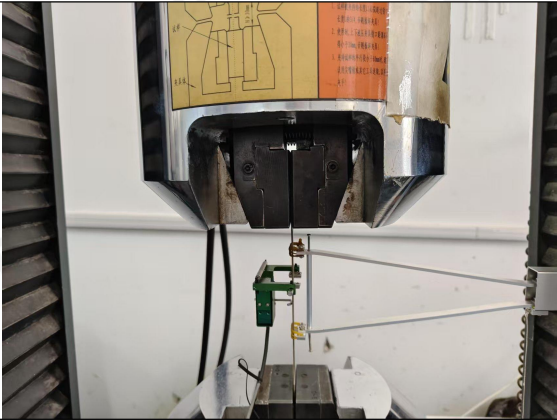
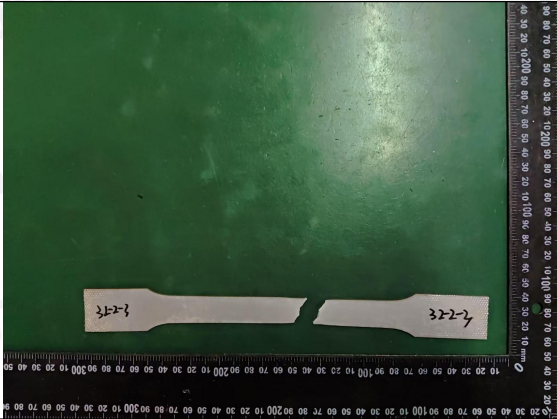
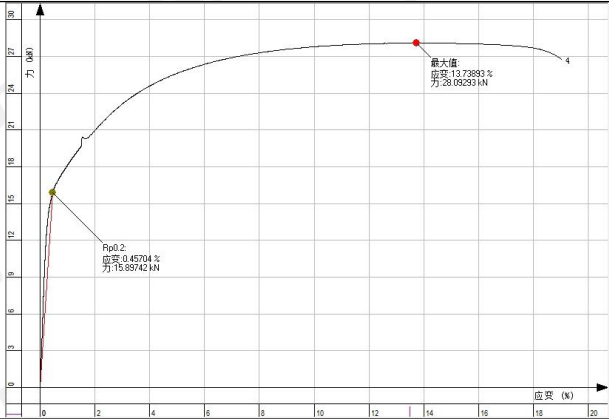
6、测试照片/Test Photo(s)

n 值/n value(n ₄₋₆)	
	
测试前/Before test	测试中/During test
	
测试后/After test	曲线/Curve

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n 值/n value(n10-Ag)	
	
测试前/Before test	测试中/During test
	
测试后/After test	曲线/Curve

四、锌层厚度/Zinc thickness

1、测试标准/Test Standard

MBN 51251 2023-12

DIN EN ISO 1463

2、测试日期/Test Date

2025/02/20

3、测试仪器/Test Equipment

设备名称 Test Equipment	设备型号 Equipment Type	校准有效期 Calibration Period of Validity
正置金相显微镜 Upright Metallographic microscope	M-1-543	2026/10/11

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4、测试条件/Test Condition

环境温度/Environment Temperature : (23±5)℃

环境湿度/Environment Humidity : ≤70%RH

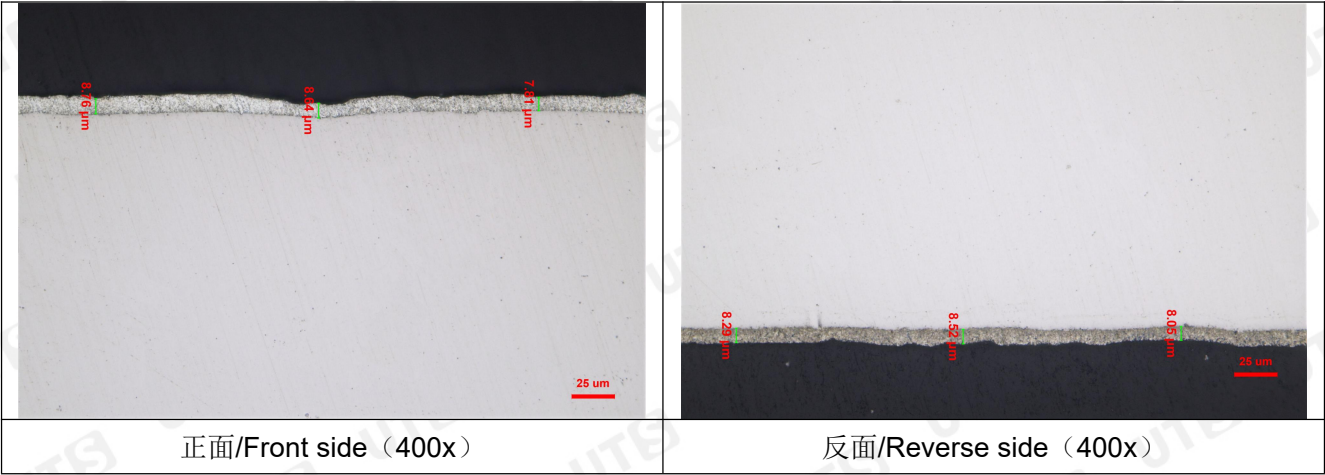
5、测试结果/Test Result(s)

样品编号 Sample No.	测试位置 Test Position	单位 Unit	判定依据 Judgment Basis	结果/Result			判定 Determine
				①	②	③	
32-3	正面/Front side	μm	7.0~9.9	8.76	8.64	7.81	符合/PASS
	反面/Reverse side			8.29	8.52	8.05	符合/PASS

备注：判定限值依客户要求。

Note: The limit value is determined according to customer requirements.

6、测试照片/Test Photo(s)



.....接下页/ To be continued.....

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五、锌层双面质量/Zinc layer double-sided quality

1、测试标准/Test Standard

MBN 51251:2023-12

DIN EN ISO 1460

2、测试日期/Test Date

2025/02/20

3、测试仪器/Test Equipment

设备名称 Test Equipment	设备编号 Equipment Number	校准有效期 Calibration Period of Validity
电子天平 Electronic balance	M-1-062	2025/11/20
游标卡尺 Vernier caliper	M-1-081	2025/11/20

4、测试条件

环境温度/Environment Temperature : (23±5)℃

环境湿度/Environment Humidity : ≤70%RH

5、测试结果/Test Result(s)

测试位置 Test Position	单位 Unit	判定依据 Judgment Basis	结果/Result		
			32-4-A	32-4-B	32-4-C
A 面/side	g/m ²	50-70	55.3	57.6	56.6
B 面/side			50.4	51.3	52.1
判定/Determine			符合/PASS	符合/PASS	符合/PASS

备注：判定限值依客户要求。

Note: The limit value is determined according to customer requirements.

.....报告结束/End of Report.....

本报告中结果仅作为科研、教学或内部质量控制之用。

Test results in this report are only used for scientific research, teaching and internal quality control.