

INSPECTION CERTIFICATE

CERTIFICATE NO. :BYVF3930

PAGE : 1/7 DATE :2019-05-23

CUSTOMER :
ORDER NO. :RFP-201811345(19-MSCT-10-120326)
SHIPPER :SUMITOMO CORPORATION 057 KEN 82405/E 9-845-N3-5-5-FKFM-01
COMMODITY :SEAMLESS HOT FINISHED STAINLESS STEEL TUBING WITH VAM TOP
STANDARD :SM13CRS-110 (NIPPON STEEL & SUMITOMO METAL STD.)
SPECIFICATION :TSP-4283RA, TSP-2368RQ, TSP-2369RE
MILL WORK NO. :BYVF3930 O.D.:4-1/2inch W.T.:12.60lb/ft LENGTH:MIN.10.97m MAX.12.19m
QUANTITY:86pcs. TOTAL LENGTH:1036.85m MASS:19234kg

HEAT NO. :F912057 F912075
PRODUCTS PCS. :36 50

HEAT TREATMENT :QUENCHED & TEMPERED

CHEMICAL COMPOSITION(%)

		*1	C	Si	Mn	P	S	Cr	Ni	Mo	Ti	V	Nb	Al
						*3	*3	*2	*2					*3
SPEC. MIN.		R	-	-	-	-	-	115	50	180	1	-	-	-
MAX.		R	3	50	50	20	5	135	65	250	50	50	-	-
HEAT NO.														
F912057		L	1	24	40	10	0	120	54	193	10	5	0	39
		P	1	24	40	10	1	119	53	192	10	5	0	37
		P	1	25	40	10	1	120	54	193	10	5	0	39
F912075		L	1	23	41	16	0	121	55	192	10	5	0	38
		P	1	23	42	15	1	120	54	192	10	5	0	39
		P	1	23	41	15	1	120	54	192	10	5	0	39
*1 R:LADLE & PRODUCT ANALYSIS L:LADLE ANALYSIS P:PRODUCT ANALYSIS *2:X10 *3:X1000 OTHER:X100														

TENSILE TEST

		*1 *2	YS	YS	TS	TS	EL
			*3	*3	*3	*3	%
SPEC. MIN.	HEAT-	L B	P 110.0	M 758	P 115.0	M 793	13
MAX.	LOT NO.	L B	P 125.0	M 862	P -	M -	-
HEAT NO.							
F912057	002	L B	P 114.9	M 792	P 120.2	M 829	26
	002	L B	P 115.2	M 794	P 119.9	M 827	26
F912075	001	L B	P 114.4	M 789	P 119.7	M 825	25
	001	L B	P 114.6	M 790	P 119.8	M 826	26
TYPE OF SPECIMEN:STRIP 1in.(25.4mm) WIDTH *1 SAMPLING DIRECTION L:LONGITUDINAL *2 SAMPLING POSITION B:BASE METAL							
*3 UNIT P:ksi M:MPa GAUGE LENGTH:2.0in.(50.8mm) KIND OF YS:0.6% EXTENSION UNDER LOAD							

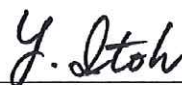
IMPACT TEST(-10.0°C +14.0°F 2mm V-Notch 10X5.00)

		*1 *2	*3 *4	AVG	*3 *4	AVG
SPEC. MIN.	HEAT-	L B	E J *5 22/33	33	E F *5 16/24	24
MAX.	LOT NO.	L B	E J -/-	-	E F -/-	-
			[1] [2] [3]		[1] [2] [3]	
HEAT NO.						
F912057	002	L B	E J 109 108 105 107		E F 80 80 77 79	

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




Munakata Masayasu
All documents and certification
reviewed and accepted.
Documents digitally signed on
27/May/19 Page 1 of 7



YUJIN ITO

INTERTEK INDUSTRY SERVICES JAPAN LIMITED

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PAGE : 2 / 7 DATE : 2019-05-23

IMPACT TEST(-10.0°C +14.0°F 2mm V-Notch 10X5.00)

