OUTO KUMPU

# Certificate of Analysis and Tests

OUR ORDER 0276765 - 02 HEAT & PIECE 851204-6A 07/07/11

SOLD TO: ROLLED ALLOYS - CANADA
2283 ARGENTIA ROAD, UNIT 6
00000

SHIP TO: ROLLED ALLOYS
6810 RUE ERNEST CORMIER
LAVAL QC H&C 2T5 00000

---------- YOUR ORDER & DATE ----------

M12330 7/05/11

---------- ITEM DESCRIPTION ----------

HEAT & PIECE 851204 - 6A
WEIGHT 2903
FINISH 1
GRADE 316L / 316 UNS-S31603 / UNS-S31600
DIMENSIONS .375 X 96.000 X 264.000 EXACT

---------- SPECIFICATIONS ----------

*** MFG IN NEW CASTLE, IN, USA
AMS 5507F WITH EXCEPTIONS
ASTM A240-11A ASMESA240 10E
ROLLED ALLOYS SPECS 316L/316
MEETS EU ELECTRICAL ROHS
NO GRIPPER MARKS
ASTM A262-02A PRACTICE A

FROM SLABS IMPORTED FROM BRITAIN
AMS 5524L WITH EXCEPTIONS
ASTM A480-11A ASMESA480 10ED
NAFTA CTRY ORIGIN= SLAB CTRY
LIST HEAT/PCE/SIZE ON INVCE
NO WELD REPAIRS
ASTM A262-02A PRACTICE E

PLATES & TEST PCS SOLUTION ANNEALED @ 1900 DEGREES FAHRENHEIT MINIMUM.
THEN WATER COOLED OR RAPIDLY COOLED BY AIR
FREE FROM MERCURY CONTAMINATION AT CURRENT DETECTION LIMITS
HOT ROLLED, ANNEALED & PICKLED (HRAP)

JAN 3 0 2012

---------- MECHANICAL & OTHER TESTS ----------

| | |
|---|---|
| HARDNESS HRBW | 80 |
| GRAIN SIZE | 6 |
| YIELD STRENGTH (PSI) | 46156 |
| TENSILE STRENGTH (PSI) | 86940 |
| BEND | OK |
| INTERGRANULAR CORROSION | OK |
| ELONGATION % IN 2" | 56.5 |
| REDUCTION OF AREA % | 68.0 |

Q.C.I. N.D.

W.O. # 9833
M.L. # 1
THK. # 395
P.O. # N436-9833Q

---------- CHEMICAL COMPOSITION ----------

| | | |
|---|---|---|
| CARBON | (C) | .015 |
| MANGANESE | (MN) | 1.57 |
| PHOSPHORUS | (P) | .033 |
| SULFUR | (S) | .001 |
| SILICON | (SI) | .37 |
| CHROMIUM | (CR) | 16.40 |
| NICKEL | (NI) | 10.05 |
| COBALT | (CO) | .17 |
| COPPER | (CU) | .33 |
| MOLY | (MO) | 2.01 |
| NITROGEN | (N) | .04 |
| COLUMBIUM | (CB) | .014 |
| TITANIUM | (TI) | .009 |
| ALUMINUM | (AL) | .007 |
| TIN | (SN) | .006 |
| TANTALUM | (TA) | .006 |

TRACER# 240326

Certification of Material - Per ASME
HT# 851204
Qualifies to all requirements of
SA240 316/316L per
Sect. II 10 Edition 11 Addenda

Q.C.I. E.Y.

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE LISTED SPECIFICATION(S) AND THAT THE RESULTS OF ALL TESTS ARE ACCEPTABLE.

JAMES DOUBMAN, QUALITY ASSURANCE MANAGER

CERTIFICATE IN CONFORMANCE WITH EN10204-95 3.1.B/EN10204-2004 3.1

James Doubman

Outokumpu Stainless Plate, Inc.
P.O. Box 370
New Castle, Indiana 47362

Outokumpu Stainless Plate, Inc.

