



INSPECTION CERTIFICATE
CERTIFICADO DE INSPECCIÓN
CERTIFICAT DE RECEPTION
ABNAHMEPRÜFZEUGNIS
EN 10204:2004 / 3.1

Number: 670640 Page: 1 / 5	Rev: 00
Created on: Date: 19.10.2017	Modified on: 31.10.2017

TTI - TUBACEX TUBOS INOXIDABLES

Registro Mercantil de Alava, Tomo 587, Folio 189, Hoja VI 2885 - N.I.F. A-01140227

Tres cruces, 8

01400 Llodio (Alava)

SPAIN

CUSTOMER DESCRIPTION/DESCRIPCIÓN DEL CLIENTE/KUNDENBEZEICHNUNG/COMMETTANT

CLIENT ORDER/PEDIDO CLIENTE/KUNDEN AUFTRAGSNUMMER/NO.DE COMMANDE:

SALES ORDER/PEDIDO VENTAS/AUFTRAGSNUMMER/NO.DE COMMANDE D'USINE:

MATERIAL:SEAML. STAINL. STEEL TUBES/PIPES/TUBOS INOXIDABLES SIN SOLDADURA/TUBES INOX SANS SOUDURE/NAHTLOSE EDELSTAHLROHRE

HEAT-TREATED, PICKLED / TRATADO, DECAPADO / HYPERTREMPE, DECAPE / WÄRMEBEHANDELT, GEBEIZT, PASSIVATED / PASIVADO / PASSIVÉ / PASSIVIERT

GRADE / ACERO / GRADE / WERKSTOFF: S31254,1.4547,

STANDARD / NORMA / STANDARD / LIEFERUNG NACH: ASME SECT.II PART.A SA312/SA312M-2015 ED.

ASTM A312/A312M-16a

EN 10216-5:2013 TC2

EN 10297-2:2005

Materials System Specification 01-SAMSS-046 - 30 October 2013

Hydrotest for all tubes

CORROSION TESTED ACC. TO ASTM A262 PRACTICE E

CORROSION TESTED ACC. TO ASTM A923 TEST METHOD C

CORROSION TESTED ACC. TO ASTM G48 TEST METHOD A, 24 hours & 48 hours.

CORROSION TESTED ACC. TO EN ISO 3651-2 METHOD C

VICKERS HARDNESS TEST

HYDROTEST

MICROGRAPHIC EXAMINATION

NACE MR0103-2012

ANSI/NACE MR0175/ISO15156-3:2015

NORSOK M650 QTR No.3

NORSOK M630 REV.6 MDS R11 REV.5

TOLERANCES / TOLERANCIAS / TOLERANCES / TOLERANZEN NACH: ASME SECT.II PART.A SA999/SA999M-2015 ED.

ASTM A999/A999M-16

EN ISO 1127/03.97 D3/T3

RANDOM LENGTHS / LARGOS VARIABLES / LONGUEUR COURANTE / EINGEENGTE LÄNGE 6.096/7.315 MM

PLAIN ENDS / LISOS / EXTRÉMITÉ D'EQUERRE / GLATTE ENDEN,

DIMENSIONS/DIMENSIONES/DIMENSIONS/DIMENSIONS: 21,34 X 2,77 MM - 1/2" SCH 40S

COLD FINISHED/LAMINADOS EN FRIO/KALTGEFORMT/LAMINES A FROID



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INOXIDABLES S.A.U.

INGENIERIA DE CALIDAD

[Signature]

Isigo Arriola Alciabar

We hereby certify that the material herein described has been manufactured, sampled, tested, and inspected in accordance with above standards and specifications and satisfies order requirements. This certificate is issued by a computerized system and it is valid without original signature. In case the owner of the certificate would release as a copy of it, he must attest its conformity to the issued, assuming the responsibility for any unlawful or TUBACEX, not allowed use. Any forgery or falsification of this certificate shall legally prosecuted.



