日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240219
		证明书编号 CERTIFICATE NO.	240219Z00181		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102104D	H42140085	H4214037301	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	H42140085	H4214037302	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
			合计(TOTAL):	2	2,800																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240219
		证明书编号 CERTIFICATE NO.	240219Z00182		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102102D	H42070030	H4206488101	22x2438x6096	1	2,567	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	387	578	20	230	192	182	201
24102102D	H42070030	H4206488102	22x2438x6096	1	2,567	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	387	578	20	230	192	182	201
24102102D	H42070030	H4206488201	22x2438x6096	1	2,567	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	387	578	20	230	192	182	201
24102102D	H42070030	H4206488202	22x2438x6096	1	2,567	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	387	578	20	230	192	182	201
24102102D	H42070030	H4206488203	22x2438x6096	1	2,567	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	387	578	20	230	192	182	201
24102102D	H42070031	H4206489101	25x2438x6096	1	2,917	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	402	584	19.5	254	239	206	233
24102102D	H42070031	H4206489102	25x2438x6096	1	2,917	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	402	584	19.5	254	239	206	233
24102102D	H42070031	H4206489201	25x2438x6096	1	2,917	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	402	584	19.5	254	239	206	233
			合计(TOTAL):	8	21,586																				

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00606		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	I ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻⁴	Nb ×10⁻⁴	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值 Ave J
24102502A	S42170191	S4217278101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217278102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217278201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217278202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217278203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217280201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217283101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计(TOTAL):	12	12,600																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00607		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102502A	S42170191	S4217283203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计(TOTAL):	6	6,300																				

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
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INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00671		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102502A	S42170191	S4217280101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217280102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217280202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217280203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217282101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217282102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217282201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计(TOTAL):	12	12,600																				

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

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DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00672		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	I ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻⁴	Nb ×10⁻⁴	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值 Ave J
24102502A	S42170191	S4217282202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217282203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217283102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217283201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217283202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217285101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217285102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计(TOTAL):	12	12,600																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00673		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102502A	S42170191	S4217285201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217285202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217285203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计(TOTAL):	3	3,150																				

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

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野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00674		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
23119140D	S42070076	S4207186101	22x2438x6096	1	2,567	L	146	341	1324	190	51	269	1320	483	21	6227	30	70	40	427	601	20	160	186	158	168
23119140D	S42070076	S4207186201	22x2438x6096	1	2,567	L	146	341	1324	190	51	269	1320	483	21	6227	30	70	40	427	601	20	160	186	158	168
23119140D	S42070076	S4207186202	22x2438x6096	1	2,567	L	146	341	1324	190	51	269	1320	483	21	6227	30	70	40	427	601	20	160	186	158	168
			合计 (TOTAL) :	3	7,701																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

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WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

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Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00831		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
23103774A	S42140013	S4213453101	9x2438x6096	1	1,050	L	144	321	1382	180	39	266	1740	481	26	6231	40	50	50	377	645	23	50	53	46	50
23103774A	S42140013	S4213453201	9x2438x6096	1	1,050	L	144	321	1382	180	39	266	1740	481	26	6231	40	50	50	377	645	23	50	53	46	50
23103774A	S42140013	S4213453301	9x2438x6096	1	1,050	L	144	321	1382	180	39	266	1740	481	26	6231	40	50	50	377	645	23	50	53	46	50
			合计(TOTAL):	3	3,150																				

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

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WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240226
		证明书编号 CERTIFICATE NO.	240226Z00202		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102102D	H42070032	H4206490102	38x2438x6096	1	4,433	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	381	541	18.5	279	248	250	259
			合计(TOTAL)：	1	4,433																				

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

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WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240228
		证明书编号 CERTIFICATE NO.	240228Z00551		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102102D	H42070026	H4207010102	12x2438x6096	1	1,400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
			合计(TOTAL)：	1	1,400																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

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冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240302
		证明书编号 CERTIFICATE NO.	240302Z00089		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值 Ave J
							×10^-3	×10^-3	×10^-3	×10^-4	×10^-4	×10^-3	×10^-4	×10^-3	×10^-3	×10^-3	×10^-4	×10^-4	×10^-4								
24102102D	H42070032	H4206490101	38x2438x6096	1	4,433	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	381	541	18.5	279	248	250	259
			合计(TOTAL):	1	4,433																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20°C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

PACKING LIST

Shipper / Exporter

HYUNDAI CORPORATION
25, YULGOK-RO 2-GIL, JONGNO-GU,
SEOUL, 03143, KOREA

No. & date of invoice

SP1-40174570K-HB-01 Mar. 31. 2024

Remarks

* CONTRACT NO.: SP1-240109-HBE01

For Account & risk of Messrs.

HB ESTRUCTURAS METALICAS SAS
NIT:860.006.282-8 AVENIDA CARRERA 129 NO.17F-97
FONTIBON, BOGOTA COLOMBIA
TELEFONO: 601 4224700 EXT.127 MARYELY AGUILAR
ANCOMERCIOEXT@HBSADELEC.COM.CO
CEL NO. +57 3015444528/+57 3184277948

Notify party

HB ESTRUCTURAS METALICAS SAS
NIT:860.006.282-8 AVENIDA CARRERA 129 NO.17F-97
FONTIBON, BOGOTA COLOMBIA
TELEFONO: 601 4224700 EXT.127 MARYELY AGUILAR
ANCOMERCIOEXT@HBSADELEC.COM.CO
CEL NO. +57 3015444528/+57 3184277948

Port of loading	Port of Discharge
BAYUQUAN PORT IN CHINA	BUENAVENTURA, COLOMBIA

Vessel Name / Voyage No.	Sailing on or about
PORT KYUSHU / POKY31	Mar. 31. 2024

== DETAILS AS PER ATTACHED RIDER ==

Marks and numbers of pkgs	Description of goods	Quantity /unit	Net-weight	Gross-weight
SHIPPING MARKS :N/M	HOT ROLLED STEEL PLATE			

SPEC	SIZE(MM)			NO. OF PIECES	NET WEIGHT	GROSS WEIGHT
ASTM A709 Gr.50WT-Z1-B	9	2438	6096	57 PCS	59.850MT	59.850MT
ASTM A709 Gr.50WT-Z1-B	12	2438	6096	80 PCS	112.000MT	112.000MT
ASTM A709 Gr.50WT-Z1-B	19	2438	6096	25 PCS	55.425MT	55.425MT
ASTM A709 Gr.50WT-Z1-B	22.2	2438	6096	48 PCS	123.216MT	123.216MT
ASTM A709 Gr.50WT-Z1-B	25	2438	6096	11 PCS	32.087MT	32.087MT
ASTM A709 Gr.50WT-Z1-B	38	2438	6096	2 PCS	8.866MT	8.866MT
ASTM A709 Gr.50WT-Z1-B	50	2438	6096	2 PCS	11.666MT	11.666MT
TOTAL				**225 PCS**	**403.110MT**	**403.110MT**

//

HYUNDAI CORPORATION
Jinbyeong Chai / TEAM LEADER
FLAT PRODUCTS TEAM 1 OF STEEL DIVISION

HYUNDAI corporation

Signed b

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021；A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240326
车 号 TRAIN NO.		证明书编号 CERTFICATE NO.	240326Z00330		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	Ti ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻⁴	Nb ×10⁻⁴	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % B5	A0C01 冲击单值A J	A0C012 冲击单值B J	A0C013 冲击单值C J	A0C02 冲击均值Ave J
24302654D	H43220068	H4321490201	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	375	600	19.5	225	208	234	222
24302654D	H43220068	H4321490301	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	375	600	19.5	225	208	234	222
24302654D	H43220068	H4321490401	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	375	600	19.5	225	208	234	222
24302654D	H43220068	H4322002101	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	375	600	19.5	225	208	234	222
24302654D	H43220068	H4322002201	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	375	600	19.5	225	208	234	222
24302654D	H43220068	H4322002301	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	375	600	19.5	225	208	234	222
24302654D	H43220068	H4322002401	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	375	600	19.5	225	208	234	222
24302654D	H43230364	H4323384101	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	375	600	19.5	225	208	234	222
24302654D	H43230364	H4323384201	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	383	611	28.5	88	82	79	83
24302654D	H43230364	H4323384301	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	383	611	28.5	88	82	79	83
24302654D	H43230364	H4323384401	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	383	611	28.5	88	82	79	83
24302654D	H43230364	H4323385101	12x2438x12192	1	2,800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	383	611	28.5	88	82	79	83
			合计(TOTAL):	12	33,600																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 365-24 -01 AL MTR 365-24 -12

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobian district,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGRIZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021 ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240326
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240326Z00331		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Al	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻¹	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24302654D	H43230364	H4323385201	12x2438x12192	1	2.800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	383	611	28.5	88	82	79	83
24302654D	H43230364	H4323385301	12x2438x12192	1	2.800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	383	611	28.5	88	82	79	83
24302654D	H43230364	H4323385401	12x2438x12192	1	2.800	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	383	611	28.5	88	82	79	83
24104700D	H43230365	H4323386101	12x2438x12192	1	2.800	L	150	327	1360	230	40	295	3010	467	22	6670	20	50	40	400	610	22.5	77	72	79	76
24104700D	H43230365	H4323386201	12x2438x12192	1	2.800	L	150	327	1360	230	40	295	3010	467	22	6670	20	50	40	400	610	22.5	77	72	79	76
24104700D	H43230365	H4323386301	12x2438x12192	1	2.800	L	150	327	1360	230	40	295	3010	467	22	6670	20	50	40	400	610	22.5	77	72	79	76
24104700D	H43230365	H4323386401	12x2438x12192	1	2.800	L	150	327	1360	230	40	295	3010	467	22	6670	20	50	40	400	610	22.5	77	72	79	76
24104700D	H43230365	H4323387101	12x2438x12192	1	2.800	L	150	327	1360	230	40	295	3010	467	22	6670	20	50	40	400	610	22.5	77	72	79	76
24104700D	H43230365	H4323387201	12x2438x12192	1	2.800	L	150	327	1360	230	40	295	3010	467	22	6670	20	50	40	400	610	22.5	77	72	79	76
24104700D	H43230365	H4323387301	12x2438x12192	1	2.800	L	150	327	1360	230	40	295	3010	467	22	6670	20	50	40	400	610	22.5	77	72	79	76
24104700D	H43230365	H4323387401	12x2438x12192	1	2.800	L	150	327	1360	230	40	295	3010	467	22	6670	20	50	40	400	610	22.5	77	72	79	76
			合计(TOTAL):	11	30.800																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 366-24 -01 AL MTR 366-24 -11

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021；A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240331
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240331Z00073		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	I ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻⁴	Nb ×10⁻⁴	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
24401570B	H43200043	H4319238101	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319239101	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319239102	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319239103	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319239201	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319239202	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319239203	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319239204	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24302654D	H43220170	H4322133101	22x2438x6096	1	2.567	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	450	569	22.5	204	229	215	216
24302654D	H43220170	H4322133102	22x2438x6096	1	2.567	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	450	569	22.5	204	229	215	216
24302654D	H43220170	H4322133201	22x2438x6096	1	2.567	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	450	569	22.5	204	229	215	216
24302654D	H43220170	H4322133202	22x2438x6096	1	2.567	L	135	332	1380	210	40	312	3070	533	21	6796	20	40	40	450	569	22.5	204	229	215	216
			合计(TOTAL):	12	30.804																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，
近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 367-24 -01 AL MTR 367-24 -12

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

GERDAU

MILL TEST / QUALITY CERTIFICATE

PAGE 1 / 1

CUSTOMER	CUSTOMER ORDER	SALES ORDER	DIMENSIONS	DATE
CYRGO SAS	SAW078/20	9296847-000018	31,750mm x 2440mm x 12192mm	12.16.2020

GERDAU AÇOMINAS S.A.
ROD MG 443 KM 7 SN FAZENDA DO CADETE
OURO BRANCO MG
36420-000 BRAZIL

PRODUCT	EDGE TYPE	DELIVERY CONDITION	DOCUMENT NUMBER
PLANCHA GRUESA	Cut edge	Thermal Mech Control Process	0003835E20

SPECIFICATION
ASTM A709 TYPEB 50WT2 2018

Gerdau S.A. certifies that the material herein described is in accordance with the applicable technical specifications. As mutual protection for costumer and supplier, this certificate is considered as confidential and can not be transcribed or reproduced without the written authorization of Gerdau S.A.

PACKAGES

PLATE #	WEIGHT (MT)	HEAT	SAMPLE
3024545801	7.414	28115289	28115289005
			28115289008
3024545901	7.414	28115289	28115289005
			28115289008

PLATE #	WEIGHT (MT)	HEAT	SAMPLE
3025005901 (*)	7.414	28116631	28116631001
			28116631002
3025006001 (*)	7.414	28116631	28116631001
			28116631002

PLATE #	WEIGHT (MT)	HEAT	SAMPLE
3025006101 (*)	7.414	28116631	28116631001
3025006201 (*)	7.414	28116631	28116631001
3025006301 (*)	7.414	28116631	28116631001
3025006401 (*)	7.414	28116631	28116631001

CHEMICAL COMPOSITION

HEAT	C(%)	Mn(%)	Si(%)	P(%)	S(%)	Al T(%)	Cr(%)	Cu(%)	Ti(%)	Mo(%)	Nb(%)	Ni(%)	V(%)	B(%)	Ca(%)	N(%)
28115289	0.10	0.86	0.32	0.017	0.004	0.025	0.49	0.30	0.011	0.02	0.024	0.25	0.031	0.0001	0.0000	0.0046
28116631	0.10	0.84	0.34	0.020	0.004	0.027	0.50	0.30	0.013	0.01	0.025	0.23	0.033	0.0000	0.0002	0.0045

HEAT	CEQ2(%)
28115289	0.39
28116631	0.38

TENSILE TEST

SAMPLE	DIRECTION	POSITION	YS/RE(MPa)	TS/RT(MPa)	ELONG/ALARG(%)
28115289005	Transversal	Corner / Borde	436	536	51.0
28116631001	Transversal	Corner / Borde	486	568	54.0

CHARPY IMPACT TEST

SAMPLE	DIRECTION	POSITION	TEMP/TEMP(°C)	IND EN/EN IND(J)	IND EN/EN IND(J)	IND EN/EN IND(J)	AVG EN/EN MD(J)
28115289008	Longitudinal	Corner / Borde	-13	359	356	373	363
28116631001	Longitudinal	Corner / Borde	-13	267	270	272	270
28116631002	Longitudinal	Corner / Borde	-13	376	380	380	379

TENSILE TEST
GAUGE LENGTH/LONGITUD DE REFERENCIA:
L0: 50 mm

CHARPY IMPACT TEST
SPEC SIZE/DIM MUESTRA: 10X10mm - V 2mm

ABBREVIATIONS

(*) Mother Plate
AVG EN/EN MD Average Energy
YS/RE Yield Point
TS/RT Tensile Strength
ELONG/ALARG Elongation
TEMP/TEMP Temperature
IND EN/EN IND Individual Energy

MTR 368 -21-04

MTR 368 -21-06

5x1 2160 OC 12126 Stock

MTR-368-21-04
MTR-368-21-06

REMARKS

All radiation sources are verified and controlled.
All scrap used at Gerdau Ouro Branco is internally generated.
We certify that this material is free of contamination by radiation.

QUALITY ASSURANCE

THAYENE OLIVEIRA SILOTTI
CREA 249773

SURVEYOR

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021 ; A709 Gr.50W T-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240322
		证明书编号 CERTIFICATE NO.	240322Z00131		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 A.A	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24401570B	H43200043	H4319238102	22x2438x6096	1	2,567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319238201	22x2438x6096	1	2,567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319238202	22x2438x6096	1	2,567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319238301	22x2438x6096	1	2,567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24401570B	H43200043	H4319238302	22x2438x6096	1	2,567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	441	581	23.5	317	296	303	305
24104229B	H43200044	H4319240101	22x2438x6096	1	2,567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	435	587	29.5	206	215	240	220
24104229B	H43200044	H4319240102	22x2438x6096	1	2,567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	435	587	29.5	206	215	240	220
24104229B	H43200044	H4319240201	22x2438x6096	1	2,567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	435	587	29.5	206	215	240	220
24104229B	H43200044	H4319240202	22x2438x6096	1	2,567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	435	587	29.5	206	215	240	220
24104229B	H43200044	H4319240301	22x2438x6096	1	2,567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	435	587	29.5	206	215	240	220
24104229B	H43200044	H4319240302	22x2438x6096	1	2,567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	435	587	29.5	206	215	240	220
24104229B	H43210059	H4320482101	22x2438x6096	1	2,567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	453	584	22.5	204	174	259	212
			合计(TOTAL):	12	30,804																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，
近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTERFRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 368-24 -01 AL MTR 368-24 -12

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT
殷彩刚

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet, Laobiandistrict, Yingkou, Liaoning, P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGRIZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021 ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240322
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240322Z00132		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	Ti	Nb	BOA01 屈服强度	BOA02 抗拉强度	BOA03 断后伸长率	AOC01 冲击单值A	AOC012 冲击单值B	AOC013 冲击单值C	AOC02 冲击均值Ave
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴	MPa Rp0.2	MPa Rm	% A5	J	J	J	J
24104229B	H43210059	H4320482102	22x2438x6096	1	2.567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	453	584	22.5	204	174	259	212
24104229B	H43210059	H4320482201	22x2438x6096	1	2.567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	453	584	22.5	204	174	259	212
24104229B	H43210059	H4320482202	22x2438x6096	1	2.567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	453	584	22.5	204	174	259	212
24104229B	H43210059	H4320482301	22x2438x6096	1	2.567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	453	584	22.5	204	174	259	212
24104229B	H43210059	H4320482302	22x2438x6096	1	2.567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	453	584	22.5	204	174	259	212
24104229B	H43210059	H4320482303	22x2438x6096	1	2.567	L	143	339	1350	200	24	254	3200	480	26	6470	10	60	40	453	584	22.5	204	174	259	212
			合计(TOTAL):	6	15.402																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
AOC冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，
近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
BOA01=YIELD STRENGTH
BOA02=TENSILE STRENGTH
BOA03=PRECENTAGE ELONGATION AFTER FRACTURE

AOC01=IMPACT TEST A
AOC012=IMPACT TEST B
AOC013=IMPACT TEST C
AOC02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 369-24 -01 AL MTR 369-24 -06

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
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Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021；A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240322
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240322Z00175		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Al	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻¹	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24401570B	H43170140	H4317116101	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317116102	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317116201	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317116202	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317116301	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317116302	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317116303	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317117101	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317117102	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317117201	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317117202	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24401570B	H43170140	H4317117301	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
			合计(TOTAL):	12	30.804																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，
近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 370-24 -01 AL MTR 370-24 -12

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
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Yejinstreet, Laobiandistrict, Yingkou, Liaoning, P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021 ; A709 Gr.50 W T-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OFISSUE	20240325
车 号 TRAIN NO.		证明书编号 CERTFICATE NO.	240325Z00081		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度	B 0A02 抗拉强度	B 0A03 断后伸长率	A 0C01 冲击单值A	A 0C012 冲击单值B	A 0C013 冲击单值C	A 0C02 冲击均值Ave
							$\times10^{-3}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-4}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-4}$	$\times10^{-4}$	MPa Rp0.2	MPa Rm	% B5	J	J	J	J
24401570B	H43178021	H4317113101	25x2438x6096	1	2,917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	442	584	23	301	259	258	273
24401570B	H43178021	H4317113102	25x2438x6096	1	2,917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	442	584	23	301	259	258	273
24401570B	H43178021	H4317113201	25x2438x6096	1	2,917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	442	584	23	301	259	258	273
24401570B	H43178021	H4317113202	25x2438x6096	1	2,917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	442	584	23	301	259	258	273
24401570B	H43178021	H4317113302	25x2438x6096	1	2,917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	442	584	23	301	259	258	273
			合计(TOTAL):	5	14,585																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，
近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILESTRENGTH
B0A03=PRECENTAGE ELONGATION AFTERFRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTSIN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 372-24 -01 AL MTR 372-24 -05

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021；A709 Gr.50W T-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240318
车 号 TRAIN NO.		证明书编号 CERTFICATE NO.	240318Z00364		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻¹	Cr ×10⁻³	V ×10⁻³	Ⅰ ×10⁻³	Mo ×10⁻⁶	Ti ×10⁻⁴	Nb ×10⁻⁴	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % B5	A0C01 冲击单值A J	A0C012 冲击单值B J	A0C013 冲击单值C J	A0C02 冲击均值Ave J
24401570B	H43170138	H4317114101	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317114102	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317114201	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317114202	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317114301	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317114302	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317115101	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317115102	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317115201	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317115202	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170138	H4317115301	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	428	572	24	316	304	281	300
24401570B	H43170139	H4317115302	25x2438x6096	1	2.917	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	403	557	23	290	275	289	285
			合计(TOTAL):	12	35.004																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，
近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 373-24 -01 AL MTR 373-24 -12

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021 ; A709 Gr.50W T-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240322
		证明书编号 CERTIFICATE NO.	240322Z00176		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	Al ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻⁴	Nb ×10⁻⁴	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % B5	A0C01 冲击单值A J	A0C012 冲击单值B J	A0C013 冲击单值C J	A0C02 冲击均值Ave J
24302500B	H43170136	H4317110101	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170136	H4317110102	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170136	H4317110201	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170136	H4317110202	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24401570B	H43170140	H4317117302	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	367	531	24.5	245	219	268	244
24401570B	H43170140	H4317117303	22x2438x6096	1	2.567	L	143	347	1370	220	22	255	3260	482	25	6531	10	60	40	416	578	20	286	229	234	250
24302500B	H43200040	H4319234101	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	416	578	20	286	229	234	250
24302500B	H43200040	H4319234102	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	425	584	22.5	227	231	257	238
24302500B	H43200040	H4319234201	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	425	584	22.5	227	231	257	238
24302500B	H43200040	H4319234202	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	425	584	22.5	227	231	257	238
			合计(TOTAL):	10	40.598																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，
近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 374-24 -01AL MTR 374-24 -10

