



## LISTA CONTENTS

LMC  
L47

COMMESSA - JOB L47	CLIENTE - CUSTOMER BALLESTRA S.p.a	APPARECCHIO – ITEM 16R1-JOB 1E35
PURCH.ORDER 290968	N.F. - S.N. 3145	MACCHINA – UNIT REATTORE 120 TUBI

## QUALITY BOOK

1. NAMEPLATE

2. QUALITY CONTROL PLAN

3. NON DESTRUCTIVE EXAMINATION

4. WELD MAP AND WPS

5. MARKING MAP AND MILL TEST REPORT

6. DRAW

# desmet ballestra

MILANO (ITALY)



3V COGEIM

SERIAL N°  
N° FABBR.

3145

ITEM  
SIGLA

16R1-JOB-1E35

YEAR  
ANNO

2010

DESIGN PRESS.  
PRESS. BOLLO

0.45

Bar (g)

DESIGN TEMPER.  
TEMPER. BOLLO

60

°C

RADIOGRAPH  
RADIOGRAFIA

N.A.

STRESS RELIEV.  
RICOTTURA

N.A.

SHELL THK.  
SPESS. MANTELLO

5

mm

SURFACE  
SUPERFICIE RISC.

60

m<sup>2</sup>

DESIGN PRESS.  
PRESS. BOLLO

0.45

Bar (g)

DESIGN TEMPER.  
TEMPER. BOLLO

80

°C

RADIOGRAPH  
RADIOGRAFIA

N.A.

STRESS RELIEV.  
RICOTTURA

N.A.

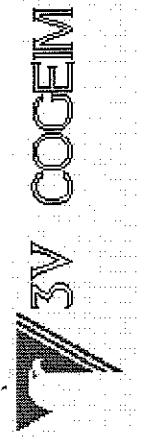
CHANNELS THK.  
SPESS. TUBI

1.45

mm

SHELL SIDE  
LATO MANTELLO

TUBES SIDE  
LATO TUBI



## QUALITY CONTROL PLAN

### FILM REACTOR 120 TUBE - 16R1 - JOB 1E35 3V COGEIM JOB: L47 - SN 3145

Step	Description	Reference Documents	Inspection			Notes
			Manufacturer	Ballestra	Third Party	
			Sign	Sign	sign	
1	Construction drawings approval	Equipment specification Data Sheet	H <i>St. 2010</i>			
2	Welding Process / Welding Performance qualification review	Design code Equipment specifications	H <i>St. 2010</i>			
4	Non Destructive Examination (PT, RT, MT, etc.)	Data Sheet Construction drawing	H <i>St. 2010</i>			
5	Pneumatic test tube side	Data sheet Construction drawing	H <i>St. 2010</i>			
6	Visual and dimensional check Nameplate Check	Data sheet Construction drawing	H <i>St. 16/02</i>			
8	Pressure test, shell and tube side	Design Code Approved Data sheet	H <i>St. 16/02</i>			
9	Circulation check	Ballestra std procedure	H <i>St. 16/02</i>			
10	Upper tubesheet strip down/ ring nuts/ threaded holes check	Ballestra std procedure	H <i>St. 16/02</i>			
11	Internal finishing of tube to tube-heads check	Ballestra std procedure	H <i>St. 16/02</i>			
12	Tube extraction test	Ballestra std procedure	H <i>St. 16/02</i>			
13	Loose and spare parts check	Construction drawing Ballestra Material Requisition	H <i>St. 16/02</i>			
14	Surfaces treatment/ Painting check	Approved Data sheet Ballestra Material Requisition	H <i>St. 16/02</i>			
14	Review of mill certificates	Design Code Approved Data Sheet	H <i>St. 16/02</i>			
15	Documents review	Applicable code Ballestra Material Requisition	H <i>St. 16/02</i>			



# LIQUID PENETRANT TESTING REPORT

PTR  
3145DATE  
29/01/10

COMESSA - Job L47	CLIENTE - Customer BALLESTRA	ORDINE - Order 290968	N.F. - Serial Number 3145		
DISEGNO - Drawing SB-PRS-00026		MATERIALE - Material S31603 - S30403			
NDE PROC. SAQ 004		PR. SAL. - Weld pr. GTAW - SMAW - FCAW	T.T. - Heat Treatment ----		
LIMITI DI ACCETTABILITA' - Acceptance standards ASME VIII DIV. 1 App. 8		TEMP. SUPERF. E PENETRANTE - Penetrant and surface temp. AMBIENT			
METODO ESAME Examination method		<input checked="" type="checkbox"/> CONTRASTO COLORE Color contrast <input type="checkbox"/> FLUORESCENTE Fluorescent	CONDIZ. SUPERFICIE Surface condition MACHINED		
PT MATERIALI - PT Materials				FABBRICANTE Manufacturer	DESIGNAZIONE Designation
PENETRANTE Penetrant		<input checked="" type="checkbox"/> LAVABILE CON ACQUA Water washable <input type="checkbox"/> POST EMULSIONABILE Post emulsifying <input type="checkbox"/> ASPORT. CON SOLVENTE Solvent removable	Water washable Post emulsifying Solvent removable	QPL USA	R2.71
PULENTE Cleaner		<input type="checkbox"/> EMULSIFICATORE Emulsifier <input type="checkbox"/> SOLVENTE Solvent	Emulsifier Solvent		
RIVELATORE Developer		<input type="checkbox"/> SECCO - Dry <input checked="" type="checkbox"/> ACQUOSO Aqueous <input type="checkbox"/> NON ACQ. Nonaqueous	Aqueous Nonaqueous	QPL USA	R2.82
NOTA:	I MATERIALI SONO STATI ANALIZZATI E CERTIFICATI PER ATTESTARE CHE IL CONTENUTO DI ALOGENI NON SUPERA 1% IN PESO				
Note:	The materials have been analysed and certified that the total content of sulfur / halogen of the residue does not exceed 1% by weight				
TECNICA - Technique					
PULITURA Cleaning		BY SOLVENT		ESSICCAZIONE Drying	
APPLICAZIONE PENETR. Penetrant application		SPRAY		TEMPO DI PENETR. MIN. Minimum penetration time	
RIMOZIONE PENETR. Penetrant removal		BY WATER		APPLICAZIONE EMULSIF. Emulsifier application	
APPLICAZIONE RIVEL. Developer application		SPRAY		TEMPO DI SVILUPPO MIN Minimum developing time	
TEMPO DI LETT. MAX Maximum checking time		30 min		PULIZIA POST-CONTR. Post examination cleaning	
COMPONENTE Component		SALD. N. Weld No.	PROCED Process	SALDATORE Welder	ACC. Acc.
Reattore 120 tubi		ALL	A. A.	ALL	✓
	ESAMINATORE Examiner	LIVELLO - Level: II	A.I.		CLIENTE - Customer
NOME Name	S. CAPELLI				
FIRMA Segnatura					
DATA Date	29/01/10				

COMMessa - Job L47	N.F. - S.N. 3145	MACCHINA - Unit REATTORE 120 TUBI
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CLIENTE - Client BALLESTRA	Commessa Clete - Purchase Job 1E35	SIGLA - Item 16R1
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## PRESSURE TESTS

TYPE OF TEST	
PRESSURE	
HOLD TIME	
MEDIUM	
TEMPERATURE	

INNER CHAMBER	
HYDROSTATIC	
1.2(*)	Bar
1	Hrs.
WATER	
16	°C
ACCETTATO Accepted	RESPINTO Rejected.
<input checked="" type="checkbox"/>	<input type="checkbox"/>
PRESSURE GAGES: PG 0402 (*)HYDROSTATIC TEST IN HORIZONTAL POSITION	

TUBE	
PNEUMATIC	
0.5	Bar
1	Hrs.
AIR	
16	°C
ACCETTATO Accepted	RESPINTO Rejected.
<input checked="" type="checkbox"/>	<input type="checkbox"/>
PRESSURE GAGES: PG 0401	

REMARKS	
3V COGEIM QUALITY CONTROL	

*SML* 11/02/10

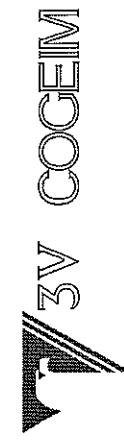
DESMET BALLESTRA S.p.A.	
Inspector 11/02/10	
Leonardo Sanci	
<input checked="" type="checkbox"/> Witness	<input type="checkbox"/> Review

*SML* 11/02/10

DESMET BALLESTRA S.p.A.	
Inspector 11/02/10	
Leonardo Sanci	
<input checked="" type="checkbox"/> Witness	<input type="checkbox"/> Review

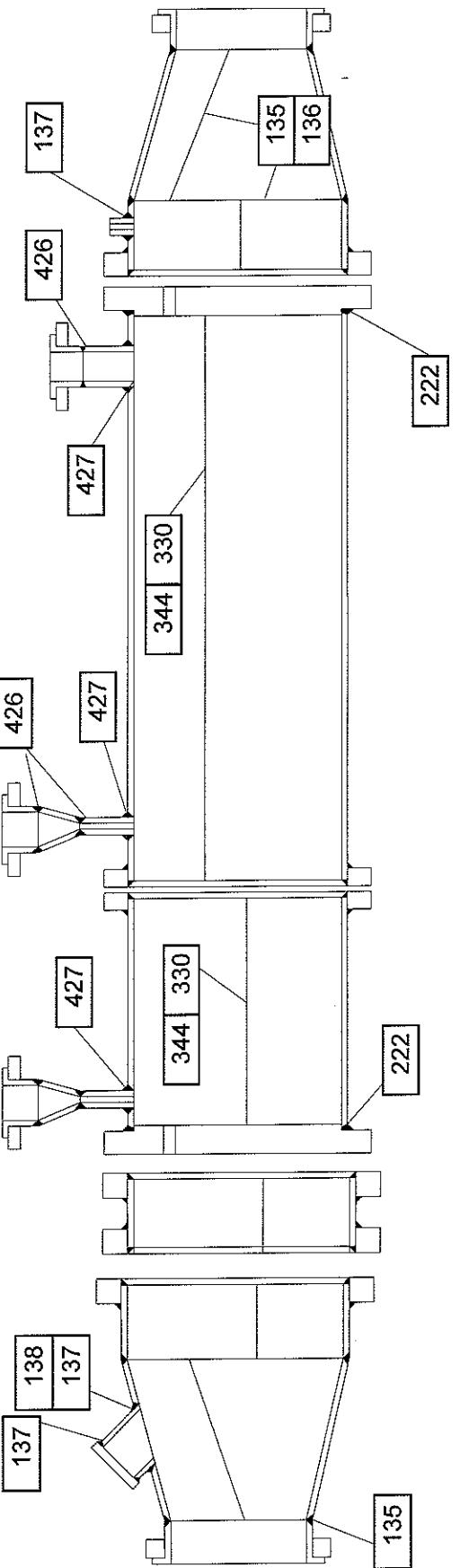
## OTHER INSPECTIONS

	ACC. Acc'td.	RESP. Rej'td.	3V COGEIM QC	A.I. INSPECTOR	CLIENT REPRESENTATIVE
INTERNAL SURFACE VISUAL INSPECTION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>SML</i> 11/02/10		<i>Desmet Ballestra S.p.A.</i> Inspector 11/02/10 Leonardo Sanci
EXTERNAL SURFACE VISUAL INSPECTION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>SML</i> 11/02/10		
DIMENSIONAL INSPECTION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>SML</i> 11/02/10		

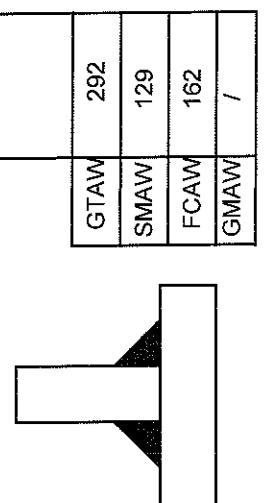


## WELD MAP

3V COGEIM		WELD MAP		WM R120P	Rev. 0	DATE 05/11/2009
JOB No.	UNIT	SERIAL No.	ITEM No.			
L47	FLM REACTOR	3145	16R1	PURCHASER BALLESTRA		



WPSS APPLICABLE TO ALL FILLET WELDS



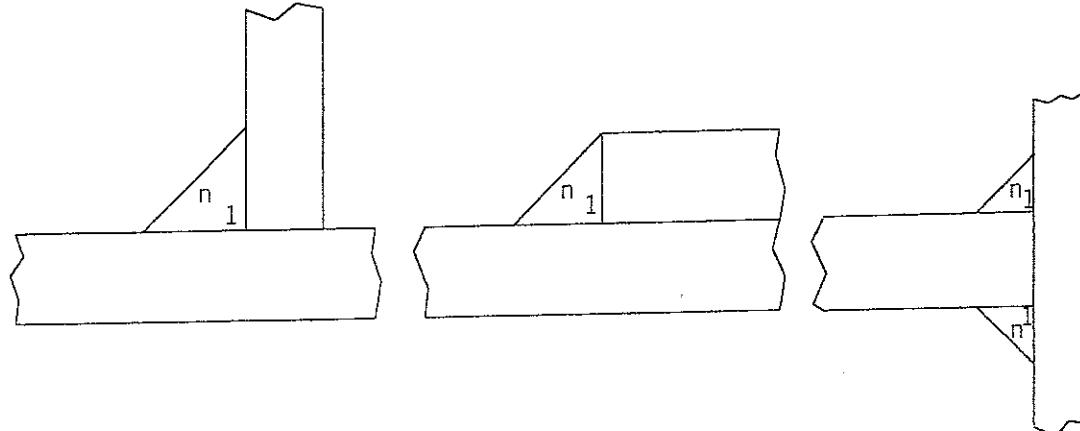
3V COGEIM S.p.A - WELDING ENGINEER  
S.CAPELLI  
*[Signature]*  
5/11/09

## SPECIFICA PROCED. DI SALDATURA

## Welding Procedure Specification

PQR DI SUPPORTO 8/8-1  
Supporting PQRPROCEDIM. GTAW TIPO MANUAL  
Process Type

PREPARAZIONE GIUNTO - Joint design: MACHINING - GRINDING

SOSTEGNO - Backing:  SI - Yes  NO - No MATER. - Material: BASE METALSUPPORTO - Retainers:  SI - Yes  NO - No TIPO - Type:

## METALLI BASE - Base Metals

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
SPECIFICA TIPO E GRADO Specification type and grade	SA240 - SA312 - SA182 - SA479 F/Tp 316L			A To	SA240 - SA312 - SA182 - SA479 F/Tp 316L			F/Tp 304L	
AN. CHIM. E PROPR. MECC. Chem. analysis and mech. prop.				A To					

## CAMPI DI SPESSEZZO - Thickness range

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE Base metal mm (in.)	GTAW	NONE	NO LIMITS
SALDATURA DEPOSITATA Deposited weld metal mm (in.)	GTAW	NONE	NO LIMITS
CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.)		N.A.	N.A.

## ALTRO - Other

## METALLI D'APPORTO - Filler metals

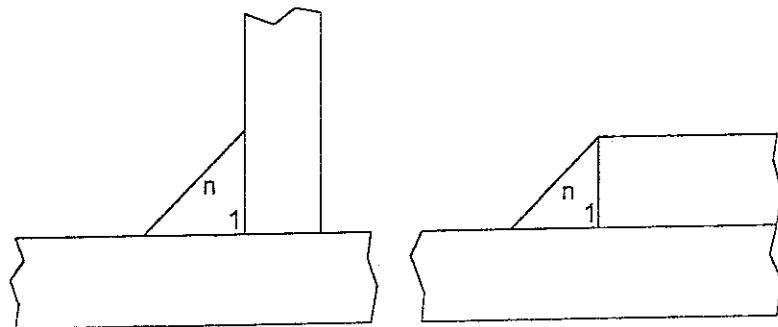
PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (1-n)	5.9	ER316L	6	8	2 (solid)

FLUSSO ELETT. Elect. flux Class	N.A.	DES. COMM. FL. Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.
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POSIZIONI - Positions		TRATTAM. TERMICO - Post Weld Heat Treatment									
POSIZIONE CIANFRINO Position (s) of groove	N.A.	CAMPO TEMPERATURA °C Temperature range	N.A.								
PROGRESSIONE SALDATURA Welding progression (up/down)	UP	CAMPO TEMPO DI PERM. min Time range	N.A.								
POSIZIONE ANGOLO Position (s) of fillet	ALL POSITIONS		GAS								
PRERISCALDO - Preheat		PROCEDIMENTO Process	GTAW								
TEMP. MIN. DI PRERISC. °C Minimum preheat temperature	10	GAS DI PROTEZIONE Shielding Gas	ARGON								
TEMP. MAX DI INTERPASS °C Max. interpass temperature	150	COMPOSIZIONE % (MISCELA) % composition (mixture)	99.996%								
MANTENIM. PRERISCALDO Preheat maintenance	CONTINUOUS	PORTATA FLUSSO l/min Flow rate	8 - 10								
ALTRO Other		GAS AL ROVESCI Backing gas	N.A.								
		GAS AL ROV. PORTATA FL. Backing gas flow rate	N.A.								
		COMPOS. GAS TRAINATO Trailing gas composition	N.A.								
CARATTERISTICHE ELETTRICHE - Electrical characteristics											
PASSATA Weld layer(s)	PROCEDIM. Process	MET. D'APP. - Filler metal		CORRENTE - Current		TENSIONE Volt range	VELOCITA' Travel speed (cm/min)	ALTRO Other			
		CLASS	DIAM. (mm)	POLAR.	AMP. RAN.						
1-n + TW	GTAW	ER316L	2	DC - SP	80 - 160	11 - 16	N.A.				
ELETTRODO DI TUNGSTENO DIAMETRO E TIPO Tungsten electrode diameter and type	3/32" EWTH-2										
MODO DI TRASFERIMENTO DEL METALLO PER GMAW GMAW Metal transfer mode	N.A.										
CAMPO DI VELOCITA' DEL FILO m/min Electrode wire feed speed range	N.A.										
TECNICA - Technique											
PASSATA LARGA O CORDONI Weave or string bead	STRING		DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size			5/16" - 1/2"					
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning	GRINDING - BRUSHING		METODO SOLC. A ROVESCI Method of back gouging			N.A.					
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)	MULTIPASS		DIST. TUBO DI CONT. - MATERIALE mm Contact tube to work distance			N.A.					
OSCILLAZIONE Oscillation	N.A.		ELETTR. MULTIPIO O SINGOLO Single or multiple electrode			SINGLE					
MARTELLATURA Peening	NONE		Dentro/Fuori Camera Chiusa CLOSED CHAMBER / OUT OF CH.			OUT					
REMOVE TACK WELDS TW = TACK WELDS (*) NO PASS THICKER THAN 1/2" GTAW NO PULSING											

**SPECIFICA PROCED. DI SALDATURA****Welding Procedure Specification**PQR DI SUPPORTO 8/8 - 2  
Supporting PQRPROCEDIM. SMAW TIPO MANUAL  
Process Type

PREPARAZIONE GIUNTO - Joint design: MACHINING - GRINDING

SOSTEGNO - Backing:  SI - Yes  NO - No MATER. - Material: BASE METALSUPPORTO - Retainers:  SI - Yes  NO - No TIPO - Type:

## METALLI BASE - Base Metals

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
SPECIFICA TIPO E GRADO Specification type and grade	SA240 316L SA182 F316L	SA312 Tp316L SA182 F304L		A To	SA240 316L SA182 F316L	SA312 Tp316L SA182 F304L			
AN. CHIM. E PROPR. MECC. Chem. analysis and mech. prop.				A To					

## CAMPI DI SPESORE - Thickness range

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE Base metal mm (in.)	SMAW	NONE	NO LIMIT
SALDATURA DEPOSITATA Deposited weld metal mm (in.)	SMAW	NONE	NO LIMIT
CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.)		N.A.	N.A.

## ALTRO - Other

## METALLI D'APPORTO - Filler metals

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
SMAW	5.4	E316L	5	8	3.25
FLUSSO ELETT. Elect. flux Class	N.A.	DES. COMM. FL. Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.

POSIZIONI - Positions		TRATTAM. TERMICO - Post Weld Heat Treatment					
POSIZIONE CIANFRINO Position (s) of groove	N.A.	CAMPO TEMPERATURA °C Temperature range	N.A.				
PROGRESSIONE SALDATURA Welding progression (up/down)	UP	CAMPO TEMPO DI PERM. min Time range	N.A.				
POSIZIONE ANGOLO Position (s) of fillet	ALL POSITIONS	GAS					
PRERISCALDO - Preheat		PROCEDIMENTO Process	N.A.				
TEMP. MIN. DI PRERISC. Minimum preheat temperature	°C	10	GAS DI PROTEZIONE Shielding Gas	N.A.			
TEMP. MAX DI INTERPASS Max. interpass temperature	°C	150	COMPOSIZIONE % (MISCELA) % composition (mixture)	N.A.			
MANTENIM. PRERISCALDO Preheat maintenance	CONTINUOUS		PORTATA FLUSSO l/min Flow rate	N.A.			
ALTRO Other			GAS AL ROVESCI Backing gas	N.A.			
			GAS AL ROV. PORTATA FL. Backing gas flow rate	N.A.			
			COMPOS. GAS TRAINATO Trailing gas composition	N.A.			

## CARATTERISTICHE ELETTRICHE - Electrical characteristics

PASSATA Weld layer(s)	PROCEDIM. Process	MET. D'APP. - Filler metal		CORRENTE - Current		TENSIONE Volt range	VELOCITA' Travel speed (cm/min)	ALTRO Other
		CLASS	DIAM. (mm)	POLAR.	AMP. RAN.			
1-n & TW	SMAW	E316L	3.25	DC - RP	100 - 140	22 - 28	N.A.	(*)
ELETTRODO DI TUNGSTENO DIAMETRO E TIPO Tungsten electrode diameter and type		N.A.						
MODO DI TRASFERIMENTO DEL METALLO PER GMAW GMAW Metal transfer mode		N.A.						
CAMPO DI VELOCITA' DEL FILO m/min Electrode wire feed speed range		N.A.						

## TECNICA - Technique

PASSATA LARGA O CORDONI Weave or string bead	STRING	DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size	N.A.
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning	GRINDING - BRUSHING	METODO SOLC. A ROVESCIO Method of back gouging	N.A.
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)	MULTIPASS	DIST. TUBO DI CONT. - MATERIALE mm Contact tube to work distance	N.A.
OSCILLAZIONE Oscillation	NONE	ELETTR. MULTIPLO O SINGOLO Single or multiple electrode	SINGLE
MARSELLATURA Peening	N.A.	Dentro/Fuori Camera Chiusa CLOSED CHAMBER / OUT OF CH.	OUT

REMOVE TACK WELDS  
TW = TACK WELDS  
(\*) NO PASS THICKER THAN 1/2"

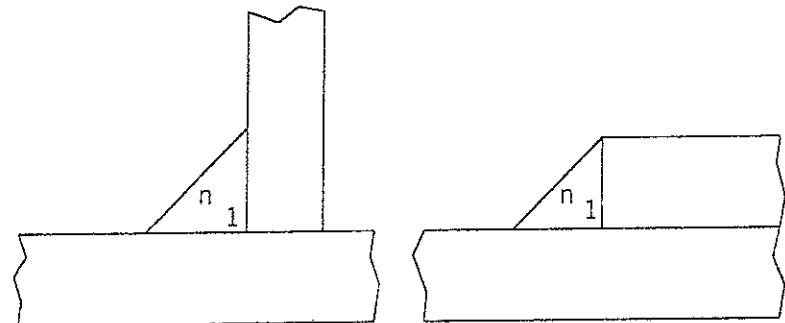
  
- 01/04/98  
3V COGEIM S.p.A.  
M. ORSINI

## SPECIFICA PROCED. DI SALDATURA

## Welding Procedure Specification

PQR DI SUPPORTO 8/8-1 8/8-24  
Supporting PQRPROCEDIM. GTAW - FCAW  
ProcessTIPO  
TypeMANUAL+  
SEMAUT.

PREPARAZIONE GIUNTO - Joint design: MACHINING - GRINDING

SOSTEGNO - Backing:  SI - Yes  NO - No MATER. - Material: BASE METALSUPPORTO - Retainers:  SI - Yes  NO - No TIPO - Type:

## METALLI BASE - Base Metals

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
SPECIFICA TIPO E GRADO	SA240 316L	SA312 Tp316L	A	SA240 316L	SA312 Tp316L				
Specification type and grade	SA182 F316L	SA479 316L	To	SA182 F316L	SA479 316L				
AN. CHIM. E PROPR. MECC.				A					
Chem. analysis and mech. prop.				To					

## CAMPI DI SPESORE - Thickness range

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE	GTAW		TACK WELDS ONLY
Base metal	FCAW	NONE	NO LIMITS
mm (in.)			
SALDATURA DEPOSITATA	GTAW		TACK WELDS ONLY
Deposited weld metal	FCAW	NONE	NO LIMITS
mm (in.)			

CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.) N.A. N.A.

ALTRO - Other QW404 27-29 not used

## METALLI D'APPORTO - Filler metals

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (TW)	5.9	ER316L	6	8	2 (solid)
FCAW (1-n)	5.22	E316LT0-1	6	8	1.2
FLUSSO ELETT. Elect. flux Class	N.A.	DES. COMM. FL Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.



WPS

162

REV.

2

DATA  
Date

07/01/03

FOGLIO  
Sheet

2

DI  
OF

2

## POSIZIONI - Positions

## TRATTAM. TERMICO - Post Weld Heat Treatment

POSIZIONE CIANFRINO Position (s) of groove	N.A.	CAMPO TEMPERATURA °C Temperature range	N.A.		
PROGRESSIONE SALDATURA Welding progression (up/down)	UP	CAMPO TEMPO DI PERM. Time range	min N.A.		
POSIZIONE ANGOLO Position (s) of fillet	ALL POSITIONS	GAS			
PRERISCALDO - Preheat		PROCEDIMENTO Process	GTAW	FCAW	
TEMP. MIN. DI PRERISC. Minimum preheat temperature	°C	16	GAS DI PROTEZIONE Shielding Gas	ARGON	CO <sub>2</sub>
TEMP. MAX DI INTERPASS Max. interpass temperature	°C	150	COMPOSIZIONE % (MISCELA) % composition (mixture)	99.996%	99.996%
MANTENIM. PRERISCALDO Preheat maintenance	CONTINUOUS	PORTATA FLUSSO Flow rate	l/min	8 - 10	15 - 20
ALTRO Other		GAS AL ROVESCI Backing gas		N.A.	N.A.
		GAS AL ROV. PORTATA FL. Backing gas flow rate	l/min	N.A.	N.A.
		COMPOS. GAS TRAINATO Trailing gas composition		N.A.	N.A.

## CARATTERISTICHE ELETTRICHE - Electrical characteristics

PASSATA Weld layer(s)	PROCEDIM. Process	MET. D'APP. - Filler metal		CORRENTE - Current		TENSIONE Volt range	VELOCITA' Travel speed (cm/min)	ALTRO Other
		CLASS	DIAM. (mm)	POLAR.	AMP. RAN.			
TW	GTAW	ER316L	2	DC - SP	80 - 160	11 - 16	N.A.	
1-n	FCAW	E316LT0-1	1.2	DC - RP	180 - 220	28 - 34	N.A.	(*)

## ELETTRODO DI TUNGSTENO DIAMETRO E TIPO

3/32" EWTH-2

Tungsten electrode diameter and type

MODO DI TRASFERIMENTO DEL METALLO PER GMAW  
GMAW Metal transfer mode

SPRAY

CAMPO DI VELOCITA' DEL FILO m/min  
Electrode wire feed speed range

7 - 10

## TECNICA - Technique

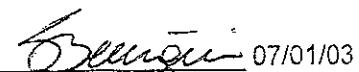
PASSATA LARGA O CORDONI Weave or string bead	STRING	DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size	5/16" - 1/2" (GTAW) 3/4" - 1" (FCAW)
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning	GRINDING - BRUSHING	METODO SOLC. A ROVESCI Method of back gouging	N.A.
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)	MULTIPASS	DIST. TUBO DI CONT. - MATERIALE mm Contact tube to work distance	15 - 25
OSCILLAZIONE Oscillation	N.A.	ELETTR. MULTIPLO O SINGOLO Single or multiple electrode	SINGLE
MARTELLATURA Peening	NONE	Dentro/Fuori Camera Chiusa CLOSED CHAMBER / OUT OF CH.	OUT

REMOVE TACK WELDS

TW = TACK WELDS

(\*) NO PASS THICKER THAN 1/2"

GTAW NO PULSING

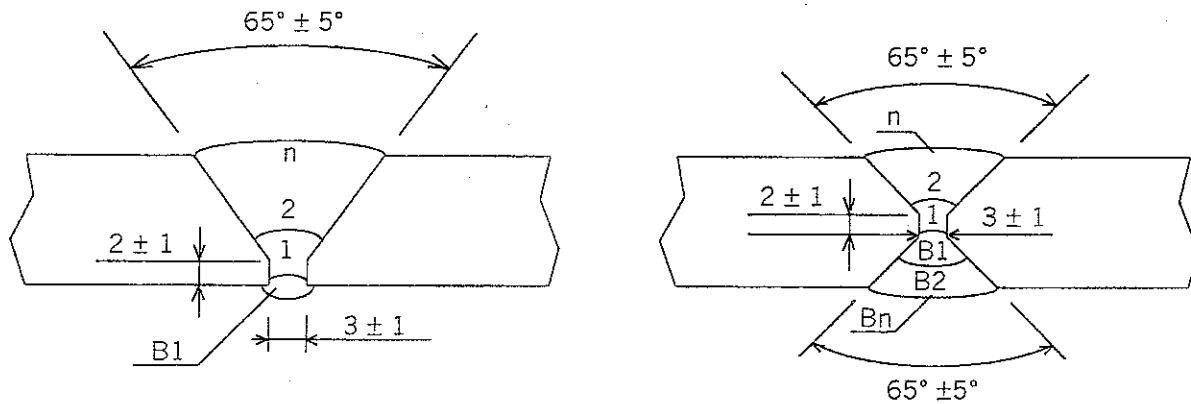
 07/01/03  
3V COGEIM S.p.A.  
S. BENIGNI

## SPECIFICA PROCED. DI SALDATURA

## Welding Procedure Specification

PQR DI SUPPORTO 8/8-1 8/8-2  
Supporting PQRPROCEDIM. GTAW - SMAW | TIPO  
Process Type | MANUAL

PREPARAZIONE GIUNTO - Joint design: MACHINING - GRINDING

SOSTEGNO - Backing:  SI - Yes  NO - No MATER. - Material: WELD METALSUPPORTO - Retainers:  SI - Yes  NO - No TIPO - Type:

## METALLI BASE - Base Metals

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
SPECIFICA TIPO E GRADO Specification type and grade	SA240 316L SA182 F316L		SA312 Tp316L SA479 316L		A To	SA240 316L SA182 F316L		SA312 Tp316L SA479 316L	
AN. CHIM. E PROPR. MECC. Chem. analysis and mech. prop.					A To				

## CAMPI DI SPESSORE - Thickness range

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE Base metal mm (in.)	GTAW - SMAW	1.6 (1/16") - 200 (8")	NONE
SALDATURA DEPOSITATA Deposited weld metal mm (in.)	GTAW	4.76 (3/16") MAX	NONE
	SMAW	195.24 (7.677") MAX	NONE

CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.) N.A. N.A.