OUTO KUMPU

# Certificate of Analysis and Tests

OUR ORDER 0278367 - 01

HEAT & PIECE 853095-1A 12/28/11

SOLD TO: ROLLED ALLOYS
P O BOX 310
TEMPERANCE MI 48182

SHIP TO: ROLLED ALLOYS INC
9818 EAST HARDY ROAD
PH:713-691-4967
HOUSTON TX 77093

YOUR ORDER & DATE

J17098 11/15/11 TAG# 3003-5799-00-1

ITEM DESCRIPTION

HEAT & PIECE 853095 - 1A
WEIGHT 11109
FINISH 1
GRADE 316L / 316 UNS-S31603 / UNS-S31600
DIMENSIONS 5.000 X 72.000 X 106.000 EXACT

*** MFG IN NEW CASTLE, IN, USA
AMS 5507F WITH EXCEPTIONS
ASTM A240-11A ASMESA240-11ED
ROLLED ALLOYS SPECS 316L/316
MEETS EU ELECTRICAL ROHS
NO GRIPPER MARKS
ASTM A262-02A PRACTICE A

SPECIFICATIONS
FROM SLABS IMPORTED FROM BRITAIN
AMS 5524L WITH EXCEPTIONS
ASTM A480-11A ASMESA480 11ED
NAFTA CTRY ORIGIN= SLAB CTRY
LIST HEAT/PCE/SIZE ON INVCE
NO WELD REPAIRS
ASTM A262-02A PRACTICE E

PLATES & TEST PCS SOLUTION ANNEALED @ 1900 DEGREES FAHRENHEIT MINIMUM.
THEN WATER COOLED OR RAPIDLY COOLED BY AIR
FREE FROM MERCURY CONTAMINATION AT CURRENT DETECTION LIMITS
HOT ROLLED, ANNEALED & PICKLED (HRAP)

MECHANICAL & OTHER TESTS

| | |
|---|---|
| HARDNESS HRBW | 90 |
| GRAIN SIZE | 3 |
| YIELD STRENGTH (PSI) | 52722 |
| TENSILE STRENGTH (PSI) | 87810 |
| INTERGRANULAR CORROSION | OK |
| ELONGATION % IN 2" | 45.5 |
| REDUCTION OF AREA % | 64.1 |

Certification of Material - Per ASME
HT# 853095
Qualifies to all requirements of SA240-316/316L per
Sect. II 10 Edition 11 Addenda

CHEMICAL COMPOSITION

| | | |
|---|---|---|
| CARBON | (C) | .017 |
| MANGANESE | (MN) | 1.60 |
| PHOSPHORUS | (P) | .032 |
| SULFUR | (S) | .001 |
| SILICON | (SI) | .33 |
| CHROMIUM | (CR) | 16.33 |
| NICKEL | (NI) | 10.11 |
| COBALT | (CO) | .22 |
| COPPER | (CU) | .49 |
| MOLY | (MO) | 2.03 |
| NITROGEN | (N) | .08 |
| COLUMBIUM | (CB) | .024 |
| TITANIUM | (TI) | .005 |
| ALUMINUM | (AL) | .008 |
| TIN | (SN) | .010 |
| TANTALUM | (TA) | .003 |

Rolled Alloys Quality Assurance
Approved Derek Bell
Date 1-5-12

Q.C.I. N.D.

FEB 27 2012

HEAT# 853095
TRACER# 253171

W.O. # 9833Q
M.L. # 2
THK. # 5"
P.O. # N436-9833Q

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE LISTED SPECIFICATION(S) AND THAT THE RESULTS OF ALL TESTS ARE ACCEPTABLE.

JAMES DOUBMAN, QUALITY ASSURANCE MANAGER

CERTIFICATE IN CONFORMANCE WITH EN10204-95 3.1.B/EN10204-2004 3.1

James Doubman

Outokumpu Stainless Plate, Inc.
P.O. Box 370
New Castle, Indiana 47362

**Outokumpu Stainless Plate, Inc.**

OUTO KUMPU

# Certificate of Analysis and Tests

OUR ORDER 0277284 - 03 HEAT & PIECE 852286-1A 10/17/11

SOLD TO: ROLLED ALLOYS
P O BOX 310
TEMPERANCE MI 48182

SHIP TO: ROLLED ALLOYS INC
9818 EAST HARDY ROAD
PH:713-691-4967
HOUSTON TX 77093

---------- YOUR ORDER & DATE ----------

J16811 8/17/11 TAG# 3003-5699-00-1

---------- ITEM DESCRIPTION ----------

HEAT & PIECE 852286 - 1A
WEIGHT 10108
FINISH 1
GRADE 316L / 316 UNS-S31603 / UNS-S31600
DIMENSIONS 4.500 X 72.000 X 107.000 EXACT

---------- SPECIFICATIONS ----------

*** MFG IN NEW CASTLE, IN, USA
AMS 5507F WITH EXCEPTIONS
ASTM A240-11A ASME SA240-10E
ROLLED ALLOYS SPECS 316L/316
MEETS EU ELECTRICAL ROHS
NO GRIPPER MARKS
ASTM A262-02A PRACTICE A