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240285004-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-2021；A709 Gr.50 W T-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240318
		证明书编号 CERTIFICATE NO.	240318Z00365		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	Al ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻⁴	Nb ×10⁻⁴	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % B5	A0C01 冲击单值A J	A0C012 冲击单值B J	A0C013 冲击单值C J	A0C02 冲击均值Ave J
24302500B	H43170136	H4317111101	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170136	H4317111102	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170136	H4317111201	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170136	H4317111202	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170136	H4317112101	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170136	H4317112102	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170136	H4317112201	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	367	531	24.5	245	219	268	244
24302500B	H43170137	H4317112202	38x2438x6096	1	4.433	L	141	344	1350	210	36	276	3000	484	25	6595	10	60	40	366	531	24	246	265	272	261
			合计(TOTAL):	8	35.464																					

注释 NOTES

L：熔炼成分SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，
近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 375-24 -01 AL MTR 375-24 -08

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区沿金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN230285001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20230314
车 号 TRAIN NO.		质量证明书编号 CERTIFICATE NO.	230314Z00094		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Als	B	Nb	B0A01 屈服强度 MPa Rt0.2	B0A02 抗拉强度 MPa Rm	E0A03 断后伸长率 % A82	A0C01 冲击功 单值 A J	A0C012 冲击功 单值 B J	A0C013 冲击功 单值 C J	A0C02 冲击功 均值 Ave J
23103776D	1133090063	1133090551O1	50x2438x6095	1	5,832	L	145	363	1390	130	19	278	1720	497	28	6311	40	40	50	413	586	25	280	274	290	281
23103770D	1133090063	1133090551O2	50x2438x6095	1	5,832	L	145	363	1390	130	19	278	1720	497	28	6311	40	40	50	413	586	25	280	274	290	281
			合计 (TOTAL):	2	11,664																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=50 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，1/4位置 1/4 LOCATION，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

MTR.410-23--01 MTR.410-23--02

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 410-23-01
02

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT21015017A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGRIZANN230285001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20230301
车号 TRAIN NO.		证书编号 CERTIFICATE NO.	230301Z00338		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻²	Si ×10⁻²	Mn ×10⁻²	P ×10⁻²	S ×10⁻²	Cu ×10⁻²	Ni ×10⁻²	Cr ×10⁻²	V ×10⁻²	Ti ×10⁻³	Al ×10⁻²	Ti ×10⁻²	Nb ×10⁻²	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % A	A B0C01 冲击值 J A	A B0C012 冲击值 J B	A B0C013 冲击值 J C	A B0C02 冲击值 J Ave
23103713D	S32280005	S3227272102	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227272201	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227272202	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227272301	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227272302	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227272303	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227273101	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227273102	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227273201	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227273202	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227273301	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
23103713D	S32280005	S3227273302	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	24	132	121	138	130
			合计 (TOTAL)	12	21,000																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标准(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR.447-23-01 AL MTR.447-23--12

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 447-23-10 12 03 10 04 05 01 02 06 27 08 11 29

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGRIZANN230285001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20230302
		质量证明书编号 CERTIFICATE NO.	230302Z00325		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Al	Mo	Ti	Nb	B 0A01 屈服强度	B 0A02 抗拉强度	L 0A03 断后伸长率	A 0C01 冲击单值 A	A 0C012 冲击单值 B	A 0C013 冲击单值 C	A 0C02 冲击均值 Ave
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	MPa Rp0.2	MPa Rm	% L2	J	J	J	J
2310370501	1132270264	1132272001O1	50x2438x6095	1	5.832	L	151	331	1342	200	38	290	1800	492	24	6448	40	60	50	410	571	26.5	292	293	295	293
2310370501	1132270264	1132272001O2	50x2438x6095	1	5.832	L	151	331	1342	200	38	290	1800	492	24	6448	40	60	50	410	571	26.5	292	293	295	293
2310370501	1132270264	1132272031O1	50x2438x6095	1	5.832	L	151	331	1342	200	38	290	1800	492	24	6448	40	60	50	410	571	26.5	292	293	295	293
2310370501	1132270264	1132272031O2	50x2438x6095	1	5.832	L	151	331	1342	200	38	290	1800	492	24	6448	40	60	50	410	571	26.5	292	293	295	293
2310370501	1132270265	1132272051O2	50x2438x6095	1	5.832	L	151	331	1342	200	38	290	1800	492	24	6448	40	60	50	404	571	26.5	191	181	172	181
2310370501	1132270265	1132272061O1	50x2438x6095	1	5.832	L	151	331	1342	200	38	290	1800	492	24	6448	40	60	50	404	571	26.5	191	181	172	181
2310370501	1132270265	1132272061O2	50x2438x6095	1	5.832	L	151	331	1342	200	38	290	1800	492	24	6448	40	60	50	404	571	26.5	191	181	172	181
2310370501	1132270266	1132272111O1	50x2438x6095	1	5.832	L	151	331	1342	200	38	290	1800	492	24	6448	40	60	50	410	575	24	204	201	225	211
2310370501	1132270266	1132272111O2	50x2438x6095	1	5.832	L	151	331	1342	200	38	290	1800	492	24	6448	40	60	50	410	575	24	204	201	225	211
			合计(TOTAL):	9	52.488																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=50 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，1/4位置 1/4 LOCATION，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

MTR，453-23--01
AL
MTR，453-23--09

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED IT HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 453-23- 01 AL 09

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT21015011/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN230285001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控轧控冷(CR)	签发日期 DATE OF ISSUE	20230301
车一号 TRAIN NO.		质量证明书号 CERTIFICATE NO.	230301Z00428		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Als	B	Nb	S BA01 屈服强度	R BA02 抗拉强度	E BA03 断后伸长率	A DC01 冲击单值 A	A DC012 冲击单值 B	A DC013 冲击单值 C	A DC02 冲击均值 Ave
							<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	MPa Rpt0.2	MPa Rm	% B5	J	J	J	J
Z31037071D	H132270273	H13227236Z02	25x2438x6095	1	2,916	L	154	348	1359	190	72	259	1800	478	24	6245	40	60	50	429	582	19.5	153	151	129	144
Z31037071D	H132270273	H13227237101	25x2438x6095	1	2,916	L	154	348	1359	190	72	259	1800	478	24	6245	40	60	50	429	582	19.5	153	151	129	144
Z31037641D	H132270274	H13227241Z02	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	413	572	19.5	245	245	253	248
Z31037641D	H132270274	H13227243101	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	413	572	19.5	245	245	253	248
Z31037641D	H132270274	H13227243201	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	413	572	19.5	245	245	253	248
Z31037641D	H132270274	H13227243Z02	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	413	572	19.5	245	245	253	248
Z31037641D	H132270274	H13227243301	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	413	572	19.5	245	245	253	248
Z31037641D	H132270274	H13227243302	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	413	572	19.5	245	245	253	248
Z31037641D	H132270274	H13227244101	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	413	572	19.5	245	245	253	248
Z31037641D	H132270275	H13227244Z01	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	413	572	19.5	245	245	253	248
Z31037641D	H132270274	H13227244202	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	558	19.5	149	156	132	146
Z31037641D	H132270274	H13227244301	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	413	572	19.5	245	245	253	248
			合计 (TOTAL):	12	34,992																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR.455-23--01 AL MTR.455-23--12

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

野斗

MTR455-23-01 AL 12

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区营口港大街115005
Yejinstreet Laobiandistrict Yingkou Liaoning P.R.China#115005
TEL 0417 3236081 FAX 0417 3236057 NO. DTZ101301-A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	CLIMIC STEEL USA INC	产品牌号 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel
收货单位 CONSIGNEE	CLIMIC STEEL USA INC	合同编号 CONTRACT NO.	YGRIZANN240285008-01
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr 50WT-Z2-B	交货状态 DELIVERY CONDITION	+A+AR(AR)
车 号 TRAIN NO		质量证明书编号 CERTIFICATE NO.	240512Z00226

炉号 HEAT NO	批号 LOT NO	钢板号 PLATE NO	规格 mm DIMENSION	数量 QTY	重量 kg WEIGHT	交货状态 DELIVERY CONDITION	化学成分 CHEMICAL ANALYSIS% C	Si	Mn	P	S	Ni	Cr	Cu	V	Al	Nb	Ti	Als	力学性能 MECHANICAL PROPERTIES REH MPa Rp0.2	Rm	A %	B	C	Ave
2410498A	N412B0078	N412B0761 ※	9X2438X12192	1	2,180	+A	14	32	140	220	63	3010	161	269	21	10	10	7	19	355	635	16.5	66	41	46	52
2410499A	N412B0078	N412B0762 ※	9X2438X12192	1	2,180	+A	14	32	140	220	63	3010	161	269	21	10	10	7	19	355	635	16.5	66	41	46	52
2410499A	N412B0078	N412B0763 ※	9X2438X12192	1	2,180	+A	14	32	140	220	63	3010	161	269	21	10	10	7	19	355	635	16.5	66	41	46	52
2410499A	N412B0078	N412B0771 ※	9X2438X12192	1	2,180	+A	14	32	140	220	63	3010	161	269	21	10	10	7	19	355	635	16.5	66	41	46	52
2410499A	N412B0078	N412B0772 ※	9X2438X12192	1	2,180	+A	14	32	140	220	63	3010	161	269	21	10	10	7	19	355	635	16.5	66	41	46	52
2410499A	N412B0078	N412B0773 ※	9X2438X12192	1	2,180	+A	14	32	140	220	63	3010	161	269	21	10	10	7	19	355	635	16.5	66	41	46	52
		实重TOTAL	6	12,680																					

NOTES:
1. 冶炼成分 SMELTING COMPOSITION
2. 拉伸试验 (GAUGE LENGTH) Lo=200 mm
3. A0C01=冲击试验IMPACT TEST A，-4℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，试样SIZE10*7.5*55
4. B0A01=YIELD STRENGTH
5. B0A02=TENSILE STRENGTH
6. B0A03=PRECENTAGE ELONGATION AFTER FRACTURE
7. A0C01=IMPACT TEST A
8. A0C012=IMPACT TEST B
9. A0C013=IMPACT TEST C
10. A0C02=IMPACT AVERAGE

According to EN 10204 3.1

我厂保证以上数据系本炉批钢的实际检验结果，其质量符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 456-24-03
MTR 456-24-01
AL
MTR 456-24-04
05
06
MTR 456-24-06

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240213
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240213Z00670		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS% C	Si	Mn	P	S	Cu	Ni	Cr	V	Nb	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							$\times10^{-3}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-4}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-3}$	$\times10^{-2}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-4}$								
24102102D	1142070026	1142070101	12x2438x6096	1	1,400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070103	12x2438x6096	1	1,400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070201	12x2438x6096	1	1,400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070202	12x2438x6096	1	1,400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070301	12x2438x6096	1	1,400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070062	1142070302	12x2438x6096	1	1,400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	394	599	21	172	187	195	185
24102104D	1142100262	1142103771101	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
			合计(TOTAL):	7	9,800																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 314-24 -01T

AL

MTR 314-24 -07

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAICORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAICORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240213
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240213Z00669		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102102D	1142070026	1142064852O1	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142064852O2	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142064852O3	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142064853O1	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142064853O2	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070091O1	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070091O2	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070091O3	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070092O1	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070092O2	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070093O1	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
24102102D	1142070026	1142070093O2	12x2438x6096	1	1.400	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
			合计(TOTAL):	12	16.800																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 315-24 -01

AL

MTR 315-24 -12

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240213
		质量证明书编号 CERTIFICATE NO.	240213Z00668		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							<10^-3	<10^-3	<10^-3	<10^-4	<10^-4	<10^-2	10^-1	<10^-3	<10^-3	<10^-3	<10^-4	<10^-1	<10^-4							
241021041D	1142070027	1142064833O1	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	416	605	23.5	134	108	102	115
241021041D	1142070027	1142064833O2	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	416	605	23.5	134	108	102	115
241021021D	1142070026	1142064841O1	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
241021021D	1142070026	1142064841O2	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
241021021D	1142070026	1142064842O1	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
241021021D	1142070026	1142064842O2	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
241021021D	1142070026	1142064843O1	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
241021021D	1142070026	1142064843O2	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
241021021D	1142070026	1142064844O1	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
241021021D	1142070026	1142064844O2	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
241021021D	1142070026	1142064851O1	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
241021021D	1142070026	1142064851O2	12x2438x6096	1	1,400	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	415	614	28.5	133	123	149	135
			合计(TOTAL):	12	16,800																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE 10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 316-24 -01
AL
MTR 316-24 -12

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240213
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240213Z00476		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Nb	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻²	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102104D	1142100261	114210370101	19x2438x6096	1	2.217	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	436	601	23.5	195	228	216	213
24102104D	1142100261	114210370102	19x2438x6096	1	2.217	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	436	601	23.5	195	228	216	213
24102104D	1142100261	114210370103	19x2438x6096	1	2.217	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	436	601	23.5	195	228	216	213
24102104D	1142100261	114210370201	19x2438x6096	1	2.217	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	436	601	23.5	195	228	216	213
24102104D	1142100261	114210370202	19x2438x6096	1	2.217	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	436	601	23.5	195	228	216	213
			合计 (TOTAL):	5	11.085																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
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冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 317-24 -01
AL
MTR 317-24 -05

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240213
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240213Z00671		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Nb	Mo	Ti	Nb	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % B5	A0C01 冲击单值 A J	A0C012 冲击单值 B J	A0C013 冲击单值 C J	A0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴								
24102104D	H42070029	H42206187101	19x2438x6096	1	2,217	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	413	595	19.5	180	209	160	183
24102104D	H42070029	H42206187102	19x2438x6096	1	2,217	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	413	595	19.5	180	209	160	183
24102104D	H42070029	H42206187201	19x2438x6096	1	2,217	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	413	595	19.5	180	209	160	183
24102104D	H42070029	H42206187202	19x2438x6096	1	2,217	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	413	595	19.5	180	209	160	183
24102102D	H42100255	H42110358102	25x2138x6096	1	2,917	L	144	350	1340	150	42	268	2690	486	24	6418	20	60	10	418	601	23	267	283	252	267
			合计 (TOTAL):	5	11,785																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 320-24 -01

AL

MTR 320-24 -05

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240212
		证明书编号 CERTIFICATE NO.	240212Z00601		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	B	Nb	B0A01 屈服强度 MPa ReL/Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % A5	A0C01 冲击单值 A J	A0C012 冲击单值 B J	A0C013 冲击单值 C J	A0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
231Z1614D	1142100256	114210359101	22x2438x6096	1	2.567	L	143	321	1330	250	37	276	3100	496	23	6649	10	50	40	412	588	20.5	270	286	295	284
231Z1614D	1142100256	114210359102	22x2438x6096	1	2.567	L	143	321	1330	250	37	276	3100	496	23	6649	10	50	40	412	588	20.5	270	286	295	284
231Z1614D	1142100256	114210359201	22x2438x6096	1	2.567	L	143	321	1330	250	37	276	3100	496	23	6649	10	50	40	412	588	20.5	270	286	295	284
231Z1614D	1142100256	114210359202	22x2438x6096	1	2.567	L	143	321	1330	250	37	276	3100	496	23	6649	10	50	40	412	588	20.5	270	286	295	284
23Z07959A	1142100257	114210360101	22x2438x6096	1	2.567	L	142	195	1350	170	48	340	1260	491	14	6314	20	10	40	400	554	21.5	316	298	290	301
23Z07959A	1142100257	114210360102	22x2438x6096	1	2.567	L	142	195	1350	170	48	340	1260	491	14	6314	20	40	40	400	554	21.5	316	298	290	301
23Z07959A	1142100257	114210360201	22x2438x6096	1	2.567	L	142	195	1350	170	48	340	1260	491	14	6314	20	10	40	400	554	21.5	316	298	290	301
23Z07959A	1142100257	114210360202	22x2438x6096	1	2.567	L	142	195	1350	170	48	340	1260	491	14	6314	20	40	40	400	554	21.5	316	298	290	301
231168880D	1142100258	114210361101	22x2438x6096	1	2.567	L	149	189	1360	180	59	329	1460	487	15	6313	20	30	40	419	577	24.5	245	191	209	215
231168880D	1142100258	114210361102	22x2438x6096	1	2.567	L	149	189	1360	180	59	329	1460	487	15	6313	20	30	40	419	577	24.5	245	191	209	215
231168880D	1142100258	114210361201	22x2438x6096	1	2.567	L	149	189	1360	180	59	329	1460	487	15	6313	20	30	40	419	577	24.5	245	191	209	215
231168880D	1142100258	114210361202	22x2438x6096	1	2.567	L	149	189	1360	180	59	329	1460	487	15	6313	20	30	40	419	577	24.5	245	191	209	215
			合计(TOTAL):	12	30.804																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

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MTR 323-24 -01

AL

MTR 323-24 -12

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
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TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAICORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAICORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240212
		证明书编号 CERTIFICATE NO.	240212Z00602		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS% C	Si	Mn	P	S	Cu	Ni	Cr	V	Nb	Mo	Ti	Nb	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % B5	A0C01 冲击单值 A J	A0C012 冲击单值 B J	A0C013 冲击单值 C J	A0C02 冲击均值 Ave J
							$\times10^{-3}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-4}$	$\times10^{-3}$	10^{-4}	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-4}$	$\times10^{-4}$								
24102102D	1142100255	1142103571O1	25x2438x6096	1	2,917	L	111	350	1340	150	42	268	2690	486	24	6418	20	60	40	448	601	23	267	283	252	267
24102102D	1142100255	1142103571O2	25x2438x6096	1	2,917	L	111	350	1340	150	42	268	2690	486	24	6418	20	60	40	448	601	23	267	283	252	267
24102102D	1142100255	1142103572O1	25x2438x6096	1	2,917	L	111	350	1340	150	42	268	2690	486	24	6418	20	60	40	448	601	23	267	283	252	267
24102102D	1142100255	1142103572O2	25x2438x6096	1	2,917	L	111	350	1340	150	42	268	2690	486	24	6418	20	60	40	448	601	23	267	283	252	267
23116880D	1142100258	1142103621O1	22x2438x6096	1	2,567	L	119	189	1360	180	59	329	1460	487	15	6313	20	30	40	419	577	24.5	245	191	209	215
23116880D	1142100258	1142103621O2	22x2438x6096	1	2,567	L	119	189	1360	180	59	329	1460	487	15	6313	20	30	40	419	577	24.5	245	191	209	215
23116880D	1142100258	1142103622O1	22x2438x6096	1	2,567	L	119	189	1360	180	59	329	1460	487	15	6313	20	30	40	419	577	24.5	245	191	209	215
23116880D	1142100258	1142103622O2	22x2438x6096	1	2,567	L	119	189	1360	180	59	329	1460	487	15	6313	20	30	40	419	577	24.5	245	191	209	215
23121614D	1142128006	1142103631O1	22x2438x6096	1	2,567	L	113	321	1330	250	37	276	3100	496	23	6649	10	50	40	410	583	21	261	268	196	242
23121614D	1142128006	1142103631O2	22x2438x6096	1	2,567	L	113	321	1330	250	37	276	3100	496	23	6649	10	50	40	410	583	21	261	268	196	242
23121614D	1142128006	1142103632O1	22x2438x6096	1	2,567	L	113	321	1330	250	37	276	3100	496	23	6649	10	50	40	410	583	21	261	268	196	242
23121614D	1142128006	1142103632O2	22x2438x6096	1	2,567	L	113	321	1330	250	37	276	3100	496	23	6649	10	50	40	410	583	21	261	268	196	242
			合计(TOTAL):	12	32,204																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 325-24 -01

AL

MTR 325-24 -12

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240212
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240212Z00603		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Nb	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							10^{-3}	10^{-3}	10^{-3}	10^{-4}	10^{-4}	10^{-3}	10^{-4}	10^{-4}	10^{-3}	10^{-3}	10^{-4}	10^{-4}	10^{-4}								
24102102D	1142100255	1142103581O1	25x2438x6096	1	2.917	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	418	601	23	267	283	252	267
24102102D	1142100255	1142103582O1	25x2438x6096	1	2.917	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	418	601	23	267	283	252	267
24102102D	1142100255	1142103582O2	25x2438x6096	1	2.917	L	114	350	1340	150	42	268	2690	486	24	6418	20	60	40	418	601	23	267	283	252	267
			合计 (TOTAL):	3	8.751																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

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冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

野牛

MTR 328-24 -01

AL

MTR 328-24 -03

ISF 2AP752L04

注文者 SHIPPER : METAL ONE CORPORATION

契約番号 CONTRACT No 2-831 H1-5-X-BX08　船番 SHIP No.

商品名 COMMODITY : HOT ROLLED STEEL PLATES

規格 SPECIFICATION : ASTM A572 21 GRADE 50

需要家 CUSTOMER : TERNIUM PROCUREMENT SA

日本製鉄株式会社
NIPPON STEEL CORPORATION

鋼材検査証明書
INSPECTION CERTIFICATE

本社 〒100-8071 東京都千代田区丸の内二丁目6番1号
HEAD OFFICE 2-6-1, MARUNOUCHI, CHIYODA-KU TOKYO, 100-80 JAPAN
東日本製鉄所 鹿島 〒314-0014 茨城県鹿嶋市光3番地
EAST NIPPON WORKS KASHIMA 3, HIKARI, KASHIMA-CITY, IBARAKI-PREF., 314-0014, JAPAN

証明書番号 CERTIFICATE No : E22006629　頁 PAGE : 1

発行年月日 DATE OF ISSUE : 2022-12-21

需要家管理番号 CUSTOMER'S CONTROL No. CO-24234

文書番号 DOCUMENT No.