ALTRO - Other

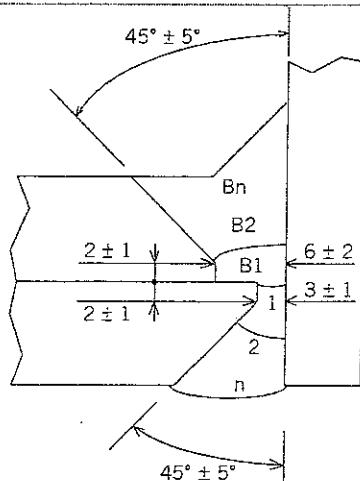
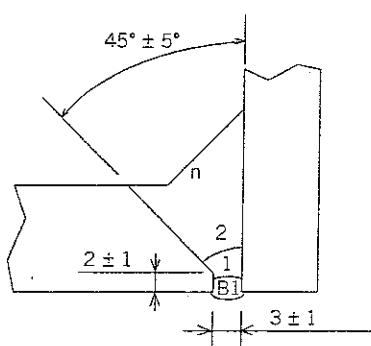
## METALLI D'APPORTO - Filler metals

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (1, B1)	5.9	ER316L	6	8	2 (solid)
SMAW (2-n)	5.4	E316L	5	8	3.25 - 4
SMAW (B2-Bn)	5.4	E316L	5	8	3.25 - 4
FLUSSO ELETT. Elect. flux Class	N.A.	DES. COMM. FL. Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.



**SPECIFICA PROCED. DI SALDATURA****Welding Procedure Specification**PQR DI SUPPORTO 8/8-1 8/8-2  
Supporting PQRPROCEDIM. GTAW - SMAW TIPO  
Process Type MANUAL

PREPARAZIONE GIUNTO - Joint design: MACHINING - GRINDING

SOSTEGNO - Backing:  SI - Yes SMAW  NO - No GTAW MATER. - Material: WELD METALSUPPORTO - Retainers:  SI - Yes  NO - No TIPO - Type:**METALLI BASE - Base Metals**

	P No. 8	Gr. No. 1	A	P No. 8	Gr. No. 1
			To		
SPECIFICA TIPO E GRADO Specification type and grade	SA240 316L SA182 F316L	SA312 Tp316L SA479 316L	A To	SA240 316L SA182 F316L	SA312 Tp316L SA479 316L
AN. CHIM. E PROPR. MECC. Chem. analysis and mech. prop.			A To		

**CAMPPI DI SPESSEZZO - Thickness range**

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE Base metal	GTAW - SMAW	1.6 (1/16") - 200 (8")	NO LIMITS
mm (in.)			
SALDATURA DEPOSITATA Deposited weld metal	GTAW	4.76 (3/16") MAX	NO LIMITS
mm (in.)	SMAW	195.24 (7.677") MAX	NO LIMITS

CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.) N.A. N.A.

ALTRO - Other

**METALLI D'APPORTO - Filler metals**

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (1, B1)	5.9	ER316L	6	8	2 (solid)
SMAW (2-n)	5.4	E316L	5	8	3.25 - 4
FLUSSO ELETT. Elect. flux Class	N.A.	DES. COMM. FL. Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.

## POSIZIONI - Positions

## TRATTAM. TERMICO - Post Weld Heat Treatment

POSIZIONE CIANFRINO Position (s) of groove	ALL POSITIONS	CAMPO TEMPERATURA Temperature range	°C	N.A.
PROGRESSIONE SALDATURA Welding progression (up/down)	UP	CAMPO TEMPO DI PERM. Time range	min	N.A.
POSIZIONE ANGOLO Position (s) of fillet	ALL POSITIONS			GAS
PRERISCALDO - Preheat		PROCEDIMENTO Process		GTAW
TEMP. MIN. DI PRERISC. Minimum preheat temperature	°C	10	GAS DI PROTEZIONE Shielding Gas	ARGON
TEMP. MAX DI INTERPASS Max. interpass temperature	°C	150	COMPOSIZIONE % (MISCELA) % composition (mixture)	99.996%
MANTENIM. PRERISCALDO Preheat maintainance		CONTINUOUS	PORTATA FLUSSO Flow rate	l/min 8 - 12
ALTRO Other			GAS AL ROVESCI Backing gas	ARGON 99.99%
			GAS AL ROV. PORTATA FL. Backing gas flow rate	l/min 6 - 10
			COMPOS. GAS TRAINATO Trailing gas composition	N.A.

## CARATTERISTICHE ELETTRICHE - Electrical characteristics

PASSATA Weld layer(s)	PROCEDIM. Process	MET. D'APP. - Filler metal		CORRENTE - Current		TENSIONE Volt range	VELOCITA' Travel speed (cm/min)	ALTRO Other
		CLASS	DIAM. (mm)	POLAR.	AMP. RAN.			
1, B1& TW	GTAW	ER316L	2-	DC - SP	80 - 160	11 - 16	N.A.	
2 & B2	SMAW	E316L	3.25	DC - RP	100 - 140	22 - 28	N.A.	(*)
3 - n	SMAW	E316L	4	DC - RP	120 - 160	24 - 30	N.A.	(*)
B3 - Bn	SMAW	E316L	4	DC - RP	120 - 160	24 - 30	N.A.	(*)

## ELETRODO DI TUNGSTENO DIAMETRO E TIPO

3/32" EWTh-2

Tungsten electrode diameter and type

## MODO DI TRASFERIMENTO DEL METALLO PER GMAW

N.A.

GMAW Metal transfer mode

## CAMPO DI VELOCITA' DEL FILO

m/min

N.A.

Electrode wire feed speed range

## TECNICA - Technique

PASSATA LARGA O CORDONI Weave or string bead	STRING	DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size	5/16" - 1/2"
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning	GRINDING - BRUSHING	METODO SOLC. A ROVESCI Method of back gouging	GRINDING
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)	MULTIPASS	DIST. TUBO DI CONT. - MATERIALE Contact tube to work distance	mm N.A.
OSCILLAZIONE Oscillation	N.A.	ELETTR. MULTIPLO O SINGOLO Single or multiple electrode	SINGLE
MARTELLATURA Peening	NONE	Dentro/Fuori Camera Chiusa CLOSED CHAMBER / OUT OF CH.	OUT

REMOVE TACK WELDS

TW = TACK WELDS

(\*) NO PASS THICKER THAN 1/2"

GTAW NO PULSING


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 S. BENIGNI

## SPECIFICA PROCED. DI SALDATURA

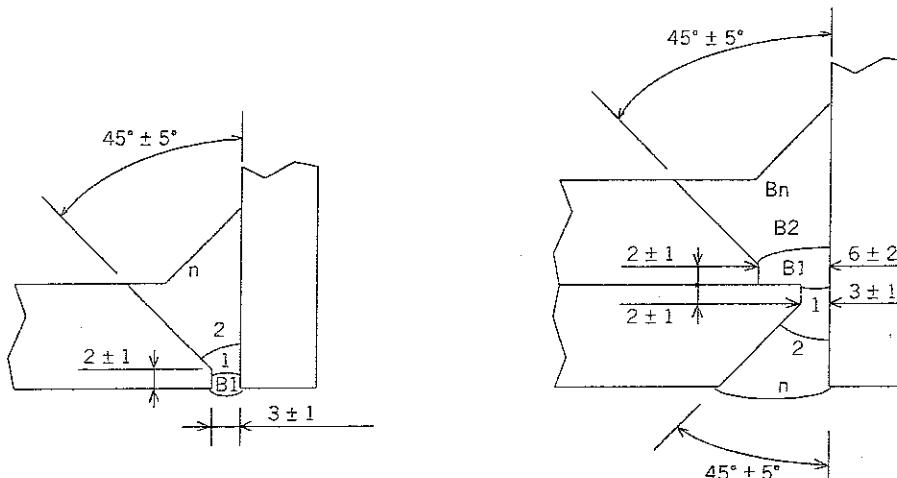
## Welding Procedure Specification

PQR DI SUPPORTO 8/8-1 8/8-24  
Supporting PQRPROCEDIM. GTAW - FCAW TIPO  
Process Type MANUAL +  
SEMIAUT.

PREPARAZIONE GIUNTO - Joint design: MACHINING - GRINDING

SOSTEGNO - Backing:  SI - Yes FCAW  NO - No GTAW MATER. - Material: WELD METALSUPPORTO - Retainers:  SI - Yes  NO - No

TIPO - Type:



## METALLI BASE - Base Metals

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
SPECIFICA TIPO E GRADO Specification type and grade	SA240 316L SA182 F316L	SA312 Tp316L SA479 316L		A To	SA240 316L SA182 F316L	SA312 Tp316L SA479 316L			
AN. CHIM. E PROPR. MECC. Chem. analysis and mech. prop.				A To					

## CAMPI DI SPESORE - Thickness range

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE Base metal	GTAW - FCAW	1.6 (1/16") - 19 (3/4")	NO LIMITS
mm (in.)			
SALDATURA DEPOSITATA Deposited weld metal	GTAW	4.76 (3/16") MAX	NO LIMITS
mm (in.)	FCAW	14.24 (9/16") MAX	NO LIMITS

CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.) N.A. N.A.

ALTRO - Other QW404.27-29 not used

## METALLI D'APPORTO - Filler metals

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (1, B1)	5.9	ER316L	6	8	2 (solid)
FCAW (2-n)	5.22	E316LT0-1	6	8	1.2

FLUSSO ELETT.  
Elect. flux Class N.A. DES. COMM. FL.  
Flux trade name N.A. INS. CONSUMABILE  
Consumable insert N.A.

POSIZIONI - Positions		TRATTAM. TERMICO - Post Weld Heat Treatment						
POSIZIONE CIANFRINO Position (s) of groove	ALL POSITIONS	CAMPO TEMPERATURA Temperature range	°C	N.A.				
PROGRESSIONE SALDATURA Welding progression (up/down)	UP	CAMPO TEMPO DI PERM. Time range	min	N.A.				
POSIZIONE ANGOLO Position (s) of fillet	ALL POSITIONS	GAS						
PRERISCALDO - Preheat		PROCEDIMENTO Process	GTAW	FCAW				
TEMP. MIN. DI PRERISC. Minimum preheat temperature	°C	10	GAS DI PROTEZIONE Shielding Gas	ARGON	CO <sub>2</sub>			
TEMP. MAX DI INTERPASS Max. interpass temperature	°C	150	COMPOSIZIONE % (MISCELA) % composition (mixture)	99.996%	99.996%			
MANTENIM. PRERISCALDO Preheat maintainance	CONTINUOUS		PORTATA FLUSSO Flow rate	l/min	8 - 12	15 - 20		
ALTRO Other			GAS AL ROVESCIO Backing gas	ARGON	99.996%	N.A.		
			GAS AL ROV. PORTATA FL. Backing gas flow rate	l/min	6 - 10	N.A.		
			COMPOS. GAS TRAINATO Trailing gas composition	N.A.	N.A.			

## CARATTERISTICHE ELETTRICHE - Electrical characteristics

ELETRODO DI TUNGSTENO DIAMETRO E TIPO                            3/32" EWTh-2  
Tungsten electrode diameter and type

MODO DI TRASFERIMENTO DEL METALLO PER GMAW  
GMAW Metal transfer mode SPRAY

CAMPO DI VELOCITA' DEL FILO m/min Electrode wire feed speed range 7 - 10

## TECNICA - Technique

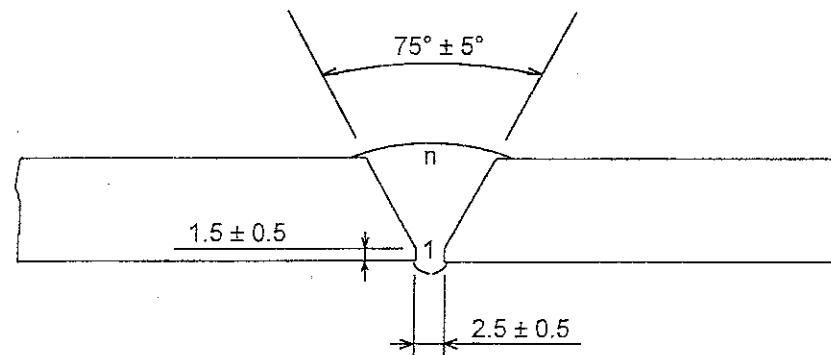
PASSATA LARGA O CORDONI Weave or string bead	STRING	DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size	5/16" - 1"
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning	GRINDING - BRUSHING	METODO SOLC. A ROVESCIO Method of back gouging	GRINDING
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)	MULTIPASS	DIST. TUBO DI CONT. - MATERIALE mm Contact tube to work distance	15 - 25
OSCILLAZIONE Oscillation	N.A.	ELETTR. MULTIPIO O SINGOLO Single or multiple electrode	SINGLE
MARTELLATURA Peening	NONE	Dentro/Fuori Camera Chiusa CLOSED CHAMBER / OUT OF CH.	OUT

REMOVE TACK WELDS  
TW = TACK WELDS  
(\*) NO PASS THICKER THAN 1/2"  
GTAW NO PULSING

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S. BENIGNI

**SPECIFICA PROCED. DI SALDATURA****Welding Procedure Specification**PQR DI SUPPORTO 8/8-2  
Supporting PQRPROCEDIM. GTAW TIPO  
Process Type MANUAL

PREPARAZIONE GIUNTO - Joint design: MACHINING - GRINDING

SOSTEGNO - Backing:  SI - Yes  NO - No MATER. - Material:SUPPORTO - Retainers:  SI - Yes  NO - No TIPO - Type:**METALLI BASE - Base Metals**

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
					To				
SPECIFICA TIPO E GRADO Specification type and grade	SA240 304L SA182 F304L	SA312 Tp304L SA479 304L	A To	SA240 304L SA182 F304L	SA312 Tp304L SA479 304L				
AN. CHIM. E PROPR. MECC. Chem. analysis and mech. prop.					A To				

**CAMPPI DI SPESORE - Thickness range**

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE Base metal	GTAW	1.6 (1/16") - 4.76 (3/16")	NONE
mm (in.)			
SALDATURA DEPOSITATA Deposited weld metal	GTAW	4.76 (3/16") MAX	NONE
mm (in.)			

CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.) N.A. N.A.

ALTRO - Other

**METALLI D'APPORTO - Filler metals**

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (1-n)	5.9	ER308L	6	8	2

FLUSSO ELETT. Elect. flux Class	N.A.	DES. COMM. FL. Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.
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## POSIZIONI - Positions

## TRATTAM. TERMICO - Post Weld Heat Treatment

POSIZIONE CIANFRINO Position (s) of groove	ALL POSITIONS	CAMPO TEMPERATURA Temperature range	°C	N.A.		
PROGRESSIONE SALDATURA Welding progression (up/down)	UP	CAMPO TEMPO DI PERM. Time range	min	N.A.		
POSIZIONE ANGOLO Position (s) of fillet	N.A.	GAS				
PRERISCALDO - Preheat		PROCEDIMENTO Process	GTAW			
TEMP. MIN. DI PRERISC. Minimum preheat temperature	°C	16	GAS DI PROTEZIONE Shielding Gas	ARGON		
TEMP. MAX DI INTERPASS Max. interpass temperature	°C	150	COMPOSIZIONE % (MISCELA) % composition (mixture)	99.99%		
MANTENIM. PRERISCALDO Preheat maintainance	CONTINUOUS		PORTATA FLUSSO Flow rate	l/min 8 - 12		
ALTRO Other			GAS AL ROVESCI Backing gas	ARGON 99.99%		
			GAS AL ROV. PORTATA FL. Backing gas flow rate	l/min 6 - 10		
			COMPOS. GAS TRAINATO Trailing gas composition	N.A.		

## CARATTERISTICHE ELETTRICHE - Electrical characteristics

PASSATA Weld layer(s)	PROCEDIM. Process	MET. D'APP. - Filler metal		CORRENTE - Current		TENSIONE Volt range	VELOCITA' Travel speed (cm/min)	ALTRO Other
		CLASS	DIAM. (mm)	POLAR.	AMP. RAN.			
1-n & TW	GTAW	ER308L	2	DC-SP	80 - 160	11 - 13	N.A.	

## ELETTRODO DI TUNGSTENO DIAMETRO E TIPO

3/32" EWTh-2

Tungsten electrode diameter and type

MODO DI TRASFERIMENTO DEL METALLO PER GMAW  
GMAW Metal transfer mode

N.A.

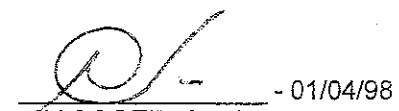
CAMPO DI VELOCITA' DEL FILO  
Electrode wire feed speed range

m/min

N.A.

## TECNICA - Technique

PASSATA LARGA O CORDONI Weave or string bead	STRING	DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size	5/16" - 1/2"
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning	GRINDING - BRUSHING	METODO SOLC. A ROVESCI Method of back gouging	N.A.
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)	MULTIPASS	DIST. TUBO DI CONT. - MATERIALE Contact tube to work distance	mm N.A.
OSCILLAZIONE Oscillation	N.A.	ELETTR. MULTIPLO O SINGOLO Single or multiple electrode	SINGLE
MARTELLATURA Peening	NONE	Dentro/Fuori Camera Chiusa CLOSED CHAMBER / OUT OF CH.	OUT

REMOVE TACK WELDS  
TW = TACK WELDS


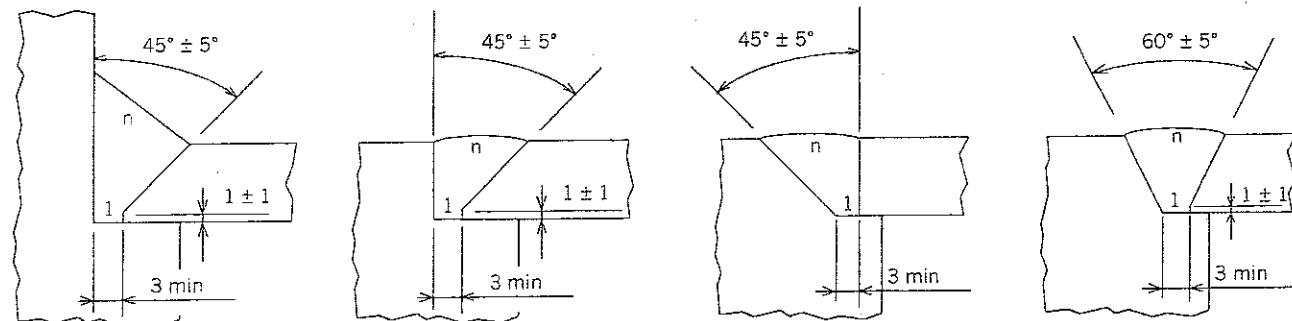
- 01/04/98  
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M. ORSINI

## SPECIFICA PROCED. DI SALDATURA

## Welding Procedure Specification

PQR DI SUPPORTO 8/8-2 8/8-24  
Supporting PQRPROCEDIM. GTAW - FCAW | TIPO  
Process Type MANUAL

PREPARAZIONE GIUNTO - Joint design: MACHINING - GRINDING

SOSTEGNO - Backing:  SI - Yes  NO - No MATER. - Material: BASE METALSUPPORTO - Retainers:  SI - Yes  NO - No TIPO - Type:

## METALLI BASE - Base Metals

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
SPECIFICA TIPO E GRADO Specification type and grade	SA240 316L SA182 F316L		SA240 304L SA182 F304L		A To	SA240 316L SA182 F316L		SA240 304L SA182 F304L	
AN. CHIM. E PROPR. MECC. Chem. analysis and mech. prop.					A To				

## CAMPI DI SPESORE - Thickness range

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLI Fillet
METALLO BASE Base metal mm (in.)	GTAW - FCAW	1.6 (1/16") - 19 (3/4")	NO LIMITS
SALDATURA DEPOSITATA Deposited weld metal mm (in.)	GTAW	4.76 (3/16") MAX	NO LIMITS
	FCAW	19 (3/4") MAX	NO LIMITS

CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.) N.A. N.A.

ALTRO - Other QW 404 27-29 not used

## METALLI D'APPORTO - Filler metals

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (1)	5.9	ER316L	6	8	2 (solid)
FCAW (2 - n)	5.22	E316LT0-1	6	8	1.2
FLUSSO ELETT. Elect. flux Class	N.A.	DES. COMM. FL. Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.

N.A.

POSIZIONI - Positions		TRATTAM. TERMICO - Post Weld Heat Treatment			
POSIZIONE CIANFRINO Position (s) of groove	ALL POSITIONS		CAMPO TEMPERATURA °C Temperature range	N.A.	
PROGRESSIONE SALDATURA Welding progression (up/down)	UP		CAMPO TEMPO DI PERM. min Time range	N.A.	
POSIZIONE ANGOLO Position (s) of fillet	ALL POSITIONS		GAS		
PRERISCALDO - Preheat			PROCEDIMENTO Process	GTAW	FCAW
TEMP. MIN. DI PRERISC. Minimum preheat temperature	°C	10	GAS DI PROTEZIONE Shielding Gas	ARGON	CO <sub>2</sub>
TEMP. MAX DI INTERPASS Max. interpass temperature	°C	150	COMPOSIZIONE % (MISCELA) % composition (mixture)	99.996%	99.996%
MANTENIM. PRERISCALDO Preheat maintenance	CONTINUOUS		PORTATA FLUSSO l/min Flow rate	8 - 12	15 - 20
ALTRO Other			GAS AL ROVESCI Backing gas	N.A.	N.A.
			GAS AL ROV. PORTATA FL. Backing gas flow rate	l/min	N.A.
			COMPOS. GAS TRAINATO Trailing gas composition	N.A.	N.A.

## CARATTERISTICHE ELETTRICHE - Electrical characteristics

PASSATA Weld layer(s)	PROCEDIM. Process	MET. D'APP. - Filler metal		CORRENTE - Current		TENSIONE Volt range	VELOCITA' Travel speed (cm/min)	ALTRO Other
		CLASS	DIAM. (mm)	POLAR.	AMP. RAN.			
1	GTAW	ER316L	2	DC-SP	80 - 160	11 - 16	N.A.	
2 - n	FCAW	E316LT0-1	1.2	DC - RP	180 - 220	28 - 34	N.A.	(*)

ELETTRODO DI TUNGSTENO DIAMETRO E TIPO  
Tungsten electrode diameter and type

3/32" EWTh-2

MODO DI TRASFERIMENTO DEL METALLO PER GMAW  
GMAW Metal transfer mode

SPRAY

CAMPO DI VELOCITA' DEL FILO m/min  
Electrode wire feed speed range

7 - 10

## TECNICA - Technique

PASSATA LARGA O CORDONI Weave or string bead	STRING	DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size	5/16" - 1/2" (GTAW) 1/2" - 1" (FCAW)
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning	GRINDING - BRUSHING	METODO SOLC. A ROVESCI Method of back gouging	N.A.
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)	MULTIPASS	DIST. TUBO DI CONT. - MATERIALE mm Contact tube to work distance	15 - 25
OSCILLAZIONE Oscillation	N.A.	ELETTR. MULTIPLO O SINGOLO Single or multiple electrode	SINGLE
MARTELLATURA Peening	NONE	Dentro/Fuori Camera Chiusa CLOSED CHAMBER / OUT OF CH.	OUT

REMOVE TACK WELDS

TW = TACK WELDS

(\*) NO PASS THICKER THAN 1/2"

GTAW NO PULSING


 - 07/01/03  
 3V COGEIM S.p.A.  
 S. BENIGNI

**SPECIFICA PROCED. DI SALDATURA****Welding Procedure Specification**PQR DI SUPPORTO 8/8-1 8/8-2  
Supporting PQRPROCEDIM. GTAW - SMAW  
ProcessTIPO  
Type

MANUAL

## PARTICOLARI - Details

PREPARAZIONE GIUNTO  
Joint design

## MACHINING - GRINDING

SOSTEGNO  
Backing SI  
Yes

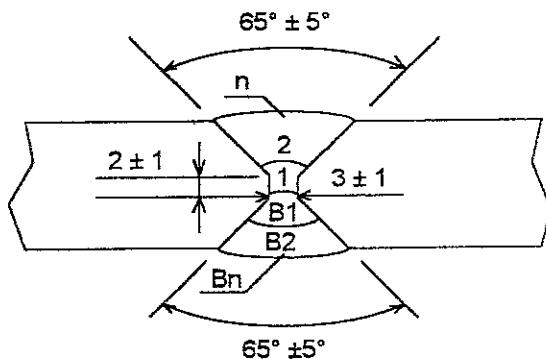
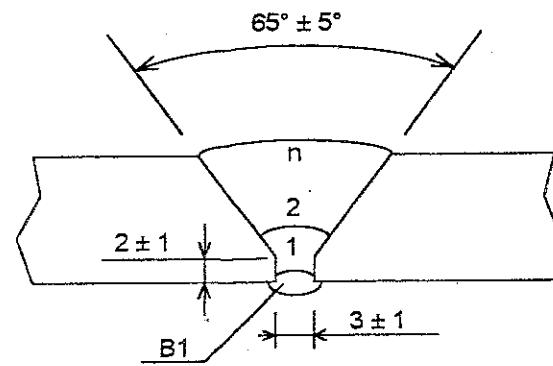
SMAW

 NO  
No

GTAW

MATERIALE  
Backing Material

WELD METAL



## METALLI BASE - Base Metals

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
					To				
SPECIFICA TIPO E GRADO Specification type and grade	SA240 304L SA312 Tp 304L		SA182 F304L SA479 304L		A To	SA240 304L SA312 Tp 304L		SA182 F304L SA479 304L	
AN. CHIM. E PROPR. MECC. Chem. analysis and mech. prop.						A To			

## CAMPI DI SPESSEZZO - Thickness range

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE Base metal	GTAW - SMAW	1.6 (1/16") - 200 (8")	N.A.
mm (in.)			
SALDATURA DEPOSITATA Deposited weld metal	GTAW	5 (3/16") MAX	N.A.
mm (in.)	SMAW	195 (7.677") MAX	N.A.
CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.)		N.A.	N.A.

## ALTRO - Other

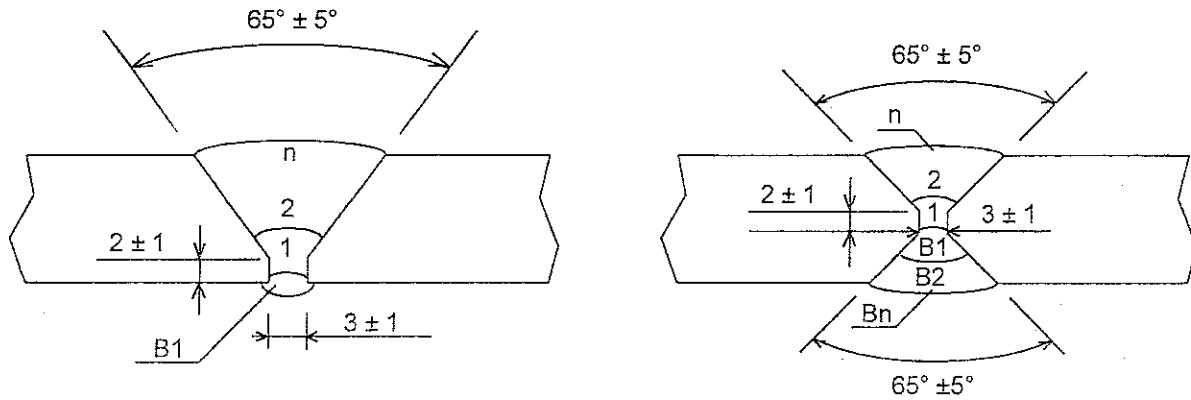
## METALLI D'APPORTO - Filler metals

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (1)	5.9	ER308L	6	8	2
SMAW (2-n)	5.4	E308L	5	8	3.25 - 4
FLUSSO ELETTT. Elect. flux Class	N.A.	DES. COMM. FL. Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.