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Sales Item	Client Item	Delivery No	Lot No.	Heat No	Pieces	Weight	Tot Lgth	Un Lgth
Pos Ped.	Pos Clnt	N° Entrega	N° lote	Colada	Piezas	Peso	Long. Tot	Long. Un
AuftragPos	Kunde Pos	Lieferung	Los Nr.	Schmelze	Stück	Gewicht	Gesamtlänge	Längentyp
Usine Pos	Com. Pos	Avis. d'exp	Lot d'inspection	Coulée	Pes	Poids	Tolength	Long. Un
10		8110051342	P1704255	53236	100	904 KG	681.68 M	6096-7315 MM

RAW MATERIAL/DATOS MATERIAL/VORMATERIAL/MATIERE PREMIERE

Heat Nr:
53236

Method
Electric furnace+AOD

CHEMICAL COMPOSITION (%) / COMPOSICIÓN QUÍMICA (%) / CHEMISCHE ZUSAMMENSETZUNG (%) / COMPOSITION CHIMIQUE(%)

*L: Ladle C: Products

*	Heat	Seq	C	Mn	Si	P	S	Ni	Cr	Mo	Cu	N
L	53236	1	0,012	0,73	0,210	0,020	0,0003	18,00	19,95	6,13	0,89	0,2260
C	53236	5	0,012	0,76	0,220	0,021	0,0003	17,75	19,90	6,42	0,87	0,2260
*	Heat	Seq	Pren									
L	53236	1	43,7950									
C	53236	5	44,7020									

HEAT TREATMENT/TRATAMIENTO TÉRMICO/WÄRMEBEHANDLUNG/TRAITEMENT THERMIQUE

HIPERTEEMPLADOS A 1150 °C , 18 min , Agua
SOLUTION ANNEALED AT 1150 °C , 18 min , WATER
HYPERTEMPES 1150 °C , 18 min , L' EAU
LOESUNGSGEGLUEHT 1150 °C , 18 min , Wasser

TENSILE TEST/TEST DE TENSION/ESSAI TRACTION/ZUGVERSUCH

Lot No.	Sample	T	Rp0.2	Rp1.0	Rm	A2"	A5	Type	Spc.Type	Spc.Dim
		°C	MPa	MPa	MPa	%	%			mm
P1704255	1	20	379	433	762	47	44	L	F	21,29
	2	20	403	451	757	48	45	L	F	21,36

HARDNESS TEST/TEST DE DUREZA/DUREE/HÄRTEPRÜFUNG

Lot No.	Sample	HRB1	HRB2	HV1	HV2
P1704255	1	86	85		
	1			165	169
	2	87	85		
	3	87	86		

Corrosion test ASTM G48 practice "A"/Corrosión ASTM G48 práctica "A"/LOCHFRASSTEST ASTM G 48 PR.A

Lot No.	Sample	T	Pits-20x	W.loss	time
		°C		g/m2	Horas
P1704255	1	50	N	0,2877	48,0



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CORROSION ACCORDING TO ASTM A923 C/CORROSION DE ACUERDO A ASTM A923 C/CORROSION ACCORDING TO ASTM A923 C/CORROSION ACCORDING TO ASTM

Lot No.	Sample	T	Pits-20x	Wloss	time
		°C		MDD	Horas
P1704255	1	50	N	0,9746	24,0

Corrosion test ASTM G48 practice "A"/Corrosión ASTM G48 práctica "A"/LOCHFRASSTEST ASTM G 48 P.R.A

Lot No.	Sample	T	Pits-20x	W.loss	time
		°C		g/m2	Horas
P1704255	1	50	N	0,0975	24,0