		*1 *2	*3 *4	AVG			*3 *4	AVG		
SPEC. MIN.	HEAT-	L B	E J	*5	22/33	33	E F	*5	16/24	24
MAX.	LOT NO.	L B	E J		-/-	-	E F		-/-	-
				[1]	[2]	[3]		[1]	[2]	[3]
HEAT NO.										
F912075	001	L B	E J	113	109	118	E F	83	80	87
		*1 *2	*3 *4	AVG				AVG		
SPEC. MIN.	HEAT-	L B	S %	*6	-	-				
MAX.	LOT NO.	L B	S %		-	-				
				[1]	[2]	[3]				
HEAT NO.										
F912057	002	L B	S %	100	100	100				
F912075	001	L B	S %	100	100	100				

[1] [2] [3]: SPECIMEN NO.
 ABSORBED ENERGY *5:VALUE OF ONE PIECE/EACH VALUE OF TWO PIECES AVG:AVERAGE VALUE OF ONE SET(3 PIECES)
 SHEAR AREA *6:VALUE OF ONE PIECE AVG:AVERAGE VALUE OF ONE SET(3 PIECES)
 *1 SAMPLING DIRECTION L:LONGITUDINAL *2 SAMPLING POSITION B:BASE METAL *3 E:ABSORBED ENERGY S:SHEAR AREA
 *4 UNIT J:Joule F:ft·lbf %:%

VISUAL & DIMENSIONS: ACCEPTABLE

DRIFT TEST: ACCEPTABLE (O.D.:97.36mm LENGTH:1067mm)

HYDROSTATIC TEST 10000psi(69.0MPa)X5sec.: ACCEPTABLE

ULTRASONIC EXAMINATION: ACCEPTABLE

APPLICABLE STANDARD: ISO11960 SECTION 10.15

REFERENCE STANDARD: L2 EXTERNAL & INTERNAL LONGITUDINAL & TRANSVERSE NOTCH LENGTH 2.0in.(50mm) WIDTH 0.040in.(1mm)

MAGNETIC PARTICLE EXAMINATION(END AREA): ACCEPTABLE

APPLICABLE STANDARD: ISO11960 SECTION 10.15

REFERENCE STANDARD: BRUMAH CASTROL EXTERNAL & INTERNAL LONGITUDINAL & TRANSVERSE

ULTRASONIC EXAMINATION (LAMINATION): ACCEPTABLE

REFERENCE STANDARD: 0.20in.(5mm) X 2.0in.(50mm)

ELECTRO MAGNETIC EXAMINATION: ACCEPTABLE

APPLICABLE STANDARD: ISO11960 SECTION 10.15

REFERENCE STANDARD: L2 EXTERNAL LONGITUDINAL & TRANSVERSE NOTCH LENGTH 2.0in.(50mm) WIDTH 0.040in.(1mm)

ULTRASONIC WALL THICKNESS CHECK: ACCEPTABLE

THREAD GAUGING: ACCEPTABLE

EQUINOR MATERIAL NO.

558079

TROO48VER.7

EN 10204 3.1

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



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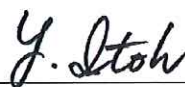
CERTIFICATE NO. : BYYF3930

PAGE : 3/7 DATE : 2019-05-23

HARDNESS TEST(HRC)

		*1*2 *3	*4 *5	*V.A.
SPEC. MIN.		B C	- -	-
MAX.		B C	- 30.0	-
HEAT NO.	HEAT- LOT NO.		AVG. MID WALL QUAD IMPRESSION NO. -RANT (1) (2) (3) AVG.	
F912057	002	B C T	25.8 A 25.8 25.8 25.9 25.8	-
	002	B C B	26.0 A 25.7 25.9 26.4 26.0	-
F912075	001	B C T	25.1 A 25.0 25.0 25.3 25.1	-
	001	B C B	25.7 A 25.3 25.7 26.0 25.7	-
		*ALL	25.6	
*1 SAMPLING POSITION B:BASE METAL *2 LOCATION C:CROSS SECTION *3 SAMPLING LOCATION T:TOP B:BOTTOM *4 EACH *5 AVERAGE *V.A.:VARIATION AVERAGE MAX.-MIN. * ALL:ALL AVG.				