POSIZIONI - Positions		TRATTAM. TERMICO - Post Weld Heat Treatment								
POSIZIONE CIANFRINO Position (s) of groove	ALL POSITIONS		CAMPO TEMPERATURA °C Temperature range	N.A.						
PROGRESSIONE SALDATURA Welding progression (up/down)	UP		CAMPO TEMPO DI PERM. Time range	min N.A.						
POSIZIONE ANGOLO Position (s) of fillet	N.A.		GAS							
PRERISCALDO - Preheat			PROCEDIMENTO Process	GTAW						
TEMP. MIN. DI PRERISC. Minimum preheat temperature	°C	10	GAS DI PROTEZIONE Shielding Gas	ARGON						
TEMP. MAX DI INTERPASS Max. interpass temperature	°C	150	COMPOSIZIONE % (MISCELA) % composition (mixture)	99.9%						
MANTENIM. PRERISCALDO Preheat maintainance	CONTINUOUS		PORTATA FLUSSO Flow rate	l/min 8 - 12						
ALTRO Other			GAS AL ROvescio Backing gas	ARGON 99.9%						
			GAS AL ROV. PORTATA FL. Backing gas flow rate	l/min 6 - 10						
			COMPOS. GAS TRAINATO Trailing gas composition	N.A.						
CARATTERISTICHE ELETTRICHE - Electrical characteristics										
PASSATA Weld layer(s)	PROCEDIM. Process	MET. D'APP. - Filler metal		CORRENTE - Current		TENSIONE Volt range	VELOCITA' Travel speed (cm/min)	ALTRO Other		
		CLASS	DIAM. (mm)	POLAR.	AMP. RAN.					
1, B1 & TW	GTAW	ER308L	2	DC - SP	100 - 180	11 - 13	N.A.			
2 & B2	SMAW	E308L	3.25	DC - RP	100 - 180	22 - 27	N.A.	(*)		
3 - n	SMAW	E308L	4	DC - RP	140 - 200	22 - 27	N.A.	(*)		
B3 - Bn	SMAW	E308L	4	DC - RP	140 - 200	22 - 27	N.A.	(*)		
ELETTRODO DI TUNGSTENO DIAMETRO E TIPO Tungsten electrode diameter and type							3/32" EWTh-2			
MODO DI TRASFERIMENTO DEL METALLO PER GMAW GMAW Metal transfer mode							N.A.			
CAMPO DI VELOCITA' DEL FILO Electrode wire feed speed range							m/min N.A.			
TECNICA - Technique										
PASSATA LARGA O CORDONI Weave or string bead			STRING		DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size	5/16" - 1/2"				
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning			GRINDING - BRUSHING		METODO SOLC. A ROvescio Method of back gouging	GRINDING				
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)			MULTIPASS		DIST. TUBO DI CONT. - MATERIALE Contact tube to work distance	mm N.A.				
OSCILLAZIONE Oscillation			N.A.		ELETTR. MULTIPLO O SINGOLO Single or multiple electrode	SINGLE				
MARTELLATURA Peening			NONE		ALTRO Other	REMOVE TACK WELDS				
TW = TACK WELDS										
(*) NO PASS THICKER THAN 1/2"										
BACK WELDING ON SINGLE-V JOINT PREPARATION TO BE DONE ONLY WHERE NECESSARY.										
							- 25/06/96			
3V COGEIM S.p.A. M. ORSINI										

**SPECIFICA PROCED. DI SALDATURA****Welding Procedure Specification**PQR DI SUPPORTO 8/8-2 8/8-24  
Supporting PQRPROCEDIM. GTAW - FCAW TIPO MANUAL +  
Process Type SEMIAUT.

PREPARAZIONE GIUNTO - Joint design: MACHINING - GRINDING

SOSTEGNO - Backing:  SI - Yes FCAW  NO - No GTAW MATER. - Material: WELD METALSUPPORTO - Retainers:  SI - Yes  NO - No TIPO - Type:**METALLI BASE - Base Metals**

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
SPECIFICA TIPO E GRADO	SA240 304L		SA312 Tp304L		A	SA240 304L		SA312 Tp304L	
Specification type and grade	SA182 F304L		SA479 304L		To	SA182 F304L		SA479 304L	

AN. CHIM. E PROPR. MECC.  
Chem. analysis and mech. prop.A  
To**CAMPI DI SPESORE - Thickness range**

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE Base metal mm (in.)	GTAW - FCAW	1.6 (1/16") - 19 (3/4")	NONE
SALDATURA DEPOSITATA Deposited weld metal mm (in.)	GTAW	4.76 (3/16") MAX	NONE
	FCAW	14.24 (9/16") MAX	NONE

CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.)

N.A.

N.A.

ALTRO - Other

**METALLI D'APPORTO - Filler metals**

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (1, B1)	5.9	ER308L	6	8	2
FCAW (2-n)	5.22	E308LT-1	6	8	1.2
FLUSSO ELETT. Elect. flux Class	N.A.	DES. COMM. FL. Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.



3V COGEIM

WPS

344

REV.

1

DATA Date

01/04/98

FOGLIO Sheet

2

POSIZIONI - Positions		TRATTAM. TERMICO - Post Weld Heat Treatment										
POSIZIONE CIANFRINO Position (s) of groove	ALL POSITIONS	CAMPO TEMPERATURA °C Temperature range		N.A.								
PROGRESSIONE SALDATURA Welding progression (up/down)	UP	CAMPO TEMPO DI PERM. min Time range		N.A.								
POSIZIONE ANGOLO Position (s) of fillet	N.A.	GAS										
PRERISCALDO - Preheat			PROCEDIMENTO Process		GTAW	FCAW						
TEMP. MIN. DI PRERISC. °C Minimum preheat temperature	10	GAS DI PROTEZIONE Shielding Gas		ARGON		CO <sub>2</sub>						
TEMP. MAX DI INTERPASS °C Max. interpass temperature	150	COMPOSIZIONE % (MISCELA) % composition (mixture)		99.99%		99.99%						
MANTENIM. PRERISCALDO Preheat maintenance	CONTINUOUS	PORTATA FLUSSO l/min Flow rate		8 - 12		15 - 20						
ALTRO Other		GAS AL ROVESCIO Backing gas		ARGON 99.99		N.A.						
		GAS AL ROV. PORTATA FL. Backing gas flow rate		6 - 10		N.A.						
		COMPOS. GAS TRAINATO Trailing gas composition		N.A.		N.A.						
CARATTERISTICHE ELETTRICHE - Electrical characteristics												
PASSATA Weld layer(s)	PROCEDIM. Process	MET. D'APP. - Filler metal		CORRENTE - Current		TENSIONE Volt range	VELOCITA' Travel speed (cm/min)	ALTRO Other				
		CLASS	DIAM. (mm)	POLAR.	AMP. RAN.							
1, B1 & TW	GTAW	ER308L	2	DC - SP	80 - 160	11 - 13	N.A.					
2-n, B2 - Bn	FCAW	ER308LT-1	1.2	DC - RP	180 - 220	22 - 27	N.A.	(*)				
ELETTRODO DI TUNGSTENO DIAMETRO E TIPO Tungsten electrode diameter and type							3/32" EWTh-2					
MODO DI TRASFERIMENTO DEL METALLO PER GMAW GMAW Metal transfer mode							SPRAY					
CAMPO DI VELOCITA' DEL FILO Electrode wire feed speed range		m/min		7 - 10								
TECNICA - Technique												
PASSATA LARGA O CORDON! Weave or string bead		STRING		DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size		GTAW: 5/16" - 1" FCAW: 3/4" - 1"						
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning		GRINDING - BRUSHING		METODO SOLC. A ROVESCIO Method of back gouging		GRINDING						
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)		MULTIPASS		DIST. TUBO DI CONT. - MATERIALE mm Contact tube to work distance		15 - 25						
OSCILLAZIONE Oscillation		N.A.		ELETTR. MULTIPLO O SINGOLO Single or multiple electrode		SINGLE						
MARSELLATURA Peening		N.A.		Dentro/Fuori Camera Chiusa CLOSED CHAMBER / OUT OF CH.		OUT						
TW = TACK WELDS												
(*) NO PASS THICKER THAN 1/2"												
							- 01/04/98					
3V COGEIM S.p.A. M. ORSINI												

## SPECIFICA PROCED. DI SALDATURA

## Welding Procedure Specification

PQR DI SUPPORTO 8/8-1 8/8-2  
Supporting PQRPROCEDIM. GTAW - SMAW | TIPO  
Process Type | MANUAL

## PARTICOLARI - Details

PREPARAZIONE GIUNTO  
Joint design

## MACHINING - GRINDING

SOSTEGNO  
Backing SI  
Yes

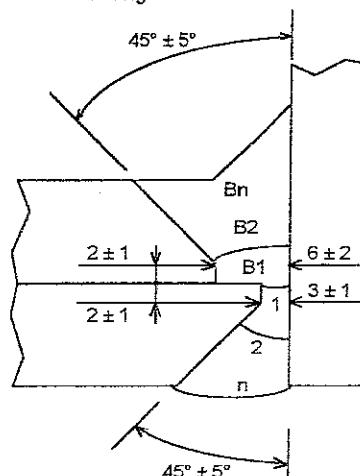
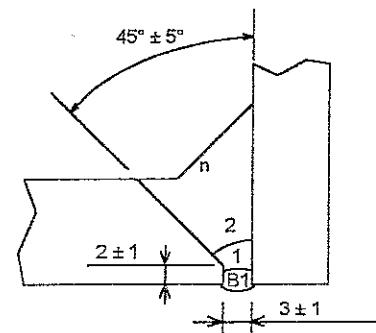
SMAW

 NO  
No

GTAW

MATERIALE  
Backing Material

WELD METAL



## METALLI BASE - Base Metals

	P No.	8	Gr. No.	1	A	P No.	8	Gr. No.	1
SPECIFICA TIPO E GRADO Specification type and grade	SA240 304L SA182 F304L	SA312 Tp304L SA479 304L	A To	SA240 304L SA182 F304L	SA312 Tp304L SA479 304L				
AN. CHIM. E PROPR. MECC. Chem. analysis and mech. prop.				A To					

## CAMPI DI SPESORE - Thickness range

	PROCEDIMENTO Process	CIANFRINO Groove	ANGOLO Fillet
METALLO BASE Base metal mm (in.)	GTAW - SMAW	1.6 (1/16") - 200 (8")	N.A.
SALDATURA DEPOSITATA Deposited weld metal mm (in.)	GTAW SMAW	5 (3/16") MAX 195 (7.677") MAX	N.A. N.A.
CAMPO DIAMETRI TUBO - Pipe diameter range mm (in.)		N.A.	N.A.

## ALTRO - Other

## METALLI D'APPORTO - Filler metals

PROCEDIMENTO Process	SFA	CLASSE AWS AWS Class	F - No.	A - No.	DIAMETRO (mm) Size (mm)
GTAW (1)	5.9	ER308L	6	8	2
SMAW (2-n)	5.4	E308L	5	8	3.25 - 4
FLUSSO ELETT. Elect. flux Class	N.A.	DES. COMM. FL. Flux trade name	N.A.	INS. CONSUMABILE Consumable insert	N.A.

POSIZIONI - Positions		TRATTAM. TERMICO - Post Weld Heat Treatment		
POSIZIONE CIANFRINO Position (s) of groove	ALL POSITIONS	CAMPO TEMPERATURA °C Temperature range	N.A.	
PROGRESSIONE SALDATURA Welding progression (up/down)	UP	CAMPO TEMPO DI PERM. min Time range	N.A.	
POSIZIONE ANGOLO Position (s) of fillet	N.A.	GAS		
PRERISCALDO - Preheat		PROCEDIMENTO Process	GTAW	
TEMP. MIN. DI PRERISC. °C Minimum preheat temperature	10	GAS DI PROTEZIONE Shielding Gas	ARGON	
TEMP. MAX DI INTERPASS °C Max. interpass temperature	150	COMPOSIZIONE % (MISCELA) % composition (mixture)	99.9%	
MANTENIM. PRERISCALDO Preheat maintenance	CONTINUOUS	PORTATA FLUSSO l/min Flow rate	8 - 12	
ALTRO Other		GAS AL ROVESCIO Backing gas	ARGON 99.9%	
		GAS AL ROV. PORTATA FL. l/min Backing gas flow rate	6 - 10	
		COMPOS. GAS TRAINATO Trailing gas composition	N.A.	

## CARATTERISTICHE ELETTRICHE - Electrical characteristics

ELETTRODO DI TUNGSTENO DIAMETRO E TIPO  
Tungsten electrode diameter and type

3/32" EWTh-2

## MODO DI TRASFERIMENTO DEL METALLO PER GMAW

N.A.

CAMPO DI VELOCITA' DEL FILO      m/min  
Electrode wire feed speed range

N.A.

## TECNICA - Technique

PASSATA LARGA O CORDONI Weave or string bead	STRING	DIAM. ORIFIZIO O COPPA GAS Orifice or gas cup size	5/16" - 1/2"
PULIZIA INIZIALE E INTERPASS Initial and interpass cleaning	GRINDING - BRUSHING	METODO SOLC. A ROVESCIO Method of back gouging	GRINDING
PASSATE MULT. O SING. (PER LATO) Multiple or single pass (per side)	MULTIPASS	DIST. TUBO DI CONT. - MATERIALE mm Contact tube to work distance	N.A.
OSCILLAZIONE Oscillation	N.A.	ELETTR. MULTIPLO O SINGOLO Single or multiple electrode	SINGLE
MARELLATURA Peening	NONE	Dentro/Fuori Camera Chiusa CLOSED CHAMBER / OUT OF CH.	OUT

**REMOVE TACK WELDS**

TW = TACK WELDS

(\*) NO PASS THICKER THAN 1/2"

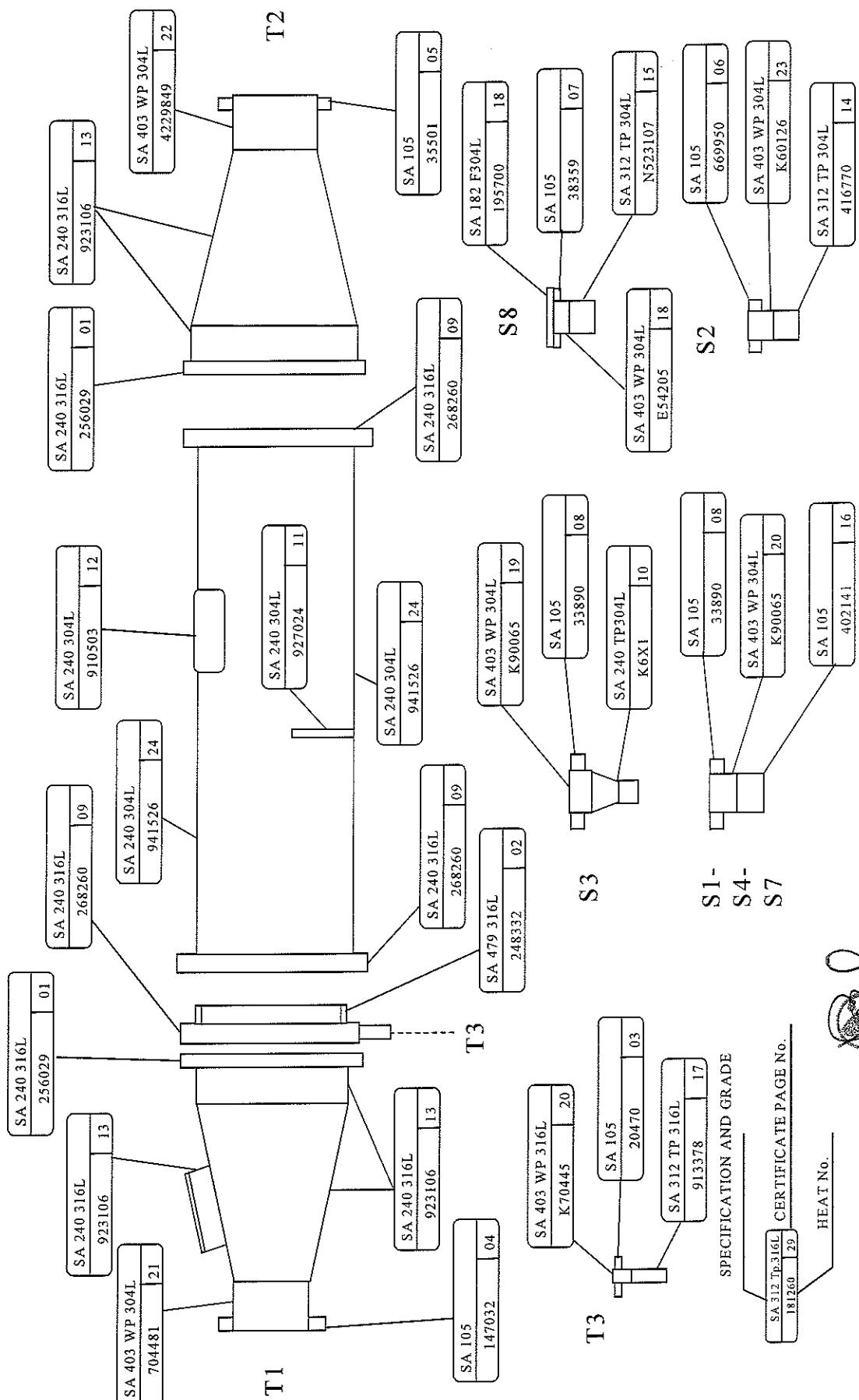
  
3X COGEIM S.p.A.  
M. ORSINI

- 01/07/97

3V COGEIM

MARKING MAP

SN  
3145



# ACRONI

TEHNIČNA KONTROLA  
Telefon: +386 4 584 10 40  
Telefax: +386 4 584 10 68  
<http://www.acroni.si>  
E-mail: askube@acroni.si

## Potrdilo o prevzemu 3.1. Abnahmepflegezeugnis 3.1. / Inspection certificate 3.1.

Stran/Seite/Page 1 / 2

St. / Nr. / No.

EN 10 204 3.1. anhage zu 3.2. TUV

Datum / Datum / Date

31069100-1

29.09.2006

Naročilno / Bestellung Nr. / Order No.  
243 disp.24370

Dobavni list / Lieferchein / Dispatch note

31069100 z vom/frm 29.09.2006

Izdelek / Erzeugnis / Product

BLECH

Vrsti peći / Erschmelzungsart / Melting furnace

E+VOD

Znak izvedenca TK

Zeichen des sachverständigen  
Inspectors' stamp

CENTRO SERVIZI METALLI SPA

SOCIETA APPARTENENTE AL GRUPPO  
PREDIERI GROUP SPA  
VIA G.M.FERRARONI, 7  
42100 REGGIO EMILIA

ITALY



Znak preizvajalca  
Zeichen des Herstellwerks  
Mark of the Manufacturer



Specifikacije / Vorschriften / Specifications

ASTM A240/A 240 M/ED.04 A/480

ASME SA 240 SECT.II PART A/ED.04 Add 05

Tip / Wnr. / Type

316L/316

Pov. / Flache / Finish Koroz. test / Int.krist.korr. / Corrasion test

316L/316

No.1

ASTM A262 PRACTICE E:OK

DIN 17440/ED.96 EN10088-2/ED.95

EN 10028-7/ED.2000

NF-A 36.209/ED.90

AD 2000 Regelwerk W2/ED.01 und W10/ED.01

TRB 100

PED/97/23/EC

X2CrNiMo17/12/2

C2-Ha, 1D

W.Mr.1..4404/1.4401

EN ISO 3651-2: OK

Z3CND17-11-02

NF-A 05.159.T1 : OK

X2CrNiMo17/12/2

C2-Ha

W.Mr.1..4404/1.4401

### Obseg dobave / Umlang der Lieferung / Extent of material delivery

Poz.	St. srza	St. plisce	Toza neto	Dimenzije			St. kom.	St. vzorca
Pos.	Schmelzen Nr.	Waltztafel	Gewicht	Abmessungen			Stückzahl	Probe Nr.
Item	Heat No.	Plate No.	Weight	Dimensions			Quantity	Sample No.
P.1	1	256029	74277	4800	50	/ 2000 /	6000	1
P.1	4 L4	256321	77360	5200	65	/ 2000 /	5000	1

### Mehanske lastnosti / Mechanische Eigenschaften / Mechanical properties

Sl.vzorca	Smer/vzorca	Nap.tecenja	Nap.tecenja	Nat.udihos	Raztezak / Bruchdehnung / Elongation	Kontrakc.	Trdota	Zlavost / Korbschlag / Impact
Probe Nr.	Preben lage	Dehn.grenze	Dehn.grenze	Zugfestigk	Red. of area %	Einschergung	Harte	pri / smer bei / smer / atosost.
Sample Nr.	Position	Yield 0.2% N/mm²	Yield 1% N/mm²	Tensile str. N/mm²	AS %	AS %	Hardness	
Zahitev	MIM	220	260	520	45			
Aufforderung.	MAX		670				217	
							60	20
74277 T p	265	305	551	57.0	75.0		149	335 319 348 20
77360 T p	277	322	558	53.4	71.7		156	372 352 366 26
G. Glava / Kopf / Top:	N - Noga / Fuss / Bottom	V - Vzdolzno / Langs / Longitudinal	P - Preco / Quer / Transverse	Upogib / Biega / Bend:	0.5a			

CENTRO SERVIZI METALLI  
COPIA CONFORME ALL'ORIGINALE  
CLIENTE INOX TECH SRL  
VS. ORDINE 158 del 06/11/08  
NS. BOLLA NR. 100-1875 del 11/11/08

Zig in prapis  
Riman stampel und Uberschrift  
Stamp and signature  
ACRONI d.o.o.  
Cesta Borisla Kidriča 44  
4210 Jesenice  
Ceska Republika SSS  
Ministarstvo Strojarskega in Metalurgijskega proizvodnje

11.11.2008

C1657Ea

## Potrdilo o prevzemu 3.1. Abnahmeprfzeugnis 3.1. / Inspection certificate 3.1.

SLN-Nr. 51069100-1

stran/Sheet: 2/2

### Kemična analiza / Chemische Zusammensetzung / Chemical Composition

Sez/Schmelze Nr./ sc	SC	Si	Mn	SP	Cr	Mo	Ni	SiMn	SiMn	Ferite
256029	0.025	0.28	1.54	0.040	0.001	16.65	10.03	2.06	0.0268	
256321	0.020	0.40	1.56	0.033	0.002	16.73	10.04	2.02	0.0276	

Opozoril:

HEAT TREATMENT : QUENCHED AT 1050° C, WATER QUENCHED

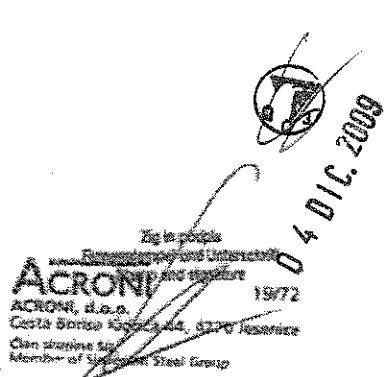
- VISUAL AND DIMENSIONAL CHECK: OK!
- SPECTROMETER SORTING TEST : OK!
- INTERGRANULAR CORROSION TEST ACCORDING TO  
ASTM A - 262 PRACTICE E : OK!

WARMBEHANDLUNG : LOSUNGSGLÜHEN BEI 1050°C, WASSER ABGESCHRECKT !

- OBERFLÄCHEN UND MASSPRÜFUNG : OHNE BEARSTANDUNG NACH EN 10029 DICHE CLASS A
- PRÜFUNG AUF WERKSTOFFVERWECHSLUNG : OHNE BEARSTANDUNG
- PRÜFUNG AUF BESTANDIGKEIT GEGEN INTERKRISTALLINE KORROSION  
NACH EN ISO 3651-2 : OHNE BEARSTANDUNG

Certified acc. Pressure Equipment Directive (97/25/EC)

by TÜV-CERT-Certification body for pressure equipment of the  
TÜV Industrie Service G.m.b.H TÜV Süd Gruppe.



6 DIC. 2009

C1657Eb

# Acciaierie Valbruna S.p.A.



36100 VICENZA (Italia) - Viale della scienza, 25 z.i.

Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4

Cliente / Besteller/Purchaser/Client  
3V COGEIM SRL - SOC. UNIPERSONALE  
VIA FRIULI, 19  
24044-DALMINE-BG

Produttore: ACCIAIERIE VALBRUNA S.P.A.  
Hersteller/Item/Usine produtrice

Oggetto Prove: Decapato Solubilizzato Laminato  
Prüfgegenstand/Item Inspected/Finissage

Avviso di Spedizione: A-MI09005351  
Lieferanzeige/Packing list/B.L.

Ordine nr: ORDINE 53375  
Bestell/Your order/Commande

Tipo di Elaborazione: E+AOD  
Erschmelzungsart/Melting process/Mode d'élaboration

## CERTIFICATO DI COLLAUDO ABNAHMEPRUEFZEUGNIS INSPECTION CERTIFICATE CERTIFICAT DE RECEPTION EN 10204 (2005), 3.1

Certificato nr: MEST786136/2009/  
Prüfung/Test/Essai

Conferma ordine nr: MI09005484  
Werks/Our Order/Ref nr.

Marchio di Fabbrica:  
Zeichen des Lieferwerkes  
Trade mark  
Signe de l'usine produitrice



Punzone del Collaudatore:  
Stempel des Werkssachverständigen  
Inspector's stamp/Pointon de l'assayeur



### Specifiche:

Anforderungen / Requirements / Exigences

VAL STOCK 2005 1.4404/316L A

AMS 5648 K S31600 A

ASME SA182 2007 S31603 A 1

ASME SA276 2007 S31603 A 4

ASME SA479 2007 S31603 A 7

ASTM A193 2008B B8M CLASS1

ASTM A276 2008A S31603 A

ASTM A479 2008 S31600 A

DIN 17440 96 1.4404 A

EN 10269 99 1.4401

EN 10272 2007 1.4404 A

QQ-S-763 F 316 A

(0) SEC.II PT.A 2007 EDITION ADD. 2008a

(1) SEC.II PT.A 2007 EDITION ADD. 2008a

(2) SEC.II PT.A 2007 EDITION ADD. 2008a

(4) SEC.II PT.A 2007 EDITION ADD. 2008a

(6) SEC.II PT.A 2007 EDITION ADD. 2008a

(8) Chemical analysis only and mechanical properties.

(A) \* ISO 15156-3

AISI 316

AMS 5653 F S31603 A

ASME SA193 2007 B8M CLASS1 2

ASME SA320 2007 B8M CLASS1 5

ASTM A182 2008A S31600 A 8

ASTM A262 2002A PRACTICE E

ASTM A314 2008 S31600

ASTM A479 2008 S31603 A

EN 10088-3 2005 1.4401 A

EN 10269 99 1.4404

NACE MR0175\* 2003 S31600 A

QQ-S-763 F 316L A

AISI 316L

ASME SA182 2007 S31600 A (0)

ASME SA276 2007 S31600 A (3)

ASME SA479 2007 S31600 A (6)

ASTM A182 2008A S31603 A (9)

ASTM A276 2008A S31600 A

ASTM A320 2008 B8M CLASS1

DIN 17440 96 1.4401 A

EN 10088-3 2005 1.4404 A

EN 10272 2007 1.4401 A

NACE MR0175\* 2003 S31603 (B)

0Chemical analysis only and mechanical properties.

1Chemical analysis only and mechanical properties.

3SEC.II PT.A 2007 EDITION ADD. 2008a

5SEC.II PT.A 2007 EDITION ADD. 2008a

7SEC.II PT.A 2007 EDITION ADD. 2008a

9Chemical analysis only and mechanical properties.

B\* ISO 15156-3

Qualità: 1.4404/316/316L

Werkstoff/Grade/Nuance

Marca: APML

Markenbezeichnung/Brand/Nuance

Punzonatura: 1.4404/316/316L

Kennzeichnung/Marking/Marque

Pos. nr. Pos. nr. Item nr. Nr. de poste	Oggetto Gegenstand Product description Descrip. du produit	Dimensioni - mm Abmessungen Dimension Dimension	Tolleranza Toleranz, Allowance Tolerance	Lunghezza - mm Länge Length Longueur	Colata Schmelze Heat Coulée	Pezzi Stückzahl/ Pieces Pieces	Peso - KG Gewicht Weight Poids	Lotto nr. Losnr. Lot nr. Lot nr.
0050	Piatto	50,000 x 20,000	DIN1017	6000 / 6220	248332		390,0	827100540

Sono state soddisfatte tutte le condizioni richieste

Die gestellten Anforderungen sind it. Anlage erfüllt

The material has been furnished in accordance with the requirements

Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza: OK

Verwachslungsprüfung: spectralanalytisch durchgeführt

Antimixing testing performed: OK

Contrôle antimélange fait: r.a.s.