需要家照合番号 ORDER ITEM No / 寸法 DIMENSION mm, H.inch, F:feet	員数 QUANTITY	質量 MASS KG	製鋼番号 HEAT No / 試験番号 TEST No	製品番号 PLATE No	区分※1 位置 方向	引張試験 TENSILE TEST 降伏点・耐力 YP, YS	引張強さ TS	伸び EL %	衝撃試験 IMPACT TEST 試験温度 TEST TEMP.	ABSORBED ENERGY 1	2	3	AVG	化学成分 CHEMICAL COMPOSITION % (10 ex. 1: 1/10, 2: 1/100, 3: 1/1000, 4: 1/10000, 5: 1/100000) 区分※10	C 2	Si 2	Mn 2	P 3	S 3	Cu 2	Ni 2	Cr 2	Mo 2	Nb 2	V 2	T.A	Sol. Al	PCM	CEI	熱処理 ※12	検査 ※13
01 38X2440X6096	3	13308	2B30227 MX0018	FROM X01992001 TO X01992003	TC F	57	74	30						L	15	26	113	9	2	1	1	3	0	1	0					H	
01 38X2440X6096	1	4436	2B30227 MX0018	X01992101	TC F	57	74	30						L	15	26	113	9	2	1	1	3	0	1	0					H	A
01 38X2440X6096	1	4436	2B30227 MY0018	X01992102	TC F	59	77	25						L	15	26	113	9	2	1	1	3	0	1	0					H	A
02 32X2440X6096	1	3735	2A21404 MX0020	X60707601	TC F	65	78	27						L	14	28	114	17	1	1	1	2	0	1	0					H	A
02 32X2440X6096	1	3735	2A21404 MY0020	X60707602	TC F	59	76	29						L	14	28	114	17	1	1	1	2	0	1	0					H	A
02 32X2440X6096	3	11205	2B30227 MY0018	FROM X01992201 TO X01992203	TC F	59	77	25						L	15	26	113	9	2	1	1	3	0	1	0					H	A
02 32X2440X6096	1	3735	2920727 MX0021	X60708301	TC F	64	78	26						L	15	27	116	12	2	1	1	2	0	1	0					H	A
02 32X2440X6096	1	3735	2920727 MY0021	X60708302	TC F	61	76	28						L	15	27	116	12	2	1	1	2	0	1	0					H	A
02 32X2440X6096	1	3735	2922703 MX0022	X60708601	TC F	63	71	26						L	15	27	115	10	2	1	1	2	0	1	0					H	A
02 32X2440X6096	1	3735	2922703 MY0022	X60708602	TC F	56	73	29						L	15	27	115	10	2	1	1	2	0	1	0					H	A

注釈 NOTES ※1 試験片熱処理区分 Test piece heat treatment H:試験片熱処理実施 Heat treated for test piece. ブランク blank:供給まま As-supplied ※2 位置 Location T:Top B:Bottom ※3 方向 Direction L:圧延方向 Longitudinal C:板直角方向 Transverse Z:板厚方向 Through Thickness. R:45° 方向 45Deg. to the Longitudinal Axis ※4 採内位置 Position in thickness F:全厚 Full-thick., S:表層 Surface B:Bottom surface. Q:1/4厚 Quarter-thick., M:1/2厚 Mid-thick., T:1/3厚 Third-thick., A:1/4厚 Three quarter-thick., W:表面下12.5mm 12.5mm-under surface, H:半厚 Half-thick. ※5 GL:標点距離 Gauge Length 平板試験片 Rectangular type specimen. A:50mm B:70mm C:80mm D:200mm E:2", F:8", Q:5.65√So H:4√So 丸棒試験片 Round type specimen. 1:50mm 2:70mm 3:2", 4:5.65√So 5:4√So ※6 YP,YS:Yield Point or Yield Strength 0.2YS:0.2% Offset, 0.5YS:0.5% total extension under load, LYP:Lower yield point ※7 RA:絞り Reduction of Area, YR:降伏比 Yield Ratio ※8 A:合格 Acceptable ※9 SI:圧縮試験片14(1" F 10mm Full 2:2.5mm Sub. 3:3.8mm Sub. 4:3.33mm Sub. 5:5mm Sub. 6:6.67mm Sub. 7:7.5mm Sub. 8:6.7mm Sub. 9:10.8mm, A:Plate Thick. ※10 分析区分 Analysis L:レードル分析 Ladle, P:製品分析 Product ※11 超音波試験 Ultrasonic test A:Acceptable ※12 寸法、外観、形状検査 Dimension, Visual, Shape Inspection A:Acceptable. ※13 供給状態 Condition of supply H:TMCP ※MISC 温度 Temperature/°C °C °F °F MPa=N/mm2

FA:延性破面率 Fracture Appearance(Shear Fracture) CF:脆性破面率 Crystallinity Fracture. LE:横膨出 Lateral Expansion. AGS:オーステナイト粒度 Austenite Grain Size. FGS:フェライト粒度 Ferrite Grain Size. SR:Stress Relieved/PostWeld Heat Treatment

All plates are produced by following process.
STEEL MAKING:LD Process and Fully-Killed practice.

上記注文品は御指定の規格または仕様に従って製造され、その要求事項を満足していることを証明します。

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE IN ACCORDANCE WITH THE RULES OF THE CONTRACT.

MTR, 358, 23-三10

10

MTR 358-23-09

HIDENORI FUKAMI
深水 秀範
東日本製鉄所 品質保証室長
HEAD OF DEPARTMENT
QUALITY ASSURANCE DEPT
EAST NIPPON WORKS

092*********MF04E

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(Notice)Modification to or unauthorized use of this certificate is strictly prohibited. If you have any questions on the authenticity of this certificate, you can contact us by E-mail: ac-[illegible]p.nipponsteel.com

MTR, 358, 23-三09

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240217
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240217Z00204		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS% C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 拉伸强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
24201194A	S42150126	S4215246101	9x2438x6096	1	1.050	L	143	355	1340	210	43	283	2880	468	22	6608	10	60	40	376	605	25	53	67	55	58
24201194A	S42150126	S4215246102	9x2438x6096	1	1.050	L	143	355	1340	210	43	283	2880	468	22	6608	10	60	40	376	605	25	53	67	55	58
24201194A	S42150126	S4215246201	9x2438x6096	1	1.050	L	143	355	1340	210	43	283	2880	468	22	6608	10	60	40	376	605	25	53	67	55	58
24201194A	S42150126	S4215246202	9x2438x6096	1	1.050	L	143	355	1340	210	43	283	2880	468	22	6608	10	60	40	376	605	25	53	67	55	58
			合计 (TOTAL):	4	4.200																				

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 304-24 -01
A2

MTR 304-24 -04

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240213
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240213Z00475		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Nb	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
24102104D	1142100262	1142103731O3	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	1142103732O1	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	1142103732O2	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	1142103732O3	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	1142103733O1	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	1142103733O2	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
			合计 (TOTAL):	6	8,400																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标准(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

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冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 306-24 -01
AL
MTR 306-24 -06

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240202
		证明书编号 CERTIFICATE NO.	240202Z00760		
车号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	B	Nb	B 0A01 屈服强度 MPa ReH	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % A5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻¹	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
23208651C	1141290121	141291241O1	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	141291241O2	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	141291242O2	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	141291242O3	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	141291251O1	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	141291252O1	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	141291252O2	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	141291252O3	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	141291261O1	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	141291262O1	12x2438x6096	1	1,400	L	140	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
			合计(TOTAL):	10	14,000																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE 10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 307-24 -01

AL

MTR 307-24 -10

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240204
车号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240204Z00239		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							$\times10^{-2}$	$\times10^{-2}$	$\times10^{-2}$	$\times10^{-4}$	$\times10^{-4}$	$\times10^{-2}$	10^{-4}	$\times10^{-2}$	$\times10^{-2}$	$\times10^{-2}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-4}$	$\times10^{-4}$							
23208651C	1141290121	114129124201	12x2438x6096	1	1.400	L	110	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	114129125102	12x2438x6096	1	1.400	L	110	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	114129126102	12x2438x6096	1	1.400	L	110	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	114129126201	12x2438x6096	1	1.400	L	110	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
23208651C	1141290121	114129126203	12x2438x6096	1	1.400	L	110	164	1320	150	58	315	1240	473	14	6131	30	30	40	382	554	21.5	157	144	96	132
			合计(TOTAL):	5	7.000																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 306-24 -01
AL
MTR 308-24 -05

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240213
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240213Z00474		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Nb	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻¹	×10⁻⁴							
24102104D	1142100262	114210371102	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	114210371103	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	114210371201	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	114210371202	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	114210371203	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	114210371301	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
24102104D	1142100262	114210371302	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
23121141A	1142100263	114210372101	12x2438x6096	1	1,400	L	135	330	1370	170	51	284	2690	458	25	6474	10	60	40	401	588	24	205	171	156	177
23121141A	1142100263	114210372102	12x2438x6096	1	1,400	L	135	330	1370	170	51	284	2690	458	25	6474	10	60	40	401	588	24	205	171	156	177
23121141A	1142100263	114210372201	12x2438x6096	1	1,400	L	135	330	1370	170	51	284	2690	458	25	6474	10	60	40	401	588	24	205	171	156	177
23121141A	1142100263	114210372202	12x2438x6096	1	1,400	L	135	330	1370	170	51	284	2690	458	25	6474	10	60	40	401	588	24	205	171	156	177
24102104D	1142100262	114210373102	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
			合计 (TOTAL):	12	16,800																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 309-24 -01
AL
MTR 309-24 -12

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
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Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAICORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAICORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240212
		证明书编号 CERTIFICATE NO.	240212Z00234		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Al	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							$\times10^{-3}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-4}$	$\times10^{-3}$	$\times10^{-1}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-1}$	$\times10^{-4}$								
24102104D	1142100262	114210373101	12x2438x6096	1	1.400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	420	617	22.5	103	103	101	102
			合计(TOTAL):	1	1.400																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

MTR 310-24 -01

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGRIZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240219
车号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240219Z00181		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻¹	×10⁻⁴								
24102104D	1142110085	114211037301	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142110085	114211037302	12x2438x6096	1	1,400	L	147	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
			合计 (TOTAL):	2	2,800																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 311-24 -01

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 311-24 -02

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240216
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240216Z00670		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻¹	×10⁻⁴	×10⁻³	10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102104D	1142140085	1142140371O1	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140371O2	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140371O3	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140372O1	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140372O2	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140381O1	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140381O2	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140381O3	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140382O1	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140382O2	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140383O1	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
24102104D	1142140085	1142140383O2	12x2438x6096	1	1,400	L	117	353	1330	160	52	273	2550	488	25	6445	10	60	40	404	617	23	56	63	63	61
			合计 (TOTAL):	12	16,800																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL,
近表 CLOSE TO SURFACE, 尺寸 SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 313-24 -01
AL

MTR 313-24 -12

南冶钢铁 NAN STEEL

湖南南冶钢铁有限公司
Nansteel Manufacturing Co.,Ltd.
湖南省长沙市岳麓科技工业园学士路
21ST&22ND FLOOR GOLDEN TOWER, CHANGSHA WEST INTERNATIONAL CENTRAL MANSION, YUELU DISTRICT, CHANGSHA, HUNAN, CHINA

产品质量证明书
MILL TEST CERTIFICATE
(EN 10204 3.1)

生产许可证编号 Production license
No: TS2710L40-2018
T:+86 731 8878 7783,
E:info@nan-steel.com
Page:www.nan-steel.com

订货单位 Customer	KENNA INTERN ATIONAL CORPOR ATION PTY LTD			合同编号 Contract .No		NSCO24978		总件数 Total PCS	624		出证日期 DATE OF ISSUE	2024.09.26	
品种名称 Product Name	角钢/EQUAL ANGLE STEEL			产品要求标准 Technical Specification		ASTM A709 ZONE 1 WT		证书编号 Certificate No	24978-01		交货条件 DELIVERY	热轧Hot Rolling	
炉号 Heat No.	尺寸 Size 宽*长*厚W*L*T Specification(mm)	单重 Theoretical Weight(kg/m)	件数 pcs	总长度 total length (m)	总重量 total weight (kg)	钢号 Steel Grade	机械性能Mechanical Property			冲击试验Impact Test (+20℃)			通径测试 Drift Test	水压试验 Hydrostatic Test	金相检测 Metallographic Test
							Tensile Strength	Yield Strength	Elongation	1	2	3			
							Mpa		%	J					
32408310	ANGULO 4*4*3/8*12M	14.60	143	1,716	25,053.60	GR.50	550	385	27.0	54	52	57	-	-	-
32406096	ANGULO 4*4*1/2*12M	19.07	306	3,672	70,025.04	GR.50	510	375	30.0	62	68	57	-	-	-
32407175	ANGULO 4*4*5/8*12M	23.30	89	1,068	24,884.40	GR.50	510	360	29.0	73	69	68	-	-	-
24303773DE2	ANGULO 5*5*1/2*12M	24.13	86	1,032	24,902.16	GR.50	522	370	31.0	114	121	126	-	-	-
Total			624	7,488	144,865.20										

炉号 Heat No.	化学成分 Chemical Composition (%)											压扁测试 Flattening Test	硬度 Hardness Test HRC	弯曲试验 Bend Test	非金属杂质 Non-metallic Inclusions				组织 The Banded Structure	漏磁 Leakage	超声 Ultrasound	外观尺寸及表面 The Size of Surface Appearance
	C	Mn	Si	P	S	Cr	Ni	Cu	B	V+Nb+Ti	CE				A 细/粗	B 细/粗	C 细/粗	D 细/粗				
32408310	0.210	1.300	0.360	0.029	0.017	-	-	-	-	-	-	-	-	PASS	-	-	-	-	-	-	-	PASS
32406096	0.180	1.290	0.330	0.029	0.018	-	-	-	-	-	-	-	-	PASS	-	-	-	-	-	-	-	PASS
32407175	0.210	1.320	0.170	0.017	0.017	-	-	-	-	-	-	-	-	PASS	-	-	-	-	-	-	-	PASS
24303773DE2	0.180	1.280	0.310	0.022	0.010	-	-	-	-	-	-	-	-	PASS	-	-	-	-	-	-	-	PASS

注释 Note

我们证明本文档所代表的材料已经过检查和测试，并且符合参考规范和您的采购订单的要求。
We certify that the material represented by this document has been inpected and tested,and is in conformance with the requirements of the referenced specification's and your purchase order.

盖章生效
Stamp to take effect

检验 INSPECTOR: Li Yiming　　发货 CONSIGNOR: Mr. Wang　　签批 APPROVAL: Xiang Wang

王香

TR003 -25--01

AL

TR003 -25--04

HS SIDERLEC
APROBADO
QC 5

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240885001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M;A709 Gr.50WT-Z2-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240926
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240926Z01206		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Ni	Cr	Cu	V	Mo	Nb	I	Als	B 0A01 屈服强度	B 0A02 抗拉强度	B 0A03 断后伸长率	A 0C01 冲击单值 A	A 0C012 冲击单值 B	A 0C013 冲击单值 C	A 0C02 冲击均值 Ave
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁰	×10⁻³	MPa Rp0.2	MPa Rm	% B5	J	J	J	J
24116443D	H49240116	H4924154101	12x2438x12192	1	2,800	L	69	363	1380	170	83	3350	466	317	22	30	130	7	37	373	556	25.5	153	179	153	162
24116443D	H49240116	H4924154201	12x2438x12192	1	2,800	L	69	363	1380	170	83	3350	466	317	22	30	130	7	37	373	556	25.5	153	179	153	162
24116443D	H49240116	H4924154301	12x2438x12192	1	2,800	L	69	363	1380	170	83	3350	466	317	22	30	130	7	37	373	556	25.5	153	179	153	162
24116443D	H49240116	H4924154401	12x2438x12192	1	2,800	L	69	363	1380	170	83	3350	466	317	22	30	130	7	37	373	556	25.5	153	179	153	162
			合计 (TOTAL):	4	11,200																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 4℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR 36 -25- 0 AL MTR 36 -25- 04

HB SADELEC
APROBADO
QC 5

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

posco

Mill Test Certificate

Certificate No. : 211108-FP01PS-0005A1-0001
Date of Issue : Nov., 25, 2021

Order No. : 01S5221952
PO No. : HB1
Supplier : POSCO INTERNATIONAL CORPORATION
Commodity : STEEL PLATE
Customer : H B ESTRUCTURAS METALICAS
Spec & Type : ASTM A709-50W T-z1-B

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test YP (MPa)	Tensile Test TS (MPa)	Tensile Test EL (%)	Impact Test V Notch +21℃ Energy (Joule)	Division	Chemical Composition C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	Cu (%)	V (%)	Sol-Al (%)
15.8x2440x6096	PC98479801-9802	2	3,688	SB24632	T	372	624	22	1: 149 2: 146 3: 132 A: 142	L	0.0688	0.332	1.300	0.0069	0.0019	0.488	0.351	0.319	0.052	0.032
										P	0.0667	0.337	1.307	0.0074	0.0018	0.488	0.361	0.311	0.053	0.032
15.8x2440x6096	PB62513101-3108	8	14,752	SB24643	T	408	598	23	1: 311 2: 256 3: 271 A: 279	L	0.0705	0.345	1.299	0.0074	0.0022	0.478	0.332	0.324	0.053	0.033
										P	0.0694	0.324	1.290	0.0073	0.0019	0.479	0.338	0.314	0.054	0.034
15.8x2440x6096	PB62513001-3008	8	14,752	SB24645	T	415	625	23	1: 223 2: 195 3: 172 A: 197	L	0.0745	0.359	1.293	0.0075	0.0022	0.482	0.330	0.324	0.052	0.033
										P	0.0702	0.323	1.275	0.0068	0.0020	0.470	0.325	0.322	0.053	0.031
*** Sub Total (010) ***		18	33,192 (kg)																	
*** Heat Treatment ===> Thermo Mechanical Rolling + Accelerated Cooling ***																				
32x2440x6096	PB62463601-3604	4	14,940	SB24643	T	475	635	21	1: 308 2: 290 3: 287 A: 295	L	0.0705	0.345	1.299	0.0074	0.0022	0.478	0.332	0.324	0.053	0.033
										P	0.0694	0.324	1.290	0.0073	0.0019	0.479	0.338	0.314	0.054	0.034
32x2440x6096	PB62463501-3502	2	7,470	SB24649	T	511	672	21	1: 327 2: 315 3: 311 A: 318	L	0.0754	0.342	1.290	0.0069	0.0016	0.483	0.330	0.327	0.053	0.035
										P	0.0711	0.328	1.280	0.0069	0.0013	0.476	0.334	0.322	0.053	0.035
32x2440x6096	PB62463504	1	3,735	SB24649	T	511	672	21	1: 327 2: 315 3: 311 A: 318	L	0.0754	0.342	1.290	0.0069	0.0016	0.483	0.330	0.327	0.053	0.035
										P	0.0711	0.328	1.280	0.0069	0.0013	0.476	0.334	0.322	0.053	0.035

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 200 ㎜(Rectangular), YP Method : Upper Point
* Impact Test. Direction : 1/4T Transversal, Full-Size : 10 ㎜X10 ㎜
* Division - L : Ladle Analysis, P : Products Analysis
* Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing and calcium treated process.
Test Certificate is issued according to ISO 10474/EN 10204 3.1.
Melted and Manufactured in Republic of Korea

04=1
05=11
MTR-046-22-06=1
03=11

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

MTR 046 -22-03 AL

Surveyor To :

MTR 046 -22-06

T.C.BAE

Chief of material testing section

Bae, Tae C

Mill Test Certificate

Certificate No. : 211108-FP01PS-0005A1-0002
Date of Issue : Nov., 25, 2021

posco

Order No. : 01S5221952
PO No. : HB1
Supplier : POSCO INTERNATIONAL CORPORATION
Commodity : STEEL PLATE
Customer : H B ESTRUCTURAS METALICAS
Spec & Type : ASTM A709-50W T-z1-B

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test YP (MPa)	Tensile Test TS (MPa)	Tensile Test EL (%)	Impact Test V Notch +21 ℃ Energy (Joule)	Division	Chemical Composition C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	Cu (%)	V (%)	Sol-Al (%)
32x2440x6096	PB62463401-3404	4	14,940	SB24649	T	511	672	21	1: 325 2: 327 3: 325 A: 326	L	0.0754	0.342	1.290	0.0069	0.0016	0.483	0.330	0.327	0.053	0.035
										P	0.0711	0.328	1.280	0.0069	0.0013	0.476	0.334	0.322	0.053	0.035
32x2440x6096	PB62464501-4504	4	14,940	SB24649	T	511	672	21	1: 276 2: 296 3: 300 A: 291	L	0.0754	0.342	1.290	0.0069	0.0016	0.483	0.330	0.327	0.053	0.035
										P	0.0711	0.328	1.280	0.0069	0.0013	0.476	0.334	0.322	0.053	0.035
32x2440x6096	PB62464301-4305	5	18,675	SB24649	T	511	672	21	1: 273 2: 280 3: 297 A: 283	L	0.0754	0.342	1.290	0.0069	0.0016	0.483	0.330	0.327	0.053	0.035
										P	0.0711	0.328	1.280	0.0069	0.0013	0.476	0.334	0.322	0.053	0.035
32x2440x6096	PB62464401-4405	5	18,675	SB24649	T	511	672	21	1: 281 2: 289 3: 259 A: 276	L	0.0754	0.342	1.290	0.0069	0.0016	0.483	0.330	0.327	0.053	0.035
										P	0.0711	0.328	1.280	0.0069	0.0013	0.476	0.334	0.322	0.053	0.035
32x2440x6096	PB62464201-4205	5	18,675	SB24649	T	511	672	21	1: 284 2: 296 3: 303 A: 294	L	0.0754	0.342	1.290	0.0069	0.0016	0.483	0.330	0.327	0.053	0.035
										P	0.0711	0.328	1.280	0.0069	0.0013	0.476	0.334	0.322	0.053	0.035
32x2440x6096	PB62464101-4105	5	18,675	SB24649	T	511	672	21	1: 280 2: 302 3: 282 A: 288	L	0.0754	0.342	1.290	0.0069	0.0016	0.483	0.330	0.327	0.053	0.035
										P	0.0711	0.328	1.280	0.0069	0.0013	0.476	0.334	0.322	0.053	0.035
*** Sub Total (020) ***		35	130,725 (kg)																	
*** Heat Treatment ===> Thermo Mechanical Rolling + Accelerated Cooling ***																				

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 200 ㎜(Rectangular), YP Method : Upper Point
* Impact Test. Direction : 1/4T Transversal, Full-Size : 10 ㎜X10 ㎜
* Division - L : Ladle Analysis, P : Products Analysis
* Supply Condition : As-Rolled unless otherwise Heat Treated.