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NIPPON STEEL

NIPPON STEEL CORPORATION
WAKAYAMA WORKS [KAINAN AREA]
260-100, FUNOO, KAINAN, JAPAN

INSPECTION CERTIFICATE

CERTIFICATE NO. :BYZF3930

PAGE : 4/7 DATE :2019-05-23

TEMPERING TEMPERATURE

HEAT NO.	PRODUCT PCS. (PCS.)	HEAT LOT/NO.	SETTING TEMPERING TEMPERATURE (°C)
F912057	36	002	605
F912075	50	001	605
TOTAL	86		
REMARKS : TEMPERING TEMPERATURE CONTROL RANGE : SETTING TEMPERATURE +,-10°C			

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NO.086462K19

INSPECTION CERTIFICATE(COUPLING)

CERTIFICATE NO. :BYVF3930

PAGE : 5 / 7 DATE :2019-05-23

MATERIAL WORK NO.:BCFF7637, BCFF8227

HEAT TREATMENT:QUENCHED & TEMPERED

CHEMICAL COMPOSITION(%)

		*1	C	Si	Mn	P	S	Cr	Ni	Mo	Ti	V	Nb	Al
						*3	*3	*2	*2					*3
SPEC. MIN.		R	-	-	-	-	-	115	50	180	1	-	-	-
MAX.		R	3	50	50	20	5	135	65	250	50	50	-	-
HEAT NO.														
F818083		L	1	22	43	15	1	120	54	192	10	6	1	35
		P	1	21	43	14	1	121	54	194	9	6	0	29
		P	1	21	43	14	1	121	54	194	9	6	0	29
F912110		L	1	22	44	16	0	121	55	192	10	5	1	37
		P	1	23	45	15	1	122	55	192	10	5	1	33
		P	1	23	45	15	1	122	55	192	10	5	1	33

*1 R:LADLE & PRODUCT ANALYSIS L:LADLE ANALYSIS P:PRODUCT ANALYSIS *2:X10 *3:X1000 OTHER:X100

TENSILE TEST

		*1 *2	YS	YS	TS	TS	EL
			*3	*3	*3	*3	%
SPEC. MIN.	PIPE	L B	P 110.0	M 758	P 115.0	M 793	16
MAX.	NO.	L B	P 125.0	M 862	P -	M -	-
HEAT NO.							
F818083	1	L B	P 117.3	M 809	P 122.0	M 841	36
F912110	1	L B	P 115.9	M 799	P 122.1	M 842	35

TYPE OF SPECIMEN:STRIP 1in.(25.4mm) WIDTH *1 SAMPLING DIRECTION L:LONGITUDINAL *2 SAMPLING POSITION B:BASE METAL
*3 UNIT P:ksi M:MPa GAUGE LENGTH:2.0in.(50.8mm) KIND OF YS:0.6% EXTENSION UNDER LOAD

TENSILE TEST

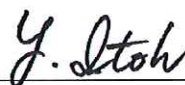
		*1 *2	YS	YS	TS	TS	EL
			*3	*3	*3	*3	%
SPEC. MIN.	PIPE	L B	P 110.0	M 758	P 115.0	M 793	16
MAX.	NO.	L B	P 125.0	M 862	P -	M -	-
HEAT NO.							
F818083	1	L B	P 118.8	M 819	P 122.6	M 845	36
F912110	1	L B	P 115.6	M 797	P 121.7	M 839	36

TYPE OF SPECIMEN:STRIP 1in.(25.4mm) WIDTH *1 SAMPLING DIRECTION L:LONGITUDINAL *2 SAMPLING POSITION B:BASE METAL
*3 UNIT P:ksi M:MPa GAUGE LENGTH:2.0in.(50.8mm) KIND OF YS:0.6% EXTENSION UNDER LOAD

IMPACT TEST(-10.0°C +14.0°F 2mm V-Notch 10X5.00)