Controllo visivo e dimensionale: soddisfa le esigenze:

Bestichtigung und Ausmessung: ohne Beanstandung

Visual inspection and dimensional checks:satisfactory

Contrôle visuel et dimensions: satisfaisant

TEST ALLO STATO DI FORNITURA										
Test on delivery condition			Prüfung auf lieferbereitem produkt			test a l'état de fourniture			Prueba sobre el material así como entregado	
TEST	Provvetta/Probstab Specimen/Eprüvstabe Lang diam Spess. Breite Diam. Dicke Width Diam. Thickness Lang diam épaisse mm/mm	° C Posiz. Saggio Position Saggenort Saggenpunkt 1)	Snervamento Streckgrenze Yield Stress Limite élastique Rp 0,2% N/mm2	Snervamento Streckgrenze Yield Stress Limite élastique Rp 1% N/mm2	Resistenza Zugfestigkeit Yield Stress Limite élastique Rm N/mm2	Allungamento Bruchdehnung Elongation Allongement	Strizione Einschränkung Reduction of area Stricken	Resilienza Kehrbiegsigkeit Impact Value Resilience KV J	Durezza Härte Hardness Dureza	HB
Valori richiesti 1 Anforderungen/Required values Valeurs demandées	min max	207	240	517 690	40	40	-	50	100	140 215
A	10	20	L	329	368	624	54	56	67	238 236 232 183

TEST	min	max	6
Dimensioni grano x ASTM E112			

1)L=longitudinale/längs, T=trasversale/quer, C=tangenziale/tangential

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

Colata /Heat Schmelze/Coulée	min - max 0,030	1,00 2,00	1,25 2,00	16,50 18,00	2,00 2,50	1,00 13,00	10,00 -	- 0,040	0,030 -	0,100 -	- -	- -										
248332	C %	0,018	Si %	0,45	Mn %	1,42	Cr %	16,67	Mo %	2,01	Cu %	0,62	Ni %	10,12	Co %	0,100	P %	0,030	S %	0,027	N %	0,074

Vicenza, 22/09/09

VCO012

(Mod. MCER)

Il collaudatore di stabilimento / der Werkssachverständige / Works inspector / L'agent d'usine

M. Rizzotto

Pagina - 1 di 2

# Acciaierie Valbruna s.p.a.



36100 VICENZA (Italia) - Viale della scienza, 25 z.i.  
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4

Cliente / Besteller/Purchaser/Client  
3V COGEIM SRL - SOC. UNIPERSONALE  
VIA FRIULI, 19  
24044-DALMINE-BG

Produttore: ACCIAIERIE VALBRUNA S.P.A.  
Hersteller/Item/Usine productrice

Avviso di Spedizione: A-MI09005351  
Lieferanzeige/Packing list/B.L.

Ordine nr: ORDINE 53375  
Bestell/Your order/Commande

Oggetto Prove: Decapato Solubilizzato Laminato  
Prüfgegenstand/Item Inspected/Finissage

Tipo di Elaborazione: E+AOD  
Erschmelzungsart/Melting process/Mode d' élaboration

## CERTIFICATO DI COLLAUDO ABNAHMEPRUEFZEUGNIS INSPECTION CERTIFICATE CERTIFICAT DE RECEPTION EN 10204 (2005), 3.1

Certificato nr: MEST786136/2009/  
Prüfung/Test/Essai

Conferma ordine nr: MI09005484  
Werks/Our Order/Ref nr.

Marchio di Fabbrica:  
Zeichen des Lieferwerkes  
Trade mark  
Sigle de l' usine productrice



Punzone del Collaudatore:  
Stempel des Werkssachverständigen  
Inspector's stamp/Poinçon de l' assyeur



Intergranular corrosion test per ASTM A262 pract. E: ok.

I.Korrosion nach EN ISO 3651-2A Sensibilisierung : T1 : OK

Corrosion test per EN ISO 3651-2A sensitized T1 : OK

Melted and manufactured in Italy No welding or weld repair Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination through Portal System when it leaves the production plant.

The Quality Management System is Certified acc. Pressure Equipment Directive [97/23/EC] Annex 1,s.4.3 by TUEV and LLOYD'S

*22 SET. 2009*











SEDE AMMINISTRATIVA E STABILIMENTO:  
23861 CESANA BRIANZA (LC) - Italy  
Via G. Parini, 28  
Tel. +39 031.855441  
Fax +39 031.855149  
quality.mff@farmas.com

PRODOTTI INDUSTRIALI S.p.A.  
STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

### SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

Certificato generato da un sistema informatico secondo la norma EN10204, valido senza firma - This certificate has been generated by computer and need not to be signed for validity acc. to EN10204

### CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

Certif. n. 5506	Del / Dated 10.11.2008
DDT / Del Note n. 5271	Del / Dated 10.11.2008
Fattura / Invoice n. 3057	Fattura / Invoice n. 3057
COMPANY	
WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001 : 2000 =	
FERRAMENTA INDUSTRIALE BONACINA SRL VIALE EUROPA, 2G - FRAZ. CURNASCO 24048 TREVISO	BG IT

Pag. 2 - 7

COD. COL. HEAT CODE	COLATA HEAT	POS. ITEM	VS. ORDINE YOUR REF.	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION						DIM. IN ACC. A DIM. ACCORDANCE TO	DIM. IN ACC. B DIM. ACCORDANCE TO	VISIVO E DIMENS. VISUAL & DIMENS.					
					C%	S%	M%	P%	C%	N%								
75818	0007	3626 DEL 07.11.2009	1+	3.00	W/N 300 RF 1/2" 160	A105					ASME/ANSI B16.5	ASME/ANSI B16.5	SATISFACTORY					
76172	0008	3626 DEL 07.11.2009		4.00	W/N 300 RF 2" XS	A105					ASME/ANSI B16.5	ASME/ANSI B16.5	SATISFACTORY					
63696/1	0009	3626 DEL 07.11.2009		1.00	S/O 300 RF 20"	A105 □ COME DA ALLEGATO					ASME/ANSI B16.5	ASME/ANSI B16.5	SATISFACTORY					
508884	0010	3626 DEL 07.11.2009		1.00	BLIND 300 RF 20"	A105 □ COME DA ALLEGATO					ASME/ANSI B16.5	ASME/ANSI B16.5	SATISFACTORY					
09/90581	0011	3626 DEL 07.11.2009		1.00	BLIND 300 RF 10"	A105 □ COME DA ALLEGATO					ASME/ANSI B16.5	ASME/ANSI B16.5	SATISFACTORY					
08/38247	0012	3626 DEL 07.11.2009		4.00	LAP JOINT 300 FF 2"	A105 □ COME DA ALLEGATO					ASME/ANSI B16.5	ASME/ANSI B16.5	SATISFACTORY					
38359	0013	3626 DEL 07.11.2009		5.00	LAP JOINT 150 FF 4"	A105												
COD. COL. HEAT CODE	COLATA HEAT	POS. ITEM	MATERIALE MATERIAL	MATERIALE MATERIAL	C%	S%	M%	P%	C%	N%	Mo%	T%	Cu%	V%	Nb%	Al%	C.E.%	ALTRIE ELEMENTI OTHER ELEMENTS
75818	0007	ASTM A105	0,200	0,220	1.000	0,015	0,015	0,010	0,060	0,001	0,001	0,230	0,001	0,001	0,000	0,026	0,410	<i>COLLAUDATO</i>
76172	0008	ASTM A105	0,180	0,210	1.000	0,014	0,011	0,070	0,005	0,001	0,150	0,005	0,005	0,000	0,029	0,379		
63696/1	0009	ASTM A105	0,180	0,240	0,800	0,012	0,014	0,190	0,060	0,002	0,270	0,005	0,005	0,000	0,026	0,378		
508884	0010	ASTM A105	0,190	0,230	0,820	0,002	0,008	0,190	0,070	0,002	0,150	0,001	0,001	0,000	0,029	0,385		
09/90581	0011	ASTM A105	0,200	0,250	1,060	0,004	0,016	0,040	0,060	0,002	0,160	0,005	0,001	0,000	0,026	0,404		
08/38247	0012	ASTM A105	0,200	0,220	0,990	0,015	0,012	0,150	0,080	0,020	0,170	0,003	0,002	0,000	0,005	0,416		
38359	0013	ASTM A105	0,200	0,220	0,950	0,015	0,015	0,130	0,050	0,010	0,180	0,009	0,003	0,000	0,005	0,402		
COD. COL. HEAT CODE	POS. ITEM	PROGETTO / TEST SPECIM.	SNEDVAYMENTO / TEST SPECIM.	ROTTURA	ALLUNGAMENTO	CONTRAZIONE	REDUCT. OF AREA	%>=	DUREZZA HB	PIEGA BEND TEST	SCHIACCIA M. FLATTENING TEST	RESILIENZA / IMPACT TEST - JOULE/cm2	TIPO / TYPE 10x10mm	SCALARE / YIELD POINT 1= O 2= □	FORMA SHAPE 1 = O 2 = □	SNEDVAYMENTO / YIELD POINT N/mm2 >=1,0%	ORIGINE ORIGIN	
75818	0007	126,60	50,80	335,0	543,0	30,0	30,0	60,0	163 - 165	0,0	0,0	KV	20	88	86	84	0,0	EUROPE
76172	0008	126,60	50,80	330,0	531,0	33,0	33,0	58,0	163 - 165	0,0	0,0	KV	20	85	88	80	1,0	EUROPE
63696/1	0009	126,60	50,80	311,0	502,0	28,0	28,0	64,0	152 - 156	0,0	0,0	KV	20	89	84	81	1,0	EUROPE
508884	0010	126,60	50,80	317,0	525,0	33,0	33,0	61,0	159 - 163	0,0	0,0	KV	20	86	92	94	1,0	EUROPE
09/90581	0011	126,60	50,80	354,0	535,0	30,0	30,0	59,0	163 - 165	0,0	0,0	KV	20	86	83	84	1,0	EUROPE
08/38247	0012	126,60	50,80	370,0	529,0	30,0	30,0	59,0	159 - 163	0,0	0,0	KV	20	87	87	83	1,0	EUROPE
38359	0013	126,60	50,80	359,0	525,0	30,0	30,0	59,0	159 - 163	0,0	0,0	KV	20	87	80	85	1,0	EUROPE
COD. COL. HEAT CODE	POS. ITEM	MATERIALE IN ACCORDO A MATERIAL IN ACCORDANCE TO	HEAT TREATMENT	TRATTAMENTO TERMICO	FORN. FORNO	ORIGINE ORIGIN												
75818	0007	ASTM ASME A 105/SA 105 M - 05		NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE	EUROPE												
76172	0008	ASTM ASME A 105/SA 105 M - 05		NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE	EUROPE												
63696/1	0009	ASTM ASME A 105/SA 105 M - 05		NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE	EUROPE												
508884	0010	ASTM ASME A 105/SA 105 M - 05		NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE	EUROPE												
09/90581	0011	ASTM ASME A 105/SA 105 M - 05		NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE	EUROPE												
08/38247	0012	ASTM ASME A 105/SA 105 M - 05		NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE	EUROPE												
38359	0013	ASTM ASME A 105/SA 105 M - 05		NORMALIZED AT 920 C - COOLED IN STILL AIR	ELECTRIC FURNACE	EUROPE												
NOTE MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156	QUALITY CONTROL DEPARTMENT	ENTE UFFICIALE DI COLLAUDO	MARCHIO PRODUZIONE															
NOTES																		
<i>FERRAMENTA INDUSTRIALE BONACINA SRL</i>	<i>S. Corti</i>	<i>MFF</i>																

**METALFAR**

PRODOTTI INDUSTRIALI S.P.A.

23861 CESANA BRIANZA (LC) ITALY  
Tel. 031.655441 - Fax 031.655149

MATERIAL TEST DEPARTMENT  
SALA PROVE ED ANALISI MATERIALI

COMPANY  
WITH QUALITY MANAGEMENT  
SYSTEM CERTIFIED BY DNV  
= ISO 9001 : 2000 =

**INSPECTION CERTIFICATE EN 104/3.1**

CERTIFICATO DI COLLAUDO N. 3221 / 11/09/2009

FERRAMENTA IND/LB BONACINA SRL  
VIA EUROPA, 26-PRAT CURNASCO  
24048 TREVISO BG

INVOICE / FATTURA:  
S. 59376  
DEL. NOTE / BOLLA: 4186 / 10/09/2009

**TEST SPECIMEN**

HEAT CODE COD. COLATA	HEAT COLATA	ITEM POS.	YOUR P.O. VS. ORDINE	OUR REFERENCE NS. ORDINE	QUANTITY QUANTITA'	DESCRIPTION DESCRIZIONE
08/77048	0008	REINTEGR	09002366	0010	10	BLIND 300 RF 1"
74402	0009	REINTEGR	09002366	0011	10	BLIND 300 RF 2"
09/34164	0010	REINTEGR	09002366	0012	10	BLIND 300 RF 4"
37751	0011	REINTEGR	09002366	0013	5	BLIND 300 RF 8"
09/33890	0013	REINTEGR	09002366	0015	10	LAP JOINT 150 PP 6"
146301	0014	REINTEGR	09002366	0016	5	LAP JOINT 150 PP 10"

**MATERIAL**  
MATERIALE

HEAT CODE COD. COLATA	HEAT COLATA	ITEM POS.	YOUR P.O. VS. ORDINE	OUR REFERENCE NS. ORDINE	QUANTITY QUANTITA'	DESCRIPTION DESCRIZIONE
08/77048	0008	ASTM A 105	0.190	0.180	0.890	0.015
74402	0009	ASTM A 105	0.185	0.240	0.970	0.010
09/34164	0010	ASTM A 105	0.210	0.290	1.010	0.009
37751	0011	ASTM A 105	0.205	0.250	0.980	0.014
09/33890	0013	ASTM A 105	0.200	0.220	1.010	0.010
146301	0014	ASTM A 105	0.190	0.230	1.050	0.007

**MATERIAL**  
MATERIALE

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08/77048	0008	ASTM A 105	0.190	0.180	0.890	0.015
74402	0009	ASTM A 105	0.185	0.2		

# ACRONI

N° JACQUET :  
13638

N° JACQUET :  
082651

TEHNIČNA KONTROLA  
Telefon: +386 4 584 10 40  
Telefax: +386 4 584 10 68  
<http://www.acroni.si>  
E-mail: askube@acroni.si

## Potrdilo o prevzemu 3.1 / Abnahmeprüfzeugnis 3.1 / Inspection certificate 3.1

Stran/Seite/Page 1 / 2

St. / Nr. / No

EN 10 204 3 1 anlage zu 3 2 TUV

Datum / Datum / Date

310001557-2

19.08.2009

Narocilo / Bestellung Nr / Order No  
72818 disp 28983

Dobavni list / Lieferschein / Despatch note  
310001557 z/dovm/from 19.08.2009

Izdelek / Erzeugnis / Product

BLECH

Vrsta peći / Erschmelzungsart / Melting furnace

E+VOD

Znak izvedenca TK

Zeichen des sachverständigen  
Inspectors' stamp



Znak proizvajalca  
Zeichen des Herstellwerks  
Mark of the Manufacturer



Specifikacije / Vorschriften / Specifications

ASTM A240/A 240M/ED.08

ASME SA 240/SA240M 2007 Section II Part A

Tip / W.nr / Type

316L/316

316L/316

Pov / Flache / Finish

No.:1

No.:1

Koroz test / Int.krist korr / Corrosion test

ASTM A262 PRACTICE E:C

EN 10028-7/ED.2008, EN 10088-2/ED.05

X2CrNiMo17/12/2

W.Nr.1.4404/1.4401

C2-IIa, 1D

EN ISO 3651-2: OK

AD 2000 Regelwerk W2/ED.01 und W10/ED.01

X2CrNiMo17/12/2

W.Nr.1.4404/1.4401

C2-IIa

PED/97/23/EC

### Obseg dobave / Umfang der Lieferung / Extent of material delivery

Poz.	St. sarže	St. plosce	Teza neto	Dimenzije	St. korn.	St. vzorca
Pos.	Schmelzen Nr	Waftztafel	Gewicht	Abmessungen	Stückzahl	Probe Nr
Item	Heat No.	Plate No.	Weight kg	Dimensions mm	Quantity	Sample No.
85	268260	37992	5280	55 / 2000 / 6000	1	37992 T

### Mehanske lastnosti / Mechanische Eigenschaften / Mechanical properties

St.vzorca Probe Nr. Sample No.	Smer vzorca Proben lage Position	Nap.tecenja Dehn grenze Yield Yield 0,2% N/mm²	Nap.tecenja Dehn grenze Dehn grenze Tensile str. N/mm²	Nat.trdnost Zugfestigkeit Tensile str. N/mm²	Raztezek / Bruchdehnung / Elongation AS % AS % AS %	Kontrakc. Einschnürung Red. of area %	Trdota Harte Hardness HB	Zilavost / Kerbschlag / Impact pri/siner bei Lage at/posit	
Zahiteve Anforderung Requir.:	MIN	220	260	520	45			60	20
	MAX			670			217		
37992 T P	273	335	564	52.9	73.3		156	367	388 372 20

G - Glava / Kopf / Top    N - Noga / Fuss / Bottom    V - Vzdolzno / Langs / Longitudinal    P - Precno / Quer / Transverse    Upogib / Biege / Bend : 0.5a

16 NOV. 2009

Zig in podpis  
Firmenstempel und Unterschrift  
Stamp and signature  
ACRONI d.o.o.  
Cesta Borisa Kidriča 44 4270 Jesenice  
član skupine SIU  
Member of Stamping Steel Group

# ACRONI

N° JACQUET :  
13638

N° JACQUET :  
082651

TEHNIČNA KONTROLA  
Telefon: +386 4 584 10 40  
Telefax: +386 4 584 10 68  
<http://www.acroni.si>  
E-mail: askube@acroni.si

## Potrdilo o prevzemu 3.1/ Abnahmeprufzeugnis 3.1/ Inspection certificate 3.1

St./Nr./No.: 310001557-2

Stran/Suite/Page 2 / 2

### Kemična analiza / Chemische Zusammensetzung / Chemical Composition

Sarza/Schmelzen Nr. / %C	%Si	%Mn	%P	%S	%Cr	%Ni	%Mo	%N	%B	%Co	Ferite
Heat No.											
268260	0.029	0.34	1.46	0.039	0.001	16.60	10.12	2.04	0.0127	0.0010	0.38

### Opozme / Bemerkungen / Remarks

HEAT TREATMENT : SOLUTION ANNEALED AT 1050°C, WATER QUENCHED

- VISUAL AND DIMENSIONAL CHECK : OK
- SPECTROMETER SORTING TEST : OK
- INTERGRANULAR CORROSION TEST ACCORDING TO  
ASTM A - 262 PRACTICE E : OK!

Im Einvernehmen mit dem TÜV Bayern e.V. (Avgust 1965).

Gegenzeichnungsverzicht durch TÜV Bayern Sachsen e.V. mit Schreiben vom 20.6.1996.

WARMBEHANDLUNG . LoSUNGSGLUHEN BEI 1050 °C, WASSER ABGESCHRECHT!

- OBERFLÄCHEN UND MASSPRUFUNG : OHNE BEANSTANDUNG NACH EN 10029 DICKE CLASS B UND  
EN 10163-2 B3

- PRUFUNG AUF WERKSTOFFVERWECHSLUNG : OHNE BEANSTANDUNG  
- PRUFUNG AUF BESTÄNDIGKEIT GEGEN INTERKRISTALLINE KORROSION  
NACH EN ISO 3651-2 : OHNE BEANSTANDUNG.

Certified acc. Pressure Equipment Directive (97/23/EC)

by TÜV-CERT-Certification body for pressure equipment of the

TÜV Industrie Service G.m.b.H TÜV Süd Gruppe.

THE MATERIAL COMPLIES WITH THE REQUIREMENTS OF THE ORDER.

NO WELD REPAIR

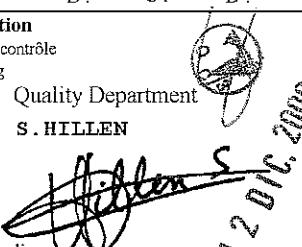
16 Nov 2000  
Zig in podpis  
Firmenstempel und Unterschrift  
Stamp and signature  
ACRONI, d.o.o.  
Cesta Borisa Kidriča 44 1270 Ljubljana  
Slovenia  
Member of SI-TEST

ACERINOX, S.A.			INSPECTION CERTIFICATE CERTIFICADO DE INSPECCION 3.1									
FABRICA DEL CAMPO DE GIBRALTA PALMONES: (LOS BARRIOS) TELEF.: (34) - 956 62 93 00 FAX: (34) - 956 62 93 11 S.C. D.O. 63 11370 LOS BARRIOS (CÁDIZ)		ACCORDING TO EN 10204 SIGUIENDO		CERTIFICATE N° CERTIFICADO N° 56 10111 20001 * / 1								
CUSTOMER CLIENTE OIKI ACCIAI INOSSIDABILI SPA VIA PARADIGMA, 95/A 43100 PARMA		OUR ORDER N° N. PEDIDO SN 97679		YOUR ORDER N° N. PEDIDO 3713								
TRADE MARK SELLO DEL FABRICANTE		INSPECTOR'S STAMP SELLO DEL INSPECTOR		STEELMAKING PROCESS PROCESO DE ACERIA								
A.O.D.												
REQUIREMENTS NORMAS APLICABLES EN 10088-2:2005 ASTM-A240EJ06,A480EJ06		INTERGRANULAR CORROSION CORROSIÓN INTERGRANULAR		GRADE MATERIAL		FINISH ACABADO						
		ASTM-A-262 PRACTICA E		Acx 150 Acx 150		1.4307 TP-304L						
COIL / BOX BOLITRA/CAJA		CONTENT CONTENIDO		DIMENSIONS DIMENSIONES		MARKS MARCA		QUANTITY CANTIDAD		TEST N° PRUEBA		
05K6X1 C		05K6X1 C		4,000	1250,00	2		1		05K6X1 C		
CHEMICAL ANALYSIS / COMPOSICION QUIMICA (%)												
HEAT N° COLADA	C	CR	MN	N	NI	P	S	SI				
K6X1	0,019	17,641	1,683	0,060	8,002	0,031	0,002	0,324				
MECHANICAL PROPERTIES / CARACTERISTICAS MECANICAS												
TEST N° PRUEBA	PROBE TIPO	Rm N/mm²	Rp 0.2 N/mm²	Rp 1.0 N/mm²	A50 %	A5 %	HRB					
05K6X1	C T	617,89	292,95	338,50	53,72	65,72	80,00					
REMARKS / OBSERVACIONES								SURFACE AND DIMENSIONAL CONTROL INSPECCION SUPERFICIAL Y DIMENSIONAL				
The delivery is in accordance with the order Temperatura de hipertempero entre 1050 y 1100 °C.								SATISFACTORY Satisfactoria				
								WORK INSPECTOR INSPECTOR				
								T. Micó				
								Palmones, 13 NOVIEMBRE 2008				

FDT0009

This to declare that the material as described in here has been cut to :

NASTRO 304 1250X 4,0 CALDO X 6000 304L/1.4307

 <b>ArcelorMittal</b>		<b>A04 MILL CERTIFICATE BS EN 10204/3.1</b> <b>CERTIFICAT DE RECEPTION NF EN 10204/3.1</b> <b>ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1</b> <p>Approved acc. AD 2000-Merkblatt W0/TRD 100 by TÜV SÜD Industrie Service GmbH.  Certified acc. PED 97/23/EC Annex I § 4.3 by Certification Body 0036 of TÜV SÜD  Industrie Service GmbH with certificate No.: 314/2007/MUC.  Renounced of counter signature agreed by TÜV SÜD (9/5/2007).</p>										<b>N-Nr-N 2009K0023778</b> A03					
Maatschappelijke zetel: ArcelorMittal - Stainless Belgium NV/SA Koning Albert II-laan 35, 1030 Brussel, Belgium Correspondentieadres: ArcelorMittal Genk - Stainless Europe Swinnenwijkweg 5, 3600 Genk, Belgium Tel. +32 (0)89 30 21 11		A02															
<b>Manufacturer's works order number</b> N° de la commande usine productrice Werksauftragsnummer <b>9UA851876/02-20550/424/02</b> A08 <b>Packing list: 2009K913855</b>		<b>Surveyor's mark</b> Cachet de l'expert <b>AMSE</b> Z03		<b>Purchaser and/or consignee</b> Client et/ou destinataire Besteller und/oder Empfänger <b>GRIFFON &amp; ROMANO SPA</b>		<b>Purchaser's order number</b> Nº de commande client Kundenbestellnummer <b>ORDINE 19-0076 MAGGI O</b> A07											
<b>Product - Produit - Erzeugnis</b> COILS, HOT ROLLED, ANNEALED AND PICKLED COILS, LAMINE A CHAUD, RECUTS + DECAPE COILS, WARMGEWALZT, GEGLUEHT UND GEBEIZT		<b>AMSE</b> Z03		<b>VIA TACITO 8-10</b> <b>20094 CORSICO (MI)</b> <b>ITALIE</b> B01		<b>Customer article number</b> Nº d'article client Artikelnummer des Kunden <b>A09</b>											
<b>Steel designation</b> Désignation de l'acier Stahlbezeichnung EN 10028-7/08 WNR 1.4307/1.4301 ASTM A 240 (M)-08 TYPE 304L/304 ASME SA 240-07 TYPE 304L/304		<b>B02</b> Finish Présentation Ausführung 1D NO 1 NO 1	<b>Steelmaking process</b> Mode d'élaboration de l'acier - Stahlherstellungsverfahren Electric arc furnace-VOD/AOD-Continuous casting Four à arc-VOD/AOD-Coulée continue Elektro-Ofen-VOD/AOD-Stranggussanlage		<b>C70</b> A06	<b>Product delivery condition</b> Etat de livraison du produit Lieferzustand Solution treated: Hyper trempé: Loesungsgegl.+abgeschreckt: <b>1050 C</b>											
<b>Any supplementary requirements</b> Prescriptions supplémentaires - Zusätzliche Anforderungen <b>X2 CRNI 18-9</b>						<b>Forced air</b> - Air forced Gebläse Luft <b>B04</b>											
AD 2000 W2/2008 -- AD 2000 W10/2007 -- EN 13445-2/2002 NACE MR 0175 / ISO 15156-1 / ISO 15156-3														Z05			
<b>Identification of the product</b> Identification du produit-Identifizierung des Erzeugnisses		<b>B07</b>		<b>Dimensions</b> Dimensions - Abmessungen				<b>B08</b>		<b>Number of pieces</b> Nombre de pièces - Stückzahl <b>1</b>							
<b>Coil n.</b> N° de bobine - Band Nr <b>91904733</b>		<b>Heat n.</b> N° de coulée - Schmelz Nr <b>919047</b>		<b>B09</b> Thickness Epaisseur - Dicke <b>15.00 mm</b>	<b>B10</b> Width Largeur - Breite <b>2000.00 mm</b>	<b>B11</b> Length Longueur - Laenge	<b>B12</b>		<b>B13</b> Net weight Poids net - Netto Gewicht <b>14080 KG</b>								
<b>CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG</b>																	
<b>Required-Exigé</b> Anforderung <b>% mini</b> <b>% maxi</b>		<b>C</b> 0.030	<b>Si</b> 0.75	<b>Mn</b> 2.00	<b>Ni</b> 10.50	<b>Cr</b> 19.50	<b>Mo</b> 	<b>Ti</b> 	<b>N</b> 0.100	<b>S</b> 0.015	<b>P</b> 0.045						
<b>Cast Analysis</b> Analyse coulée Analyse Schmelze		C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86
Tests to verify batch and quality have been carried out : OK Tests de vérification de la conformité de la nuance fournie : OK Vervuchlungsprüfung wurde durchgeführt : OK				<b>α Ferrite</b> δ Ferrite				Bend test results are satisfactory EN ISO 7438 D02 Les essais de pliage sont satisfaisants 180 : ok C93 Ergebnisse des Biegeversuchs entsprechen den Vorschriften									
<b>Location (1)</b>		<b>MECHANICAL PROPERTIES - PROPRIETES MECANIQUES - MECHANISCHE WERTE EN 10002-1</b>															
<b>Room temperature</b> - Température ambiante - Raumtemperatur		Test Temperature : <b>C03</b>															
<b>Direction (2)</b>		<b>Yield strength</b> Limite d'élasticité Dehngrenze <b>MPa</b>		<b>Tensile strength</b> Résistance à la traction Zugfestigkeit <b>MPa</b>		<b>Elongation after fracture (A)</b> Allongement après rupture Bruchdehnung <b>%</b>		<b>Hardness</b> Dureté Haerte		<b>Yield strength</b> Limite d'élasticité Dehngrenze <b>MPa</b>		<b>Tensile str.</b> Résist. Zugfestigkeit <b>MPa</b>		<b>Elongation %</b> Allongement Bruchdehnung			
<b>Required</b> Exigé Anforderung <b>mini</b> <b>maxi</b>		<b>Rp 0.2 %</b> 210	<b>Rp 1 %</b> 250	<b>Rm</b> 520 670	<b>A5</b> 45	<b>50mm</b> 45	<b>HRB</b> C30	<b>Rp 0.2 %</b> 	<b>Rp 1 %</b> 	<b>Rm</b> 	<b>A5</b>						
<b>1 T</b> Obtained Obtenu Ergebnisse		C11	C14	C12	C13	C15	C31	C16	C17	C18	C19						
<b>Impact strength test</b> Essai de résilience Kerbshlagzähigkeitstest		<b>Corrosion test</b> Test de corrosion Korrosionstest		<b>Z0.2 (T) / R(T)</b> 8		<b>44</b>										Sample Thickness 5.03mm	
C40 Temp. C44		EN ISO 3651/2 :OK C42		C50 DS1 Internal Cleanliness :		C51		C52		C53		C54		C55		C05	
<b>Location of the sample (1)</b> Emplacement de l'échantillon Lage des Probenabschnitte 1. Front - Début - Anfang 2. Back - Fin - Ende 3. Middle - Milieu - Mitte		The delivery is in accordance with the order La fourniture est conforme aux exigences de la commande Die Lieferung entspricht den Bestellbedingungen										<b>Organisation inspection</b> Organisme et/ou service contrôle Ueberwachungsabteilung					
<b>Direction of the test pieces (2)</b> Orientation des éprouvettes Probemrichtung T. Transverse - Travers - Quer L. Longitudinal - long - laengs		<b>Marking, inspection and measurement : without objection</b> Contrôle de marquage, d'aspect et de dimensions : satisfaisants Prüfung der Stempelung, des Oberflächenaspekts und der Abmessungen : ohne Beanstandung										<b>Quality Department</b> 26/05/2009 <b>S. HILLEN</b> The inspector Le responsable Der Werkssachverständige					
 12/05/2009														Z02			