NTR 047 -22-01 AL

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing and calcium treated process.
Test Certificate is issued according to ISO 10474/EN 10204 3.1.
Melted and Manufactured in Republic of Korea

NTR-047-22-01 : 1111
02 : 1111
03 : 11111
04 : 111

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To : NTR 047 -22-04

T.C.BAE

Chief of material testing section Bae, Tae C

KOCAER

Kocaer Celik San. Ve Tic. A.S.
Address: Yenifoca Yolu Uzeri 3.Km
Aliaga, Izmir/Turkey

www.kocaersteel.com

info@kocaersteel.com
Phone +902326251166
Fax +902326251966

TO : HB ESTRUCTURAS METALICAS SAS
AV. CARRERA 129 No. 17F-97 BOGOTA, COLOMBIA
COLOMBIA

MILL TEST CERTIFICATE

IN ACCORDANCE WITH EN 10204:2004 3.1 | DATE : 12.01.2024 | NO :KCR-179 | PAGE : 1 / 1

* DESCRIPTION OF GOODS :
PRIME QUALITY HOT ROLLED STEEL PROFILES
AS PER QUALITY A572 GR50 TP2, ACCORDING TO ASTM A6
AS PER SALES CONTRACT NO: KH231120 05/SDL-24 DATED: 20.11.2023

HOT ROLLED STEEL C CHANNELS ACC TO ASTM A572-21

SIZE (in. x lb/ft)	QUALITY	LENGTH (mm)	TOTAL PIECES	QUANTITY (MT)	HEAT NO	MECHANICAL PROPERTIES			BEND TEST 180°	CHEMICAL PROPERTIES (LADLE)											
						YIELD STRENGTH (N/mm²)	TENSILE STRENGTH (N/mm²)	% ELONG.		C %	Si %	Mn %	P %	S %	Cu %	N (ppm)	V %	Cr %	Ni %	Mo %	Ceq %
C 6 X 8.2	A572 GR50 TP2	6000	22	1,610	23171984	415	595	29	OK	0,20	0,23	0,94	0,033	0,005	0,40	110	0,014	0,140	0,100	0,010	0,42
C 6 X 8.2	A572 GR50 TP2	6000	178	13,028	23290464	432	581	24	OK	0,21	0,18	0,91	0,015	0,010	0,47	90	0,015	0,091	0,127	0,021	0,43

Tolerances on shape and dimensions are fulfilled Acc. to American Standard ASTM A6/A6M-22
Mechanical and chemical requirements are fulfilled Acc. to client specifications and American Standard ASTM A572-21
Standard for surface: EN 10163-3:2004, Class C, Subclass 1
Steel Making Process: Electric Arc Furnace Deoxidation Method: Killed Steel

Tensile test as per ASTM A370
Chemical test as per CEN/TR 10261
CEQ:C+Mn/6+ (Cr+Mo+V)/5+(Ni+Cu)/15

ISSUED BY

MTR 053-24-01
02

MTR 053-24 -01
MTR 053-24 -02

2000038444

KOCAER

Kocaer Celik San. Ve Tic. A.S.
Address: Yenifoca Yolu Uzeri 3.Km
Aliaga, Izmir/Turkey

TO : HB ESTRUCTURAS METALICAS SAS
AV. CARRERA 129 No. 17F-97 BOGOTA, COLOMBIA
COLOMBIA

www.kocaersteel.com

info@kocaersteel.com
Phone +902326251166
Fax +902326251966

MILL TEST CERTIFICATE

IN ACCORDANCE WITH EN 10204:2004 3.1 | DATE : 25.01.2024 | NO :KCR-180 | PAGE : 1 / 1

*** DESCRIPTION OF GOODS :**
PRIME QUALITY HOT ROLLED STEEL PROFILES
AS PER QUALITY A572 GR50 TP2, ACCORDING TO ASTM A6
AS PER SALES CONTRACT NO: KH231120 05/SDL-24 DATED: 20.11.2023

HOT ROLLED STEEL C CHANNELS ACC TO ASTM A572-21

SIZE (in. x lb/ft)	QUALITY	LENGTH (mm)	TOTAL PIECES	QUANTITY (MT)	HEAT NO	MECHANICAL PROPERTIES			BEND TEST 180°	CHEMICAL PROPERTIES (LADLE)											
						YIELD STRENGTH (N/mm²)	TENSILE STRENGTH (N/mm²)	% ELONG.		C %	Si %	Mn %	P %	S %	Cu %	N (ppm)	V %	Cr %	Ni %	Mo %	Ceq %
C 6 X 10.5	A572 GR50 TP2	12000	144	26,952	23171946	398	480	26	OK	0,21	0,22	0,99	0,020	0,012	0,35	100	0,014	0,130	0,110	0,020	0,44
C 6 X 10.5	A572 GR50 TP2	12000	130	24,332	23171984	400	578	25	OK	0,20	0,23	0,94	0,033	0,005	0,40	110	0,014	0,140	0,100	0,010	0,42
C 8 X 11.5	A572 GR50 TP2	12000	120	24,624	23170111	406	581	30	OK	0,21	0,21	0,97	0,023	0,005	0,32	110	0,014	0,140	0,110	0,020	0,44

Tolerances on shape and dimensions are fulfilled Acc. to American Standard ASTM A6/A6M-22
Mechanical and chemical requirements are fulfilled Acc. to client specifications and American Standard ASTM A572-21
Standard for surface: EN 10163-3:2004, Class C, Subclass 1
Steel Making Process: Electric Arc Furnace — Deoxidation Method: Killed Steel

Tensile test as per ASTM A370
Chemical test as per CEN/TR 10261
CEQ:C+Mn/6+ (Cr+Mo+V)/5+(Ni+Cu)/15

ISSUED BY

MTR 064-24 -01
MTR 064-24 -02
MTR 064-24 -03

MTR 064-24-01
02
03

2000038444

KOCAER

Kocaer Celik San. Ve Tic. A.S.
Address: Yenifoca Yolu Uzeri 3.Km
Aliaga, Izmir/Turkey

www.kocaersteel.com

info@kocaersteel.com
Phone +902326251166
Fax +902326251966

TO : HB ESTRUCTURAS METALICAS SAS
AV. CARRERA 129 No. 17F-97 BOGOTA, COLOMBIA
COLOMBIA

MILL TEST CERTIFICATE

IN ACCORDANCE WITH EN 10204:2004 3.1 | DATE: 25.01.2024 | NO: KCR-180 | PAGE: 1/1

* DESCRIPTION OF GOODS :
PRIME QUALITY HOT ROLLED STEEL PROFILES
AS PER QUALITY A572 GR50 TP2, ACCORDING TO ASTM A6
AS PER SALES CONTRACT NO: KH231120 05/SDL-24 DATED: 20.11.2023

HOT ROLLED STEEL C CHANNELS ACC TO ASTM A572-21

SIZE (in. x lbs/ft)	QUALITY	LENGTH (mm)	TOTAL PIECES	QUANTITY (MT)	HEAT NO	MECHANICAL PROPERTIES			BEND TEST 180°	CHEMICAL PROPERTIES (LADLE)											
						YIELD STRENGTH (N/mm²)	TENSILE STRENGTH (N/mm²)	% ELONG.		C %	Si %	Mn %	P %	S %	Cu %	N (ppm)	V %	Cr %	Ni %	Mo %	Ceq %
C 6 X 10.5	A572 GR50 TP2	12000	144	26,952	23171946	398	460	26	OK	0,21	0,22	0,99	0,020	0,012	0,35	100	0,014	0,130	0,110	0,020	0,44
C 6 X 10.5	A572 GR50 TP2	12000	130	24,332	23171984	400	578	25	OK	0,20	0,23	0,94	0,033	0,005	0,40	110	0,014	0,140	0,100	0,010	0,42
C 8 X 11.5	A572 GR50 TP2	12000	120	24,624	23170111	406	581	30	OK	0,21	0,21	0,97	0,023	0,005	0,32	110	0,014	0,140	0,110	0,020	0,44

Tolerances on shape and dimensions are fulfilled Acc. to American Standard ASTM A6/A6M-22
Mechanical and chemical requirements are fulfilled Acc. to client specifications and American Standard ASTM A572-21
Standard for surface: EN 10163-3:2004, Class C, Subclass 1
Steel Making Process: Electric Arc Furnace Deoxidation Method: Killed Steel

Tensile test as per ASTM A370
Chemical test as per CEN/TR 10261
CEQ:C+Mn/6+ (Cr+Mo+V)/5+(Ni+Cu)/15

ISSUED BY

2000038444

INFORME DE ENSAYOS

Razón Social: **Ternium Siderurgica de Caldas** Página Web: **www.ternium.com.co**
NIT: **900174468-4**
Teléfono: **01 8000 114 114**
Dirección: **Km 2 Vía Termales la Enea. Manizales**

INFORMACION GENERAL

Cliente: **FABRICA DE ESTRUCTURAS SADE ELECTRI**
Dirección: **AV CR 129 17F 97 BOGOTA**
Teléfono: **4224700**

Fecha Impresión: **21/03/30**
No. Remisión: **82307806**
Página: **1 de 4**

DATOS GENERALES / PROPIEDADES QUIMICAS

MATERIAL	DESCRIPCION	LOTE	NORMA	FABRICANTE	% C	% Mn	% Si	% S	% P	% Nb	% Ce	% Cr	% Ni	% Cu
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351707 01	ASTM A572 GR50	Ternium	0.210	0.89	0.19	0.024	0.016	0.002	0.38	0.13	0.07	0.19
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351708 02	ASTM A572 GR50	Ternium	0.210	0.89	0.19	0.024	0.016	0.002	0.38	0.13	0.07	0.19
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351709 03	ASTM A572 GR50	Ternium	0.210	0.89	0.19	0.024	0.016	0.002	0.38	0.13	0.07	0.19
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351713 04	ASTM A572 GR50	Ternium	0.210	0.89	0.19	0.024	0.016	0.002	0.38	0.13	0.07	0.19
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351714 05	ASTM A572 GR50	Ternium	0.210	0.89	0.19	0.024	0.016	0.002	0.38	0.13	0.07	0.19
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351801 06	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351802 07	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351803 08	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351804 09	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351805 10	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351806 11	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351807 12	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351808 13	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351809 14	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351810 15	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351811 16	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351812 17	ASTM A572 GR50	Ternium	0.203	0.88	0.18	0.027	0.017	0.003	0.37	0.15	0.07	0.21

[redacted] 109 -21-01 AL [redacted] 109 -21-17 SI 7092 SOLKSD CC32561

MTR-109-21-01 AL 17

Los datos del presente informe de ensayos, han sido revisados por el área de Verificaciones y Laboratorio.
La conformidad de los resultados de ensayo está basada en aceptación simple.
Los resultados reportados en este informe de ensayos se relacionan únicamente a los materiales ensayados, aquí descritos.
No se debe reproducir información parcial del informe de ensayos, excepto, si se hace en su totalidad con la aprobación escrita del laboratorio emisor.

Autoriza
Eivy Dayan Jerez Salazar
Jefe Sector Verificaciones y Laboratorios

INFORME DE ENSAYOS

Razón Social: **Ternium Siderurgica de Caldas** Página Web: **www.ternium.com.co**
NIT: **900174468-4**
Teléfono: **01 8000 114 114**
Dirección: **Km 2 Vía Termales la Enea. Manizales**

INFORMACION GENERAL

Cliente: **FABRICA DE ESTRUCTURAS SADE ELECTRI**
Dirección: **AV CR 129 17F 97 BOGOTA**
Teléfono: **4224700**

Fecha Impresión **21/03/30**
No. Remisión: **82307806**

DATOS GENERALES					PROPIEDADES QUIMICAS			
MATERIAL	DESCRIPCION	LOTE	NORMA	FABRICANTE	% Sn	% V	% Mo	% Al
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351707	ASTM A572 GR50	Ternium	0.017	0.023	0.019	0.212
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351708	ASTM A572 GR50	Ternium	0.017	0.023	0.019	0.212
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351709	ASTM A572 GR50	Ternium	0.017	0.023	0.019	0.212
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351713	ASTM A572 GR50	Ternium	0.017	0.023	0.019	0.212
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351714	ASTM A572 GR50	Ternium	0.017	0.023	0.019	0.212
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351801	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351802	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351803	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351804	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351805	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351806	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351807	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351808	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351809	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351810	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351811	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351812	ASTM A572 GR50	Ternium	0.018	0.021	0.017	0.209

Autoriza
Eivy Dayan Jerez Salazar
Jefe Sector Verificaciones y Laboratorios

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INFORME DE ENSAYOS

Razón Social: **Ternium Siderurgica de Caldas** Página Web: **www.ternium.com.co**
NIT: **900174468-4**
Teléfono: **01 8000 114 114**
Dirección: **Km 2 Vía Termales la Enea. Manizales**

INFORMACION GENERAL

Cliente: **FABRICA DE ESTRUCTURAS SADE ELECTRI** Fecha Impresión **21/03/30**
Dirección: **AV CR 129 17F 97 BOGOTA** No. Remisión: **82307806**
Teléfono: **4224700** Página: **3 de 4**

DATOS GENERALES					PROPIEDADES FISICAS					
MATERIAL	DESCRIPCION	LOTE	NORMA	FABRICANTE	FLUENCIA	TRACCION	ELONGACION	FLUENCIA(2)	TRACCION(2)	ALARGAMIENTO(2)
					PSI	PSI	%	PSI	PSI	%
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351707	ASTM A572 GR50	Ternium	58443	79909	23.9	58786	80177	22.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351708	ASTM A572 GR50	Ternium	58443	79909	23.9	58786	80177	22.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351709	ASTM A572 GR50	Ternium	58443	79909	23.9	58786	80177	22.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351713	ASTM A572 GR50	Ternium	58443	79909	23.9	58786	80177	22.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351714	ASTM A572 GR50	Ternium	58443	79909	23.9	58786	80177	22.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351801	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351802	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351803	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351804	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351805	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351806	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351807	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351808	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351809	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351810	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5

Autoriza
Eivy Dayan Jerez Salazar
Jefe Sector Verificaciones y Laboratorios

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INFORME DE ENSAYOS

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INFORMACION GENERAL

Cliente: **FABRICA DE ESTRUCTURAS SADE ELECTRI** Fecha Impresión **21/03/30**
Dirección: **AV CR 129 17F 97 BOGOTA** No. Remisión: **82307806**
Teléfono: **4224700** Página: **4 de 4**

DATOS GENERALES / PROPIEDADES FISICAS

MATERIAL	DESCRIPCION	LOTE	NORMA	FABRICANTE	FLUENCIA	TRACCION	ELONGACION	FLUENCIA(2)	TRACCION(2)	ALARGAMIENTO(2)
					PSI	PSI	%	PSI	PSI	%
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351811	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5
8000091	ANGULO 3"x1/4" 12m A572/G50	A009351812	ASTM A572 GR50	Ternium	59393	91023	23.9	59068	80449	23.5

Material	Lote	Ensayo	Norma	Fecha Ensayo
8000091	A0093517	QUÍMICO	NTC 5192	25.03.2021
8000091	A0093518	QUÍMICO	NTC 5192	25.03.2021
8000091	A0093517	TRACCIÓN	NTC 3353	27.03.2021
8000091	A0093518	TRACCIÓN	NTC 3353	27.03.2021

Autoriza
Eivy Dayan Jerez Salazar
Jefe Sector Verificaciones y Laboratorios

Los datos del presente informe de ensayos, han sido revisados por el área de Verificaciones y Laboratorio.
La conformidad de los resultados de ensayo está basada en aceptación simple.
Los resultados reportados en este informe de ensayos se relacionan únicamente a los materiales ensayados, aquí descritos.
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posco

Mill Test Certificate

Certificate No. : 211215-FP01PS-0003A1-0006
Date of Issue : Dec., 22, 2021

Order No. : 01S5222016
PO No. : HB3
Supplier : POSCO INTERNATIONAL CORPORATION
Commodity : STEEL PLATE
Customer : H B ESTRUCTURAS METALICAS
Spec & Type : ASTM A709-50W T-z1-B

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test YP (MPa)	Tensile Test TS (MPa)	Tensile Test EL (%)	Impact Test V Notch +20 °C Energy (Joule)		Division	Chemical Composition C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	Cu (%)	V (%)	Sol-Al (%)
12x2440x6096	PC98899401-9406 01	6	8,406	SF49294	T	351	612	22	1: 153 2: 177 3: 161 A: 164		L P	0.0688 0.0756	0.332 0.336	1.303 1.311	0.0057 0.0062	0.0022 0.0020	0.474 0.476	0.324 0.327	0.270 0.273	0.048 0.051	0.020 0.022
12x2440x6096	PC98899601-9606 02	6	8,406	SF49294	T	351	612	22	1: 164 2: 166 3: 159 A: 163		L P	0.0688 0.0756	0.332 0.336	1.303 1.311	0.0057 0.0062	0.0022 0.0020	0.474 0.476	0.324 0.327	0.270 0.273	0.048 0.051	0.020 0.022
12x2440x6096	PC98899501-9506 03	6	8,406	SF49294	T	351	612	22	1: 147 2: 133 3: 142 A: 141		L P	0.0688 0.0756	0.332 0.336	1.303 1.311	0.0057 0.0062	0.0022 0.0020	0.474 0.476	0.324 0.327	0.270 0.273	0.048 0.051	0.020 0.022
12x2440x6096	PC99496301 04	1	1,401	SF49294	T	351	612	22	1: 266 2: 269 3: 269 A: 268		L P	0.0688 0.0756	0.332 0.336	1.303 1.311	0.0057 0.0062	0.0022 0.0020	0.474 0.476	0.324 0.327	0.270 0.273	0.048 0.051	0.020 0.022
*** Sub Total (020) ***		65	91,065 (kg)																		
15x2440x6096	PB63944001-4010 05	10	17,520	SB35633	T	396	604	25	1: 194 2: 182 3: 171 A: 182		L P	0.0692 0.0670	0.342 0.336	1.291 1.280	0.0070 0.0069	0.0028 0.0025	0.490 0.484	0.341 0.336	0.319 0.315	0.056 0.057	0.029 0.030
15x2440x6096	PC98899301-9305 06	5	8,760	SF49298	T	381	586	24	1: 236 2: 270 3: 273 A: 260		L P	0.0676 0.0719	0.358 0.351	1.307 1.308	0.0057 0.0057	0.0009 0.0014	0.467 0.471	0.326 0.324	0.264 0.258	0.051 0.052	0.033 0.031
*** Sub Total (030) ***		15	26,280 (kg)																		

*** Heat Treatment ===> Thermo Mechanical Rolling + Accelerated Cooling ***

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test, Direction : Transversal, Gauge Length : 200 mm(Rectangular), YP Method : Upper Point
* Impact Test, Direction : 1/4T Transversal, Full-Size : 10 mmX10 mm
* Division - L : Ladle Analysis, P : Products Analysis
* Supply Condition : As-Rolled unless otherwise Heat Treated.

01 = N+T
02 = N+T
03 = N+T
04 =
MTR-199-22-05 = N+T
06 = N+T

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing and calcium treated process.
Test Certificate is issued according to ISO 10474/EN 10204 3.1.
Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

T.C.BAE

MTR 199 -22-01 AL MTR 199 -22-06

posco

Mill Test Certificate

Certificate No. : 211215-FP01PS-0003A1-0011
Date of Issue : Dec., 22, 2021

Order No. : 01S5222016
PO No. : HB3
Supplier : POSCO INTERNATIONAL CORPORATION
Commodity : STEEL PLATE
Customer : H B ESTRUCTURAS METALICAS
Spec & Type : ASTM A709-50W T-z1-B

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test YP (MPa)	Tensile Test TS	Tensile Test EL (%)	Impact Test V Notch +20 °C Energy (Joule)		Division	Chemical Composition C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	Cu (%)	V (%)	Sol-Al (%)
38x2440x6096	PC98897001-7002	2	8,872	SF49294	T	363	550	26	1: 380 2: 384 3: 378 A: 381		L P	0.0688 0.0756	0.332 0.336	1.303 1.311	0.0057 0.0062	0.0022 0.0020	0.474 0.476	0.324 0.327	0.270 0.273	0.048 0.051	0.020 0.022
38x2440x6096	PC98897101-7102	2	8,872	SF49294	T	363	550	26	1: 280 2: 450 3: 340 A: 357		L P	0.0688 0.0756	0.332 0.336	1.303 1.311	0.0057 0.0062	0.0022 0.0020	0.474 0.476	0.324 0.327	0.270 0.273	0.048 0.051	0.020 0.022
38x2440x6096	PC98897201-7202	2	8,872	SF49294	T	363	550	26	1: 268 2: 327 3: 278 A: 291		L P	0.0688 0.0756	0.332 0.336	1.303 1.311	0.0057 0.0062	0.0022 0.0020	0.474 0.476	0.324 0.327	0.270 0.273	0.048 0.051	0.020 0.022
38x2440x6096	PC98696201-6202	2	8,872	SF49298	T	370	548	26	1: 316 2: 329 3: 265 A: 303		L P	0.0676 0.0719	0.358 0.351	1.307 1.308	0.0057 0.0057	0.0009 0.0014	0.467 0.471	0.326 0.324	0.264 0.258	0.051 0.052	0.033 0.031
38x2440x6096	PC98696001-6002	2	8,872	SF49298	T	370	548	26	1: 358 2: 284 3: 291 A: 311		L P	0.0676 0.0719	0.358 0.351	1.307 1.308	0.0057 0.0057	0.0009 0.0014	0.467 0.471	0.326 0.324	0.264 0.258	0.051 0.052	0.033 0.031
38x2440x6096	PC98696101-6102	2	8,872	SF49298	T	370	548	26	1: 240 2: 271 3: 244 A: 252		L P	0.0676 0.0719	0.358 0.351	1.307 1.308	0.0057 0.0057	0.0009 0.0014	0.467 0.471	0.326 0.324	0.264 0.258	0.051 0.052	0.033 0.031
38x2440x6096	PC98772001-2002	2	8,872	SF49298	T	370	548	26	1: 253 2: 323 3: 154 A: 243		L P	0.0676 0.0719	0.358 0.351	1.307 1.308	0.0057 0.0057	0.0009 0.0014	0.467 0.471	0.326 0.324	0.264 0.258	0.051 0.052	0.033 0.031

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 200 ㎜(Rectangular), YP Method : Upper Point
* Impact Test. Direction : 1/4T Transversal, Full-Size : 10 ㎜X10 ㎜
* Division - L : Ladle Analysis, P : Products Analysis
* Supply Condition : As-Rolled unless otherwise Heat Treated.