		*1 *2	*3 *4	AVG	*3 *4	AVG
SPEC. MIN.	PIPE	T B	E J *5	22/33	E F *5	16/24
MAX.	NO.	T B	E J	-/-	E F	-/-
			[1] [2] [3]		[1] [2] [3]	
HEAT NO.						
F818083	1	T B	E J	78 76 78 77	E F	58 56 58 57

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INSPECTION CERTIFICATE(COUPLING)

CERTIFICATE NO. :BYFF3930

PAGE : 6 / 7 DATE :2019-05-23

IMPACT TEST(-10.0°C +14.0°F 2mm V-Notch 10X5.00)

		*1 *2	*3 *4	AVG			*3 *4	AVG		
SPEC. MIN.	PIPE	T B	E J	*5	22/33	33	E F	*5	16/24	24
MAX.	NO.	T B	E J		-/-	-	E F		-/-	-
				[1]	[2]	[3]		[1]	[2]	[3]
HEAT NO.										
F912110	1	T B	E J	77	82	79	79	E F	57	60
									58	58
		*1 *2	*3 *4	AVG						
SPEC. MIN.	PIPE	T B	S %	*6	-	-				
MAX.	NO.	T B	S %		-	-				
				[1]	[2]	[3]				
HEAT NO.										
F818083	1	T B	S %	100	100	100	100			
F912110	1	T B	S %	100	100	100	100			

[1] [2] [3]: SPECIMEN NO.
 ABSORBED ENERGY *5:VALUE OF ONE PIECE/EACH VALUE OF TWO PIECES AVG:AVERAGE VALUE OF ONE SET(3 PIECES)
 SHEAR AREA *6:VALUE OF ONE PIECE AVG:AVERAGE VALUE OF ONE SET(3 PIECES)
 *1 SAMPLING DIRECTION T:TRANSVERSE *2 SAMPLING POSITION B:BASE METAL *3 E:ABSORBED ENERGY S:SHEAR AREA
 *4 UNIT J:Joule F:ft•lbf %:%

VISUAL & DIMENSIONS: ACCEPTABLE

MAGNETIC PARTICLE EXAMINATION: ACCEPTABLE

APPLICABLE STANDARD: ISO11960 SECTION 9.12

REFERENCE STANDARD: BRUMAH CASTROL EXTERNAL & INTERNAL LONGITUDINAL

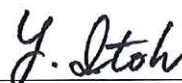
THREAD GAUGING: ACCEPTABLE

EN 10204 3.1

TEST HEAT LOT

MATERIAL WORK NO.	HEAT NO.	HEAT LOT NO.	PIPE NO.
BCFF7637	F818083	001	1-2
BCFF8227	F912110	001	1-4

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HARDNESS TEST(HRC)

		*1*2	*3	*4	*5													*V.A.	
SPEC. MIN.		B	C	-	-													-	
MAX.		B	C	-	30.0													-	
HEAT NO.	PIPE NO.			AVG.	QUAD	OUTER WALL IMPRESSION NO.				MID WALL IMPRESSION NO.				INNER WALL IMPRESSION NO.					
					-RANT	(1)	(2)	(3)	AVG.	(1)	(2)	(3)	AVG.	(1)	(2)	(3)	AVG.		
F818083	1	B	C	T	26.8	A	26.6	26.7	26.3	26.5	26.8	26.9	26.9	26.9	26.8	26.8	27.0	26.9	0.4
	1	B	C	T	26.8	B	26.6	26.7	26.6	26.6	27.1	27.0	26.9	27.0	26.7	26.7	27.0	26.8	0.4
	1	B	C	T	26.7	C	26.8	26.8	26.2	26.6	26.6	26.5	27.2	26.8	27.0	26.9	26.6	26.8	0.2
	1	B	C	T	26.6	D	26.5	26.5	26.3	26.4	26.6	26.4	26.5	26.5	26.7	26.8	26.8	26.8	0.4
F912110									V.A.	0.2			V.A.	0.5			V.A.	0.1	
	1	B	C	T	26.8	A	26.8	27.1	26.5	26.8	26.6	27.0	26.9	26.8	27.1	27.0	26.5	26.9	0.1
	1	B	C	T	26.4	B	26.2	26.3	26.3	26.3	26.8	26.5	26.4	26.6	26.3	26.4	26.6	26.4	0.3
	1	B	C	T	26.7	C	26.9	26.7	26.7	26.8	26.7	26.8	26.7	26.7	26.6	26.3	26.6	26.5	0.3
	1	B	C	T	26.4	D	26.4	26.5	26.4	26.4	26.2	26.1	26.3	26.2	26.7	26.8	26.2	26.6	0.4
									V.A.	0.5			V.A.	0.6			V.A.	0.5	
				*ALL	26.6														
*1 SAMPLING POSITION B:BASE METAL *2 LOCATION C:CROSS SECTION *3 SAMPLING LOCATION T:TOP B:BOTTOM *4 EACH																			
*5 AVERAGE *V.A.:VARIATION AVERAGE MAX.-MIN. * ALL:ALL AVG.																			