 <b>ArcelorMittal</b> <p>Maatschappelijke zetel: ArcelorMittal - Stainless Belgium NV/SA Koning Albert II-laan 35, 1030 Brussel, Belgium Correspondentieadres: ArcelorMittal Genk - Stainless Europe Swimmenwierweg 5, 3600 Genk, Belgium Tel. +32 (0)89 30 21 11</p>		<p style="text-align: center;"><b>MILL CERTIFICATE BS EN 10204/3.1</b>  <b>CERTIFICAT DE RECEPTION NF EN 10204/3.1</b>  <b>ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1</b></p> <p>Approved acc. AD 2000-Merkblatt W/WT RD 100 by TÜV SÜD Industrie Service GmbH.  Certified acc. PED 97/23/EC Annex I § 4.3 by Certification Body 0036 of TÜV SÜD  Industrie Service GmbH with certificate No.: 314/2007/MUC.  Renounced of counter signature agreed by TÜV SUD (9/5/2007).</p>										N-Nr-N 2009R0013754 A03																																																																				
												9347000																																																																				
<p>Manufacturer's works order number N° de la commande usine productrice Werksauftragsnummer</p> <p><b>9UAB41202/01-14387/012/01</b> A08</p> <p>Packing list: 2009K907665</p>		<p>Surveyor's mark Cachet de l'expert Stempel des Werkssachverstaendigen</p> <p><b>AMSE</b> A01</p>		<p>Purchaser and/or consignee Client et/ou destinataire Besteller und/oder Empfänger</p> <p><b>LAMIERE SPECIALI INOX SPA</b> <b>VIA GIULIO NATTA 7-A</b> <b>43100 PARMA</b> <b>ITALIE</b> A06</p>						<p>Purchaser's order number N° de commande client Kundenbestellnummer</p> <p><b>10/4307/1D</b> A07</p>																																																																						
<p>Product - Produkt - Erzeugnis</p> <p>COIL, HOT ROLLED, ANNNEALED+PICKLED, UNTRIMMED COIL, LAMEINE A CHAUD, RECUIT+DECAPÉ, NON REFINÉE COIL, WAARSGEVALST, GEGLUIJKT+GEBEET, UNTERREFINIERT</p>				<p>Finish Présentation Ausführung</p> <p><b>Steel designation</b> Désignation de l'acier Stahlbezeichnung</p> <p><b>EN 10028-7/08 WNR 1.4307/1.4301</b> <b>ASTM A 240 (M)-08 TYPE 304L/304</b> <b>EN 10088-2/05 WNR 1.4307/1.4301</b> <b>ASME SA 240-07 TYPE 304L/304</b></p> <p><b>B01</b></p>						<p>Customer article number N° d'article client Artikelnummer des Kunden</p> <p><b>B03</b></p>																																																																						
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<p>AD 2000 W2/2008 -- AD 2000 W10/2007 -- EN 13445-2/2002  CORROSION TEST: ASTM A 262 - E / 02A(R2008) : OK</p>												Z05																																																																				
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<p>Identification of the product Identification du produit-Identifizierung des Erzeugnisses</p> <p>Coll n. N° de bobine - Band Nr</p> <p><b>91050312</b></p>			<p>Heat n. N° de coulée - Schmelz Nr</p> <p><b>910503</b></p>			<p>Dimensions Dimensions - Abmessungen</p> <p>Thickness Epaisseur - Dicke</p> <p><b>B07</b></p> <p><b>B09</b></p> <p><b>B10</b></p> <p><b>B11</b></p>			<p>Number of pieces Nombre de pièces - Stückzahl</p> <p><b>B08</b></p> <p><b>B13</b></p>			<p><b>1</b></p>																																																																				
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									<p>Net weight Poids net - Netto Gewicht</p> <p><b>B13</b></p>			<p><b>24060 KG</b></p>																																																																				
<b>CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG</b>												Z07																																																																				
<table border="1"> <thead> <tr> <th></th> <th>C</th> <th>Si</th> <th>Mn</th> <th>Ni</th> <th>Cr</th> <th>Mo</th> <th>Ti</th> <th>N</th> <th>S</th> <th>P</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Required-Exigé % mini Anforderung % maxi</td> <td>0.030</td> <td>0.75</td> <td>2.00</td> <td>10.50</td> <td>19.50</td> <td></td> <td></td> <td>0.100</td> <td>0.015</td> <td>0.045</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Cast Analysis Analyse coulée Analysse Schmelze</td> <td>0.023</td> <td>0.49</td> <td>1.39</td> <td>8.01</td> <td>19.11</td> <td></td> <td></td> <td>0.083</td> <td>0.001</td> <td>0.030</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>C71</td> <td>C72</td> <td>C73</td> <td>C74</td> <td>C75</td> <td>C76</td> <td>C77</td> <td>C78</td> <td>C79</td> <td>C80</td> <td>C81</td> <td>C82</td> <td>C83</td> <td>C84</td> <td>C85</td> <td>C86</td> </tr> </tbody> </table>													C	Si	Mn	Ni	Cr	Mo	Ti	N	S	P							Required-Exigé % mini Anforderung % maxi	0.030	0.75	2.00	10.50	19.50			0.100	0.015	0.045							Cast Analysis Analyse coulée Analysse Schmelze	0.023	0.49	1.39	8.01	19.11			0.083	0.001	0.030								C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86	Z08
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<p>Tests to verify batch and quality have been carried out : OK  Tests de vérification de la conformité de la matière fournie : OK  Verwachslungsprüfung wurde durchgeführt : OK</p>												<p>OK Fermité</p> <p>OK Fermité</p> <p><b>C04</b></p>			<p>Bend test results are satisfactory EN ISO 7438  Les essais de pliage sont satisfaisants 180 : OK  C93 Ergebnisse des Biegeversuchs entsprechen den Vorschriften</p>			Z09																																																														
<b>MECHANICAL PROPERTIES - PROPRIETES MECANIQUES - MECHANISCHE WERTE EN 10002-1</b>												Z10																																																																				
Location (1)		Room temperature - Température ambiante - Raumtemperatur								Test Temperature : <b>C03</b>																																																																						
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Impact strength test Essai de résilience Kerbschlagzähigkeits-test		Corrosion test Test de corrosion Korrosionstest		EN ISO 3651/2		DS		Internal Cleanliness :		A : B : C : D : C57		Sample Thickness S.01mm																																																																				
C40 Temp. C44		C41		C42		DS		C50 C51 C52 C53 C54 C55		C56 C57		C05																																																																				
Location of the sample (1) Emplacement de l'échantillon Legs des Probenabschnitten		The delivery is in accordance with the order La fourniture est conforme aux exigences de la commande Die Lieferung entspricht den Bestellbedingungen								Organisation inspection Organisme et/ou service contrôlé Überwachungsabteilung		Quality Department S. HILLEN																																																																				
Direction of the test pieces (2) Orientation des éprouvettes Probenrichung		Marking, inspection and measurement : without objection Contrôle de marquage, d'aspect et de dimensions : satisfaisants Prüfung der Stempelung, des Oberflächenanpects und der Abmessungen : ohne Beanstandung								24/03/2009		202																																																																				
C01										D01		The inspector Le responsable Der Werkssachverstaendige																																																																				
												EQC621 03/10/2008																																																																				

 <p><b>ArcelorMittal</b></p> <p>Metschappelijke zetel: ArcelorMittal - Stainless Belgium NVSA Koning Albert II-laan 35, 1030 Brussel, Belgium</p> <p>Correspondentieadres: ArcelorMittal Genk - Stainless Europe Swinhoeweg 5, 3600 Genk, Belgium Tel. +32 (0)89 30 21 11</p>		<p style="text-align: center;"><b>Mill Certificate BS EN 10204/3.1</b>  <b>CERTIFICAT DE RECEPTION NF EN 10204/3.1</b>  <b>ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1</b></p> <p>Approved acc. AD 2000-Merkblatt W/TRD 100 by TÜV SÜD Industrie Service GmbH.  Certified acc. PED 97/23/EC Annex I § 4.3 by Certification Body 0036 of TÜV SÜD  Industrie Service GmbH with certificate No.: 314/2007/MUC.  Renounced of counter signature agreed by TÜV SÜD (9/9/2007).</p>		<p>N-Nr-N 2009R0029253 A03</p>													
<p>Manufacturer's works order number N° de la commande usine productrice Werksauftragsnummer</p> <p><b>9UA854777/04-14387/016/04</b></p> <p>Packing list: 2009R917432</p> <p>Product - Produit - Erzeugnis</p> <p>COIL, COLD ROLLED, SHOT BLASTED, UNTRIMMED COIL, LAMINÉ A FROID, QUÉMALLE, RIVES BRUTES COIL, KALTGEWALZT, GESTRAHLT, UNTRIMMED</p>		<p>Surveyor's mark Cachet de l'expert</p> <p><b>AMSE</b></p> <p>Purchaser and/or consignee Client et/ou destinataire Besteller und/oder Empfänger</p> <p>LAMIERE SPECIALI INOX SPA</p> <p>VIA GIULIO NARDO 7-A 43100 PARMA ITALIE</p>		<p>Purchaser's order number N° de commande client Kundenbestellnummer</p> <p><b>28</b></p> <p>Customer article number N° d'article client Artikelnummer des Kunden</p>													
<p>Steel designation Désignation de l'acier Stahlbezeichnung</p> <p>EN 10028-7/08 WER 1.4404/1.4401 ASTM A 240 (M)-09 TYPE 316L/316 EN 10088-2/05 WER 1.4404/1.4401 ASME SA 240-07 TYPE 316L/316</p>		<p>Finish Présentation Ausführung</p> <p><b>2E</b> <b>2D</b> <b>2E</b> <b>2D</b></p> <p>Steelmaking process Mode d'élaboration de l'acier - Stahlherstellungsverfahren</p> <p>Electric arc furnace-VOD/AOD-Continuous casting Four à arc-VOD/AOD-Coulée continue Elektro-Ofen-VOD/AOD-Stahlgussanlage</p> <p><b>X2 CRNI MO 17-12-2</b></p>		<p>Product delivery condition Etat de livraison du produit Lieferzustand</p> <p>Solution treated; Hypertrémpe: Lösungsgeglüht-abgeschreckt:</p> <p><b>1050 °C</b></p> <p>Forced air - Air force Geföhlte Luft</p>													
<p>AD 2000 W2/2008 -- AD 2000 W10/2007 -- EN 13445-2/2002  CORROSION TEST: ASTM A 262 - E / 02A(R2008) : OK</p> <p style="text-align: right;">9545000</p>																	
<p>Identification of the product Identification du produit-Identifizierung des Erzeugnisses</p>		<p>Dimensions Dimensions - Abmessungen</p>		<p>Number of pieces Nombre de pièces - Stückzahl</p>													
Cull n. N° de bobine - Band Nr	Heat n. N° de coulée - Schmelz Nr	Thickness Epaisseur - Dicke	Width Largeur - Breite	Length Longueur - Länge	Net weight Poids net - Netto Gewicht												
92310632	923106	5.00 mm	2040.00 mm		28630 KG												
<b>CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG</b>																	
	C	Si	Mn	Ni	Cr	Mo	Ti	N	S	P							
Required-Exigé Anforderung	% mini % max.				10.00	16.50	2.00										
0.030	0.75	2.00	13.00	18.00		2.50		0.100	0.015	0.045							
Cast Analysis Analyse coulée Analyse Schmelze	0.022	0.44	1.21	10.00	16.60	2.00		0.051	0.003	0.033							
	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85		
Tests to verify batch and quality have been carried out : OK		<input checked="" type="checkbox"/> Ferrite		<input type="checkbox"/> Ferrite		Bend test results are satisfactory EN ISO 7438											
Tests de vérification de la conformité de la nuance fournie : OK						Les essais de pliage sont satisfaisants 180 : ok											
Verweichungsprüfung wurde durchgeführt : OK		C041				C03 Ergebnisse des Biegewinels entsprechen den Vorschriften											
Location (1)		Mechanical Properties - Propriétés mécaniques - Mechanische Werte en 10002-1										Test Temperature : C03					
Room temperature - Température ambiante - Raumtemperatur																	
Direction (2) Required Exigé Anforderung	Yield strength Limit d'élasticité Dehngrenze		Tensile strength Résistance à la traction Zugfestigkeit		Elongation after fracture (A) Allongement après rupture		Hardness Duréé Härte		Yield strength Limite d'élasticité Dehngrenze		Tensile str. Resist MPa Zugfestigkeit		Elongation % Allongement Bruchdehnung				
	Rp 0.2 % Rp 1 %		MPa		A5 50mm		HRB C30		Rp 0.2 % Rp 1 %		MPa		A5				
	mini maxi		240 270		530 680		40 40										
1 T	Obtained Obtenu Ergebnisse	286		325		607		57		57		81					
		C11		C14		C12		C13		C15		C31		C16		C17	
Impact strength test Essai de résilience Kerbshlagzähigkeits-test		Corrosion test Test de corrosion Korrosions-test		E0.2 (E) / E (E)												Sample thickness	
C40 Temp. C44		EN ISO 3651/2 : OK		C50		C51		C52		C53		C54		C55		4.97mm C05	
C47		C42		D51 Internal Cleanliness :													
Location of the sample (1) Emplacement de l'échantillon Lage des Probenabschnitten		The delivery is in accordance with the order La fourniture est conforme aux exigences de la commande Die Lieferung entspricht den Bestellbedingungen		Z01		Organization inspection Organisme et/ou service contrôle Überwachungsabteilung		Quality Department 02/07/2009 S. HILLEN		A05							
1. Front - Début - Anfang 2. Back - Fin - Ende 3. Middle - Milieu - Mitte		C06		D01		The inspector Le responsable Der Werkstoffverantwortliche		D02		22/07/2009							
Direction of the test pieces (2) Orientation des éprouvettes Probenrichtung		Marking, inspection and measurement : without objection Contrôle de marquage, aspect et de dimensions : sans réticence Prüfung der Stempelung, des Oberflächenaspekts und der Abmessungen : ohne Beanstandung		D01		EQ/621 04/10/2008		2009									
T. Transverse - Travers - Quer L. Longitudinal - long - längs		C07															



**COMPANY  
WITH QUALITY SYSTEM  
CERTIFIED BY DNV  
= ISO 9001 / 2000 =  
CERT-00149-94-AQ-MIL-SINCERT**

**COMPANY WITH  
ENVIRONMENTAL MANAGEMENT  
SYSTEM CERTIFIED BY DNV  
= ISO 14001 : 2004 =  
CERT-1194-2005-AE-MIL-SINCERT**

Ita Inox S.p.A.  
Strada Statale 45 b/s  
26010 Robecco d'Oglio (CR) - Italia  
  
Tel. + 39 0372 9801  
Fax + 39 0372 921538  
e-mail:sales@ita.arvedi.it  
quality@ita.arvedi.it  
www.arvedi.it

**itainox**



**TEST CERTIFICATE ACCORDING TO EN 10204/ 3.1** **N° 86863** **Pag. 1 di 1**  
**ABNAHMEPRÜFZEUGNIS - CERTIFICAT D'ESSAIS - CERTIFICATO DI COLLAUDO**  
 for longitudinally welded tubes// längsnahrgeschweißte rohre/pour tubes soudes longitudinalement /Per tubi saldati longitudinalmente

<b>Customer:</b> Besteller/Client/Cliente	<b>ELVINOX S.R.L.</b> Loc. Cascina Faustina	<b>20080 ALBATRATE</b>	<b>MI</b>				
<b>Customer Order N°:</b> Bestellung/Commande Client/Ordine Cliente	<b>A9001203</b>	<b>Mill's Ita Inox N°:</b> <b>2009/2833</b> Werke N°/N° référence Interna/Confirms ordine					
<b>Specifications:</b> Anforderungen/Specifications/Specifiche		<b>Tolerances:</b> <b>EN ISO 1127 D3/T3</b> Toleranzen/Tolérances/Tolleranze					
<b>Manufacturer's mark:</b> <b>Inspector's stamp:</b> M.S. Stempel des Sachverständigen/Poinçon de l'inspecteur/Punzone dell'ispettore		<b>Marking:</b> <b>EN 10217-7</b> Kennzeichnung/Marquage/Marcatura					
<b>Item Pos. N°</b>	<b>DIMENSIONS</b> Abmessungen Dimensions/Dimensioni	<b>PIECES N°</b> Stückzahl/ Pièces/Pezzi	<b>METERS</b> Meter Mètres/Metri	<b>WEIGHT(Kg)</b> Gewicht/Poids Peso	<b>GRADE</b> Werksstoff/Nuance Materiale	<b>STANDARD CODE</b> Normbezeichnung Designation/Designazione	<b>EXECUTION</b> Ausführung Execution/Esecuzione
002	88.90x 3.05x6000	19	114.00	674.00	1.4307 304L Z3 CN 19-09 UNS S30403	X2 CrNi 18-9	W1R

**Chemical analysis acc.to: ASTM A240 / EN 10088-2/EN 10028-7 Last Edition**  
**Steel making process : E/AOD**

Schmelzanalyse/Chimique analyse/Analisi chimica  
 Erschmelzungsaart/Procédé d'élaboration/Procedimento di elaborazione acciaio

<b>Item N°</b>	<b>Manuf. Hersteller</b>	<b>HEAT N°</b> Schmelze Coulée Caisla	<b>HOMOLOG.</b> Zulassung Omotologation Omotologization	<b>TEST</b> Probe Eprauvette Provino N°	<b>SPECIMEN SIZE</b> Abmessung Probestab Dimen. Eprauvette Dimensions provette mm.	<b>YIELD STRENGHT</b> Streck-Dehngrenze Limites d'élasticité Limite di snervamento 0,2% N/mm <sup>2</sup> 1%	<b>TENSILE STRENGHT</b> Zugfestigkeit Résistance à traction Limite di rottura N/mm <sup>2</sup>	<b>ELONGAT.</b> Bruchdehnung Allongement Allungamento A %	<b>HARDNESS</b> Härte Durata Durezza HB				
002	.....	416770	0.022	0.310	0.001	0.028	1.690	18.100	8.040	0.180	0.190	0.250	0.065

**Mechanical test acc.to tab.: 6-7 EN 10217-7**

Mechanische Prüfungen/Essais mécaniques/Caratteristiche meccaniche

<b>Item Pos. N°</b>	<b>HEAT N°</b> Schmelze Coulée Caisla	<b>HOMOLOG.</b> Zulassung Omotologation Omotologization	<b>TEST</b> Probe Eprauvette Provino N°	<b>SPECIMEN SIZE</b> Abmessung Probestab Dimen. Eprouvette Dimensions provette mm.	<b>YIELD STRENGHT</b> Streck-Dehngrenze Limites d'élasticité Limite di snervamento 0,2% N/mm <sup>2</sup> 1%	<b>TENSILE STRENGHT</b> Zugfestigkeit Résistance à traction Limite di rottura N/mm <sup>2</sup>	<b>ELONGAT.</b> Bruchdehnung Allongement Allungamento A %	<b>HARDNESS</b> Härte Durata Durezza HB
002	416770		1 L	20 x 3.0	>= 180	>= 215	470 - 670	>= 40

**Test Results**

Ergbnisse der Prüfungen/Résultat des essais/Risultati delle prove

**Heat treatment:** 1050 °C ATMOSFERA CONTROLLATA + RAFFREDDAMENTO RAPIDO IN ARIA

Wärmebehandlung/Traitement thermique/Trattamento termico

**Tecnological test :** EN 10234: OK / ===== / ===== / =====

Technologische Prüfung/Examen technologique/Prove tecnologiche

**Residual Corrosion Test acc. to:**

Korrosionsfördernde Rückständen/Essai résidues corrosif/Prova residui corrosivi

**Intergranular Corrosion Test acc. to:**

IK Beständigkeit/Essai cor. intergran./Prova di corrosione intergranolare

**Non Destructive Test acc to:** EN 10246-3/E1H: OK

Zerstörungsfreie Prüfung/Essai non destructif/Controllo non distruttivo

**Leak Test/Hydrostatic test to:** EN 10246-2 : OK

Dichtheitsprüfung/Essai d'étanchéité/Prova di tenuta

**Uncorrect Material Test:** al 100%: Favorevole

Verweichungsprüfung/Essai P.M.I./Prova antimiscuglio

**Visual and gauging control:** Favorevole

Besichtigung und Ausmessung/Contrôle visual et dimensionnel/Controllo Visivo e dimensionale

**Notes:**

SET. 2009

We certify that the delivered products comply with the specification of the order.  
 entspricht/Nous attestons que les produits livrés sont conformes aux références de la commande/ Noi attestiamo che il materiale spedito è conforme ai requisiti dell'ordine

Robecco d'Oglio, 20/05/2009  
 Issued by: Cordani A. S

**Mill's Inspector / Der Werksachverständige** **Mazzolari p.i. Stefano**  
 Inspecteur de l'usine / Firma Ispettore

Arvedi

# Inspection Certificate

EN 10204-3.1

Certificate-No. 79433



# BUTTING

Page 1 of 2

Purchaser:  
Raccortubi S.R.L.  
Via Adamello 1  
  
I - 20010 Arluno (MI)  
ITALIA

Order-No.: OS000224Sand rev.1  
BUTTING Order No.: 55/42530/01  
BA-Nr.: 1879543  
Requirements: ASTM-A 312 ed.03/ASME SA312 ed.01 A02  
purchasing spec. 312W rev.0

Weld seam efficiency: 100 %



**TESTOBJECT:** longitudinally welded stainless steel pipes

**Dimension:** 114,3x3,05mm/4"SCH10S      **Quantity:** 302,50 m = 50 pipes

produced with **Works order-No.:** 51/79543/00 of strip  
out of **Material grade No.:** TP304/304L  
with Inspection Certificate acc. to EN 10204-3.1B

109322

Results of chem. Composition of Cast acc. to mill Inspection Certificate:

delivered by	Cast-No.	C%	Si%	Mn%	P%	S%	Cr%	Ni%	N%
UGI	N523107	0,026	0,43	1,49	0,029	0,003	18,14	8,06	0,072

ASTM A312 51/79543 114,3x3,05/4"SCH10S TP304/304L CH.N523107 WLD ET

**MARKING:**



Inspector's stamp:

## CHECK OF MATERIAL

**Check for material marking:**

o.B.

**Alloy verification:**

(spectroscope) o.B.

**Surface inspection:**

inside 100% with light without complaints  
outside 100% o.B.

**Surface condition:**

pickled/passivated

**Conditions of delivery:**

heat treated

**Heat treatment:**

1040-1080°C, quenched in water



This certificate is generated by computer and valid without signature.

H. Butting GmbH & Co. KG

29379 Wittringen-Knesebeck

Knesebeck den 07.11.2005 /7067

QC department

Eckhardt Flohr

Works Inspector

(0049)5834 50-316

Customer: 3V COGEIM S.r.l. - Società Unipersonale

Order : 42388 - 25.2.06 Posiz./Item n.: 10

Descr. : 114,30x3,05 W

Heat n°/Pcs. marking : N523107 Qtà/Qty:24,18

Protocollo : CTCERC200600001882 \* Certified True Copy \* Issued 03/03/06

*luca alberi*

21/3/2006

# Inspection Certificate

EN 10204-3.1

Certificate-No. 79433



# BUTTING

Page 2 of 2

## RESULTS OF INSPECTION:

### Destructive tests

#### Mechanical tests

##### Tensile test(s)

Test No.	Cast	Location	Dimension	Rp0,2(N/mm²)	Rp1,0(N/mm²)	Rm(N/mm²)	A50	Temp.°C
13	N523107	G I	20.11x2.81	353	385	633	58.7	20
136	N523107	G I	20.08x2.82	351	382	623	55.6	20
236	N523107	G I	20.02x2.81	364	396	638	53.9	20

G = base metal; S = weld; Ü = transition zone; WEZ = heat affected zone; L = longitudinal; T = transverse.

##### Impact test

Test No.	Cast	Location	Temp.°C	Dimension	Value 1 (J)	Value 2 (J)	Value 3 (J)	Average (J)

##### Technological Tests:

	Cast
	N523107
Flattening test	o.B. 5%

##### Corrosion test

1/lot IC-Test ASTM A262 pract. E | resistant

##### Metallographic examination

Hardness test (9 measuring points) | see annex

##### Nondestructive Tests

Eddy current test acc. to SEP 1914 | 100% carried out | Results: o.B.

Leakage test: | 100% carried out o.B.  
by hydraulic pressure test with water 52 bar

Dimensional control: | acc. to ASTM A999 - o.B.

Remarks: | o.B. = without complaints

The requirements are fulfilled.



Zertifiziert nach:  
ISO 9001

DIN EN ISO/IEC 17025  
TÜV AUSTRIA accredited by DAP GmbH according  
to DIN EN ISO/IEC 17025. The accreditation is applicable  
to testing procedures indicated in the certificate.

This certificate is generated by computer and valid without signature.

H. Butting GmbH & Co. KG  
29379 Wittingen-Knesebeck  
Knesebeck den 07.11.2005 /7067

QC department  
**Eckhardt Flohr**  
Works Inspector  
(0049)5834 50-316

Customer: 3V COGEIM S.r.l. - Società Unipersonale  
Order : 42388 - 25.2.06 Posiz./Item n.: 10  
Descr. : 114.30x3.05 W  
Heat n°/Pcs. marking : N523107 Qtà/Qty:24,18  
Protocollo : CTCERC200600001882 \* Certified True Copy \* Issued 03/03/06





CENTRAVIS  
Ukraine

*Centravis Production Ukraine*

53201 56, Trubnikov Avenue Nikopol Dnepropetrovsk Region Ukraine tel/fax (05662) 2-51-94

Approved acc. to AD 2000-Merkblatt W0 by TÜV Nord e. V. and certified acc. to Pressure Equipment Directive (97/23/EC) by TÜV CERT-Certification body for pressure equipment of the TÜV NORD GRUPPE; notified body, reg.-no. 0045.

Сертифицирован по AD 2000 - WO / TRD 100 и Директиве 97/23 / ЕС для сосудов высокого давления органом по сертификации ТЮФ СЕРТ технадзорного общества TÜV NORD GRUPPE. регистрационный номер сертификационного центра 0045.

Требования Сертификата Inspection Certificate <b>EN 10204/3.1</b>	Сертификат приемочных испытаний № Material Test Certificate No. <b>2008/1958-2</b>	Лист/Page <b>I</b>	Листов/Pages <b>2</b>
Заказчик Customer	<b>ELVINOX SRL</b>		
Страна назначения Country of destination	<b>ITALY</b>		
Адрес Address	<b>Localita Cascina Faustina 20080 Albairate (MI) A8017587</b>		
Контракт №/Contract No.			

**ТЕХНИЧЕСКИЕ ТРЕБОВАНИЯ / TECHNICAL REQUIREMENTS**

Наименование продукции/Goods' description

**SEAMLESS STAINLESS STEEL COLD ROLLED TUBES**

НТД/Specification

**ASTM A 312-08/ASME SA 312-04; NFA 49-117, September 85;  
NACE MR 01.75-05.**

Способ выплавки/Melting process

**EAF+AOD**

Состояние поставки / State of delivery  
**Solution annealed and passivated**

штамп контролера / Inspector's stamp

91

Гидроис-  
пытания/  
Hydr. test  
MPa

**Сортамент / Range of sizes**

номер партии, Lot	марка стали/ Steel grade	лавка/ Heat No.	штук/ Pieces	метраж/ Total Length, m	вес нетто, kg Net weight, kg	размеры/Dimensions, mm	гидроис- пытания/ Hydr. test MPa
110102	TP316/316L/ TUZ 2 CND 17-12	92401	19	110,2	114	OD 21,34 x 2,11 WT x 5000-7000	-
110103	TP316/316L/ TUZ 2 CND 17-12	92401	19	116,7	120	OD 21,34 x 2,11 WT x 5000-7000	-
110203	TP316/316L/ TUZ 2 CND 17-12	913378	19	127	134	OD 21,34 x 2,11 WT x 5000-7000	-
			<b>TOTAL:</b>	<b>57</b>	<b>353,9</b>	<b>368</b>	

дата / date **27.08.2008**

эксперт/inspector

**Э1** V. Kuropyatnik

13.10.08

## РЕЗУЛЬТАТЫ ИСПЫТАНИЙ / TEST RESULTS

МЕХАНИЧЕСКИЕ ИСПЫТАНИЯ / MECHANICAL TESTS ACC. TO EN 10002-1,-5

партия/ Lot No.	Плавка/ Heat No.	№ образца испыта- ний Specimen No.	направление испытаний/ Test direction	температура- испытаний/ Test temperature °C	предел текучести Yield strength, 0,2% MPa	предел текучести Yield strength, 1% MPa	прочность при растяже- нии Tensile strength, MPa	удли- нение Elongation %	твер- дость/ Brinell Hardness, HRB
110102	92401	1	L	20°	332	-	627	58	75
		2			328	-	616	54	79
110103	92401	1			332	-	627	58	75
		2			328	-	616	54	79
110203	913378	1			392	-	696	51	78
		2			391	-	693	52	74

РЕЗУЛЬТАТЫ МИКРОСТРУКТУРЫ/  
MICROSTRUCTURE RESULTS

n/a

ТЕХНОЛОГИЧЕСКИЕ ИСПЫТАНИЯ/  
TECHNOLOGICAL TESTS

flattening – 1 – 2 stage – acceptable; flaring- acceptable

ИСПЫТАНИЯ НА МЕЖКРИСТАЛЛИТНУЮ КОРРОЗИЮ/  
INTERGRANULAR CORROSION TEST

A 262, Practice E – acceptable.