MTR-2011-22

01 = X
02 = //
03 = +
04 = X+
05 = ++
06 = #11
07 = T

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing and calcium treated process.
Test Certificate is issued according to ISO 10474/EN 10204 3.1.
Melted and Manufactured in Republic of Korea

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

T.C.BAE

MTR 204 -22-01 AL MTR 204 -22-07

KOCAER

Kocaer Celik San. Ve Tic. A.S.
Address: Yenifoca Yolu Uzeri 3.Km
Aliaga, Izmir/Turkey

TO : HB ESTRUCTURAS METALICAS SAS
AV. CARRERA 129 No. 17F-97 BOGOTA, COLOMBIA
COLOMBIA

www.kocaergroup.com.tr

info@kocaergroup.com
Phone +902326251166
Fax +902326251966

MILL TEST CERTIFICATE

IN ACCORDANCE WITH EN 10204:2004 3.1 **DATE : 7.12.2021** **NO :KCR-176** **PAGE : 1 / 1**

*** DESCRIPTION OF GOODS :**
PRIME QUALITY HOT ROLLED STEEL MERCHANT BARS
AS PER QUALITY A709 GR50WT Z1TB, ACCORDING TO A6
AS PER SALES CONTRACT NO: KH210910 06/SDL-20 DATED: 20.09.2021 & ADDENDUM NO:1 DATE:23.11.2021

HOT ROLLED STEEL EQUAL ANGLES ACC TO ASTM A709M-18

SIZE (inch)	QUALITY	LENGTH (mm)	TOTAL PIECES	QUANTITY (MT)	HEAT NO	MECHANICAL PROPERTIES			IMPACT TEST RESULTS Joule							BEND TEST 180°	CHEMICAL PROPERTIES (LADLE)											
						YIELD STRENGTH (N/mm²)	TENSILE STRENGTH (N/mm²)	% ELONG.	SPECIMEN SIZE mm	1	2	3	AVERAGE	at °C	IMPACT ENERGY (J/cm²)		C %	Si %	Mn %	P %	S %	Cu %	N (ppm)	V %	Cr %	Ni %	Mo %	Ceq %
4 X 4 X 5/16	A709 GR50WT Z1TB	12000	120	17,568	21250771	413	570	28	7,5x10x55	100	114	66	93	21	124	OK	0,11	0,22	1,08	0,009	0,011	0,25	87	0,045	0,450	0,110	0,020	0,42
4 X 4 X 5/16	A709 GR50WT Z1TB	12000	577	84,471	21250772	437	590	25	7,5x10x55	67	63	72	67	21	90	OK	0,12	0,22	1,09	0,009	0,006	0,23	85	0,045	0,440	0,140	0,033	0,43
4 X 4 X 3/8	A709 GR50WT Z1TB	12000	90	15,766	21250771	428	599	25	7,5x10x55	64	72	57	64	21	86	OK	0,11	0,22	1,08	0,009	0,011	0,25	87	0,045	0,450	0,110	0,020	0,42
4 X 4 X 3/8	A709 GR50WT Z1TB	12000	322	56,406	21250772	447	584	31	7,5x10x55	57	67	62	62	21	83	OK	0,12	0,22	1,09	0,009	0,006	0,23	85	0,045	0,440	0,140	0,033	0,43

Tolerances on shape and dimensions are fulfilled Acc. to American Standard ASTM A6/6M-19
Mechanical and chemical requirements are fulfilled Acc. to client specifications and American Standard ASTM A709M-18
Standard for surface: EN 10163-3:2004, Class C, Subclass 1
Steel Making Process: Electric Arc Furnace Deoxidation Method: Fully Killed Steel

Bending Test: quer D=2s< 180°
Tensile test as per ASTM A370
Chemical test as per CEN/TR 10261
CEQ:C+Mn/6+ (Cr+Mo+V)/5+(Ni+Cu)/15

ISSUED BY

MTR-215-22-01 02 03 04

[redacted] 215 -22-01
AL

[redacted] 215 -22-04

2000028069

posco

Mill Test Certificate

Certificate No. : 211215-FP01PS-0005A1-0002
Date of Issue : Dec., 22, 2021

Order No. : 01S5221952
PO No. : HB1
Supplier : POSCO INTERNATIONAL CORPORATION
Commodity : STEEL PLATE
Customer : H B ESTRUCTURAS METALICAS
Spec & Type : ASTM A709-50W T-z1-B

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test YP (MPa)	Tensile Test TS (MPa)	Tensile Test EL (%)	Impact Test V Notch +20 ℃ Energy (Joule)		Division	Chemical Composition C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	Cu (%)	V (%)	Sol-Al (%)
15.8x2440x6096	PB63881701-1703	3	5,532	SB24645	T	415	625	23	1: 164 2: 167 3: 162 A: 164		L P	0.0745 0.0702	0.359 0.323	1.293 1.275	0.0075 0.0068	0.0022 0.0020	0.482 0.470	0.330 0.325	0.324 0.322	0.052 0.053	0.033 0.031
15.8x2440x6096	PB63881705-1708	4	7,376	SB24645	T	415	625	23	1: 164 2: 167 3: 162 A: 164		L P	0.0745 0.0702	0.359 0.323	1.293 1.275	0.0075 0.0068	0.0022 0.0020	0.482 0.470	0.330 0.325	0.324 0.322	0.052 0.053	0.033 0.031
15.8x2440x6096	PC98775701-5705	5	9,220	SF49296	T	362	601	21	1: 218 2: 199 3: 202 A: 206		L P	0.0664 0.0655	0.337 0.334	1.296 1.279	0.0055 0.0050	0.0010 0.0009	0.472 0.463	0.323 0.318	0.274 0.268	0.051 0.052	0.030 0.031
*** Sub Total (010) ***		12	22,128 (kg)																		
*** Heat Treatment ===> Thermo Mechanical Rolling + Accelerated Cooling ***																					
32x2440x6096	PB63903101-3104	4	14,940	SB24643	T	475	635	21	1: 275 2: 270 3: 274 A: 273		L P	0.0705 0.0694	0.345 0.324	1.299 1.290	0.0074 0.0073	0.0022 0.0019	0.478 0.479	0.332 0.338	0.324 0.314	0.053 0.054	0.033 0.034
32x2440x6096	PB62463503	1	3,735	SB24649	T	511	672	21	1: 327 2: 315 3: 311 A: 318		L P	0.0754 0.0711	0.342 0.328	1.290 1.280	0.0069 0.0069	0.0016 0.0013	0.483 0.476	0.330 0.334	0.327 0.322	0.053 0.053	0.035 0.035
32x2440x6096	PB63440801-0804	4	14,940	SB24649	T	511	672	21	1: 281 2: 294 3: 295 A: 290		L P	0.0754 0.0711	0.342 0.328	1.290 1.280	0.0069 0.0069	0.0016 0.0013	0.483 0.476	0.330 0.334	0.327 0.322	0.053 0.053	0.035 0.035

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 200 ㎜(Rectangular), YP Method : Upper Point
* Impact Test. Direction : 1/4T Transversal, Full-Size : 10 ㎜X10 ㎜
* Division - L : Ladle Analysis, P : Products Analysis
* Supply Condition : As-Rolled unless otherwise Heat Treated.

We hereby certify that the material herein has been made in accordance with the order and above specification.
This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing and calcium treated process.
Test Certificate is issued according to ISO 10474/EN 10204 3.1.
Melted and Manufactured in Republic of Korea

MTR 231 -22-01 AL MTR 231 -22-06

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

T.C.BAE

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00673		
车号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	Ti	Nb	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % A5	A0C01 冲击单值 A J	A0C012 冲击单值 B J	A0C013 冲击单值 C J	A0C02 冲击均值 Ave J
							<10^-1	<10^-2	<10^-1	<10^-1	<10^-1	<10^-2	10^-1	<10^-1	<10^-2	<10^-3	<10^-1	<10^-1	<10^-1							
24102502A	S42170191	S4217285Z01	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217285Z02	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217285Z03	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计(TOTAL):	3	3,150																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 298-24 -01
AL
MTR 298-24 -03

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmosphericcorrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00831		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	Ti	Nb	B 0A01 屈服强度 MPa ReH	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
23103774A	S42140013	S4213453101	9x2438x6096	1	1.050	L	144	321	1382	180	39	266	1740	481	26	6231	40	50	50	377	645	23	50	53	46	50
23103774A	S42140013	S4213453201	9x2438x6096	1	1.050	L	144	321	1382	180	39	266	1740	481	26	6231	40	50	50	377	645	23	50	53	46	50
23103774A	S42140013	S4213453301	9x2438x6096	1	1.050	L	144	321	1382	180	39	266	1740	481	26	6231	40	50	50	377	645	23	50	53	46	50
			合计 (TOTAL):	3	3.150																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) L0=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 299-24 -01

AL

MTR 299-24 -03

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240221Z00672		
车号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B0A01 屈服强度 MPa Rp0.2	B0A02 拉强度 MPa Rm	B0A03 断后伸长率 % B5	A0C01 冲击单值A J	A0C012 冲击单值B J	A0C013 冲击单值C J	A0C02 冲击均值Ave J
							$\times10^{-3}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-1}$	$\times10^{-4}$	$\times10^{-2}$	$\times10^{-4}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-3}$	$\times10^{-4}$	$\times10^{-4}$	$\times10^{-4}$								
24102502A	S42170191	S4217282202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217282203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217283102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217283201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217283202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217284203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217285101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217285102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计 (TOTAL):	12	12,600																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE 10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 300-24 -01

AL

MTR 300-24 -12

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240224Z00671		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻²	Si ×10⁻²	Mn ×10⁻²	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻²	Ni ×10⁻²	Cr ×10⁻²	V ×10⁻³	Ti ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻⁴	Nb ×10⁻⁴	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % B5	A0C01 冲击单值 A J	A0C012 冲击单值 B J	A0C013 冲击单值 C J	A0C02 冲击均值 Ave J
24102502A	S42170191	S4217280101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217280102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217280202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217280203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217281203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217282101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217282102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217282201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计(TOTAL):	12	12,600																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 301-24 -01

AL

MTR 301-24 -12

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
		证明书编号 CERTIFICATE NO.	240224Z00606		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Nb	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % A5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻⁴							
24102502A	S42170191	S4217278101	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217278102	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217278201	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217278202	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217278203	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279101	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279102	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279201	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279202	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217279203	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217280201	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217283101	9x2438x6096	1	1.050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计(TOTAL):	12	12.600																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 302-24 -01
AL

MTR 302-24 -12

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	HYUNDAI CORPORATION	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	HYUNDAI CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN240185001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-21;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240224
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	24022+Z00607		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							10^{-3}	10^{-3}	10^{-3}	10^{-4}	10^{-4}	10^{-2}	10^{-4}	10^{-3}	10^{-3}	10^{-3}	10^{-4}	10^{-4}	10^{-4}								
24102502A	S42170191	S4217283203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286101	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286102	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286201	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286202	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
24102502A	S42170191	S4217286203	9x2438x6096	1	1,050	L	148	320	1360	170	62	275	2630	464	24	6407	10	60	40	367	648	19	57	63	83	67
			合计(TOTAL):	6	6,300																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 303-24 -01

AL

MTR 303-24 -06

kardemir
Çelik Sanayi A.Ş.
Akçeşme Mah. Menderes Bulv. No:77 Denizli / Turkiye
Tel: +90 232 625 22 22 Fax: +90 232 625 19 85

MILL TEST CERTIFICATE
EN 10204:2004 / 3.1

EN 10025-1:2004 Hot Rolled Products of Structural Steel

CE 2195-CPR-1405603

Certificate No: / No Du Certificat: GYXBAQ 24-0773
Date : 26.06.2024

Your Order No: / Commande No: ORIGINAL

Description of Goods: BY VESSEL PRIME QUALITY HOT ROLLED STEEL EQUAL ANGLES & C - SHAPE CHANNEL IN 6,000 METERS LENGTH (-00 MM / +50 MM) IN QUALITY ASTM A572 GR50 T2 ACCORDING TO A6

Standard : ASTM
Tolerance :

Our Order No: / Notre Commande: GYXBAQ 24-0773

Purchaser : / Commettant: GYJ FERRETERIAS S.A
NIT 800.130.426-3 CARRERA 62 NO. 12-78 BOGOTA, COLOMBIA
TEL: 2600783☐
☐

CHEMICAL COMPOSITION - COMPOSITION CHEMIQUE - CEV = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15

Material: Matiare:	Size-Dimension:	Length:	Quality / Qualité: Hot Rolled Stuctural Steel	Heat No : No Coulée :	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Cu %	Ti %	Co %	N %	Sn %	Al %	V %	Cb %	B %	Cev %	Mechanical Properties - Properties Mechaniques ASTM A370-24: Yield Point-Limite él. N/mm²	Tensile Strength- Rupture (N/mm²)	Elongation/Allong.(%) (Gauge Lenght L0 = 2)	Hardness - Dureté	Quantity Shipped / Quantité expédiée (MTON)	No Of Bundles XNo Of Pieces Per Bundles
C-SHAPE CHANNEL	C 6"X8.2 lb/ft	6 M	ASTM A572 GR50 T2	2403405	0,16	0,20	1,22	0,016	0,008	0,100	0,120	0,010	0,37	0,001	0,010	0,009	0,012	0,006	0,027	0,001	0,0005	0,42	390	568	29,8			
C-SHAPE CHANNEL	C 6"X8.2 lb/ft	6 M	ASTM A572 GR50 T2	2403406	0,16	0,20	1,21	0,018	0,008	0,110	0,120	0,010	0,32	0,001	0,010	0,009	0,011	0,006	0,026	0,001	0,0005	0,42	387	561	31,2			
C-SHAPE CHANNEL	C 8"X11.5 lb/ft	6 M	ASTM A572 GR50 T2	2307072	0,16	0,18	1,28	0,012	0,008	0,090	0,100	0,020	0,33	0,001	0,010	0,009	0,014	0,003	0,026	0,002	0,0005	0,43	395	574	32,4			
C-SHAPE CHANNEL	C 8"X11.5 lb/ft	6 M	ASTM A572 GR50 T2	2403195	0,16	0,19	1,21	0,018	0,011	0,130	0,130	0,020	0,33	0,001	0,010	0,008	0,011	0,004	0,026	0,001	0,0005	0,43	384	556	30,8			
EQUAL ANGLES	4"X4"X1/4"	6 M	ASTM A572 GR50 T2	2402828	0,16	0,18	1,23	0,015	0,015	0,110	0,110	0,020	0,38	0,001	0,010	0,008	0,019	0,004	0,030	0,001	0,0004	0,43	389	562	30,2			

MTR 532-24 01

MTR 532-24 02

Tests to verify quality have been carried out -Tests de verification de la conformite de la nuance fournie- OK

Standard for surface : EN10163-3:2004,Class C,Subclass 1

Banding Test -qure D=2s<180°

Visual Inspection and Dimensional Check -Examen Visuel et Dimensionel de Surface- OK

The Surveyor-*L'expert:Ersin PEK*

Material are manufactured,inspected,tested and sampled in accordance with the requirement of manufacturing standard found satisfactory and comply.
Dimension and material surface appererarance result is acceptable and satisfactory.

Places of melting and casting/hot rolling; Facility / the name of the country: Kardemir Çelik Sanayi A.Ş./ Turkiye, **HS Code:**72071116

MTR 532-24-02,01

QUALITY CERTIFICATE/CERTIFICADO DE CALIDADE

GERDAU

GERDAU AÇOS LONGOS S.A.
AV.JOAO XXIII 6777 SANTA CRUZ
RIO DE JANEIRO RJ
23565-235 BRAZIL

PAGE/PAGINA: 1/1

CUSTOMER / CLIENTE: CYRGO SAS

SALES ORDER / ORDEN DE VENTA: 13165603/2

DATE/FECHA: /00/0000

PRODUCT DETAILS / DETALLES DEL PRODUCTO: CANTONEIRA EXP

QUALITY / CALIDAD: ASTM A572 GR50

INVOICE/FACTURA: 0003973E23

DIMENSIONS/DIMENSIONES: 4X3/8/12,000 M

SPECIFICATION / ESPECIFICACION: NA

HEAT / COLADA	C %	Mn %	Si %	S %	P %	Cu %	Cr %	Nb %	Ni %	V %	Mo %	YS MPa	TS MPa	Elong %
4139618902	0,19	1,16	0,21	0,026	0,026	0,16	0,08	0,006	0,07	0,024	0,017	478	625	19,00

MECHANICAL PROPERTIES CODE / CÓDIGO DE PROPIEDADES MECÁNICAS
YS - Yield Strength MPa/Esfuerzo de Fluencia MPa
TS - Tensile Strength MPa/Resistencia a la Tensión Mpa
Elong - Elongation/Alargamiento

MTR 572-24 01

OBSERVATIONS / OBSERVACIONES
Elongation L0=200mm
Este material ha sido probado y los niveles de radiación están por debajo del nivel permitido
This material has been tested and radiation levels are below the allowed level
The products supplied under this Quality Certificate are Free of Radiation.
Este material ha sido probado y los niveles de radiación están por debajo del nivel permitido.

Angelo Dabbicco de Melo

ANGELO DABBICCO DE MELO
Quality Manager / Gerente de Calidad
CREA/PE PE055492

SURVEYOR

MTR 572-24-01

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMITED	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMITED	合同编号 CONTRACT NO.	YGRIZANN240685003-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-11;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240717
		证明书编号 CERTIFICATE NO.	240717Z00335		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS% C	Si	Mn	P	S	Cu	Ni	Cr	V	Nb	Mo	Ti	Nb	B0A01 屈服强度 MPa Rp0.2	B0A02 抗拉强度 MPa Rm	B0A03 断后伸长率 % B5	A0C01 冲击单值A J	A0C012 冲击单值B J	A0C013 冲击单值C J	A0C02 冲击均值Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻²	×10⁻⁴	×10⁻³	10⁻⁴	×10⁻³	×10⁻³	×10⁻³	×10⁻²	×10⁻²	×10⁻⁴								
24205167A	S47160008	S4715555101	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	367	646	19.5	46	36	40	41
24205167A	S47160008	S4715555201	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	367	646	19.5	46	36	40	41
24205167A	S47160008	S4715555301	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	367	646	19.5	46	36	40	41
24205167A	S47160008	S4715556101	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	367	646	19.5	46	36	40	41
24205167A	S47160008	S4715556201	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	367	646	19.5	46	36	40	41
24205167A	S47160008	S4715556301	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	367	646	19.5	46	36	40	41
24205167A	S47160009	S4715564101	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	382	657	19	37	38	44	40
24205167A	S47160009	S4715564201	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	382	657	19	37	38	44	40
24205167A	S47160009	S4715564301	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	382	657	19	37	38	44	40
24205167A	S47160009	S4715565101	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	382	657	19	37	38	44	40
24205167A	S47160009	S4715565201	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	382	657	19	37	38	44	40
24205167A	S47160009	S4715565301	8x2438x12192	1	1,867	L	142	347	1340	200	44	272	3060	474	22	6561	30	60	40	382	657	19	37	38	44	40
			合计 (TOTAL):	12	22,404																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR 587-24--01
AL
MTR 587-24--12

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

587-24-05-02-10
06-03-11
01-12-07
08-04-09

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMITED	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMITED	合同编号 CONTRACT NO.	YGR1ZANN240685003-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-11;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240711
车号 TRAIN NO.		质量证明书编号 CERTIFICATE NO.	240711Z00179		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	Ti ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻⁴	Nb ×10⁻⁴	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
24305744C	S47090139	S4709225101	9x2438x12192	1	2,100	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	361	626	19.5	73	91	91	85
24305744C	S47090139	S4709225201	9x2438x12192	1	2,100	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	361	626	19.5	73	91	91	85
24305744C	S47090139	S4709225301	9x2438x12192	1	2,100	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	361	626	19.5	73	91	91	85
24305744C	S47090139	S4709226101	9x2438x12192	1	2,100	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	361	626	19.5	73	91	91	85
24305744C	S47090139	S4709226201	9x2438x12192	1	2,100	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	361	626	19.5	73	91	91	85
24305744C	S47090139	S4709226301	9x2438x12192	1	2,100	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	361	626	19.5	73	91	91	85
24305745C	S47090140	S4709227101	9x2438x12192	1	2,100	L	145	316	1390	200	42	274	3310	479	24	6574	40	40	50	383	646	19.5	80	100	178	119
24305745C	S47090140	S4709227201	9x2438x12192	1	2,100	L	145	316	1390	200	42	274	3310	479	24	6574	40	40	50	383	646	19.5	80	100	178	119
24305745C	S47090140	S4709228101	9x2438x12192	1	2,100	L	145	316	1390	200	42	274	3310	479	24	6574	40	40	50	383	646	19.5	80	100	178	119
24305745C	S47090140	S4709228201	9x2438x12192	1	2,100	L	145	316	1390	200	42	274	3310	479	24	6574	40	40	50	383	646	19.5	80	100	178	119
24305745C	S47090140	S4709229101	9x2438x12192	1	2,100	L	145	316	1390	200	42	274	3310	479	24	6574	40	40	50	383	646	19.5	80	100	178	119
24305745C	S47090140	S4709229201	9x2438x12192	1	2,100	L	145	316	1390	200	42	274	3310	479	24	6574	40	40	50	383	646	19.5	80	100	178	119
			合计(TOTAL):	12	25,200																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*7.5*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR 589-24-11-01
ΔL
MTR 589-24-12

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

589-24-02 11 05 -01 -12
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日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMITED	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel	
收货单位 CONSIGNEE	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMITED	合同编号 CONTRACT NO.	YGR1ZANN240685003-01	
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-11;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE: 20240714
		证明书编号 CERTIFICATE NO.	240714Z00195	
车号 TRAIN NO.				