METALURGICAL TESTS/ENSAYOS METALÚRGICOS/METALLURGISCHE PRÜFUNGEN/ESSAIS
METALLURGIQUES

MACROETCHING ACCORDING TO ASTM E381: SATISFACTORY

MACROATAQUE DE ACUERDO A ASTM E381: SATISFACTORIO

MAKROETCH PRUEFUNG ASTM E381: O.B

MACROETCHING ACCORDING TO ASTM E381: SATISFACTORY

INTERGRANULAR CORROSION TEST ACC. TO ASTM A262 PRACT."E": SATISFACTORY

ENSAYO DE CORROSION INTERGRANULAR DE ACUERDO A ASTM A262 PRACT.E:
SATISFACTORIO

BESTÄNDIGKEIT GEGEN INTERKRISTALLINE KORROSION ENTSPRECHEND ASTM A262

PRACT.E: IN ORDNUNG

ESSAI DE CORR. INTERGR. SELON ASTM A262 PRACT.E:SATISFAISANT

INTERGRANULAR CORROSION TEST ACC. TO ISO 3651-2 MET.C: SATISFACTORY

ENSAYO DE CORROSION INTERGRANULAR DE ACUERDO A ISO 3651-2 MET.C:
SATISFACTORIO

BESTÄNDIGKEIT GEGEN INTERKRISTALLINE KORROSION ENTSPRECHEND ISO 3651-2

MET."C": IN ORDNUNG

ESSAI DE CORR. INTERGR. SELON ASTM ISO 3651-2 MET."C":SATISFAISANT

NON-DESTRUCTIVE TESTS/ENSAYOS NO DESTRUCTIVOS/ZERSTÖRUNGSFREIE
PRÜFUNGEN/ESSAIS NON DESTRUCTIFS

POSITIVE MATERIAL IDENTIFICATION TEST ON EACH TUBE/PIPE BY

"X-RAY-FLUORESCENCE-ANALYZER": SATISFACTORY

VERIFICACION DEL GRADO DE ACERO EN CADA TUBO MEDIANTE "ANALIZADOR DE

FLUORESCENCIA DE RAYOS X": SATISFACTORIO

VERWECHSLUNGSPRUEFUNG AN JEDEM ROHR MIT

"RÖNTGEN-FLUORESZENZ-ANALYSATOR": IN ORDNUNG

VERIFICATION DE LA NUANCE SUR CHAQUE TUBE PAR

"X-RAY-FLUORESCENCE-ANALYZER": SATISFAISANT

HYDROSTATIC PRESSURE TESTED AT 170 bar, 2500 PSI DURING 5 SEC ON EACH

TUBE/PIPE: SATISFACTORY

ENSAYO HIDROSTÁTICO A 170 bar, 2500 PSI DURANTE 5 SEC EN CADA TUBO:

SATISFACTORIO



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WASSERDRUCKPRÜFUNG BEI 170 bar, 2500 PSI HALTEZEIT 5 SEC JE ROHR: IN
ORDNUNG
ESSAI DE PRESSION HYDROSTATIQUE À 170 bar, 2500 PSI PENDANT 5 SEC SUR
CHAQUE TUBE: SATISFAISANT

CHLORIDE CONTENT LESS THAN 50 PPM
CONTENIDO DE CLORURO INFERIOR A 50 PPM
CHLORIDGEHALT IM WASSERVERWENDET: 50 PPM
CHLORURE CONTENU DANS L'EAU UTILISEE: 50 PPM

100% EDDY CURRENT TEST AT DIN EN 10246-2: SATISFACTORY
100% ENSAYO DE CORRIENTES INDUCIDAS DE ACUERDO A DIN EN 10246-2:
SATISFACTORIO
100% WIRBELSTROM PRUEFUNG NACH DIN EN 10246-2: O.B.
100% CONTROLE COURANTS FOUCAULT D'APRES DIN EN 10246-2: BIEN

DIMENSIONAL CHECKING ON EACH TUBE: SATISFACTORY
INSPECCION DIMENSIONAL AL 100% DE LOS TUBOS SATISFACTORIA
100% MASSKONTROLLE: O.B.
VERIFICATION DIMENTIONNELLE AU 100% DES TUBES, SATISFAISANTE

VISUAL INSPECTION ON EACH TUBE: SATISFACTORY
INSPECCION VISUAL AL 100% DE LOS TUBOS, SATISFACTORIA
100% BESIGHTIGUNG: O.B.
EXAMEN VISUEL AU 100% DES TUBES, SATISFAISANT