ИСПЫТАНИЕ НА СООТВЕТСТВИЕ МАРКИ СТАЛИ  
POSITIVE MATERIAL IDENTIFICATION

100% – satisfactory.

НЕРАЗРУШАЮЩИЙ КОНТРОЛЬ/  
NON-DESTRUCTIVE TEST METHOD

100% eddy current -tested – acceptable

ПРИМЕЧАНИЯ  
ADDITIONAL REMARKS

Tubes are heat treated : 1060°C holding time 5 minutes then cooled by water.

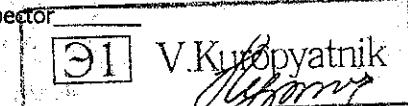
100% Визуальный контроль, проверка размеров и несмешивание марок/  
VISUAL INSPECTION, DIMENSIONAL MEASUREMENT – SATISFACTORY.

## ДОЛЯ ХИМИЧЕСКИХ ЭЛЕМЕНТОВ, В % / CHEMICAL COMPOSITION, %

плавка № Heat No.	C	Mn	Si	P	S	Cr	Ni	Mo	B
92401	0,020	1,13	0,60	0,035	0,014	17,23	11,26	2,07	0,0013
913378	0,019	1,00	0,49	0,040	0,015	16,77	11,27	2,08	0,0014

дата/date 27.08.2008

эксперт/inspector



FKS D 0414

Cert. to EN 10204/3.1B

Order No. :

(番号)

P. O. No. :

(番号)

Purchaser :

(番号)

## INSPECTION CERTIFICATE

FITTING KUZE CO., LTD.

FLOWELL INTERNATIONAL

This Document was checked and  
reviewed and found acceptable

P. MIESO Dept. A.

KUZE 株式会社 フィッティング久世  
74-1, MINAMI CHUO, TSUBATA-CCHO, KOSHU-KEN, JAPAN  
石川県河北郡津幡町字前中条 74-1 · TELEFAX 0762894141

Page :

Date : 13-FEB-97

25/11/95

Certificate No. : 6K1058F

Surveyor to :

Specification for Prematerial Pipe  
(管材)

ASTM A 403 WP304/304L MSS SP-43

Specification  
(規格)

* Manufacturing No (番号)	Size (寸法)	Dimension in mm (寸法)		Heat No. (炉番号)	Quantity (数量)	Order Quantity (注文量)	Surface Inspection (表面検査)	Dimension Inspection (寸法検査)
		Outside Diam (外径)	Thickness (厚さ)					
1 6HJ031CM	4" X S10S	114.30	3.05	E54205	300	300	GOOD	GOOD
2								
3								

Yield Strength(0.2%), EL= Elongation, H= Hardness Test  
TS=Tensile Strength, GL=Gauge Length, HT=Hydrostatic Test  
Direction = Longitudinal  
Full Section = F Rectangular = R  
JIS Z 2201 JIS T.P.NO.Chemical Composition % ( Ladle analysis as supplied by the steelmaker )  
(高炉 - カ - の熔解分析結果)

* Heat No. (炉番号)	Mechanical Properties of Pipematerial (管材の性質)						Type of Specimen (試験片) S	Type of Test (引張強さ) S	EL % (GL: 50mm) Standard (基準値)	EL % (GL: 50mm) Test (試験値)	Flattening Test (引張強さ) S	HT MPa	Hardness NACE(EN: MR-01-75)
	C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cr ×100							
1 E54205	2.0	54	104	29	8	960	1850						
2													
3													
Standard ASTM A 312	Max 3.5	Max 75	Max 200	Max 40	Max 30	Max 1300	1800 2000			Min 170	Min 485	Min 35	All OK

- I. All fittings are COLD-FORMED and made of **SEAMLESS** stainless steel pipe. (手は、すべて冷間成形を行ったものである。)  
 II. Heat Treatment (熱処理) 26 minutes and Nitrogen Cooling. (by Vacuum Furnace)  
 ■ IC test(ASTM A262 E) : GOOD / PMI : GOOD  
 ■ II.

We herewith certify that the above products meet the requirements of the standard concerned and of the order.  
 (上記の製品は、当社が販売する、ご文の要求事項に適合することを証明します。)

Manager of Quality Control Dept.

K. Komai

show # 6405455

FITTING KUZE CO., LTD.

STAINLESS KUZE CO., LTD.  
HAKUI WORKS

**INSPECTION CERTIFICATE**

29-JAN-91

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卷之三

P. O. No. 925 / Japan  
61 Shimbo-cho, Hakui-shi,  
Ishikawa-ken. (Order No.)

We herewith certify the material herein has been manufactured and examined in accordance with the requirements specified in this order and the results are acceptable.

The material is in the solution heat-treated condition.

Y. ITOI

Manager of QA Section

Cert. to

# INSPECTION CERTIFICATE

Page (三)

Order No. :  
(注文番号)  
093AN005, 098AN006

P.O. No. : 23900, 23926  
TEL: 606-7993577, 7993676, 7993677 FAX: 606-7993686  
E-mail: spjunit@streamyx.com / spjunit@im.net.my

Certificate No.: 09 - 07 - 0301  
(登録番号)

Product (形狀)	Specification (規格)
Cylindrical packing material • 400G 600G 800G 1000G	A NEW ADVANCED ANTI-AGING SKINCARE / ASMR SKIN CARE

## Specification for Prematerial Pipe (材料規格)

卷之三

MSS SP-43 WP-W 304/304L

ASIM A 312-1P 300/304L

* Size (寸法)	Dimension in mm (寸法)				Heat No. (熔解番号)	Quantity (数量)	Surface Inspection (外観検査)	Dimension Inspection (寸法検査)	S. P. I. Code No.
	Outside Diam (外径)	Thickness (厚さ)							
1 FBSES - W30L - 11/2 - 10S	48.26	2.77	K80128	50	GOOD	GOOD	1181500	C	<i>YU</i>
2 FBSES - W30L - 2 - 10S	60.33	2.77	K90074	50	GOOD	GOOD	1181200	<i>YU</i>	<i>YU</i>
3 FBSES - W30L - 6 - 10S	168.28	3.4	K90097	130	GOOD	GOOD	1181600	<i>YU</i>	<i>YU</i>
4 FBSES - W30L - 6 - 10S	168.28	3.4	K90065	20	GOOD	GOOD	11816000	<i>YU</i>	<i>YU</i>

Pipe Manufacturer:  
(管製造者)  
**YEUNG CHI YANG INDUSTRIAL CO., LTD**

Chemical Composition % (Analysed as supplied by the steelmaker)  
(鋼鉄メーカーの分析結果による)

* Heat No. (溶解番号)	C × 100	Si × 100	Mn × 100	P × 1000	S × 1000	Ni × 100	Cr × 100	Mo × 100	x 100	Type of Specimen (試験片)	YS Mpa (耐力)	TS Mpa (引張強さ)	EL% (伸び)	EL% (伸び) Standard (規格値)	Flattening Test (水圧試験)	HT MPa (水圧試験)	Hardness Test HRB
1 K80128	1.8	55	136	24	2	812	1824			294	630	52					GOOD
2 K90074	2.5	37	130	35	5	807	1816			294	650	51					GOOD
3 K90097	1.4	42	146	32	10	803	1813			272	600	55					GOOD
4 K90065	1.4	42	146	32	10	805	1813			272	600	53					GOOD
	MAX 3.0	MAX 100	MAX 200	MAX 45	MAX 30	800	1800			MIN 205	MIN 515	MIN 35					GOOD

YS=Yield Strength (0.2%), EL=Elongation, H=Hardness Test  
TS=Tensile Strength, GL=Gauge Length, HT=Hydrositic Test

Mechanical Properties of Pipe Material  
(機械的性質)

**QUALITY ASSURANCE APPROVAL**

Remarks \*Hardness acc. to NACE MR 01-75  
 IC TEST ASTM A262/E ISO 9001 / EN10204 - 3.1B  
 GASKET FINISH SPIRAL SERRATED FINISH SMOOTH 125-250 RMS  
**PMI CHECK GOOD. HEAT TREATMENT 1050 DEGREE CELSIUS QUENCHED**  
 We herewith certify that the above products meet the requirements of the standard concerned and of the order  
 (上記の製品 当該規格及び、ご注文の要求事項に適合する事を証明します。)

This Day I Was  
Born, and  
This Day I Die.

Head of Quality Assurance I  
(品质管理课长)

IC TEST ASTM  
Remarks Hardness acc. to NACE MR 01-93

IC TEST ASTM A286 ISO 9001/EN10204 - 3.1B  
GASKET FINISH SPIRAL SERRATED FINISH SMOOTH 125-250 RMS  
PMI CHECK GOOD, HEAT TREATMENT 1050 DEGREE CELSIUS QUENCHED

ISO 9001 / EN10204 - 3.1B

卷之三



Cert. to EN 10204/3, 1B



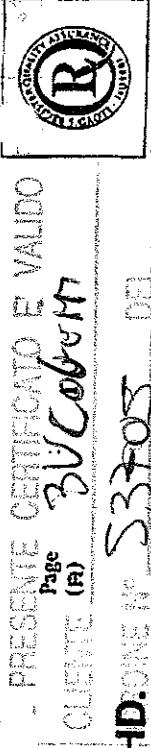
## INSPECTION CERTIFICATE

Order No.: 08SAN002,005  
( 4)

P.O. No. : 23272.23348

**SPi**

**S. P. UNITED INDUSTRY SDN. BHD.**  
(COMPANY NO. 388524 W)  
71800 NILAI, NEGERI SEMBILAN DARUL KHUSUS, MALAYSIA.  
TEL: 606-7983577, 7983676, 7983677 FAX: 606-7983666  
E-mail: spunited@streamyx.com / spundi@m.net.my



Cert. No: KLR0405952

Date: MAY 23, 2008

Certificate No: 08.05.0432 2511(9)

6 Date: MAY 23, 2008  
( 4)

Product ( <input checked="" type="checkbox"/> )		Specification ( <input checked="" type="checkbox"/> )										Specification for Prebent Pipe ( <input checked="" type="checkbox"/> )						
		ASTM A403 ASME SA403 WP-S 316/316L 00B										ASTM A312 TP 316/316L						
		Chemical Composition % (Ladle analysis as supplied by the steelmaker) ( <input checked="" type="checkbox"/> 4 -> 4)										Mechanical Properties of Pipe Material ( <input checked="" type="checkbox"/> )						
*	Size ( <input checked="" type="checkbox"/> )	Dimension in mm ( <input checked="" type="checkbox"/> )		Outside Diam (外径)	Thickness (壁厚)	Heat No. ( <input checked="" type="checkbox"/> )		Quantity ( <input checked="" type="checkbox"/> )		Surface Inspection ( <input checked="" type="checkbox"/> )		Dimension Inspection ( <input checked="" type="checkbox"/> )		S. P. I. Code No.				
1	FBSES-S316L -12-10S	21.34		2.11	X	K70445-1		200		GOOD		GOOD		11310500				
2	FBSES-S316L -5-10S	141.3		3.4	X	KB0169		20		GOOD		GOOD		11315000				
3	FBSES-S316L -8-10S	219.08		3.76	X	KB0067		20		GOOD		GOOD		11318000				
4																		
Pipe Manufacturer: ( <input checked="" type="checkbox"/> )		<i>ZHEJIANG TSINGSHAN STEEL PIPE CO., LTD.</i>																
*	Heat No. ( <input checked="" type="checkbox"/> )	C x 100	Si x 100	Mn x 100	P x 1000	S x 1000	Ni x 100	Cr x 100	Mo x 100	x 100	Type of Specimen ( <input checked="" type="checkbox"/> )	YS Mpa (屈服強度) ( <input checked="" type="checkbox"/> )	TS Mpa (抗拉強度) ( <input checked="" type="checkbox"/> )	EI.% (屈強比) Standard ( $\leq 0.85$ ) ( <input checked="" type="checkbox"/> )	El.% ( $\leq 0.2$ ) Standard ( $\leq 0.85$ ) ( <input checked="" type="checkbox"/> )	Flattening Test ( $\leq 4.5\%H$ ) ( <input checked="" type="checkbox"/> )	HT MPa (硬度) ( $\leq 300$ ) ( <input checked="" type="checkbox"/> )	Hardness NACE (HR <sub>C</sub> ) MR-01-75
1	K70445-1	2	47	105	37	4	1029	1622	205			240	565	55		GOOD	GOOD	
2	KB0169	2.5	43	103	37	3	1008	1614	202			228	543	53		GOOD	GOOD	
3	KB0067	2.4	39	106	38	5	1121	1667	208			260	570	57		GOOD	GOOD	
4																		
Remarks		MAX 3.0	MAX 100	MAX 200	MAX 45	MAX 30	MAX 1400	MAX 1800	MAX 300			MIN 205	MIN 515	MIN 35		13.5T/1.25T		

IC TEST ASTM A262/E  
GASKET FINISH SPIRAL SERPENTATED FINISH, SMOOTH 125-250 RMS  
PMI CHECK GOOD. HEAT TREATMENT 1050 DEGREE CELSIUS QUENCHED IN WATER

We herewith certify that the above products meet the requirements of the standard concerned and of its order.  
(上記の規格に、当該現品及び、て注文の要請に適合する事を確認する。)

*John*

FLOWELL INTERNATIONAL  
This Document was checked and reviewed and found acceptable.

Dept. N.Q.

LIM TECK WING

Manager of Quality Control Dept.  
(品質管理部長)



**青山钢管**  
TSINGSHAN STEEL PIPE

**ZHEJIANG QINGSHAN STEEL PIPE CO., LTD.**  
ADD:XIAOZHI INDUSTRIAL ZONE, QINGTIAN COUNTY,ZHEJIANG PROVINCE CHINA 323903

### MILL CERTIFICATE to EN 10204/3.1

Customer : SP UNITED INDUSTRY SDN BHD

Contract No. : TSP07W0428-02

Cert No. : TS070621-03

Specification : ASTM A312

Delivery Condition : A & P

Steel Grade : TP 316/316L

Appearance : Solution Treated

Goods : STAINLESS STEEL SEAMLESS PIPE

Heat No.		Chemical Composition (%)																			
Spec.	min.	C	Si	Mn	P	S	Cr	Ni	Mo	Ti											
	max	0.035	1.00	2.00	0.045	0.030	16.00	10.00	2.00												
	7A0854	0.020	0.47	1.05	0.037	0.004	16.22	10.29	2.05												
Batch No.		Size			Quantity			Test No.													
		48.3*5.08			25 PCS			813 KGS													
		60.3*5.54			25 PCS			1143 KGS													
		33.4*4.55			50 PCS			984 KGS													
		21.3*3.73			20 PCS			188 KGS													
Test No.		Mechanical Properties																			
		Yield Strength Mpa	Tensile Strength Mpa	Elongation A(%)	Hardness Test HRB	Flaring Test	Flattening Test	Flange Test	Hydrostatic Test Acc to ASTM A450/A450M												
		min.	170	485	35																
		max.			90				S.P.I Heat No												
		225/230	545/555	55/56	79/82		GOOD	/													
		230/235	550/560	58/59	78/80		GOOD	/													
		235/240	555/560	58/55	79/77		GOOD														
		240/245	565/555	55/57	81/78		GOOD		K70445-1												
Nondestructive Examination				Inter-granular Corrosion																	
Eddy Current Test		Ultrasonic Test		Acc to ASTM A262 E PRACTICE E																	
Acc to ASTM E426		Acc to ASTM E213																			
GOOD																					
GOOD																					
GOOD																					
GOOD																					
Additional Remarks:																					
1.Dimension & Surface: OK				2.Country of Origin: China																	
3.Hardness acc. to NACE MR 01-75				4.100% PMI																	
We hereby certify that the material described above has been tested and complies with the terms of the Contract & the specification, and we confirm that P.M.I has been done.																					
06/21/2007 Date																					
 <p>ZHEJIANG QINGSHAN STEEL PIPE CO., LTD. 质量检验专用章 Quality Technology Director</p>																					



06/21/2007  
Date



Reg N° 9917426

# ACCEPTANCE CERTIFICATE EN 10204/3.1

## CERTIFICAT DE RECEPTION EN 10204/3.1

# N° 133565001	DISPATCH NOTE # AVIS EXPEDITION N° 133565
YOUR ORDER: 20091358	OUR ORDER/NOTRE CDE: 166930
CUSTOMER / CLIENT: FLOWELL INTERNATIONAL SA	

### PRODUCT / PRODUIT

ITEM POSTE	QTY QTE	DESCRIPTION & SIZE DESIGNATION & DIMENSION	REQUIREMENTS SPECIFICATIONS	GRADE NUANCE
1	1	SHORT STUB-END A 12" SCH 10\$ WP316/316L-WX	WP316L ANSI B16-9 & B16-25 & MS SP43 ASTM A403-07 / ASME SEC.II PART A SA403-07	316/316L

### BASE MATERIAL / MATIERE DE BASE

HEAT NUMBER COULEE	IDENTIFICATION IDENTIFICATION	MATERIAL SUPPLIER FOURNISSEUR	REQUIREMENTS SPECIFICATIONS	PQR QMOS-AQUAP
709922 704481	08B417 08B400	OUTOKUMPU OUTOKUMPU	TOLE LAC 1500 X 3000 X 8 1.4404/316L TOLE LAC 1500 X 3000 X 5 316 L/1.4404	4650-111 4650-111

### CHEMICAL COMPOSITION / COMPOSITION CHIMIQUE

COULEE	%C	%Si	%Mn	%P	%S	%Cr	%Ni	%Mo	%N	%Co	PRÉSENTE	CERTIFICATO E VALIDO	PE
709922 704481	0.020 0.022	0.420 0.420	1.710 1.760	0.031 0.030	0.001 0.001	17.200 17.300	10.100 10.100	2.040 2.030	0.047 0.043	0.240 0.180	CLIENTE	30/06/07	
											DATA NO	J3905	

### MECHANICAL CHARACTERISTICS / TESTINGS / CARACTÉRISTIQUES MÉCANIQUES / ESSAIS

HEAT COULEE	YIELD STRENGTH LIMITE ELASTIQUE		TENSILE STRENGTH RESISTANCE Ruptur		ELONGATION ALLONGEMENT		HARDNESS DURETE		HEAT TREATMENT HYPERTREMPE		IC TEST CORROSION INTE.		PMI TEST TEST SPECTRO		WELDING FACTOR FACTEUR SOUDAGE		
	0.2% Re Mpa		Rm Mpa		A%		HRC		1040 °C		A262 PRACT.E		Z				
BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT
709922 704481	308 301	610 598		51 53				OK OK		YES YES	yes yes	Able to pass	yes yes	YES			

### ADDITIONAL TESTING(S) / TEST(S) COMPLEMENTAIRE(S)

TESTINGS ESSAIS	REQUIREMENTS SPECIFICATIONS	ORDER REFERENCE REFERENCE COMMANDE	TEST REPORT # PV N°
X-RAY 100%	CODAP + ASME VIII DIV I § 51	17719 REP 5	A6539804/0801
	PMI TESTED OK 100 %		

**FLOWELL INTERNATIONAL**  
This Document was checked and reviewed and found acceptable.  
Dept. A.Q.

### REMARKS / REMARQUES

DIMENSIONAL & ASPECT / DIMENSION ET ASPECT: GOOD	STATE OF DELIVERY / ETAT DE LIVRAISON: PICKLED AND PASSIVATED
BRAND'S MANUFACTOR SIGLE FABRICANT:	We Certify that delivered products comply requirements's customer. Nous certifions les produits conformes aux spécifications de la commande et de A.M du 24/03/78. Rm <= 760 MPa. A% (Lo=5.65 \So)>16.Rm (A-2) >= 10500.
Manufacturing according to PED 97/23/EC Annex 1 - 4.3	Chemical composition and mechanical characteristics are according to the original's Certificate. This certificate, made from data processing treatment, is applicable without signing. L'analyse chimique et les caractéristiques mécaniques sont conformes au certificat original. Ce certificat réalisé par traitement informatique est applicable sans signature.
Fabrication conforme PED 97/23/CE Annexe 1 - 4.3	DATE 10/11/2009 FACTORY INSPECTOR EXPERT USINE Assurance Qualité

CERTIFICAT DE RECEPTION 3.1  
DIN EN 10204 3.1485085/001 1 (01)  
Date Datum Date  
03.06.08

Delivery address, Empfänger, Lieu de livraison <b>ORLEANS LASER</b> <b>PARC DES CHATELIERS</b> <b>12 RUE GUSTAVE EIFFEL</b> <b>45000 ORLEANS</b> <b>FRANCE</b>						<b>R.T. INDUSTRIES STE</b> <b>LES CULS MENEAUX</b> <b>18110 VASSELAY</b> <b>FRANCE</b>		08B417							
Requirements, Anforderungen, Exigences <b>AD 2000-MERKEL W2 EN 10028-7</b> <b>ASTM A240/A240M -07</b> <b>ASME 2007 SEC. II PART A SA-240</b>						Our Order No. Unser Auftrag Nr. Notre commande n° <b>34087</b>		Your order, Ihre Bestellung, Votre commande <b>6722 OSFRA 26405</b>							
Product, Erzeugnisform, Produit <b>TOLE , ACIER INOXYDABLE</b>						Mark of Manufacturer Zeichen des Lieferwerkes Signe de producteur <b>OUTOKUMPU</b>		Process Eischmelzungsart Mode de fusion <b>AOD</b>		Inspector's stamp Zeichen d. Sachverständigen Papier de l'expert 					
Grade, Werkstoff, Nuance <b>1.4404 TYPE 316L</b>						Tolerances Toleranzen, Tolérances <b>EN 10051</b>									
Marking, Kennzeichnung, Marquage <b>1.4404 1D</b>						Marks, Versandzeichen, Marques <b>6722 OSFRA 26405</b>									
Line Reihe Ligne	Item Position Poste	Charge-test Nr. Schmelze-Probe Nr. Coulée n°	Size, Abmessungen: Schmelze-Probe Nr. Coulée n°	Dimensions			Quantity Stückzahl Nombre	Weight, Gewicht, Poids	Finish Ausführung Finir						
1	12	70992 2	8,0 X 1500 X 3000 MM				12	3406 KG	1D						
Charge no. Schmelze Nr. Coulée n°		Chemical composition, Chemische Zusammensetzung, Composition chimiques													
		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	N %	CO %	B %			
70992		0,020	0,42	1,71	0,031	0,001	17,2	10,1	2,04	0,047	0,24	0,003			
<b>COPIA CONFORME ALL'ORIGINALE</b>															
Line Reihe Ligne	Mechanical properties, Mechanische Eigenschaften, Caractéristiques mécaniques								APPROUVE SELON AD 2000 MERKBLATT W0 SANS OBLIGATION DU CONTROLE. CERTIFIE SUIVANT LA DIRECTIVE APPARAILLS A PRES- SION 97/23/CE PAR TUEV CERT, CORPS DE CERTIFICATION POUR APPARAILLS A PRESSION DE TUEV NORD SYSTEMS GMBH & CO. KG; CORPS NOTifie, ENREGISTREMENT NO. 0045						
1	E	308	363	610	50	51	176								
Identity test, Verwechslungsprüfung, Contrôle d'identification Sizes, Abmessungen, Dimensions Surface, Oberfläche, Surface Test of intergran. corros, Prüfung auf interkrist. Korros, Test de corros. intercrist.				O.B. O.B. O.B.				A = Beginning / Anfang / Début E = End / Ende / Fin							
EN ISO 3651-2 A: CONFORME												We certify that the above mentioned products comply with the terms of the order contract. Wir bestätigen, dass die Lieferung den Vereinbarungen der Bestellannahme entspricht. Nous certifions que les produits énumérés ci-dessus sont conformes aux prescriptions de la commande.			
												This test certificate is made by controlled ADP-system and is valid without signature. Dieses Zeugnis wurde von einem überprüften Datenver- arbeitungssystem erstellt und ist ohne Unterschrift gültig. Ce certificat a été établi par un système informatique contrôlé et est valide sans signature.			
												<b>Outokumpu Stainless Oy</b>			
												<i>Anne-Marie Salmi</i>			
												Authorized inspector Werksachverständiger Inspecteur autorisé <b>ANNE-MARIA SALMI</b>			
												FIN-95490 Tornio, Finland Tel. +358 16 4521, Fax +358 16 452350, www.outokumpu.com Domicile: Tornio, Finland. Business Identity Code 0823315-9			

**OUTOKUMPU**

Certificat No.  
Zeugnis Nr.  
N° du certificat

Page  
Seite  
Page

387557/005 1 (01)  
Date Datum Date  
03.06.08

**CERTIFICAT DE RECEPTION 3.1**  
**DIN EN 10204 3.1**

Delivery address, Empfänger, Lieu de livraison  
**ORLEANS LASER**  
**PARC DES CHATELIERS**  
**12 RUE GUSTAVE EIFFEL**  
**45000 ORLEANS**  
**FRANCE**

R.T. INDUSTRIES STE 08B400 & OSB401  
**LES CULS MENEAUX**  
**18110 VASSELAY**  
**FRANCE**

Requirements, Anforderungen, Exigences

AD 2000-MERKBL. W2 EN 10028-7  
ASTM A240/A240M -07  
ASME 2007 SEC. II PART A SA-240

Your Order No.  
Linear Auftrag Nr.  
Notre commande n°  
**34087**  
**6722 OSFRA 26405**

Product, Erzeugnisform, Produit

**TOLE , ACIER INOXYDABLE**

Mark of Manufacturer  
Zeichen des Lieferwerkes  
Signe de producteur  
**OUTOKUMPU**

Process  
Erschmelzungsart  
Mode de fusion  
**AOD**

Inspector's stamp  
Zeichen d. Sachverständigen  
Poison de l'expert

Grade, Werkstoff, Nuance

**1.4404 TYPE 316L**

Tolerances Toleranzen, Tolérances

**EN 10051**

Marking, Kennzeichnung, Marquage

**1.4404 1D**

Marks, Verarbeitzeichen, Marques

**6722 OSFRA 26405**

Line  
Reihe  
Ligne

Item  
Position  
Poste

Charge-test No.  
Schmelze-Probe Nr.  
Coulée n°

Size, Abmessungen, Dimensions

Quantity  
Stückzahl  
Nombre

Weight, Gewicht, Poids

Finish  
Ausführung  
Fini

1	10	70448	1	5,0 X 1500	X 3000 MM	13	2280 KG	1D 08B400
2	11	70518	3	6,0 X 1500	X 3000 MM	11	2320 KG	1D 08B401

Charge no.  
Schmelze Nr.  
Coulée n°

Chemical composition, Chemische Zusammensetzung, Composition chimiques

C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	N %	CO %	B %	
70448 0,022	0,42	1,76	0,030	0,001	17,3	10,1	2,03	0,043	0,18	0,003	
70518 0,020	0,39	1,78	0,031	0,002	17,2	10,1	2,01	0,043	0,17	0,003	

Line  
Reihe  
Ligne

Location  
Or  
Lieu

Rp0.2  
N/mm²

Rp1.0  
N/mm²

Rm  
N/mm²

A5  
%

A50  
%

%

Hardness  
Härte, Duraté  
HB30

APPROUVE SELON AD 2000  
MERKBLATT W0 SANS  
OBIGATION DU CONTROLE.  
CERTIFIE SUivant LA DIR-  
ECTIVE APPARAILS A PRES-  
SION 97/23/CE PAR TUEV  
CERT, CORPS DE CERTIFIC-  
ATION POUR APPARAILS A  
PRESSION DE TUEV NORD  
SYSTEMS GMBH & CO. KG;  
CORPS NOTifie,  
ENREGISTREMENT NO. 0045

Identity test, Verwechslungsprüfung, Controle d'identification  
Sizes, Abmessungen, Dimensions  
Surface, Oberfläche, Surface  
Test of intergran. corros., Prüfung auf interkrist. Korros., Test de corros. intercrit.

O.B.  
O.B.  
O.B.

A = Beginning / Anfang / Début  
E = End / Ende / Fin

EN ISO 3651-2 A: CONFORME

We certify that the above mentioned products comply with  
the terms of the order contract.  
Wir bestätigen, dass die Lieferung den Vereinbarungen der  
Bestellannahme entspricht.  
Nous certifions que les produits énumérés ci-dessus sont  
conformes aux prescriptions de la commande.

This test certificate is made by controlled ADP-system  
and is valid without signature.  
Dieses Zeugnis wurde von einem überprüften Datenver-  
arbeitungssystem erstellt und ist ohne Unterschrift gültig.  
Ce certificat a été établi par un système informatique  
contrôlé et est valide sans signature.