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻³	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	Ti ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻⁴	Nb ×10⁻⁴	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
24305744C	S47120009	S4711181101	12×2438×12192	1	2,800	L	142	326	1340	220	47	279	3150	174	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711181201	12×2438×12192	1	2,800	L	142	326	1340	220	47	279	3150	174	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711181301	12×2438×12192	1	2,800	L	142	326	1340	220	47	279	3150	174	23	6611	30	40	40	387	583	23.5	133	113	121	122
			合计 (TOTAL):	3	8,400																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

MTR 590-24-01

According to EN 10204 3.1

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

590-24-01

02
03

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMTED	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMTED	合同编号 CONTRACT NO.	YGR1ZANN240685003-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-11;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240717
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240717Z00336		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B A01 屈服强度 MPa Rp0.2	B A02 抗拉强度 MPa Rm	B A03 断后伸长率 % B5	A C01 冲击单值 A J	A C012 冲击单值 B J	A C013 冲击单值 C J	A C02 冲击均值 Ave J
							<10^-3	<10^-3	<10^-3	<10^-1	<10^-4	<10^-3	10^-4	<10^-3	<10^-3	<10^-3	<10^-4	<10^-1	<10^-4							
24305744C	S47120010	S4711186101	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	373	608	27	90	97	104	97
24305744C	S47120010	S4711186201	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	373	608	27	90	97	104	97
24305741C	S47120010	S4711186301	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	373	608	27	90	97	104	97
			合计 (TOTAL):	3	8,400																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR 591-24--01
ΔL
MTR 591-24--03

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

591-24-01 03
02

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMITED	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SHARPMAX INTERNATIONAL (HONGKONG) CO., LIMITED	合同编号 CONTRACT NO.	YGR1ZANN240685003-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-11;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240712
		证明书编号 CERTIFICATE NO.	240712Z01019		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	B	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % A5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							<10 ^-2	<10 ^-3	<10 ^-3	<10 ^-1	<10 ^-4	<10 ^-3	10 ^-4	<10 ^-3	<10 ^-3	<10 ^-3	<10 ^-4	<10 ^-1	<10 ^-4							
24305744C	S47120009	S4711180101	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711180201	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711180301	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711182101	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711182201	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711182301	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711183101	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711183201	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711183301	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711184101	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711184201	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
24305744C	S47120009	S4711184301	12x2438x12192	1	2,800	L	142	326	1340	220	47	279	3150	474	23	6611	30	40	40	387	583	23.5	133	113	121	122
			合计(TOTAL):	12	33,600																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR 592-24-01

AL

MTR 592-24-12

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

692-24-04 -09 -01
05 -08 -02
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日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SHARPMAXINTERNATIONAL (HONGKONG) CO., LIMITED	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SHARPMAXINTERNATIONAL (HONGKONG) CO., LIMITED	合同编号 CONTRACT NO.	YGRIZANN240685003-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-11;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240717
车 号 TRAIN NO.		证明书编号 CERTIFICATE NO.	240717Z00337		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	Ti	Nb	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
							×10⁻³	×10⁻³	×10⁻³	×10⁻¹	×10⁻⁴	×10⁻³	10⁻⁴	×10⁻³	×10⁻³	×10⁻²	×10⁻⁴	×10⁻¹	×10⁻⁴								
24108072D	S47110103	S4711117101	25x2438x12192	1	5,833	L	139	388	1362	220	46	285	3120	491	22	6748	30	50	30	388	562	24	135	111	109	118
24108072D	S47110103	S4711117201	25x2438x12192	1	5,833	L	139	388	1362	220	46	285	3120	491	22	6748	30	50	30	388	562	24	135	111	109	118
24108072D	S47110103	S4711118101	25x2438x12192	1	5,833	L	139	388	1362	220	46	285	3120	491	22	6748	30	50	30	388	562	24	135	111	109	118
24108072D	S47110103	S4711118201	25x2438x12192	1	5,833	L	139	388	1362	220	46	285	3120	491	22	6748	30	50	30	388	562	24	135	111	109	118
24108062D	S47110106	S4711125101	19x2438x12192	1	4,433	L	151	352	1321	250	31	269	2950	494	24	6628	30	50	30	378	546	24	279	234	278	264
24108062D	S47110106	S4711125201	19x2438x12192	1	4,433	L	151	352	1321	250	31	269	2950	494	24	6628	30	50	30	378	546	24	279	234	278	264
24108062D	S47160021	S4715590101	19x2438x12192	1	4,433	L	151	352	1321	250	31	269	2950	494	24	6628	30	50	30	391	570	20	195	166	203	188
24108062D	S47160021	S4715590201	19x2438x12192	1	4,433	L	151	352	1321	250	31	269	2950	494	24	6628	30	50	30	391	570	20	195	166	203	188
			合计(TOTAL):	8	41,064																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR 595-24--01
AL
MTR 595-24--08

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

595-24-05--06-01
02-03-08
04-07

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SHARPMAX INTERNATIONAL (HONGKONG) CO.,LIMITED	产品名称 PRODUCT	普通耐候结构钢 General atmospheric corrosion resisting steel		
收货单位 CONSIGNEE	SHARPMAX INTERNATIONAL (HONGKONG) CO.,LIMITED	合同编号 CONTRACT NO.	YGR1ZANN240685003-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M-11;A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20240712
		证明书编号 CERTIFICATE NO.	240712Z01021		
车号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻²	Mn ×10⁻²	P ×10⁻²	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	Ti ×10⁻³	Mo ×10⁻⁴	Ti ×10⁻²	Nb ×10⁻⁴	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值 A J	A 0C012 冲击单值 B J	A 0C013 冲击单值 C J	A 0C02 冲击均值 Ave J
24108070D	S47110107	S4711126101	19x2438x12192	1	4,433	L	154	372	1315	170	37	274	3520	486	23	6659	30	40	30	379	568	24	203	253	234	230
24108070D	S47110107	S4711126201	19x2438x12192	1	4,433	L	154	372	1315	170	37	274	3520	486	23	6659	30	40	30	379	568	24	203	253	234	230
24108072D	S47110108	S4711127101	19x2438x12192	1	4,433	L	139	388	1362	220	46	285	3120	491	22	6748	30	50	30	381	563	23.5	252	231	202	228
24108072D	S47110108	S4711127201	19x2438x12192	1	4,433	L	139	388	1362	220	46	285	3120	491	22	6748	30	50	30	381	563	23.5	252	231	202	228
24108072D	S47110108	S4711128101	19x2438x12192	1	4,433	L	139	388	1362	220	46	285	3120	491	22	6748	30	50	30	381	563	23.5	252	231	202	228
24108072D	S47110108	S4711128201	19x2438x12192	1	4,433	L	139	388	1362	220	46	285	3120	491	22	6748	30	50	30	381	563	23.5	252	231	202	228
			合计 (TOTAL):	6	26,598																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST: 20℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE, 尺寸SIZE 10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR 596-24--01
AL
MTR 596-24--06

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

596-24-02-01

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GERDAU

GERDAU AÇOMINAS S.A.
ROD MG 443 KM 7 SN FAZENDA DO CADETE
OURO BRANCO MG
36420-000 BRAZIL

MILL TEST / QUALITY CERTIFICATE

CUSTOMER	CUSTOMER ORDER	SALES ORDER	DIMENSIONS	DATE
CYRGO SAS	SAW078/20	9296847-000018	31,750mm x 2440mm x 12192mm	12.16.2020

PRODUCT	EDGE TYPE	DELIVERY CONDITION	DOCUMENT NUMBER
PLANCHA GRUESA	Cut edge	Thermal Mech Control Process	0003835E20

SPECIFICATION
ASTM A709 TYPEB 50WT2 2018

Gerdau S.A. certifies that the material herein described is in accordance with the applicable technical specifications. As mutual protection for costumer and supplier, this certificate is considered as confidential and can not be transcribed or reproduced without the written authorization of Gerdau S.A.

PACKAGES

PLATE #	WEIGHT (MT)	HEAT	SAMPLE
3024545801	7.414	28115289	28115289005
			28115289008
3024545901	7.414	28115289	28115289005
			28115289008

PLATE #	WEIGHT (MT)	HEAT	SAMPLE
3025005901 (*)	7.414	28116631	28116631001
			28116631002
3025006001 (*)	7.414	28116631	28116631001
			28116631002

PLATE #	WEIGHT (MT)	HEAT	SAMPLE
3025006101 (*)	7.414	28116631	28116631001
3025006201 (*)	7.414	28116631	28116631001
3025006301 (*)	7.414	28116631	28116631001
3025006401 (*)	7.414	28116631	28116631001

CHEMICAL COMPOSITION

HEAT	C(%)	Mn(%)	Si(%)	P(%)	S(%)	Al T(%)	Cr(%)	Cu(%)	Ti(%)	Mo(%)	Nb(%)	Ni(%)	V(%)	B(%)	Ca(%)	N(%)
28115289	0.10	0.86	0.32	0.017	0.004	0.025	0.49	0.30	0.011	0.02	0.024	0.25	0.031	0.0001	0.0000	0.0046
28116631	0.10	0.84	0.34	0.020	0.004	0.027	0.50	0.30	0.013	0.01	0.025	0.23	0.033	0.0000	0.0002	0.0045

HEAT	CEQ2(%)
28115289	0.39
28116631	0.38

TENSILE TEST

SAMPLE	DIRECTION	POSITION	YS/RE(MPa)	TS/RT(MPa)	ELONG/ALARG(%)
28115289005	Transversal	Corner / Borde	436	536	51.0
28116631001	Transversal	Corner / Borde	486	568	54.0

CHARPY IMPACT TEST

SAMPLE	DIRECTION	POSITION	TEMP/TEMP(°C)	IND EN/EN IND(J)	IND EN/EN IND(J)	IND EN/EN IND(J)	AVG EN/EN MD(J)
28115289008	Longitudinal	Corner / Borde	-13	359	356	373	363
28116631001	Longitudinal	Corner / Borde	-13	267	270	272	270
28116631002	Longitudinal	Corner / Borde	-13	376	380	380	379

TENSILE TEST
GAUGE LENGTH/LONGITUD DE REFERENCIA:
L0: 50 mm

CHARPY IMPACT TEST
SPEC SIZE/DIM MUESTRA: 10X10mm - V 2mm

ABBREVIATIONS

(*)	Mother Plate	YS/RE	Yield Point	TS/RT	Tensile Strength	ELONG/ALARG	Elongation	TEMP/TEMP	Temperature	IND EN/EN IND	Individual Energy
AVG EN/EN MD	Average Energy										

MTR 600-21-08 SI 2174 OC 12125 Stock HB

REMARKS

All radiation sources are verified and controlled.
All scrap used at Gerdau Ouro Branco is internally generated.
We certify that this material is free of contamination by radiation.

600-21-02

MTR 600-21-02
MTR 600-21-08

QUALITY ASSURANCE

THAYENE OLIVEIRA SILOTTI
CREA 249773

SURVEYOR

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街-115005
Yejin street, Laobian district, Yingkou, Liaoning, P.R.China-115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501 A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	MANUCHARSTEEL N.V.	产品名称 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	MANUCHARSTEEL N.V.	合同编号 CONTRACT NO.	YGRIZANN221185010-03		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	热轧(AR)	签发日期 DATE OF ISSUE	20230120
		证明书编号 CERTIFICATE NO.	230120Z00055		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	Ti ×10⁻³	Mo ×10⁻⁴	B ×10⁻⁴	Nb ×10⁻⁴	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
23100771D	43150297	H3115355101	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	427	574	25	206	146	166	173
23100771D	H31150297	H3115355102	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	427	574	25	206	146	166	173
23100771D	H31150297	H3115355103	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	427	574	25	206	146	166	173
23100771D	H31150297	H3115355201	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	427	574	25	206	146	166	173
23100771D	H31150297	H3115355202	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	427	574	25	206	146	166	173
23100771D	H31150297	H3116049101	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	427	574	25	206	146	166	173
23100771D	H31150297	H3116049102	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	427	574	25	206	146	166	173
23100771D	H31150297	H3116049201	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	427	574	25	206	146	166	173
23100771D	H31150297	H3116049202	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	427	574	25	206	146	166	173
23100771D	H31160220	H3116281101	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	429	578	25.5	228	222	222	224
23100771D	H31160220	H3116281102	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	429	578	25.5	228	222	222	224
23100771D	H31160220	H3116281201	25x2440x6100	1	2.921	L	149	334	1320	250	47	253	1620	495	25	6260	30	30	20	429	578	25.5	228	222	222	224
			合计 (TOTAL):	12	35.052																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃, 纵向LONGITUDINAL,
近表 CLOSE TO SURFACE, 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

According to EN 10204 3.1

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

MTR-787-23--03
MTP-787-23--02
MTP-787-23--04

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

MTR-787-23--12

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 787-23-03
12
02
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辽宁营口中板有限责任公司
Liaoning Yingkou Medium Plate Co. ,Ltd.

产品质量证明书
INSPECTION CERTIFICATE

辽宁省营口市老边区冶金街/115005
Yejin street, Laobiandistrict, Yingkou,
Liaoning, P. R. China/115005
TEL.:0417-3256081 FAX:0417-3256057
NO.: DT2101501/A

订货单位(PURCHASER)	Hangzhou Cogeneration (Hong Kong) Co., Ltd.	产品名称(PRODUCT)	热轧钢板Prime newly produced Hot Rolled Steel Plates	证明书编号(CERTIFICATE NO.)	DG70015082019B014129
收货单位(CONSIGNEE)	Hangzhou Cogeneration (Hong Kong) Co., Ltd.	交货状态 (DELIVERY CONDITION)	热轧 (AR)	签发日期(DATE OF ISSUE)	2019-02-02
合同编号(CONTRACT NO.)	YGCKB35181109227-B-04	技术条件 (SPECIFICATION)	ASTM A 709/A 709M	牌号 GRADE	A709 Gr.50
车号(TRAIN NO.)	辽H20199;辽HR3773;辽H6031C;辽HJ1225;辽H602SC;辽H6034C;辽HK2890;辽H22579;辽HC2199;辽H22590;辽H6024C;辽HQ1907;				

炉号 HEAT NO.	批号 BATCH NO.	规格尺寸(mm) DIMENSION			件数 PIECES	重量 (ton) WEIGHT	拉伸试验TENSILE TEST					弯曲试验 BEND TEST	冲击功AkV(J) IMPACT ENERGY					探伤检验UT TEST		
		T	W	L			屈服ReH (N/mm2)	屈服ReL (N/mm2)	屈服Rp (N/mm2)	抗拉强度 Rm(N/mm2)	伸长率 A (%)		尺寸SIZE (mm2)	温度 TEMP (℃)	纵向longitudinal			级别 LEVEL	结果 RESULT	标准STANDARD
19200364A	201901110049	9	2400	12000	5	10.175			415	530	24	合格OK	10X7.5	-20	72.5	64	120			
19100344A	201901110050	9	2400	12000	9	18.315			445	540	23.5	合格OK	10X7.5	-20	113	98.5	78			
18213171D	201812210175	25	3000	12000	2	14.130			410	570	25	合格OK	10X10	-20	165	192	170			
18113237D	201812290156	32	3000	12000	1	9.043			385	525	24.5	合格OK	10X10	-20	156	137	140			
合计(TOTAL)					17	51.663														

批号 BATCH NO.	化学成分CHEMICAL COMPOSITION(%)																			
	C	Si	Mn	P	S	Als	Al	Cr	Ni	Cu	Mo	V	Ti	Nb	ceq	CEV				
201901110049	0.16	0.19	1.23	0.021	0.004	0.026	0.028	0.307	0.007	0.001	0.004	0.005	0.015	0.012		0.43				
201901110050	0.17	0.19	1.24	0.017	0.006	0.033	0.035	0.302	0.006	0.001	0.002	0.005	0.016	0.015		0.44				
201812210176	0.16	0.18	1.24	0.020	0.007	0.029	0.030	0.317	0.005	0.008	0.003	0.004	0.015	0.014		0.43				
201812290156	0.17	0.17	1.25	0.020	0.007	0.030	0.031	0.302	0.005	0.008	0.002	0.004	0.014	0.013		0.44				

备注 NOTE:	ACCORDING TO EN10204 3.1 : Al=Alt ;			
牙牛	本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。 WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION.	操作员 OPERATOR	李阳 Li Yang	冶金技术处处长 DIRECTOR OF METALLURGICAL DEPARTMENT

COMERCIAL DEL ACERO S.A. CERTIFICADOS DE CALIDAD

[redacted] 861 -21-01

4

ZHUO NAN PTE. LTD.

531A UPPER CROSS STREET, #03-108, HONG LIM COMPLEX, SINGAPORE(051531)

MILL TEST CERTIFICATE

PRODUCT	HOT ROLLED ANGLE STEEL			INVOICE NO.:					UM-01202309			
MATERIAL:	ASTM A572 GR 50			DATE:					7TH SEP,2023			
HEAT NO.	MATERIAL DESCRIPTION			CHEMICAL COMPOSITION %					T.S (Mpa)	Y.S (Mpa)	ELONG (%)	BENDING TEST
	SPECIFICATION	NO OF BUNDLES	WEIGHT (MT)	C	SI	Mn	P	S				
E30621024	4"x5/16" 12.2kg/m	6	28.987	0.18	0.3	1.17	0.017	0.025	595	466	26.5	OK
E30620043	4"x3/8" 14.6kg/m	11	53.962	0.17	0.29	1.18	0.017	0.024	597	464	26	OK
61230825-11	6"x1/2" 29.2kg/m	83	233.016	0.18	0.29	1.15	0.016	0.025	596	467	26.5	OK
A30731021	8"x5/8" 48.7kg/m	26	106.361	0.18	0.28	1.20	0.019	0.022	595	467	26	OK
TOTAL		126	422.326	–	–	–	–	–	–	–	–	–

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFATORY RESULT IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION.

QUALITY INSPECTION DEPARTMENT

MTR 862-23-01
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MTR 862--23--01
al
MTR 862--23--04

Blake

扫描全能王 创建

五矿营口中板有限责任公司
MINMETALS YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	耐候桥梁钢 Corrosion resistance bridge steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN201027035-02		
技术标准/牌号 SPEC/GRADE	ASTM A709/709M; A709 Gr.50W,T2	交货状态 DELIVERY CONDITION	热轧(AR)	签发日期 DATE OF ISSUE	20201128
		证明书编号 CERTIFICATE NO.	201128Z00673		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 A.A	化学成分 CHEMICAL ANALYSIS % C ×10⁻³	Si ×10⁻³	Mn ×10⁻³	P ×10⁻⁴	S ×10⁻⁴	Cu ×10⁻³	Ni ×10⁻⁴	Cr ×10⁻³	V ×10⁻³	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 %	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
20123391D	H0B250113	31.75x2440x12192	2	14,828	L	138	361	1342	210	79	257	1150	458	11	387	566	21.5	187	185	160	177
20123391D	H0B250234	31.75x2440x12192	1	7,414	L	138	361	1342	210	79	257	1150	458	11	408	583	22.5	163	165	181	170
20123391D	H0B250235	31.75x2440x12192	1	7,414	L	138	361	1342	210	79	257	1150	458	11	402	577	22.5	168	150	176	165
20123391D	H0B250236	25.4x2440x12192	1	5,932	L	138	361	1342	210	79	257	1150	458	11	419	583	23.5	156	158	162	159
20211318D	H0B250237	25.4x2440x12192	2	11,864	L	139	338	1364	120	34	288	1220	475	11	408	562	22	185	190	175	183
20211318D	H0B250238	25.4x2440x12192	1	5,932	L	139	338	1364	120	34	288	1220	475	11	389	563	23	183	171	186	180
20211318D	H0B250239	25.4x2440x12192	1	5,932	L	139	338	1364	120	34	288	1220	475	11	386	563	24	171	150	155	159
20123397D	H0B250253	15.88x2440x12192	1	3,708	L	149	345	1348	220	80	283	1200	468	11	368	549	20	228	255	235	239
		合计(TOTAL):	10	63,024																	

注释 NOTES

A.A: ANALYSIS REGION
L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH)
A0C01冲击试验IMPACT TEST: 4℃, 纵向LONGITUDINAL
, 近表 CLOSE TO SURFACE
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=ELONGATION
A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR 10000-21-01

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

20210115-125053

MTR 10000-21-01

五矿营口中板有限责任公司
MINMETALS YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	耐候桥梁钢 Corrosion resistance bridge steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN201027035-02		
技术标准/牌号 SPEC/GRADE	ASTM A709/709M; A709 Gr.50 WT2	交货状态 DELIVERY CONDITION	热轧(AR)	签发日期 DATE OF ISSUE	20201128
		证明书编号 CERTIFICATE NO.	201128Z00673		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 A.A	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	B OA01 屈服强度 MPa Rp0.2	B OA02 抗拉强度 MPa Rm	B OA03 断后伸长率 %	A OC01 冲击单值 A J	A OC012 冲击单值 B J	A OC013 冲击单值 C J	A OC02 冲击均值 Ave J
						×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³							
20123391D	H0B250113	31.75x2440x12192	2	14,828	L	138	361	1342	210	79	257	1150	458	11	387	566	21.5	187	185	160	177
20123391D	H0B250234	31.75x2440x12192	1	7,414	L	138	361	1342	210	79	257	1150	458	11	408	583	22.5	163	165	181	170
20123391D	H0B250235	31.75x2440x12192	1	7,414	L	138	361	1342	210	79	257	1150	458	11	402	577	22.5	168	150	176	165
20123391D	H0B250236	25.4x2440x12192	1	5,932	L	138	361	1342	210	79	257	1150	458	11	419	583	23.5	156	158	162	159
20211318D	H0B250237	25.4x2440x12192	2	11,864	L	139	338	1364	120	34	288	1220	475	11	408	562	22	185	190	175	183
20211318D	H0B250238	25.4x2440x12192	1	5,932	L	139	338	1364	120	34	288	1220	475	11	389	563	23	183	171	186	180
20211318D	H0B250239	25.4x2440x12192	1	5,932	L	139	338	1364	120	34	288	1220	475	11	386	563	24	171	150	155	159
20123397D	H0B250253	15.88x2440x12192	1	3,708	L	149	345	1348	220	80	283	1200	468	11	368	549	20	228	255	235	239
		合计(TOTAL):	10	63,024																	

注释 NOTES

A.A: ANALYSIS REGION
L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH)
A0C01冲击试验IMPACT TEST: 4℃, 纵向LONGITUDINAL
. 近表 CLOSE TO SURFACE
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=ELONGATION
A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR-1008-21-02
03

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR
EMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

[redacted]1008 -21-02 [redacted]1008 -21-03

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

20210115-125053

五矿营口中板有限责任公司
MINMETALS YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	耐候桥梁钢 Corrosion resistance bridge steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN201027035-02		
技术标准/牌号 SPEC/GRADE	ASTM A709/709M; A709 Gr.50W T2	交货状态 DELIVERY CONDITION	热轧(AR)	签发日期 DATE OF ISSUE	20201207
		证明书编号 CERTFICATE NO.	201207Z00529		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 %	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
						×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³							
20123449D	H0C040127	38.1x2440x12192	1	8,897	L	139	327	1334	150	40	283	1140	460	13	435	608	20	178	186	176	180
20123449D	H0C040128	31.75x2440x12192	2	14,828	L	139	327	1334	150	40	283	1140	460	13	420	580	20.5	182	180	188	183
		合计(TOTAL):	3	23,725																	

注释 NOTES

A.A: ANALYSIS REGION
L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH)
A0C01冲击试验IMPACT TEST: 4℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=ELONGATION
A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MYR-1009-21-02

野牛

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION.