TECHNOLOGICAL TESTS/ENSAYOS TECNOLÓGICOS/TECHNOLOGISCHE
PRÜFUNGEN/TECHNOLOGICAL TESTS

FLARING TEST: SATISFACTORY
ABOCARDADO S.NORMA: SATISFACTORIO
AUFWEITVERSUCH: IN ORDNUNG
ESSAI D'EVASEMENT: SATISFAISANT

FLATTENING TEST: SATISFACTORY
APLASTADO S.NORMA: SATISFACTORIO
RINGFALTVERSUCH: IN ORDNUNG
ESSAI D'APLATISSEMENT: SATISFAISANT

MARKING/ETIQUETADO/KENNZEICHNUNG/MARKSTEXT

TX2 TX1 TUBACEX 21,34 X 2,77 MM - 1/2" SCH 40S ASME SA312 ASTM A312 EN 10216-5 TC2 EN 10297-2 S31254 1.4547
CFD CD SMLS ET HEAT/ PMI-AV LOTNO/ MADE IN SPAIN

REMARKS/OBSERVACIONES/ANMERKUNG/REMARQUES



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NO MERCURY, MERCURY COMPOUNDS OR MERCURY BEARING INSTRUMENTS AND/OR EQUIPMENT HAVE BEEN USED ALONG MANUFACTURING AND INSPECTION PROCESS.

DURANTE LOS PROCESOS DE FABRICACIÓN E INSPECCIÓN NO SE HA USADO MERCURIO NI INSTRUMENTOS Y/O EQUIPOS CONTENIENDO MERCURIO O CON COMPONENTES DE MERCURIO.

KEINE QUEKSILBER, BZW. QUEKSILBERVERUNREINIGTES KOMPONENTEN ODER KUGELLAGERINSTRUMENTE UND/ODER GERÄTE SIND BENUTZT WORDEN PRODUKTIONS UND BESICHTIGUNGSPROZESS.

IL N'A PAS ÉTÉ FAIT USAGE DE MERCURE, DE COMPOSÉS CONTENANT DU MERCURE OU DE MATÉRIAUX ET/OU D'INSTRUMENT CONTENANT DU MERCURE TOUT AU LONG DES ÉTAPES DE FABRICATION ET DU PROCESSUS D'INSPECTION ET DE CONTRÔLE.

NO WELDING OR WELD REPAIRS WERE MADE

SIN REPARACION POR SOLDADURA

KEINE SCHWEISSBEARBEITUNG WURDE VORGENOMMEN

SANS RÉPARATION AVEC SOUDURE

MATERIAL MANUFACTURER APPROVED BY TÜV SÜD Industrie Service GmbH

(NOTIFIED BODY 036) TO ISSUE CERTIFICATES OF SPECIFIC PRODUCT CONTROL IN

ACCORDING TO PRESSURE EQUIPMENT DIRECTIVE 2014/68/EU ANNEX 1 POINT 4.3.

FABRICANTE DE MATERIALES APROBADO POR TÜV SÜD Industrie Service GmbH (ORGANISMO NOTIFICADO 0036) PARA LA EMISION DE CERTIFICADOS ESPECIFICOS DE CONTROL DE PRODUCTO DE ACUERDO AL ANEXO 1, PUNTO 4.3 DE LA DIRECTIVA DE EQUIPOS A PRESION 2014/68/EU.

WERKSTOFFHERSTELLER MIT BERECHTIGUNG ZUR AUSSTELLUNG VON BESCHEINIGUNGEN ÜBER SPEZIFISCHE PRÜFUNGEN AN DEN WERKSTOFFEN IM GELTUNGSBEREICH DER ZERTIFIZIERUNG UND IN ÜBEREINSTIMMUNG MIT DER DRUCKGERÄTERICHTLINIE 2014/68/EU UND DEN ZUGRUNDE LIEGENDEN SPEZIFIKATIONEN ENTSPR. DER BENANNTE STELLE NR.0036, TÜV SÜD Industrie Service GmbH

PRODUCTEUR DU MATERIEL APPROUVE PAR TÜV SÜD Industrie Service GmbH N.B. 0036) POUR EMISSION DES CERTIFICATS SPECIFIQUE DE CONTROLE DE PRODUIT SELON LA DIRECTIVE DES EQUIPES A PRESION 2014/68/EU ANNEXE 1 POINT 4.3.