**Outokumpu Stainless Oy**



*Maria Karlsson*

Authorized Inspector  
Werkssachverständiger MARIA KARLSSON  
Inspecteur autorisé

FIN-95490 Tornio, Finland  
Tel. +358 16 4521, Fax +358 16 452350,  
www.outokumpu.com  
Domicile: Tornio, Finland. Business Identity Code 0823315-9



# CONTÔLE RADIOGRAPHIQUE

## RADIOGRAPHIC INSPECTION

### RÖNTGENAUFRAHME-KONTROLLE

RAPPORT N° A6539804/080  
 REPORT N°  
 PRÜFBERICHT-NR. IND. 10  
 Date: 2008 du 17/11 au 23/11  
 Datum

Client : R.T.I. INDUSTRIES - 18110 VASSELAY	Code N° : 17719
Customer	Order No.
Abnehmer	Auftrag-Nr.
Désignation : RED. CONC. SHORT STUB-END A	Zone contrôlée : 100% DES LONGUEURS SOUDÉES
Description COUDE LRA	Inspected area
Bezeichnung	Prüfbereich
Identification des films : RTI 17719	Spécification de référence : ASME VIII Rev : Div. I
Films identification (voir pages 02 à 06)	Reference specification Bezugspezifikation
Filmidentification	Par UW 51 + CODAP 2000 Ind.

CONDITIONS D'EXÉCUTION DES CLICHÉS - Testing conditions - Prüfbedingungen			
Rayon X - X rays - Röntgenstrahlung		Rayon Gamma - Gamma rays - Gammabestrahlung	
Poste Equipment Anlage	: EMI PANTAK LC 300	Isotope Isotope Isotop	
Tension d'utilisation Voltage Betriebsspannung	: 170 à 210 Kv	Activité Activity Wirksamkeit	: Tq
Intensité Intensity Intensität	: 11,5 mA	Foyer Focal spot Fokus	: mm
Foyer Focal spot Fokus	: 4 x 4 mm		
Distance focale en mm Focal distance Brennweite	: 600 ; 900	Temps d'exposition : h mn sec.	: 20 à 30 sec.
Films : type : MX 125	Format : 10x90; 94; 40	Simple Single Einlach	<input checked="" type="checkbox"/> Cassette <input type="checkbox"/> Autre <input checked="" type="checkbox"/>
Film : type Film : typ	Size Abmessungen	Double Double Doppelt	<input type="checkbox"/> Pocket <input type="checkbox"/> Others <input checked="" type="checkbox"/> Andere
Filtre Pb : Filter Filter	Epaisseur : / mm	<input checked="" type="checkbox"/> Antérieur Pb : Front Vorn	<input type="checkbox"/> Epaisseur : 0,05 mm
Blocage Pb : Blocking Spedung	Epaisseur : 3 mm	<input type="checkbox"/> Intermédiaire Pb : Intermediate Zwischen	<input type="checkbox"/> Epaisseur : / mm
		<input type="checkbox"/> Postérieur Pb : Back Hinten	<input type="checkbox"/> Epaisseur : 0,05 mm
Type d'exposition : Type of exposition Belichtungsart	Panoramique <input type="checkbox"/> Panoramic Rundblick	Simple paroi Single wall Einlach	<input checked="" type="checkbox"/> Double paroi Double wall Doppell
IOI Penetrometer Bildgütemesser	Type : 13FE, 10FE EN 1A	<input checked="" type="checkbox"/> Norme : EN 462-1 <input type="checkbox"/> ASME/ASTM	<input type="checkbox"/> /
		<input type="checkbox"/> EN 462-2	
Materiel : Material Werkstoff	<input checked="" type="checkbox"/> Fe <input type="checkbox"/> Al <input type="checkbox"/> Cu	Emplacement : Côté source Source aide Quelleseite	<input type="checkbox"/> Côté film Film side Filmseite
			Cale d'Epaisseur / mm

CONDITIONS DE TRAITEMENT DES CLICHÉS - Processing conditions - Verarbeitungsbedingungen			
<input type="checkbox"/> Manuel / Manual / Manuell	<input checked="" type="checkbox"/> Automatique / Auto / Automatisch		
Révélateur / Developer / Entwickler : KODAK	Temps / Time / Dauer :	mn	Température / Temperature / Temperatur : 24 °C
Fixateur / Fixer / Fixiermittel : KODAK	Temps / Time / Dauer : 9	mn	Température / Temperature / Temperatur : 24 °C
Rincage / Rinsing / Spülung : EAU	Temps / Time / Dauer :	mn	Température / Temperature / Temperatur : 20 °C

Epaisseur contrôlée : 4 à 10 mm	Flou géométrique : < 0,5	Densité : 1,8 à 4,0	ø du trou ou fil visible : /
Thickness controlled	Focus geometrical Verwackeln	Density Bilddichte	ø Hole or wire ø Loch und draht

Conclusion / Conclusion / Schluss : Conforme à la spécification : Accordant to the specification In Übereinstimmung mit den S.	<input checked="" type="checkbox"/>	Non conforme à la spécification : Not accordant to the specification Nicht in Übereinstimmung mit den S.	Fiche annexe : Appended sheet Beilage
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Nom, niveau et signature du contrôleur : Mamadou TOURÉ	Signature : ST Conf.	Page : 01/6
Name, level, signature of the controller		Sheet
Name, Selle und Unterschrift des inspektors		Seite

**FICHE D'INTERPRETATION**  
**INTERPRETATION OF RADIOGRAPHIC FILMS**  
**AUSWERTUNGSCHEIN**

Affaire :  
Subject  
Betr.

RAPPORT : A6538804/0801  
REPORT IND.  
PRÜFBERICHT 10

Matière : Matter Stoff	INOX	Méthode de soudage : Welding process Schweissart	TIG	Type de chanfrein : Type of groove Schweissfase
------------------------------	------	--	-----	---

INDICATIONS REF. / ZEICHEN		TYPE DE DÉFAUT / TYPE OF DEFECT / DEFekte										CONCLUSIONS RESULTS / BFURTEILUNG		
Appareil Equipment Anlage	<input type="checkbox"/>	N° de film Film N° / Film-Nr	Fissures Cracks / Risse	Manque de fusion Incomplete penete / Unterfeuerbrand	Inclusions de laitier Slag inclusions / Schmelzenanzehler	Inclusions de laitier alignées Slag fines / Schlackenreihen	Soufflures Porosity / Gasblasen	Vermiculaires Worm holes / Vermicularform	Soufflures n.d. Clustered/Gasblasenversammlung	Inclusion de Tungstène Tungsten / Wolfram	Dénivelation Offset / Höhenunterschied	Caniveaux Undercuts / Einbrandkerbe	Défauts de surface Surface / Oberflächenfehler	Observations Remarks / Anmerkung
Zones concernées Concerned area Prüfbereich	<input type="checkbox"/>													
N° de soudure Weld N° Schweißen-Nr	<input checked="" type="checkbox"/>													
RTI														
17719														
RED. CONC 10" x 6" 40\$ UNS S32750 N° coulée 480070														
OF 152893														
Poste : 1 -	1											2,40,16	X	
	2											X		
	3											X		
↓	4											X		
Poste : 1 -	5											2,40,16	X	
ALL OK														
RED. CONC 5" x 4" 40\$ UNS S32750 N° coulée N72484														
OF 152893														
Poste : 2 -	1											2,60,16	X	
↓	2											X		
↓	3											X		
Poste : 2 -	4											2,60,16	X	
ALL OK														

Date contrôle : Date of exam. Prüfdatum	17/12/01	Accepté Accepted Angenommen	Oui <input checked="" type="checkbox"/> Non <input type="checkbox"/>	Spécification : ASME VIII Specification Spezifikation	Croquis Sketch Skizze	Oui <input type="checkbox"/> Non <input checked="" type="checkbox"/>
Opérateurs : Operators Operator	Nom : Name Name	Niveau : Level Niveau	Nom : Name Name	Niveau :	Niveau : Level Niveau	
Interprétation des films : Nom - Niveau : Interpretation of films Filmauswertung	Name - Level Name - Niveau	Mamadou TOURE COFREND II N° B02-0084	Date : Datum	Visa : Visa Sichtvermerk	TL Cert.	Page : Sheet Seite
NORISKO EQUIPEMENTS			CND 8012 - 07/11 - Page 1/1			a DEKRA company

**FICHE D'INTERPRETATION**  
**INTERPRETATION OF RADIOGRAPHIC FILMS**  
**AUSWERTUNGSCHEIN**

Affaire :  
Subject  
Betr.

RAPPORT : A6539804/0801  
REPORT IND.  
PRÜFBERICHT 10

<b>Matière :</b> Matter Stoff	<b>INOX</b>	<b>Méthode de soudage :</b> Welding process Schweissart	<b>TIG</b>	<b>Type de chanfreins :</b> Type of groove Schweissfase	<input checked="" type="checkbox"/>
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INDICATIONS REF. / ZEICHEN		TYPE DE DÉFAUT / TYPE OF DEFECT / DEFEKTE										CONCLUSIONS RESULTS / BFURTEILUNG																	
		N° de film Film N° / Film-Nr.		Fissures Cracks / Risse		Manque de fusion Incomplete penete / Unterbrand		Inclusions de laitier Slag inclusions / Schmelzeinschlüsse		Soutuffles Porosity / Gasblasen		Vermiculaires Worm holes / Vermicularform		Soutuffles nid Clustered/Gasblasenversammlung		Inclusion de Tungstène Tungsten / Wolfram		Dénivelation Offset / Höhenunterschied		Caniveaux Undercuts / Einbrandkerbe		Défauts de surface Surface / Oberflächenfehler		Défauts de film Film / Filme		Observations Remarks / Anmerkung		Conforme à la spécification Accordant to the specification/Vorschriftsmässig	
Appareil Equipment Anlage	<input type="checkbox"/>																												
Zones concernées Concerned area Prüfbereich	<input type="checkbox"/>																												
N° de soudure Weld N° Schweißen-Nr	<input checked="" type="checkbox"/>																												
RTI																													
17719																													
RED. CONC 8" x 4" 40 \$ UNS S31803 N° coulée 48251																													
OF 153184																													
Poste: 3 1																													
2																													
3																													
4																													
5																													
Poste: 3 6 X																													
Poste: 3 6R																													
ALL ORIGINAL ALLOUÉ																													
COMIA CONFORM																													
RED. CONC 8" x 6" 40 \$ UNS S31803 N° coulée 48251																													
OF 153184																													
Poste: 4 1																			X	2,9 0,16									

Date contrôle : <b>17/12/09</b>	Accepté	Oui <input checked="" type="checkbox"/>	Non <input type="checkbox"/>	Spécification : ASME VIII	Croquis	Oui <input type="checkbox"/>	Non <input checked="" type="checkbox"/>
Date of exam.	Accepted	Yes	No	Specification Div. I par UW 51	Sketch	Yes	No
Prüfdatum	Angenommen	Ja	Nein	Spezifikation + CODAP 2000	Skizze	Ja	Nein

**Opérateurs :** Nom : \_\_\_\_\_ **Niveau :** \_\_\_\_\_ **Opérateurs :** Nom : \_\_\_\_\_ **Niveau :** \_\_\_\_\_  
Operators Name \_\_\_\_\_ Level \_\_\_\_\_ Operators Name \_\_\_\_\_ Level \_\_\_\_\_  
Operator Name \_\_\_\_\_ Niveau \_\_\_\_\_ Operator Name \_\_\_\_\_ Niveau \_\_\_\_\_

**Interprétation des films : Nom - Niveau :** Mamadou TOURE Date : 23/12/08 Visa : TT Cef.  
**Interpretation of films Name - Level :** Mamadou TOURE Date : 23/12/08 Visa : TT Cef.  
**Firmauswertung Name - Niveau :** COFREND II N° B02-00841 Datum : 23/12/08 Sichtvermerk :  
**Page :** Sheet 316 Seite 316

**FICHE D'INTERPRETATION**  
**INTERPRETATION OF RADIOGRAPHIC FILMS**  
**AUSWERTUNGSCHEIN**

Affaire :  
Subject  
Betr.

RAPPORT : A 6539804/0801  
REPORT IND.  
PRÜFBERICHT

10

Matière : Matter Stoff	INOX	Méthode de soudage : Welding process Schweissart	TIG	Type de chanfreins : Type of goove Schweissfase
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INDICATIONS REF. / ZEICHEN		TYPE DE DÉFAUT / TYPE OF DEFECT / DEFEKTE										CONCLUSIONS RESULTS / BFURTEILUNG			
Appareil Equipment Anlage	<input type="checkbox"/>	N° de film Film N° / Film-Nr	Fissures Cracks / Risse	Manque de fusion Lack of fusion / Schmelzenfehler	Manque de pénétration Incomplet penete / Untererabbrand	Inclusions de laitier Slag inclusions / SCHLACKENEINSchlüsse	Inclusions de laitier alignées Slag fines / Schlagkeinfreien	Soufflures Porosity / Gasblasen	Vermiculariares Worm holes / Vermiculariform	Soufflures nid Clustered/Gasblasenversammlung	Inclusion de Tungstène Tungsten / Wolfram	Dénivelation Offset / Höhenunterschied	Caniiveaux Undercuts / Einbranderbe	Défauts de surface Surface / Oberflächenfehler	Défauts de film Film / Filme
Zones concernées Concerned area Prüfbereich	<input type="checkbox"/>														
N° de soudure Weld N° Schweißen-Nr	<input checked="" type="checkbox"/>														
RTI															
17719															
SHORT STUB END A x 12 "															
OF 152642															
Poste. 5 1					X								2,3 0,10		
2														X	
3														X	
4														X	
5														X	
6														X	
7														X	
8														X	
9														X	
10														X	
11														X	
12														X	
13														X	
14														X	
Poste. 5 15													2,3 0,10		
↓															

Date contrôle : 17/12/07 Date of exam. Prüfdatum	Accepté Accepted Angenommen	Oui <input checked="" type="checkbox"/> Non <input type="checkbox"/>	Spécification : ASME VIII Specification Spezifikation	Croquis Sketch Skizze	Oui <input type="checkbox"/> Non <input checked="" type="checkbox"/>
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Opérateurs : Operators Operator	Nom : Name Name	Niveau : Level Niveau	Nom : Name Name	Niveau : Level Niveau
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Interprétation des films : Nom - Niveau : Interpretation of films Name - Level Filmauswertung Name - Niveau	Date : 23/12/07 Date : 23/12/07 Datum : 23/12/07	Visa : Visa Sichtvermerk	Page : Sheet Seite
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**FICHE D'INTERPRETATION**  
**INTERPRETATION OF RADIOGRAPHIC FILMS**  
**AUSWERTUNGSCHEIN**

**NORISKO**  
VOIR LE DANGER, C'EST VOIR PLUS LOIN

VOIR LE DANGER, C'EST VOIR PLUS LOIN

# INTERPRETATION OF RADIOGRAPHIC FILMS AUSWERTUNGSCHEIN

**Affaire :**  
Subject  
Betr.

RAPPORT : A653980410801  
REPORT IND.  
PRÜFBERICHT 10

<b>Matière :</b>	<b>INOX</b>	<b>Méthode de soudage :</b>	<b>TIG</b>	<b>Type de chanfreins :</b>
Matter		Welding process		Type of groove
Stoff		Schweissart		Schweissfase

INDICATIONS REF. / ZEICHEN		TYPE DE DÉFAUT / TYPE OF DEFECT / DEFEKTE										CONCLUSIONS RESULTS / BFURTEILUNG					
		N° de film Film N° / Film-Nr		Fissures Cracks / Risse	Manque de fusion Lack of fusion / Schmelzfehler	Manque de pénétration Incomplet penete / Unterfeinbrand	Inclusions de laitier Slag inclusions / Schlackeneinschlüsse	Inclusions de laitier alignées Slag fines / Schlackenreihen	Soufflures Porosity / Gasblasen	Vermiculaires Worm holes / Vermiculariform	Soufflures nid Clustered/Gastblasenversammelung	Inclusion de Tungstène Tungsten / Wolfram	Dénivellation Offset / Höhenunterschied	Caniveaux Undercuts / Einbrandkerbe	Défauts de surface Surface / Oberflächenfehler	Défauts de film Film / Filme	Observations Remarks / Anmerkung
Appareil Equipment Anlage																Conforme à la spécification Accordant to the specification/Vorschriftsmässig	
Zones concernées Concerned area Prüfbereich																Non conforme à la spécification Not accordant to the specification/Vorschriftswidrig	
N° de soudure Weld N° Schweißen-Nr																	
RTI																	
17719																	
Poste : 5 16																	
↓ 17																	
Poste : 5 19																	
		</td															

<b>Date contrôle :</b>	<b>Accepté</b>	<b>Oui</b>	<b>Non</b>	<b>Spécification : ASME VIII</b>	<b>Croquis</b>	<b>Oui</b>	<b>Non</b>
Date of exam.	Accepted	Yes	No	Specification	Dlv.I par UW 51	Sketch	Yes
Prüfdatum	Angenommen	Ja	Nein	Spezifikation	+ CODAP 2000	Skizze	Ja

**Opérateurs :** Nom : \_\_\_\_\_ **Niveau :** \_\_\_\_\_ **Opérateurs :** Nom : \_\_\_\_\_ **Niveau :** \_\_\_\_\_  
 Operators Name \_\_\_\_\_ Level \_\_\_\_\_ Operators Name \_\_\_\_\_ Level \_\_\_\_\_  
 Operator Name \_\_\_\_\_ Niveau \_\_\_\_\_ Operator Name \_\_\_\_\_ Niveau \_\_\_\_\_

**Interprétation des films : Nom - Niveau :** Mamadou TOURE **Date :** 23/11/09 **Visa :** *N.Cert.* **Page :** 5 / 16  
**Interpretation of films Name - Level :** Mamadou TOURE **Date :** 23/11/09 **Visa :** *N.Cert.* **Sheet :** 5 / 16  
**Film auswertung Name - Niveau :** COFREND II N° B02403415 **Datum:** **Sichtvermerk:** *N.Cert.* **Seite:** 5 / 16

# FICHE D'INTERPRETATION

**NORISKO**  
VIVRE LE DANGER, C'EST VOIR PLUS LOIN

**INTERPRETATION OF RADIOGRAPHIC FILMS  
AUSWERTUNGSCHEIN**

Affaire :  
Subject  
Betr.

**RAPPORT : A6539804/080**  
**REPORT IND.**  
**PRÜFBERICHT 10**

<b>Matière :</b> Matter Stoff	<b>INOX</b>	<b>Méthode de soudage :</b> Welding process Schweissart	<b>TIG</b>	<b>Type de chanfreins :</b> Type of goove Schweissfase	<input checked="" type="checkbox"/>
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<b>Date contrôle :</b> <u>17/12/09</u> <b>Date of exam.</b>		<b>Accepté</b> Accepted Angenommen	<b>Oui</b> <input checked="" type="checkbox"/> <b>Non</b> <input type="checkbox"/> Yes Ja	<b>Spécification :</b> <u>ASME VIII</u> Specification Spezifikation	<b>Croquis</b> Sketch Skizze	<b>Oui</b> <input type="checkbox"/> <b>Non</b> <input checked="" type="checkbox"/> Yes Ja
<b>Opérateurs :</b> Operators Operator		<b>Nom :</b> Name Name	<b>Niveau :</b> Level Niveau	<b>Nom :</b> Name Name	<b>Niveau :</b> Level Niveau	
<b>Interprétation des films :</b> Nom - Niveau Interpretation of films Film auswertung		<b>Mamadou TOUPE</b> COFREND II N° B02-008415	<b>Date :</b> <u>23/12/09</u> Date Datum	<b>Visa :</b> Visa Sichtvermerk	<b>Page :</b> Sheet Seite	
						<u>W. Laut</u>

Grande Générale  
RCI industries  
8110 VASSELAY-France



# ACCEPTANCE CERTIFICATE EN 10204/3.1

## CERTIFICAT DE RECEPTION EN 10204/3.1

# N° 133565002	DISPATCH NOTE # AVIS EXPÉDITION N° 133565
YOUR ORDER: 20091358	OUR ORDER/NOTRE CDE: 166930
CUSTOMER / CLIENT: FLOWELL INTERNATIONAL SA	

### PRODUCT / PRODUIT

ITEM POSTE	QTY QTE	DESCRIPTION & SIZE DESIGNATION & DIMENSION	REQUIREMENTS SPECIFICATIONS	GRADE NUANCE
2	1	SHORT STUB-END A 14" SCH 10S WP316/316L-W	WP316L ANSI B16.9 & B16.25 & MS SP43 ASTM A403-07 / ASME SEC.II PART A SA403-07	316/316L

### BASE MATERIAL / MATIERE DE BASE

HEAT NUMBER COULEE	IDENTIFICATION IDENTIFICATION	MATERIAL SUPPLIER FOURNISSEUR	REQUIREMENTS SPECIFICATIONS	PQR QMOS-AQUAP
709922 4229849	08B417 08C669	OUTOKUMPU OUTOKUMPU	TOLE LAC 1500 X 3000 X 8 1.4404/316L TUBE SOUDE 14" Sch 10S 316 L	4650-111

### CHEMICAL COMPOSITION / COMPOSITION CHIMIQUE

HEAT LEE	%C	%Si	%Mn	%P	%S	%Cr	%Ni	%Mo	%N	%Co	PRESENTATION CERTIFIÉE	STATEMENT OF VALIDITY
709922 4229849	0.020 0.022	0.420 0.410	1.710 1.760	0.031 0.031	0.001 0.001	17.200 17.200	10.100 10.100	2.040 2.050	0.047 0.047	0.240 0.240	BU S3205	08/07 25/11/09

### MECHANICAL CHARACTERISTICS / TESTINGS / CARACTÉRISTIQUES MÉCANIQUES / ESSAIS

HEAT COULEE	YIELD STRENGTH LIMITE ELASTIQUE		TENSILE STRENGTH RESISTANCE RUPTURE		ELONGATION ALLONGEMENT		HARDNESS DURETE		HEAT TREATMENT HYPERTREMPE		IC TEST CORROSION INT.		PMI TEST TEST SPECTRO		WELDING FACTOR FACTEUR Soudage	
	0.2% Re Mpa		Rm Mpa		A%		HRC		1040 °C		A262 PRACT.E		Z			
	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT
709922 4229849	308 294		610 620		51 62		NACE MR01.75		OK OK		YES YES	yes yes	Able to pass	yes yes	YES	

### ADDITIONAL TESTING(S) / TEST(S) COMPLEMENTAIRE(S)

TESTINGS ESSAIS	REQUIREMENTS SPECIFICATIONS	ORDER REFERENCE REFERENCE COMMANDE	TEST REPORT # PV N°
	PMI TESTED OK 100 %		

FLUIDS INDUSTRIALS  
This Document was checked and reviewed and found acceptable  
Dept. A.Q.

### REMARKS / REMARQUES

DIMENSIONAL & ASPECT / DIMENSION ET ASPECT: GOOD	STATE OF DELIVERY / ETAT DE LIVRAISON: PICKLED AND PASSIVATED
BRAND'S MANUFACTOR SIGLE FABRICANT:  RCI industries	We Certify that delivered products comply requirements's customer. Nous certifions les produits conformes aux spécifications de la commande et de A.M du 24/03/78. Rm <= 760 MPA. A% (Lo=5.65 \So)>16.Rm (A-2) >= 10500. Chemical composition and mechanical characteristics are according to the original's Certificate. This certificate, made from data processing treatment, is applicable without signing. L'analyse chimique et les caractéristiques mécaniques sont conformes au certificat original. Ce certificat réalisé par traitement informatique est applicable sans signature.
Manufacturing according to PED 97/23/EC Annex 1 - 4.3	DATE 10/11/2009 FACTORY INSPECTOR EXPERT USINE Assurance Qualité
Fabrication conforme PED 97/23/CE Annexe 1 - 4.3	



## CERTIFICATE EN 10204:2004/3.1

This inspection certificate fulfils the requirements of EN 10204:2004 type 3.1  
and EN 10204:1991+A1:1995 type 3.1.B.

Page 1(1)

CLIENT RTI INDUSTRIES 22, ROUTE DU CRETON  FR-18110 VASSELAY FRANKRIKE		DATE 2008-10-16		CERTIFICAT NO N0819442/ 1										
		NON DE COMMANDE USINE 2008006691		POST 140 OSL 669										
		NON DE COMMANDE CLIENT 7135		EXPEDITION NOMBRE 810571										
EXECUTION DE PRODUIT  TUBES D'ACIER INOXYDABLE SOUDES LONGITUDINALEMENT, SOUDURE EXTERIEURES MEULE, DECAPES, EXTREMITES DROITES, A LONGUEURS DE FABRICATION, TRAITEMENT THERMIQUE 1100 C REFROIDISSEMENT A L EAU														
SPECIFICATION ASTM A 312/ASME SA 312 (EFW)				SIGNE DE L'USINE <b>OUTOKUMPU-N</b>										
NUANCE TP 316/TP 316L		DESIGNATION DE L'USINE 4404U		TOLERANCES ASTM A 999										
MARQUAGE DE TUBE OUTOKUMPU-N; TP 316/TP 316L; WLD; A/SA 312; 355,60 X 4,78; 14" SCH 10S; 4229849;														
QUANTITE														
NOMBRE 2	METRE 12,00	DIMENSION 355,60	4,78	COULEE NO 4229849										
COMPOSITION CHIMIQUE				RESULTAT NO A										
HEAT ANALYSIS 1		C 0,022	SI 0,410	MN 1,76	P 0,031	S 0,001	CR 17,20	NI 10,10	MO 2,05					
RESULTAT DES ESSAIS														
	TEMP C  205	RP0,2 MPa  515	RM MPa  35	A2 %  90	HRB HRB									
A1 T	20	294	364	620	62	82								
<i>COPIE SUR DOCUMENT ALL INFORMATION</i>														
100% CONTROLE AUX COURANTS DE FOUCault ASTM A 450 / E 426 CONTROLE AUX COURANTS DE FOUCault ASTM A 999 / E 426 ESSAI D'APLATISSEMENT ASTM A 999 CONTROLES VISUELS, CONTROLES ET DIMENSIONS VERIFICATION DE LA NUANCE ESSAI DE CORROSION INTERGRANULAIRE ASTM A 262:E DURETE SELON NACE MR 0175 Base material acc to EN 10028-7 Fullfill the requirements in EN 10217-7 Welding factor Z=1,0 based on EC-test acc to EN 10246-3														CONFORME CONFORME CONFORME CONFORME CONFORME CONFORME CONFORME CONFORME
 EN ISO 9001 : 2000 No. 78 100 3711		Certified acc: PED 97/23/EC and AD2000-W0/TRD 100 by TÜV Nord gruppe for pressure equipment NOB no: 0045 Certificate no: 07 202 0111 Z 0019/O/H (no: 0121WL04780) Procedures and personnel approved by notified bodies. WPS/WPAR: EN 288 / WLD Personnel: EN 1418 / NDT: EN 473		ELABORATION: E/AOD Base material from PED 97/23/EC approved suppliers.										LES STIPULATIONS DE LA COMMANDE SONT CONFORMES TIMRE D'INSPECTOR / MAR Ulf Borsch DELIVRE PAR Yvonne Wannestrånd

Groupe Génier

**Rti** industries  
 18110 VASSELAY-France

① 02 48 69 74 20

② 02 48 69 74 29

**ACCEPTANCE CERTIFICATE EN 10204/3.1  
CERTIFICAT DE RECEPTION EN 10204/3.1**

COPIA CON ALLEGATO

# N°	82130001	DISPATCH NOTE # AVIS EXPÉDITION N°	82130
<b>YOUR ORDER:</b> 20061192			<b>OUR ORDER / NOTRE CDE:</b> 120820
<b>CUSTOMER / CLIENT:</b> FLOWELL INTERNATIONAL SA			

**PRODUCT / PRODUIT**

ITEM POSTE	QTY QTE	DESCRIPTION & SIZE DESIGNATION & DIMENSION	REQUIREMENTS SPECIFICATIONS	GRADE HUAUCE
3	15	SHORT STUB-END A 3" SCH 10S WP304/304L-S	WP304L A403 02/S403 E04.B16-9.B16-25.HSS-SP43 ASTM A403 02/S403 E04	304/304L

**BASE MATERIAL / MATIERE DE BASE**

HEAT NUMBER COULEE	IDENTIFICATION IDENTIFICATION	MATERIAL SUPPLIER FOURNISSEUR	REQUIREMENTS SPECIFICATIONS	PQR QMOS-AQUAP
K60126	06C205	S.P.I UNITED	STUB END "A" 3" Sch 10S 304 L-S	

**CHEMICAL COMPOSITION / COMPOSITION CHIMIQUE**

HEAT COULEE	%C	%Si	%Mn	%P	%S	%Cr	%Ni	IL PRÉSENTE CERTIFIATO	E VALIGO PER
K60126	0.020	0.470	1.190	0.037	0.008	18.200	8.360	30	25/11/09

**MECHANICAL CHARACTERISTICS - TESTINGS / CARACTÉRISTIQUES MÉCANIQUES - ESSAIS**

HEAT COULEE	YIELD STRENGTH LIMITÉ ELASTIQUE		TENSILE STRENGTH RESISTANCE RUPUR		ELONGATION ALLONGEMENT		HARDNESS DURETÉ		HEAT TREATMENT HYPERTREMPE		IC TEST CORROSION INT.		PMI TEST TEST SPECTRO		WELDING FACTOR FACTEUR Soudage	
	0.2% Rm Mpa		Rm Mpa		A%		HRC		1040 °C		A262 PRACT.E				Z	
	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT	BASE	PRODUCT
K60126	220		600		61			NACE MR01.75		OK		YES	yes	Able to pass	yes	YES

**ADD ON TESTING(S) / TEST(S) COMPLEMENTAIRE(S)**

TESTINGS ESSAIS	REQUIREMENTS SPECIFICATIONS	ORDER REFERENCE REFERENCE COMMANDE	TEST REPORT # PV N°
	PMI TESTED OK 100 %		FLOWELL INTERNATIONAL This Document was checked and reviewed and found acceptable. Dept. A.Q.