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

20210115-125055

[redacted]1009-21-02

五矿营口中板有限责任公司
MINMETALS YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	耐候桥梁钢 Corrosion resistance bridge steel
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN201227051-01
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M; A709 Gr.50W T2	交货状态 DELIVERY CONDITION	热轧(AR) 签发日期 DATE OF ISSUE 20210304
		证明书编号 CERTIFICATE NO.	210304Z00464
车 号 TRAIN NO.			

炉号 HEAT NO.	批号 LOT NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 A.A	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	B 0A01 屈服强度 MPa Rp0.2	B 0A02 抗拉强度 MPa Rm	B 0A03 断后伸长率 % B5	A 0C01 冲击单值A J	A 0C012 冲击单值B J	A 0C013 冲击单值C J	A 0C02 冲击均值Ave J
						×10⁻³	×10⁻³	×10⁻³	×10⁻⁴	×10⁻⁴	×10⁻³	×10⁻⁴	×10⁻³	×10⁻³							
21201378C	S12220092	31.75x2440x12192	1	7,414	L	144	334	1340	180	51	269	1740	472	23	395	557	20	189	190	195	191
		合计(TOTAL):	1	7,414																	

注释 NOTES

A.A: ANALYSIS REGION
L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C01冲击试验IMPACTTEST: 4℃, 纵向LONGITUDINAL, 近表 CLOSE TO SURFACE. 尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=ELONGATION
A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR 1020-21-01

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

20210325-153703

[redacted] 1020 -21-01

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区沿金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	桥梁结构钢 Bridge structural steel	
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN230285001-01	
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE: 20230301
车号 TRAIN NO.		质量证明书编号 CERTIFICATE NO.	230301Z00129	

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	Ti	Nb	B 0A01 屈服点 MPa ReH	B 0A02 抗拉强度 MPa Rm	B 0A03 伸长率 % A	A 0C01 冲击值 J 单值 A	A 0C012 冲击值 J 单值 B	A 0C013 冲击值 J 单值 C	A 0C02 冲击值 J 均值 Ave
							×10⁻²	×10⁻¹	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²							
Z31037131D	S32280005	S3227Z70101	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	26	132	121	138	130
Z31037131D	S32280005	S3227Z70102	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	26	132	121	138	130
Z31037131D	S32280005	S3227Z70201	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	26	132	121	138	130
Z31037131D	S32280005	S3227Z70202	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	26	132	121	138	130
Z31037131D	S32280005	S3227Z70301	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	26	132	121	138	130
Z31037131D	S32280005	S3227Z70302	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	26	132	121	138	130
Z31037131D	S32280005	S3227Z70303	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	26	132	121	138	130
Z31037131D	S32280005	S3227Z72101	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	26	132	121	138	130
Z31037131D	S32280006	S3227Z75101	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	483	589	26	132	121	138	130
Z31037131D	S32280006	S3227Z75102	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	26	169	143	161	158
Z31037131D	S32280006	S3227Z75201	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	26	169	143	161	158
Z31037131D	S32280006	S3227Z75202	15x2438x6095	1	1,750	1	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	26	169	143	161	158
			合计 (TOTAL):	12	21,000																					

注释 NOTES

L: 熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST: 20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE
A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

MTP.457-23--01 AL MTR.457-23--12

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 457-23-02 -07 08
03 01 09
04 10
05 12
06 11

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT21015017A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	品名 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGRIZANN230285001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20230301
		质量证明书号 CERTIFICATE NO.	230301Z00130		
车号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	I	Mo	Ti	Nb	B A01 B 0 A 0 2	B 0 A 0 3	C 0 A 0 2	A 0 C 0 1	A 0 C 0 1 2	A 0 C 0 1 3	A 0 C 0 2
																				屈服强度	抗拉强度	伸长率	冲击单值	冲击单值	冲击单值	冲击均值
																				MPa	MPa	%	A	B	C	Ave
							×10⁻²	×10⁻²	×10⁻²	×10⁻³	×10⁻³	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻⁴	×10⁻⁴	Rm≥0.2	Rm≥	≥	J	J	J	J
2310371101	S32280006	S3227275301	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	496	630	29	169	143	161	158
2310371101	S32280006	S3227275302	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	496	630	29	169	143	161	158
2310371101	S32280006	S3227275303	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	496	630	29	169	143	161	158
2310371101	S32280007	S3227276101	15x2438x6095	1	1,750	L	144	324	1321	170	105	319	1700	476	27	6486	30	50	50	387	566	29.5	124	151	157	144
2310371101	S32280007	S3227276102	15x2438x6095	1	1,750	L	144	324	1321	170	105	319	1700	476	27	6486	30	50	50	387	566	29.5	124	151	157	144
2310371101	S32280007	S3227276201	15x2438x6095	1	1,750	L	144	324	1321	170	105	319	1700	476	27	6486	30	50	50	387	566	29.5	124	151	157	144
2310371101	S32280007	S3227276202	15x2438x6095	1	1,750	L	144	324	1321	170	105	319	1700	476	27	6486	30	50	50	387	566	29.5	124	151	157	144
2310371101	S32280007	S3227276301	15x2438x6095	1	1,750	L	144	324	1321	170	105	319	1700	476	27	6486	30	50	50	387	566	29.5	124	151	157	144
2310371101	S32280007	S3227276302	15x2438x6095	1	1,750	L	144	324	1321	170	105	319	1700	476	27	6486	30	50	50	387	566	29.5	124	151	157	144
2310371101	S32280007	S3227276303	15x2438x6095	1	1,750	L	144	324	1321	170	105	319	1700	476	27	6486	30	50	50	387	566	29.5	124	151	157	144
2310371101	S32280007	S3227278101	15x2438x6095	1	1,750	L	144	324	1321	170	105	319	1700	476	27	6486	30	50	50	387	566	29.5	124	151	157	144
2310371101	S32280007	S3227278102	15x2438x6095	1	1,750	L	144	324	1321	170	105	319	1700	476	27	6486	30	50	50	387	566	29.5	124	151	157	144
			合计(TOTAL):	12	21,000																						

注释 NOTES

L：冶炼成分 SMELTING COMPOSITION
拉伸标准(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MIR.458-23--01

AL

MIR.458-23--12

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR 458-23-12 -04 08
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01 07 03

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT21015011/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGRIZANN230285001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20230301
车号 TRAIN NO.		质量证明书编号 CERTIFICATE NO.	230301Z00469		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析取样 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	B	Als	Ti	Nb	B 0A01 屈服强度 MPa Rpt0.2	B 0A02 抗拉强度 MPa Rm	E 0A03 断后伸长率 % A5	A 0C01 冲击单值 A	A 0C012 冲击单值 B	A 0C013 冲击单值 C	A 0C02 冲击平均值 Ave
							×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻⁴	×10⁻²	×10⁻²	×10⁻²				J	J	J	J
23103707D	H32270270	H3227226202	38x2438x6095	1	4,433	L	154	348	1359	150	72	259	1800	478	24	6245	40	60	50	395	586	28	211	214	202	209
23103764D	H32270274	H3227241103	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	186	24	6125	30	60	50	413	572	29.5	245	245	253	248
23103761D	H32270274	H3227241201	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	186	24	6125	30	60	50	413	572	29.5	245	245	253	248
23103764D	H32270274	H3227241191	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	186	24	6125	30	60	50	413	572	29.5	245	245	253	248
23103761D	H32270274	H3227241102	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	186	24	6125	30	60	50	413	572	29.5	245	245	253	248
23103761D	H32270274	H3227241103	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	186	24	6125	30	60	50	413	572	29.5	245	245	253	248
23103764D	H32270274	H3227241201	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	186	24	6125	30	60	50	413	572	29.5	245	245	253	248
23103761D	H32270274	H3227241202	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	186	24	6125	30	60	50	413	572	29.5	245	245	253	248
			合计(TOTAL):	8	24,845																					

L：熔炼成分 SMELTING COMPOSITION
拉伸试验(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20℃，纵向LONGITUDINAL，
近表 CLOSE TO SURFACE，尺寸SIZE10*10*55

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

注释 NOTES

B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

According to EN 10204 3.1

MTR.461-23--01 AL MTR.461-23--08

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

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MTR 461-23-03
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野牛

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品名称 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGRIZANN230285001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20230301
		质量证明书编号 CERTIFICATE NO.	230301Z00427		
车 号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (M/I) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	B	Mo	Ti	Nb	B B0A01 屈服强度 MPa / Rp0.2 Ksi	B B0A02 抗拉强度 MPa / Ksi	B B0A03 伸长率 % / %	A B0C01 冲击单值 A	A B0C012 冲击单值 B	A B0C013 冲击单值 C	A B0C02 冲击均值 Ave J
							E-3	E-2	E-3	E-3	E-4	E-3	E-3	E-3	E-3	E-5	E-4	E-4	E-4				J	J	J	J
231037641D	1132270272	1132272311101	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	587	19.5	151	168	145	155
231037641D	1132270272	1132272311102	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	587	19.5	151	168	145	155
231037641D	1132270272	1132272311103	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	587	19.5	151	168	145	155
231037641D	1132270272	1132272312201	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	587	19.5	151	168	145	155
231037641D	1132270272	1132272312202	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	587	19.5	151	168	145	155
231037641D	1132270272	1132272312102	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	587	19.5	151	168	145	155
231037641D	1132270272	1132272312103	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	587	19.5	151	168	145	155
231037641D	1132270272	1132272312201	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	587	19.5	151	168	145	155
231037641D	1132270272	1132272312202	25x2438x6095	1	2,916	L	155	355	1356	130	46	253	1800	486	24	6125	30	60	50	429	587	19.5	151	168	145	155
231037071D	1132270273	1132272306102	25x2438x6095	1	2,916	L	154	348	1359	100	72	259	1800	478	24	6245	40	60	50	429	592	19.5	153	151	129	144
231037071D	1132270273	1132272306103	25x2438x6095	1	2,916	L	154	348	1359	100	72	259	1800	478	24	6245	40	60	50	429	592	19.5	153	151	129	144
231037071D	1132270273	1132272306201	25x2438x6095	1	2,916	L	154	348	1359	100	72	259	1800	478	24	6245	40	60	50	429	592	19.5	153	151	129	144
		合计(TOTAL)		12	34,992																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACT TEST：20 C，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE 10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MTR.463-23--01 AL MTR.463-23--12

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

MTR2463-23-02 05-03 12 14 04 09 07 01 08 10

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT210150I/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	产品 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGRIZANN230285001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M : A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20230308
车 号 TRAIN NO.		质量证明书编号 CERTIFICATE NO.	230308Z00988		

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 mm DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	B	Nb	B BA01 屈服强度	B BA02 抗拉强度	L BA03 伸长率	A BC01 冲击单值A	A BC012 冲击单值B	A BC013 冲击单值C	A BC02 冲击均值Ave
							×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻²	×10⁻⁴	×10⁻²	MPa Rm0.2	MPa Rm	% A5	J Kv	J Kv	J Kv	J Kv
2310371301	S32280006	S3227277101	15x2438x6095	1	1.750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	28	169	143	161	158
2310371301	S32280006	S3227277102	15x2438x6095	1	1.750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	28	169	143	161	158
2310371301	S32280006	S3227277201	15x2438x6095	1	1.750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	28	169	143	161	158
2310371301	S32280006	S3227277202	15x2438x6095	1	1.750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	28	169	143	161	158
2310371301	S32280006	S3227277301	15x2438x6095	1	1.750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	28	169	143	161	158
2310371301	S32280006	S3227277302	15x2438x6095	1	1.750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	28	169	143	161	158
2310371301	S32280006	S3227277303	15x2438x6095	1	1.750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	486	586	28	169	143	161	158
			合计 (TOTAL):	7	12.250																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标准(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

MTR.466-23-01 AL MTR.466-23-07

According to EN 10204 3.1

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION

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MTR-466-23-05
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冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

日钢营口中板有限公司
RIZHAO STEEL YINGKOU MEDIUM PLATE CO.,LTD.
辽宁省营口市老边区冶金街/115005
Yejinstreet,Laobiandistrict,Yingkou,Liaoning,P.R.China/115005
TEL:0417-3256081 FAX:0417-3256057 NO.:DT2101501/A

产品质量证明书
INSPECTION CERTIFICATE

订货单位 PURCHASER	SAMSUNG C&T CORPORATION	品名 PRODUCT	桥梁结构钢 Bridge structural steel		
收货单位 CONSIGNEE	SAMSUNG C&T CORPORATION	合同编号 CONTRACT NO.	YGR1ZANN230285001-01		
技术标准/牌号 SPEC/GRADE	ASTM A709/A709M ; A709 Gr.50WT-Z1-B	交货状态 DELIVERY CONDITION	控制轧制(CR)	签发日期 DATE OF ISSUE	20230301
		质量证明书号 CERTIFICATE NO.	230301Z00339		
车号 TRAIN NO.					

炉号 HEAT NO.	批号 LOT NO.	钢板号 PLATE NO.	规格 (MM) DIMENSION	数量 QTY	重量 WEIGHT kg	分析区域 AA	化学成分 CHEMICAL ANALYSIS % C	Si	Mn	P	S	Cu	Ni	Cr	V	Ti	Mo	Nb	B	0.2%屈服强度 B0A01 MPa Rp0.2	抗拉强度 B0A02 MPa Rm	伸长率 B0A03 % A	冲击单值A A0C01 J	冲击单值B A0C012 J	冲击单值C A0C013 J	冲击均值 A0C02 J
							<10^-2	<10^-2	<10^-2	<10^-4	<10^-4	<10^-2	10^-4	<10^-3	<10^-3	<10^-3	<10^-4	<10^-4	<10^-4							
Z310371301	S32280005	S3227273303	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	493	589	28	132	121	138	130
Z310371301	S32280006	S3227274101	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	466	556	28	169	143	161	158
Z310371301	S32280006	S3227274102	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	496	586	28	169	143	161	158
Z310371301	S32280006	S3227274201	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	496	586	28	169	143	161	158
Z310371301	S32280006	S3227274202	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	496	586	28	169	143	161	158
Z310371301	S32280006	S3227274301	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	496	586	28	169	143	161	158
Z310371301	S32280006	S3227274302	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	496	586	28	169	143	161	158
Z310371301	S32280006	S3227274303	15x2438x6095	1	1,750	L	165	345	1366	140	51	264	1820	488	25	6214	30	50	50	496	586	28	169	143	161	158
			合计(TOTAL):	8	14,000																					

注释 NOTES

L：熔炼成分 SMELTING COMPOSITION
拉伸标距(GAUGE LENGTH) Lo=200 mm
A0C冲击试验IMPACTTEST：20℃，纵向LONGITUDINAL，近表 CLOSE TO SURFACE，尺寸SIZE10*10*55
B0A01=YIELD STRENGTH
B0A02=TENSILE STRENGTH
B0A03=PRECENTAGE ELONGATION AFTER FRACTURE

A0C01=IMPACT TEST A
A0C012=IMPACT TEST B
A0C013=IMPACT TEST C
A0C02=IMPACT AVERAGE

According to EN 10204 3.1

MJR.469-23--08

本产品已按照标准要求进行制造和检验，其结果符合要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIR EMENTS OF THE ABOVE MATERIAL SPECIFICATION

野牛

469-23-01 AC 08

冶金技术处处长
DIRECTOR OF METALLURGICAL DEPARTMENT

山东钢铁集团日照有限公司
Shandong Iron & Steel Group Rizhao Co.,Ltd
SD STEEL

山东省日照市东港区临钢路1号
No. 1, Lingang Road, Donggang
Rizhao City, Shandong Province, P.R.
http://www.sdsteelrz.com
TEL (0633)7920801 FAX (0633)7920801

产品质量证明书
INSPECTION CERTIFICATE

客户 PURCHASER	Young Gap Inc.			产品名称 PRODUCT	冷板, 中厚板 HOT ROLLED STEEL PLATES
技术条件 TECHNICAL STANDARD	ASTM A572/A572M	编号 SERIAL NO.	WORDRE 5/27-61	质量证明书编号 CERTIFICATE NO.	LK698545749
交货状态 DELIVERY CONDITION	热轧 AS ROLLED	合同号 CONTRACT NO.	196586989-G25	认证证书号 LICENSE NO.	
牌号 GRADE	A572 Gr50	发货日期 DATE OF ISSUE	2024-5-27	检验证书号 INSPECTION CERTIFICATE	

序号	钢卷/钢板号	炉号	批号	规格及重量MATERIAL DESCRIPTION					化学成分CHEMICAL COMPOSITION % HEAT_ANALYSIS															
				厚度T	宽度W	长度L	件数	理重	C	Si	Mn	P	S	T_Al	V	Cu	Ti	Ni	Nb	Mo	Cr	B			
NO.	COIL/PLATE NO.	HEAT NO.	LOT NO.	mm			PCS.	MASS (t)	x100	x100	x100	x100	x100	x100	x100	x100	x100	x100	x100	x100	x100	x100			
1	57M-965962-98	2547894219	56M-965890	8.0	2440	6100	5	4.675	18	20	102	1.4	2.6	1.7	0.5	1.6	0.4	0.03	0.28	0.22	0.7	0.01			
2	57M-965962-46	2547896521	56M-965890	9.0	2440	6100	46	48.392	19	21	103	1.6	2.6	1.6	0.7	1.4	0.9	0.04	0.21	0.17	0.5	0.03			
3	57M-965962-49	2547896354	56M-965890	12.0	2440	6100	38	53.275	18	23	100	1.6	2.9	1.8	0.7	1.7	0.7	0.05	0.14	0.18	0.1	0.01			
4	57M-965962-63	2547892560	56M-965890	19.0	2440	6100	10	22.200	18	20	101	1.7	2.9	1.9	0.5	1.6	0.7	0.05	0.14	0.14	0.2	0.03			

	屈服强度 Y.S. ReL/Rp MPa	抗拉强度 T.S Rm MPa	断后伸长率 ReL A %	冷弯 R.T. 180° D=3a														冲击 Impact Test Value 10*10*55mm 横向 Horizontal KV2 0°C (J)	NDT NB/T 47013.3_III (2015)			
1	319	518	24.0	Y														118,126,128,124	Y			
2	322	509	23.5	Y														129,130,130,130	Y			
3	308	529	25.3	Y														128,126,129,128	Y			
4	325	510	26.5	Y														130,126,125,127	Y			

合计 TOTAL	99 PCS	128.543 t/吨	备注 REMARKS

我厂保证以上所述本质量证明书内容正确无误，完全满足合同要求，特此证明。
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION.

质量章 STAMP OF QUALITY ASSURANCE

MTR 482-24-01 AL 04

MTR 482-24 -01

AL

MTR 482-24 -04

corpacero
aliados de acero

DECLARACION DE CONFORMIDAD

El producto en láminas colaborantes de acero galvanizado aquí descrito ha sido inspeccionado y ensayado por personal autorizado independiente del área de producción, con resultados satisfactorios en concordancia con los siguientes documentos: Plan de calidad de Corpalosa FO-CC-02-128; Especificacion técnica de Corpalosa ET-CC-02-17.

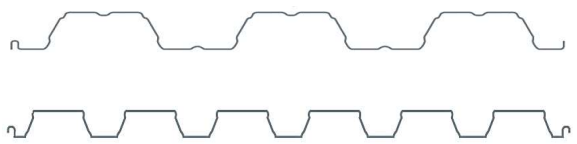
INFORMACION BASICA

Fecha:	23/10/2025	**Consecutivo Nº:**	**CET25-1250**
Línea:	**CORPALOSA® GALVANIZADA**	**Remisión:**	2135566
Norma:	**NTC 5805 NSR10**	**Cliente:**	CONSORCIO SAN FRANCISCO
Referencia:	CORPALOSA 3" GLV. CAL 22	**N° Orden:**	25004466
		Cantidad:	661,29 M2

CARACTERISTICAS DE LA MATERIA PRIMA

Gr.	Propiedades Químicas				Propiedades Mecánicas			Recubrimiento (g/m2)
	% C, máx	% Mn, máx	% P, máx	% S, máx	Esfuerzo de Fluencia MPa	Esfuerzo de Tracción MPa	% Elongación en 50 mm	
40	0,25	1,35	0,10	0,04	≥ 275	≥ 380	≥ 16	≥ 180

PRUEBAS Y ENSAYOS



Materia Prima:	CONFORME
Ancho Útil:	CONFORME
Ancho Total:	CONFORME
Longitud Nominal:	CONFORME
Prof. Grafado:	CONFORME
Seccion perfil:	CONFORME
Espesor:	CONFORME
Recubrimiento:	CONFORME

Elaboró:

MARIA CAMILA CALDERON
Aprendiz de calidad.

Aprobó:

LEONEL DARIO AVILA
Director tecnico

corpacero
aliados de acero

DECLARACION DE CONFORMIDAD

El producto en láminas colaborantes de acero galvanizado aquí descrito ha sido inspeccionado y ensayado por personal autorizado independiente del área de producción, con resultados satisfactorios en concordancia con los siguientes documentos: Plan de calidad de Corpalosa FO-CC-02-128; Especificacion técnica de Corpalosa ET-CC-02-17.