MATERIAL CHARACTERISTICS COMPLY WITH POINT 7.5 OF ANNEX I TO PED BY HAVING AN ELONGATION AFTER RUPTURE AT TENSILE TEST NO LESS THAN 14% AND A BENDING RUPTURE ENERGY AT IMPACT TEST NO LESS THAN 27J AT 20°C.

LAS CARACTERISTICAS DEL MATERIAL CUMPLEN CON LOS REQUISITOS DEL PUNTO 7.5 DE LA DIRECTIVA PED POR TENER UN ALARGAMIENTO TRAS ROTURA EN EL ENSAYO DE TRACCION NO INFERIOR AL 14% Y PO DE TRACCION NO INFERIOR AL 14% Y POR TENER UNA RESISTENCIA AL IMPACTO NO INFERIOR A 27 J A 20° C.

DIE WERKSTOFF-WERTE ENTSPRECHEN PUNKT 7.5. DER DGRL, ANHANG 1, MIT EINERBRUCHDEHNUNG = 14% IM NORMGEMÄSS DURCHFÜHRTE ZUGVERSUCH UND DER KERBSCHLAGARBEIT = 27J AN EINER ISO - v PRO PROBE BEI EINER TEMPERATUR VON HÖCHSTENS 20°C

LES CARACTERISTIQUES DU MATERIEL, AYANT UN ALLONGEMENT APRES RUPTURE A L'ESSAI DE TRACTION NON INFERIEUR DU 14% ET UNE RESISTENCE A LA FLEXION PAR CHOC A 20°C NON INFERIEUR A 27J, SONT CONFORMES AUX PRESCRIPTIONS DU PONT 7.5 DE L'ANNEXE I DE PED.

MATERIAL IS FREE OF RADIATION CONTAMINATION

EL MATERIAL ESTA LIBRE DE CONTAMINACION POR RADIACIONES

MATERIAL IS FREI VON RADIOAKTIVITÄT

MATÉRIEL LIBRE DE POLLUTION RADIOACTIVE

OBSERVATIONS:

Radiation levels on pipes are less than 100 Becquerels/gram



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EN 10204 3.1

Annex 1

Microphotographs

Number : 670640

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Date : 07/03/2018

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Registro Mercantil de Alava, Tomo 587, Folio 189, Hoja VI2885 - N.I.F. A-01140227

Tres Cruces, 8

01400 Llodio (Álava)

SPAIN

Sales Order : I002395

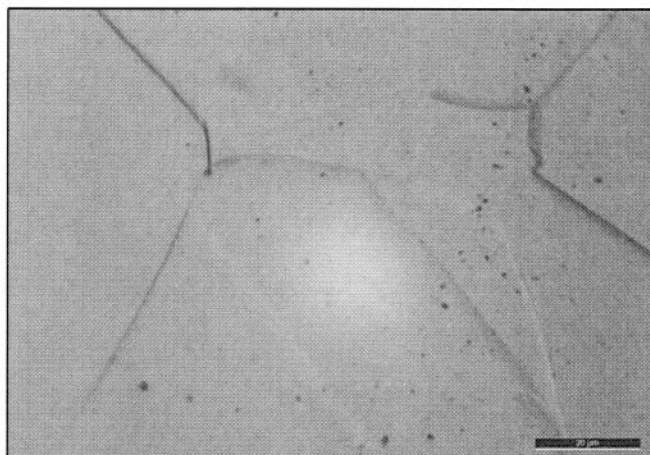
Sales Item : 10

Standard : ASTM A312

Grade : UNS S31254

Dimensions : 21,34 X 2,77 MM - 1/2" SCH 40S

Microstructure: MATERIAL FREE FROM INTERMETALLIC PHASES
AND PRECIPITATES. UNIFORM STRUCTURE
ACROSS FULL WALL THICKNESS



P1704255 I002395-10 C-53236 LONG. X500.jpg



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