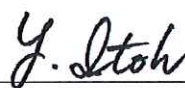
*1 SAMPLING POSITION B:BASE METAL *2 LOCATION C:CROSS SECTION *3 SAMPLING LOCATION T:TOP B:BOTTOM *4 EACH
*5 AVERAGE *V.A.:VARIATION AVERAGE MAX.-MIN. * ALL:ALL AVG.

HARDNESS TEST(HRC)

		*1*2	*3	*4	*5														*V.A.
SPEC. MIN.		B	C	-	-														-
MAX.		B	C	-	30.0														-
	PIPE			AVG.	OUTER WALL				MID WALL				INNER WALL						
HEAT NO.	NO.			QUAD	IMPRESSION NO.				IMPRESSION NO.				IMPRESSION NO.						
				-RANT	(1)	(2)	(3)	AVG.	(1)	(2)	(3)	AVG.	(1)	(2)	(3)	AVG.			
F818083	1	B	C	T	27.0	A	26.7	26.7	26.6	26.7	27.0	27.3	27.0	27.1	26.8	27.6	27.1	27.2	0.5
	1	B	C	T	26.6	B	26.2	26.7	26.8	26.6	26.8	26.4	26.9	26.7	26.1	26.4	26.8	26.4	0.3
	1	B	C	T	26.6	C	26.7	26.4	26.2	26.4	26.5	27.0	27.0	26.8	26.9	26.6	26.5	26.7	0.4
	1	B	C	T	26.4	D	26.3	26.1	26.1	26.2	26.5	26.4	26.7	26.5	26.5	26.3	26.8	26.5	0.3
F912110									V.A.	0.5			V.A.	0.6			V.A.	0.8	
	1	B	C	T	26.5	A	26.4	26.2	26.5	26.4	26.6	27.0	26.6	26.7	27.2	25.9	26.0	26.4	0.3
	1	B	C	T	26.5	B	26.0	26.3	26.5	26.3	26.7	26.6	26.6	26.6	26.6	26.9	26.6	26.7	0.4
	1	B	C	T	26.4	C	26.4	26.6	26.9	26.6	26.3	26.2	26.4	26.3	26.1	26.0	26.5	26.2	0.4
	1	B	C	T	26.4	D	26.4	26.6	26.6	26.5	26.2	26.1	26.8	26.4	26.4	26.0	26.4	26.3	0.2
									V.A.	0.3			V.A.	0.4			V.A.	0.5	
			*ALL	26.5															
*1 SAMPLING POSITION B:BASE METAL *2 LOCATION C:CROSS SECTION *3 SAMPLING LOCATION T:TOP B:BOTTOM *4 EACH																			
*5 AVERAGE *V.A.:VARIATION AVERAGE MAX.-MIN. * ALL:ALL AVG.																			

*1 SAMPLING POSITION B:BASE METAL *2 LOCATION C:CROSS SECTION *3 SAMPLING LOCATION T:TOP B:BOTTOM *4 EACH
*5 AVERAGE *V.A.:VARIATION AVERAGE MAX.-MIN. * ALL:ALL AVG.

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Fax. No. : +81-3-6867-4926 E-mail:pipe-ipp@jp.nipponsteel.com NO.086462K19