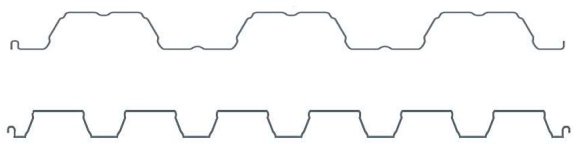
INFORMACION BASICA

Fecha:	23/10/2025	**Consecutivo Nº:**	**CET25-1251**
Línea:	**CORPALOSA® GALVANIZADA**	**Remisión:**	2135567
Norma:	**NTC 5805 NSR10**	**Cliente:**	CONSORCIO SAN FRANCISCO
Referencia:	CORPALOSA 3" GLV. CAL 22	**N° Orden:**	25004292
		Cantidad:	315,84 M2

CARACTERISTICAS DE LA MATERIA PRIMA

Gr.	Propiedades Químicas				Propiedades Mecánicas			Recubrimiento (g/m2)
	% C, máx	% Mn, máx	% P, máx	% S, máx	Esfuerzo de Fluencia MPa	Esfuerzo de Tracción MPa	% Elongación en 50 mm	
40	0,25	1,35	0,10	0,04	≥ 275	≥ 380	≥ 16	≥ 180

PRUEBAS Y ENSAYOS



Materia Prima:	CONFORME
Ancho Útil:	CONFORME
Ancho Total:	CONFORME
Longitud Nominal:	CONFORME
Prof. Grafado:	CONFORME
Seccion perfil:	CONFORME
Espesor:	CONFORME
Recubrimiento:	CONFORME

Elaboró:

MARIA CAMILA CALDERON
Aprendiz de calidad.

Aprobó:

LEONEL DARIO AVILA
Director tecnico

corpacero
aliados de acero

DECLARACION DE CONFORMIDAD

El producto en láminas colaborantes de acero galvanizado aquí descrito ha sido inspeccionado y ensayado por personal autorizado independiente del área de producción, con resultados satisfactorios en concordancia con los siguientes documentos: Plan de calidad de Corpalosa FO-CC-02-128; Especificacion técnica de Corpalosa ET-CC-02-17.

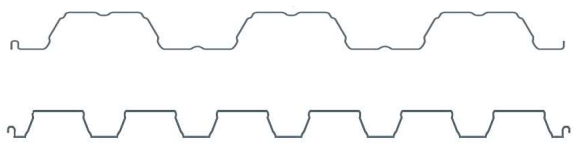
INFORMACION BASICA

Fecha:	23/10/2025	**Consecutivo Nº:**	**CET25-1252**
Línea:	**CORPALOSA® GALVANIZADA**	**Remisión:**	2135567
Norma:	**NTC 5805 NSR10**	**Cliente:**	CONSORCIO SAN FRANCISCO
Referencia:	CORPALOSA 3" GLV. CAL 18	**N° Orden:**	25004292
		Cantidad:	559,629 M2

CARACTERISTICAS DE LA MATERIA PRIMA

Gr.	Propiedades Químicas				Propiedades Mecánicas			Recubrimiento (g/m2)
	% C, máx	% Mn, máx	% P, máx	% S, máx	Esfuerzo de Fluencia MPa	Esfuerzo de Tracción MPa	% Elongación en 50 mm	
40	0,25	1,35	0,10	0,04	≥ 275	≥ 380	≥ 16	≥ 180

PRUEBAS Y ENSAYOS



Materia Prima:	CONFORME
Ancho Útil:	CONFORME
Ancho Total:	CONFORME
Longitud Nominal:	CONFORME
Prof. Grafado:	CONFORME
Seccion perfil:	CONFORME
Espesor:	CONFORME
Recubrimiento:	CONFORME

Elaboró:

MARIA CAMILA CALDERON
Aprendiz de calidad.

Aprobó:

LEONEL DARIO AVILA
Director tecnico

corpacero
aliados de acero

DECLARACION DE CONFORMIDAD

El producto en láminas colaborantes de acero galvanizado aquí descrito ha sido inspeccionado y ensayado por personal autorizado independiente del área de producción, con resultados satisfactorios en concordancia con los siguientes documentos: Plan de calidad de Corpalosa FO-CC-02-128; Especificacion técnica de Corpalosa ET-CC-02-17.

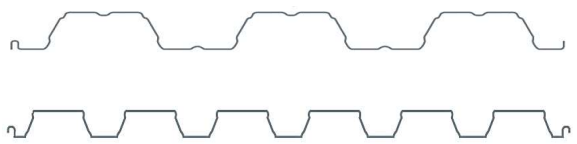
INFORMACION BASICA

Fecha:	23/10/2025	**Consecutivo Nº:**	**CET25-1253**
Línea:	**CORPALOSA® GALVANIZADA**	**Remisión:**	2135568
Norma:	**NTC 5805 NSR10**	**Cliente:**	CONSORCIO SAN FRANCISCO
Referencia:	CORPALOSA 3" GLV. CAL 22	**N° Orden:**	25004295
		Cantidad:	240,3 M2

CARACTERISTICAS DE LA MATERIA PRIMA

Gr.	Propiedades Químicas				Propiedades Mecánicas			Recubrimiento (g/m2)
	% C, máx	% Mn, máx	% P, máx	% S, máx	Esfuerzo de Fluencia MPa	Esfuerzo de Tracción MPa	% Elongación en 50 mm	
40	0,25	1,35	0,10	0,04	≥ 275	≥ 380	≥ 16	≥ 180

PRUEBAS Y ENSAYOS



Materia Prima:	CONFORME
Ancho Útil:	CONFORME
Ancho Total:	CONFORME
Longitud Nominal:	CONFORME
Prof. Grafado:	CONFORME
Seccion perfil:	CONFORME
Espesor:	CONFORME
Recubrimiento:	CONFORME

Elaboró:

MARIA CAMILA CALDERON
Aprendiz de calidad.

Aprobó:

LEONEL DARIO AVILA
Director tecnico

corpacero
aliados de acero

DECLARACION DE CONFORMIDAD

El producto en láminas colaborantes de acero galvanizado aquí descrito ha sido inspeccionado y ensayado por personal autorizado independiente del área de producción, con resultados satisfactorios en concordancia con los siguientes documentos: Plan de calidad de Corpalosa FO-CC-02-128; Especificacion técnica de Corpalosa ET-CC-02-17.

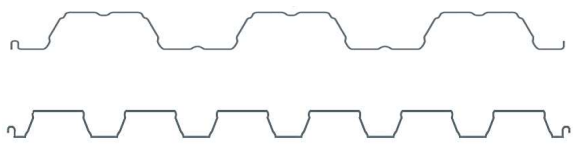
INFORMACION BASICA

Fecha:	23/10/2025	**Consecutivo Nº:**	**CET25-1254**
Línea:	**CORPALOSA® GALVANIZADA**	**Remisión:**	2135568
Norma:	**NTC 5805 NSR10**	**Cliente:**	CONSORCIO SAN FRANCISCO
Referencia:	CORPALOSA 3" GLV. CAL 18	**N° Orden:**	25004295
		Cantidad:	350,46 M2

CARACTERISTICAS DE LA MATERIA PRIMA

Gr.	Propiedades Químicas				Propiedades Mecánicas			Recubrimiento (g/m2)
	% C, máx	% Mn, máx	% P, máx	% S, máx	Esfuerzo de Fluencia MPa	Esfuerzo de Tracción MPa	% Elongación en 50 mm	
40	0,25	1,35	0,10	0,04	≥ 275	≥ 380	≥ 16	≥ 180

PRUEBAS Y ENSAYOS



Materia Prima:	CONFORME
Ancho Útil:	CONFORME
Ancho Total:	CONFORME
Longitud Nominal:	CONFORME
Prof. Grafado:	CONFORME
Seccion perfil:	CONFORME
Espesor:	CONFORME
Recubrimiento:	CONFORME

Elaboró:

MARIA CAMILA CALDERON
Aprendiz de calidad.

Aprobó:

LEONEL DARIO AVILA
Director tecnico

corpacero
aliados de acero

DECLARACION DE CONFORMIDAD

El producto en láminas colaborantes de acero galvanizado aquí descrito ha sido inspeccionado y ensayado por personal autorizado independiente del área de producción, con resultados satisfactorios en concordancia con los siguientes documentos: Plan de calidad de Corpalosa FO-CC-02-128; Especificacion técnica de Corpalosa ET-CC-02-17.

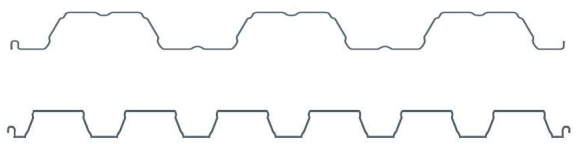
INFORMACION BASICA

Fecha:	23/10/2025	**Consecutivo Nº:**	**CET25-1255**
Línea:	**CORPALOSA® GALVANIZADA**	**Remisión:**	2135569
Norma:	**NTC 5805 NSR10**	**Cliente:**	CONSORCIO SAN FRANCISCO
Referencia:	CORPALOSA 3" GLV. CAL 18	**N° Orden:**	25004142
		Cantidad:	534,24 M2

CARACTERISTICAS DE LA MATERIA PRIMA

Gr.	Propiedades Químicas				Propiedades Mecánicas			Recubrimiento (g/m2)
	% C, máx	% Mn, máx	% P, máx	% S, máx	Esfuerzo de Fluencia MPa	Esfuerzo de Tracción MPa	% Elongación en 50 mm	
40	0,25	1,35	0,10	0,04	≥ 275	≥ 380	≥ 16	≥ 180

PRUEBAS Y ENSAYOS



Materia Prima:	CONFORME
Ancho Útil:	CONFORME
Ancho Total:	CONFORME
Longitud Nominal:	CONFORME
Prof. Grafado:	CONFORME
Seccion perfil:	CONFORME
Espesor:	CONFORME
Recubrimiento:	CONFORME

Elaboró:

MARIA CAMILA CALDERON
Aprendiz de calidad.

Aprobó:

LEONEL DARIO AVILA
Director tecnico

corpacero
aliados de acero

DECLARACION DE CONFORMIDAD

La lámina de acero galvanizado aquí descrita ha sido inspeccionada y ensayada por personal autorizado independiente del área de producción, con resultados satisfactorios en concordancia con la especificación técnica de Testeros Metálicos y materia prima acorde con la norma ASTM A653.

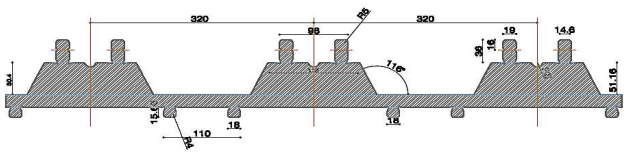
INFORMACION BASICA

Fecha:	23/10/2025	**Consecutivo Nº:**	**CET25-1256**
Línea:	**TESTEROS**	**Remisión:**	2135570
Norma:	**ASTM A653**	**Cliente:**	CONSORCIO SAN FRANCISCO
Referencia:	TESTERO METALICO 3"	**N° Orden:**	25004145
		Cantidad:	1510 UN

CARACTERISTICAS DE LA MATERIA PRIMA

Gr.	Propiedades Químicas				Propiedades Mecánicas		
	% C, máx	% Mn, máx	% P, máx	%S, máx	Esfuerzo de Fluencia, mín. Mpa	Esfuerzo de Tracción, mín. Mpa	% Elongación en 50 mm, mín.
33	0,25	1,15	0,20	0,04	230	310	20

PRUEBAS Y ENSAYOS



Corte:	CONFORME
Doblez:	CONFORME
Espesor:	CONFORME
Recubrimiento:	CONFORME

Elaboró:

MARIA CAMILA CALDERON
Aprendiz de calidad.

Aprobó:

LEONEL DARIO AVILA
Director tecnico

Consorcio San Francisco	CONTROL TECNICO DE ACTIVIDADES DE CONSTRUCCIÓN TENSIONAMIENTO DE ANCLAJES ACTIVOS	Código	327-CIV-PO-05-F-00
		Versión	1
		Fecha	19/03/2024

PROYECTO:	CONSTRUCCIÓN, MEJORAMIENTO Y MANTENIMIENTO, GESTIÓN PREDIAL, SOCIAL Y AMBIENTAL SOSTENIBLE DE LA VARIANTE SAN FRANCISCO MOCOA TRAMO 2 (FRENTE SAN FRANCISCO), DEPARTAMENTO DE PUTUMAYO, EN MARCO DE LA REACTIVACIÓN ECONÓMICA, MEDIANTE EL PROGRAMA DE OBRA PUBLICA "VIAS PARA LA LEGALIDAD Y REACTIVACIÓN VISIÓN 2030

LOCALIZACION: ***TALUD K6+800*** TIPO DE ANCLAJE: ACTIVO CON BARRA AUTOPERFORANTE R38

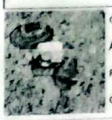
FECHA: SEPTIEMBRE 22 2025 LONGITUD DE ANCLAJE: 20 50 MTS (LB 10)

Supervisor Residente Contratista: MARIO NAM

Supervisor Residente Interventoria:

Supervisor Residente de Tensionamiento: WILLIAN MANRIQUE

ESPECIFICACIONES DEL EQUIPO



Gato	MULTITORON	
Área Efectiva	29.24	Plg²
Recorrido	200	mm
Capacidad	90	Ton

DEFORMACION ANCLAJE O VARILLA

$$\delta = \frac{T * L}{E * A}$$

T (tensión de Trabajo Barra R38)	30000	kg	
T (tensión Prueba barra R38)	39000	kg	
L_B (Longitud bulbo)	10000	mm	
L_L (Longitud libre barra R38)	10500	mm	
E (Modulo de elasticidad barra R38)	20904	kg/mm²	
A (Area nominal Barra R-38)	750	mm²	

CALCULO DE DEFORMACIONES

Esfuerzo (psi)
113
565
1131
1696
2262
2941

Carga (kg)	% Carga
1500	5%
7500	25%
15000	50%
22500	75%
30000	100%
39000	130%

δl min (mm)	δs max (mm)
1	2
5	8
9	16
13	23
17	31
22	40

PRESION BOMBA

$$P = \frac{T}{4g}$$

T (Tensión trabajo Barras R38)	66138.7	Lbs
T (Tensión prueba Barra R38)	85980.4	Lbs
Ag (Area gato)	29.24	Plg²

$P_{trabajo}$	### Lbs/Plg²	P_{prueba}	2941	Lbs/Plg²

LECTURA PARA TENSION DE PRUEBA

Anclaje No		Diámetro de Barra	Presión manómetro (PSI)/Elongacion en mm					Punzonamiento Inicial (mm)	Punzonamiento Final (mm)	Punzonamiento Total (mm)	Elongacion Final
FILA	N		Long Inicial (mm) 5%	Long 1 (mm)	Long 2 (mm)	Long 3 (mm)	Long 4 (mm)				
H2	6	R38	120	602	1203	1805	2407	20.0	47.0	27.0	25.0
			816	828	840	854	868				
I2	6	R38	120	602	1203	1805	2407	20.0	46.0	26.0	27.0
			928	940	954	970	981				
K2	6	R38	120	602	1203	1805	2407	20.0	45.0	25.0	25.0
			854	866	879	891	904				
M2	6	R38	120	602	1203	1805	2407	20.0	47.0	27.0	27.0
			976	988	1002	1016	1030				
H2	6	R38	120	602	1203	1805	2407	20.0	47.0	27.0	27.0
			816	828	840	855	870				
H2	4	R38	120	602	1203	1805	2407	20.0	46.0	26.0	27.0
			928	940	955	968	981				
L2	6	R38	120	602	1203	1805	2407	20.0	48.0	28.0	28.0
			861	867	880	895	907				
N2	6	R38	120	602	1203	1805	2407	20.0	45.0	25.0	27.0
			918	930	945	957	970				
Q2	6	R38	120	602	1203	1805	2407	20.0	47.0	27.0	32.0
			827	840	852	870	886				
Q2	6	R38	120	602	1203	1805	2407	20.0	47.0	27.0	29.0
			947	960	978	991	1003				
P2	6	R38	120	602	1203	1805	2407	20.0	48.0	28.0	32.0
			816	830	842	860	874				
S2	6	R38	120	602	1203	1805	2407	20.0	45.0	25.0	31.0
			922	938	950	961	978				
R2	6	R38	120	602	1203	1805	2407	20.0	47.0	27.0	28.0
			954	968	981	995	1007				
AC2	6	R38	120	602	1203	1805	2407	20.0	48.0	28.0	25.0
			959	971	986	998	1012				
AD2	6	R38	120	602	1203	1805	2407	20.0	45.0	25.0	28.0
			849	861	876	889	902				

$$\delta_l = \frac{T_{trab} * (L_G + 0.8L_L)}{A * E} \qquad \delta_s = \frac{T_{trab} * (L_G + L_L + 0.5L_B)}{A * E}$$

δ_l= Deformación elástica teórica mínima [mm]

δs= Deformación elástica teórica máxima [mm]

A= Área transversal de la barra [mm²]

E= Modulo de elasticidad acero de la barra [kg/mm²]

L_L= Longitud libre del anclaje [mm]

L_B= Longitud del bulbo del anclaje [mm]

L_G= Longitud del gato [mm]

OBSERVACIONES:

MARIO NAM

Vo Bo CONTRATISTA
Ing. Alberto Arcos R

Vo Bo INTERVENTORIA
Ing. Luis Vicente Calderon

Powered by CamScanner

Consorcio San Francisco	CONTROL TECNICO DE ACTIVIDADES DE CONSTRUCCIÓN TENSIONAMIENTO DE ANCLAJES ACTIVOS	Código	327-CIV-PO-05-F-00
		Versión	1
		Fecha	19/03/2024

PROYECTO:	CONSTRUCCIÓN, MEJORAMIENTO Y MANTENIMIENTO, GESTIÓN PREDIAL, SOCIAL Y AMBIENTAL SOSTENIBLE DE LA VARIANTE SAN FRANCISCO MOCOA TRAMO 2 (FRENTE SAN FRANCISCO), DEPARTAMENTO DE PUTUMAYO, EN MARCO DE LA REACTIVACIÓN ECONÓMICA, MEDIANTE EL PROGRAMA DE OBRA PÚBLICA "VIAS PARA LA LEGALIDAD Y REACTIVACIÓN VISIÓN 2030

LOCALIZACION: TALUD K6+800

TIPO DE ANCLAJE: ACTIVO CON BARRA AUTOPERFORANTE R38

FECHA: SEPTIEMBRE 23 2025

LONGITUD DE ANCLAJE: 20.50 MTS (LB:10)

Supervisor/Residente Contratista: MARIO NAM

Supervisor/Residente Interventoria:

Supervisor/Residente de Tensionamiento: WILLIAN MANRIQUE

ESPECIFICACIONES DEL EQUIPO



Gato	MULTITORON	
Área Efectiva	29.24	Plg²
Recorrido	200	mm
Capacidad	90	Ton

CALCULO DE DEFORMACIONES

Esfuerzo (psi)
113
565
1131
1696
2262
2941

Carga (kg)	% Carga
1500	5%
7500	25%
15000	50%
22500	75%
30000	100%
39000	130%

Si min (mm)	Si max (mm)
1	2
5	8
9	16
13	23
17	31
22	40

DEFORMACION ANCLAJE O VARILLA

$\delta = \frac{T * L}{E * A}$

T (tensión de Trabajo Barra R38)	30000	kg
T (tensión Prueba barra R38)	39000	kg
L_B (Longitud bulbo)	10000	mm
L_L (Longitud libre barra R38)	10500	mm
E (Modulo de elasticidad barra R38)	20004	kg/mm²
A (Area nominal Barra R38)	750	mm²

LECTURA PARA TENSION DE PRUEBA

Anclaje No.		Diámetro de Barra	Presión manómetro (PSI)/Elongacion en mm					Punzonamiento Inicial (mm)	Punzonamiento a Final (mm)	Punzonamiento Total (mm)	Elongacion Final
FILA	N.		Long Inicial (mm) 5%	Long 1 (mm)	Long 2 (mm)	Long 3 (mm)	Long 4 (mm)				
U2	6	R38	120	602	1203	1805	2407	20.0	47.0	27.0	25.0
			916	927	941	963	987				
T2	6	R38	120	602	1203	1805	2407	20.0	46.0	26.0	27.0
			928	940	954	979	981				
V2	6	R38	120	602	1203	1805	2407	20.0	45.0	25.0	27.0
			963	967	980	993	1005				
W2	6	R38	120	602	1203	1805	2407	20.0	47.0	27.0	31.0
			973	987	1001	1016	1031				
Y2	6	R38	120	602	1203	1805	2407	20.0	47.0	27.0	32.0
			827	840	853	868	886				
X2	6	R38	120	602	1203	1805	2407	20.0	46.0	26.0	27.0
			928	946	955	968	981				
Z2	6	R38	120	602	1203	1805	2407	20.0	48.0	28.0	30.0
			960	968	981	988	1008				
AB2	6	R38	120	602	1203	1805	2407	20.0	45.0	25.0	28.0
			916	929	942	954	969				

PRESION BOMBA

$P = \frac{T}{Ag}$

T (Tensión trabajo Barras R38)	66138.7	Lbs
T (Tensión prueba Barra R38)	85980.4	Lbs
Ag (Area gato)	29.24	Plg²

$P_{trabajo}$	Lbs/Plg²

P_{prueba}	2941	Lbs/Plg²

$\delta_i = \frac{T_{trab} * (L_G + 0.8L_L)}{A * E}$ $\delta_s = \frac{T_{trab} * (L_G + L_L + 0.5L_B)}{A * E}$

δ_i= Deformación elástica teórica mínima [mm]

δ_s= Deformación elástica teórica máxima [mm]

A= Área transversal de la barra [mm²]

E= Módulo de elasticidad acero de la barra [kg/mm²]

L_L= Longitud libre del anclaje [mm]

L_B= Longitud del bulbo del anclaje [mm]

L_G= Longitud del gato [mm]

OBSERVACIONES:

MARIO NAM

Vo. Bo. CONTRATISTA
Ing. Libero Arcos R.

Vo. Bo. INTERVENTORIA
Ing. Luis Vicente Calderon

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