**REMARKS / REMARQUES****DIMENSIONAL & ASPECT / DIMENSION ET ASPECT: GOOD****STATE OF DELIVERY / ETAT DE LIVRAISON: PICKLED AND PASSIVATED**

We Certify that delivered products comply requirements's customer. Nous certifions les produits conformes aux spécifications de la commande et de A.M du 24/03/78.  
 Rm <= 760 MPA. A% (Le=5.65 \Se)>16.Rm (A-2) >= 10500.

Chemical composition and mechanical characteristics are according to the original's Certificate. This certificate, made from data processing treatment, is applicable without signing. L'analyse chimique et les caractéristiques mécaniques sont conformes au certificat original. Ce certificat réalisé par traitement informatique est applicable sans signature.

DATE  
DATE 08/09/2006 FACTORY INSPECTOR  
EXPERT USINE Assurance Qualité



Manufacturing according to  
PED 97/23/EC Annex 1 - 4.3  
Fabrication conforme  
PED 97/23/CE Annexe 1 - 4.3

Reg N° 9917426

Cert. to EN 10204/3, 1B



## S. P. UNITED INDUSTRY SDN. BHD.

(COMPANY NO. 368524 W)  
P.T. 7411745, KAWASAN PERINDUSTRIAN NILAI  
71800 NILAI, NEGERI SEMBILAN DAULAT MELUSA, MALAYSIA.  
TEL: 606-7883577, 7883678, 7883677 FAX: 606-7883868  
E-mail: spunit@tnm.net.my / spunit@tnm.mymail.com

Order No.: 053AN012, 053AN003,  
053AN005, 053AN006  
P.O. No.: 21354, 2164L, 21706

## INSPECTION CERTIFICATE

Page (頁)  
1

ISO 9001:2000 Cert. No. 403592

Date (日付) APR 20, 2006

Certificate No.: 06-4-0306  
(認可番号)

Product (品名)	Specification (規格)	ASTM A403 / ASME SA403 WP-S 304/304L 008										Specification for Premium Pipe (特別規格)	
		Size (寸法)	Dimension in mm (ミリ)	Outside Diam (外径)	Thickness (壁厚)	Heat No. (炉番号)	Quantity (数量)	Surface Inspection (表面検査)	Dimension Inspection (寸法検査)	S. P. I. Code No.			
1 FRSS3-S304L1-10S	31.4	2.77	K60070	500	GOOD	GOOD	12011000						
2 FRSS3-S304L2-10S	60.32	2.77	K60127	200	GOOD	GOOD	12012000						
3 FRSS3-S304L3-10S	88.9	3.05	X	198	GOOD	GOOD	12013000						
4 FRSS3-S304L4-10S	114.3	3.05	K60169	75	GOOD	GOOD	12014000						
Pipe Manufacturer: (製管会社)	1. BANYO SPECIAL STEEL CO., LTD. 2&3. HUADY STEEL GROUP CO., LTD.	4. NIPPON STEEL CORPORATION.	YS=Yield Strength (0.2%), EL=Elongation, HR=Hardness Test YS=Tenile Strength, GL=Change Length, HT=Hydromalic Test	Type of Specimen (試験方法)	Mechanical Properties of Pipe Material (材質の機械的性質)	Type of Specimen (試験方法)	YS Mpa (屈強力)	EL % (伸び率) Standard (基準値)	TS Mpa (引張強度)	Flameout Test (燃焼試験)	HT Mpa (硬度)	Type of Specimen (試験方法)	Hardness NACE (HR) MR-01:75
Chemical Composition % (Last analysis as supplied by the steelmaker) (鋼材メーカーより供給された最終分析結果)													
• Heat No. (炉番号)	C x 100	Si x 100	Mn x 100	P x 1000	S x 1000	Ni x 100	Cr x 100	Mo x 100	x 100	Type of Specimen (試験方法)	YS Mpa (屈強力)	EL % (伸び率) Standard (基準値)	Hardness NACE (HR) MR-01:75
1 K60070	2.2	35	114	33	8	966	1830			234	600	52	GOOD
2 K60127	1.8	49	110	33	7	815	1822			230	625	59	GOOD
3 K60126	2.0	47	119	37	8	836	1820			220	600	61	GOOD
4 K60169	2.7	48	106	28	6	833	1802			241	607	63	GOOD
	MAX	MAX	MAX	MAX	MAX	800	1800			MIN	MIN	MIN	GOOD
	3.0	100	200	45	30	1200	2000			170	495	35	GOOD

Remarks

IC TEST ASTM A269E  
GASKET FINISH SERRATED FINISH SMOOTH 123-250 RMS  
PAI CHECK GOOD. HEAT TREATMENT 1050 DEGRE CELSIUS QUENCHED IN WATER

QUALITY ASSURANCE APPROVAL	15 May 2006
SAFRADE ID LUCENE	

We herewith certify that the above products meet the requirements of the standard concerned and of the order.  
(上記の製品は、当社規格及び、本文の要領等に適合する事を証明する。)

Manager of Quality Control Dept.  
(品質管理部長)

Rossi

DEC 205



华迪钢业集团有限公司  
HUADI STEEL GROUP CO., LTD  
工厂检验证书  
MIL TEST CERTIFICATE CEN/000431)

**ADD: 24-32 ZHENBIAO ROAD, YONGZHONG  
TOWN, WENZHOU,ZHEJIANG,CHINA**

HUADI STEEL GROUP CO., LTD

发票号码 INVOICE NO.: 0602180  
合同号 CONTRACT NO.: 05HD12180  
技术条件 SPECIFICATION: ASTM A117/A117M-94

**NOTE: WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE RESPECTIVE STANDARD AND SATISFIES THE REQUIREMENTS.**

INSURANCE

卷之三



ArcelorMittal

Maatschappelijke zetel:  
ArcelorMittal - Stainless Belgium NV/SA  
Koning Albert I-laan 35, 1030 Brussel, Belgium  
Correspondenteadres:  
ArcelorMittal Genk - Stainless Europe  
Swinnenwijerweg 5, 3600 Genk, Belgium  
Tel. +32 (0)99 30 21 11

**MILL CERTIFICATE BS EN 10204/3.1**  
**CERTIFICAT DE RECEPTION NF EN 10204/3.1**  
**ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1**

Approved acc. AD 2000-Merkblatt W0/TRD 100 by TÜV SÜD Industrie Service GmbH.  
Certified acc. PED 97/23/EC Annex I § 4.3 by Certification Body 0036 of TÜV SÜD  
Industrie Service GmbH with certificate No.: 31/4/2007/MUC.  
Renounced of counter signature agreed by TÜV SÜD (9/5/2007).

N-NF-N 2009K0044763

A0

Manufacturer's works order number N° de la commande usine productrice Werksauftragsnummer	Surveyor's mark Cachet de l'expert Stempel des Werkssachverständigen	<b>AMSE</b>	Purchaser and/or consignee Client et/ou destinataire Besteller und/oder Empfänger <b>AM-STAINLESS SCE ITALY</b>	Purchaser's order number N° de commande client Kundenbestellnummer <b>910111040</b>
<b>A08</b> <b>9UA882636/01-08518/081/01</b>		<b>Z03</b>		<b>A07</b>
<b>Packing list:</b> <b>2009K928030</b>				
<b>Product - Produit - Erzeugnis</b>			<b>ZONA INDUSTRIALE</b>	<b>Customer article number</b>
<b>COIL, HOT ROLLED, ANNEALED+PICKLED, UNTRIMMED</b> <b>COIL, LAMINE A CHAUD, RECUIT+DECAPÉ, NON REFENDU</b> <b>COIL, WARMGEWALZT, GEGLIEDERT+GEBELZT, UNBESARÜMT</b>			<b>26815 MASSALENGO (LO)</b>	<b>N° d'article client</b> <b>Artikelnummer des Kunden</b>
		<b>B01</b>	<b>ITALIE</b>	<b>A09</b>
<b>Steel designation</b> Désignation de l'acier Stahlbezeichnung	<b>B02</b>	<b>Finish</b> Présentation Ausführung	<b>Steelmaking process</b> Mode d'élaboration de l'acier- Stahlherstellungsverfahren Electric arc furnace-VOD/AOD-Continuous casting Four à arc-VOD/AOD-Coulée continue Elektro-Ofen-VOD/AOD-Stranggussanlage	<b>C70</b> <b>Product delivery condition</b> Etat de livraison du produit Lieferzustand
<b>EN 10028-7/08 WNR 1.4307/1.4301</b> <b>ASTM A 240 (M)-09 TYPE 304L/304</b> <b>ASME SA 240-07 TYPE 304L/304</b> <b>EN 10088-2/05 WNR 1.4307/1.4301</b>		<b>1D</b> <b>NO 1</b> <b>NO 1</b> <b>1D</b>		
			<b>Any supplementary requirements</b> Prescriptions supplémentaires - Zusätzliche Anforderungen	<b>B03</b> <b>Solution treated:</b> Hypertempe: Lösungsgegliedert+abgeschreckt: <b>1050 C</b>
			<b>X2 CRNI 18-9</b>	<b>Forced air - Air forced</b> Geblaeße Luft
				<b>B04</b>

AD 2000 W2/2008 -- AD 2000 W10/2007 -- EN 13445-2/2002

NACE MR 0175 / ISO 15156-1 / ISO 15156-3

COBBSTON TEST: ASTM A 262 - E / 02A(R2008) : OK

205

Identification of the product Identification du produit - Identifizierung des Erzeugnisses		B07	Dimensions Dimensions - Abmessungen			B08	Number of pieces Nombre de pièces - Stueckzahl	1
Coil n. N° de bobine - Band Nr	Heat n. N° de coulée - Schmelz Nr	B09	Thickness Epaisseur - Dicke	B10	Width Largeur - Breite	B11	Length Longueur - Laenge	B13
94152652	941526		5.00 mm	1540.00 mm			Net weight Poids net - Netto Gewicht	28320 KG

## **CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG**

To date, no systematic evaluations of quality have been carried out.

Tests to verify batch and quality have been carried out.

Venzechlungstuefung wurde durchgefuehrt : C

MECHANICAL PROPERTIES - PROPRIÉTÉS MÉCANIQUES - MECHANISCHE WERTE EN 10002-1

Location (1)		MECHANICAL PROPERTIES - PROPRIETES MECANIQUES - MECHANISCHE WERTE EN 10002-1													
		Room temperature - Température ambiante - Raumtemperatur				Test Temperature : C°									
1	T	Direction (2)		Yield strength Limite d'élasticité Dehngrenze	Tensile strength Résistance à la traction Zugfestigkeit	Elongation after fracture (A) Allongement après rupture Bruchdehnung	Hardness Duréti Haerte	Yield strength Limite d'élasticité Dehngrenze	Elongation % Allongement Bruchdehnung						
		Required Exigé Anforderung	mini maxi	Rp 0.2 % MPa	Rp 1 % MPa	Rm	A5	50mm	HRB C30						
		Obtained Obtenu Ergebnisse	210	250	520 670	45	45	92							
			282	322	622	58	58	83							
		C11	C14	C12	C13	C15	C31	C16	C17	C18	C19				
Impact strength test Essai de résilience Kerbschlagzähigkeitstest			Corrosion test Test de corrosion Korrosionstest		E0.2 (T) / R (T)	8					Sample thickness				
											5.08mm				
		C40	Temp.	C44	EN ISO 3651/2		OK	C50	C51	C52	C53	C54	C55	C56	
					ns1 Internal Cleanliness :						A:	B:	C:	D:	C57

<b>Location of the sample (1)</b> Emplacement de l'échantillon Lage des Probenabschnitten	The delivery is in accordance with the order La fourniture est conforme aux exigences de la commande Die Lieferung entspricht den Bestellbedingungen	Z01	<b>Organisation inspection</b> Organisme et/ou service contrôlé Überwachungsabteilung
1. Front - Début - Anfang 2. Back - Fin - Ende 3. Middle - Milieu - Mitte	C01	28/10/2009	<b>Quality Department</b> <b>S. HILLEN</b>
<b>Direction of the test pieces (2)</b> Orientation des éprouvettes Probenrichtung	<b>Marking, inspection and measurement : without objection</b> Contrôle de marquage, d'aspect et de dimensions : satisfaisants Pruefung der Stempelung, des Oberflächenaspekts und der Abmessungen : ohne Beanstandung	D01	<b>The inspector</b> Le responsable Der Werkssachverständige

**Organisation inspection**  
Organisme et/ou service contrôle  
Überwachungsbeteiligung

Überwachungsabteilung  
Qualit

Quality Depar  
S HTLJEN

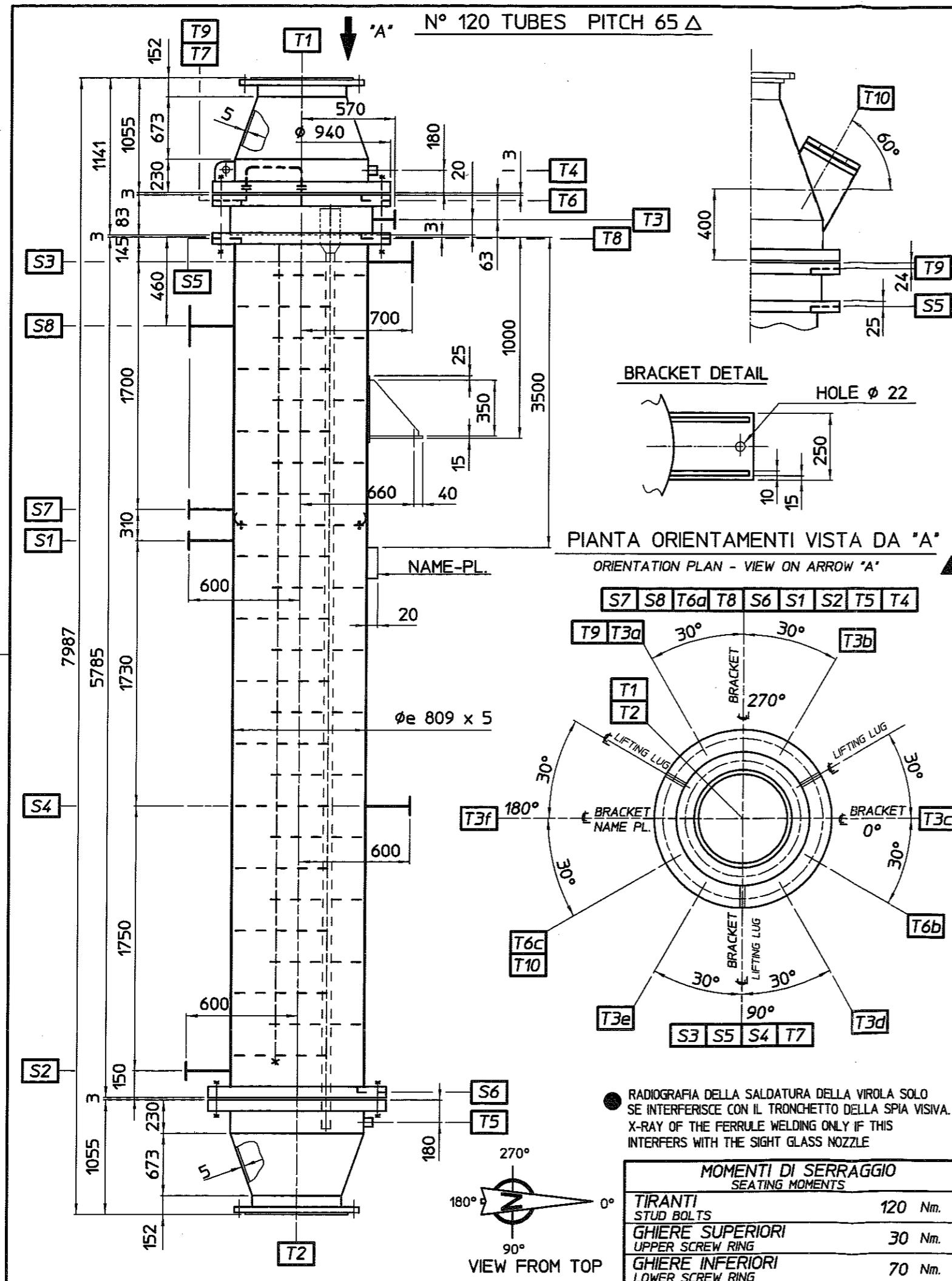
## The inspector Le responsable

Der Werkssachverständige

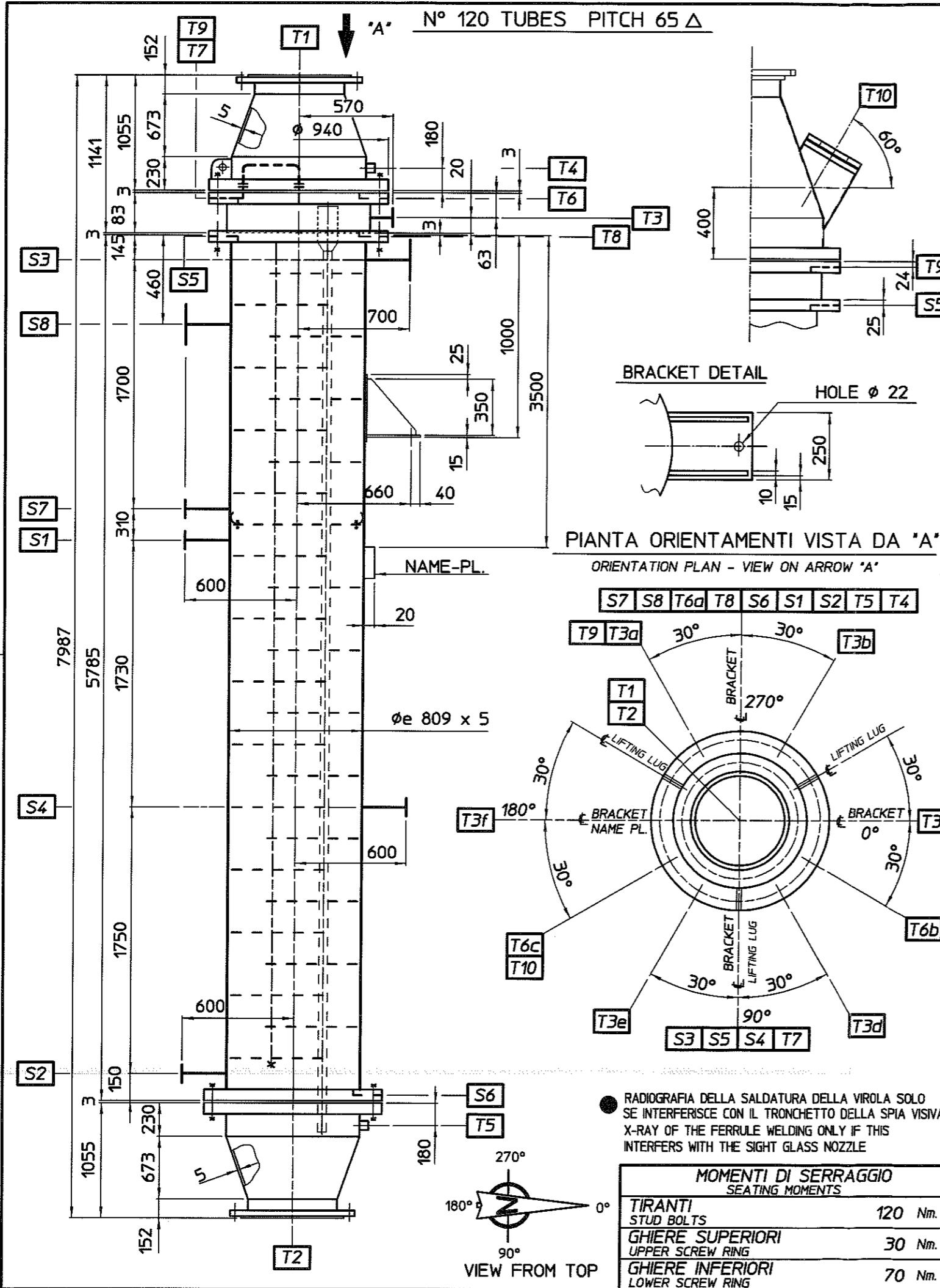
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FOC621 03/10/2008

**TubiSteel S.r.l.**  
**COPIA CONFORME**  
**ALL'ORIGINALE**



ITEM		CUSTOMER			DWG. 1E35 . 35 . 024-1				
16R1		FILM REACTOR			FLOW SHEET 1E35 . 10 . 005-1				
		N° REQUIRED 1			PLANT SULPHUREX JOB 1E35 SHEET 1 OF 1				
Rev. Date Drawn Description									
0 17.09.09 G.R. ISSUED FOR CONSTRUCTION									
1 29.10.09 G.R. SIGHT GLASS ORIENTATION MODIFIED						L 47 NF 3145			
The master version of this document is stored as a digital file in a database- Approval process is digitally managed and no signature is visible on the document.									
<b>NOZZLES</b>						<b>DESIGN DATA</b>			
						SHELL TUBE JACKET			
S1	6"	L.J. 150#	1	WR INLET	3,4	OPERATING PRESSURE Bar (g) 0,4			
S2	3"	L.J. 150#	1	WR INLET	3,05	DESIGN PRESSURE Bar (g) 0,45			
S3	6"	L.J. 150#	1	WR OUTLET WF INLET	3,4	HYDROSTATIC TEST PRESSURE Bar (g) 1,5			
S4	6"	L.J. 150#	1	WR OUTLET	3,4	PNEUMATIC TEST PRESSURE Bar (g) -			
S5	1/4"	ANSI B2.1-NPT	1	WR OUTLET	-	OPERATING TEMPERATURE °C 50			
S6	1/4"	ANSI B2.1-NPT	1	DRAIN	-	DESIGN TEMPERATURE °C 60			
S7	6"	L.J. 150#	1	WF OUTLET WR INLET	3,4	FLUID/SPECIFIC WEIGHT 1 Kg/dm³ H2O			
S8	4"	L.J. 150#	1	WR INLET	3,05	HEAT EXCHANGE SURFACE m² 60			
						HEAT TREATMENT			
						X-RAY TEST			
						PENETRATING LIQUIDS TEST			
						JOINT EFFICIENCY 0,7			
						CORROSION ALLOWANCE mm -			
						GEOMETRIC CAPACITY litri 2400~ 900~			
						INSPECTION INSTITUTE BALLESTRA S.p.A.			
						CALCULATION CODE STD. BALLESTRA			
<b>WEIGHTS</b>									
EMPTY	3200~	Kg	OPERATING	5600~	Kg				
						WATER FILLED 6500~			
<b>STD. DETAILS</b>						ENCLOSED DWG			
NAME PLATE POSITION						WORKING DWG. 1E35-30-024/1			
<b>MATERIALS</b>						STUB ENDS ST. 1073/0			
SHELL A 240-304						NAME PL. HOLDER ST. 0377/1			
CHANNEL A 240-316 L						NAME PLATE SB-PRS-00120/1			
FLANGES A 105						PAINTING SB-ATI-SP002/4			
MAIN FLANGES S.S. 316 L						EXTRACTOR FOR HEADS ST. 40812/1			
NOZZLES 'T' A 312 Tp.316 L						BUSH DISASSEMBLY WRENCHES ST. 40951/3			
TUBESHEETS A 240-316 L						BUSH DISASSEMBLY WRENCHES ST. 40952/2			
NOZZLES 'S' A 312 Tp. 304						GENERAL NOTES SB-PRS-SP001/0			
TUBES A 270/249 Tp. 316 L						DISTRIBUTION HEADS ST. 400274/2			
BRACKETS / REINF. A 240-304						TUBE LOWER & UPPER SEAL SB-PRS-00302/0			
BAFFLES / INTERNALS S.S. 304									
GASKETS TEFILON									
INTERMEDIATE FLANGES A 240-304						INSULATION : NO			
NOTE: THE ORIENTATION HAS TO BE ONLY CARRIED OUT BY ROTATING THE BRACKETS.						Attached tightening-features to the Film_Reactor:			
THE CONNECTION POSITION IS FIXED.						A) N°1 Calibrated torque wrench: Gedore/Rahsol type 802 GB (20-200 N·m)			
○ AT TOP IN VERTICAL POSITION						B) N°1 Female exagonal bushing 24mm BETA 720L			
▲ COMPLETE OF LAMP "S.S. LUMIGLAS LUMINAIRE MODEL LUMISTAR 225 24V/100W" - DIN 28120 DN 200 PN 10						C) N°1 Female exagonal bushing 27mm BETA 720L ( BALLESTRA SUPPLY )			
						RIF. COMM. 2C57 D.S. 1A1235.024			



ITEM 16R1		CUSTOMER FILM REACTOR		DWG. 1E35 . 35 . 024-1
desmet ballestra		FLOW SHEET 1E35 . 10 . 005-1		
ITEM	16R1	PLANT	SULPHUREX	JOB 1E35 SHEET 1 OF 1
Rev.	Date	Drawn	Description	
0	17.09.09	G.R.	ISSUED FOR CONSTRUCTION	L47 NF 3145
1	29.10.09	G.R.	SIGHT GLASS ORIENTATION MODIFIED	
The master version of this document is stored as a digital file in a database-Approval process is digitally managed and no signature is visible on the document.				
<b>NOZZLES</b>				
POS.	SIZE	RATING	N°	DESIGN DATA
S1	6"	L.J. 150#	1	OPERATING PRESSURE Bar (g) 0,4 SHELL 0,4
S2	3"	L.J. 150#	1	DESIGN PRESSURE Bar (g) 0,45 0,45
S3	6"	L.J. 150#	1	HYDROSTATIC TEST PRESSURE Bar (g) 1,5 1,5
S4	6"	L.J. 150#	1	PNEUMATIC TEST PRESSURE Bar (g) - 0,5
S5	1/4"	ANSI B2.1-NPT	1	OPERATING TEMPERATURE °C 50 60
S6	1/4"	ANSI B2.1-NPT	1	DESIGN TEMPERATURE °C 60 80
S7	6"	L.J. 150#	1	FLUID/SPECIFIC WEIGHT 1 Kg/dm³ H2O So3 + MP
S8	4"	L.J. 150#	1	HEAT EXCHANGE SURFACE m² 60
				HEAT TREATMENT - -
				X-RAY TEST ●
T10	200	PN 10	1	PENETRATING LIQUIDS TEST - -
T9	1/2"	ANSI B2.1-NPT	1	JOINT EFFICIENCY 0,7 0,7
T8	1/4"	ANSI B2.1-NPT	1	CORROSION ALLOWANCE mm - -
T7	1/4"	ANSI B2.1-NPT	1	GEOMETRIC CAPACITY litri 2400~ 900~
T6	1/2"	ANSI B2.1-NPT	3	INSPECTION INSTITUTE BALLESTRA S.p.A.
T5	1/2"	ANSI B2.1-NPT	1	CALCULATION CODE STD. BALLESTRA
T4	1/2"	ANSI B2.1-NPT	1	WEIGHTS
T3	1/2"	L.J. 150#	6	EMPTY 3200~ kg OPERATING 5600~ kg
T2	14"	L.J. 150#	1	WATER FILLED 6500~ kg
T1	12"	L.J. 150#	1	STD. DETAILS
				ENCLOSED DWG
NAME PLATE POSITION				
<b>MATERIALS</b>				
SHELL	A 240-304	NAME PLATE	SB-PRS-00120/1	
CHANNEL	A 240-316 L	PAINTING	SB-ATI-SP002/4	
FLANGES	A 105	EXTRACTOR FOR HEADS	ST. 40812/1	
MAIN FLANGES	S.S. 316 L	BUSH DISASSEMBLY WRENCHES	ST. 40951/3	
NOZZLES 'T'	A 312 Tp.316 L	BUSH DISASSEMBLY WRENCHES	ST. 40952/2	
TUBESHEETS	A 240-316 L	GENERAL NOTES	SB-PRS-SP001/0	
NOZZLES 'S'	A 312 Tp. 304	DISTRIBUTION HEADS	ST. 400274/2	
TUBES	A 270/249 Tp. 316 L	TUBE LOWER & UPPER SEAL	SB-PRS-00302/0	
BRACKETS / REINF.	A 240-304			
BAFFLES / INTERNALS	S.S. 304			
GASKETS	TEFLON			
INTERMEDIATE FLANGES	A 240-304	INSULATION : NO		
NOTE: THE ORIENTATION HAS TO BE ONLY CARRIED OUT BY ROTATING THE BRACKETS.				
THE CONNECTION POSITION IS FIXED.				
○ AT TOP IN VERTICAL POSITION				
▲ COMPLETE OF LAMP "S.S. LUMIGLAS LUMINAIRE MODEL LUMISTAR 225 24V/100W" - DIN 28120 DN 200 PN 10				
Attached tightening-features to the Film_Reactor: A) N°1 Calibrated torque wrench: Gedore/Rahsol type 802 GB (20-200 N·m) B) N°1 Female exagonal bushing 24mm BETA 720L C) N°1 Female exagonal bushing 27mm BETA 720L ( BALLESTRA SUPPLY )				
RIF. COMM. 2C57 D.S. 1A12.35.024				