FROM SLABS IMPORTED FROM BRITAIN
AMS 5524L WITH EXCEPTIONS
ASTM A480-11A ASMESA480 10ED
NAFTA CTRY ORIGIN= SLAB CTRY
LIST HEAT/PCE/SIZE ON INVCE
NO WELD REPAIRS
ASTM A262-02A PRACTICE E

PLATES & TEST PCS SOLUTION ANNEALED @ 1900 DEGREES FAHRENHEIT MINIMUM.
THEN WATER COOLED OR RAPIDLY COOLED BY AIR
FREE FROM MERCURY CONTAMINATION AT CURRENT DETECTION LIMITS
HOT ROLLED, ANNEALED & PICKLED (HRAP)

---------- MECHANICAL & OTHER TESTS ----------

| | |
|---|---|
| HARDNESS HRBW | 80 |
| GRAIN SIZE | 3 |
| YIELD STRENGTH (PSI) | 40339 |
| TENSILE STRENGTH (PSI) | 78900 |
| INTERGRANULAR CORROSION | OK |
| ELONGATION % IN 2" | 56.3 |
| REDUCTION OF AREA % | 65.7 |

Certification of Material - Per ASME
HT# 852286
Qualifies to all requirements of
SA240-316/316L per
Sect. II 10 Edition 11 Addenda

---------- CHEMICAL COMPOSITION ----------

| | | |
|---|---|---|
| CARBON | (C ) | .017 |
| MANGANESE | (MN) | 1.63 |
| PHOSPHORUS | (P ) | .027 |
| SULFUR | (S ) | .001 |
| SILICON | (SI) | .44 |
| CHROMIUM | (CR) | 16.33 |
| NICKEL | (NI) | 10.10 |
| COBALT | (CO) | .18 |
| COPPER | (CU) | .36 |
| MOLY | (MO) | 2.06 |
| NITROGEN | (N ) | .08 |
| COLUMBIUM | (CB) | .007 |
| TITANIUM | (TI) | .002 |
| ALUMINUM | (AL) | .009 |
| TIN | (SN) | .008 |
| TANTALUM | (TA) | .002 |

Rolled Alloys Quality Assurance
Approved Derrick D. Bell
Date 10-20-2011

FEB 27 2012

Q.C.I.
N.D.

HEAT# 852286
TRACER# 247759

W.O. # 9833Q
M.L. # 3
THK. # 4½"
P.O. # N436-9833Q

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE LISTED SPECIFICATION(S) AND THAT THE RESULTS OF ALL TESTS ARE ACCEPTABLE.

JAMES DOUBMAN, QUALITY ASSURANCE MANAGER

CERTIFICATE IN CONFORMANCE WITH EN10204-95 3.1.B/EN10204-2004 3.1

James Doubman

**Outokumpu Stainless Plate, Inc.**
P.O. Box 370
New Castle, Indiana 47362

HL WELD % N422-9742Q

**aperam** A04

Correspondentiadres:

Aperam Genk
Swinnenvijverweg 5, 3600 Genk, Belgium
Tel. +32 (0)89 30 21 11

A01

**M.L. CERTIFICATE BS EN 10204/3.1**
**CERTIFICAT DE RECEPTION NF EN 10204/3.1**
**ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1** A02

Company Certificate: 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.
Re-assessed of counter signature agreed by TÜV SÜD (9/5/2007).
Approved acc. AD 2000-Merkblatt W0/TRD 100 by TÜV SÜD Industrie Service GmbH.
Confirmation letter from TÜV SÜD Industrie Service GmbH of 07/05/2010
about the uniformity of coils acc.AD2000 W2 §4.1.1
T'ch.Req.:AD2000W2/2B-AD2000W1/007-EN13445-3/08/c10)-MR(TUV)x01 202 926/W041007 Z05

N-Nr-N 11K00399883-01 V02 A03

Manufacturer's works order number
N° de la commande usine productrice
Werksauftragsnummer
800042447/01-08446/197/01 A08

Surveyor's mark
Cachet de l'expert
Stempel des Werksachverständigen
GNKI Z08

Purchaser and/or consignee
Client et/ou destinataire
Besteller und/oder Empfänger
Superior Alloy Technology
80 Chemin du Tremblay
BOUCHERVILLE QC J4B 6Z5
CANADA
A06

Purchaser's order number
N° de commande client
Kundenbestellnummer
PO 8456 A07

Product - Produit - Erzeugnis
PLATES,HOT ROLLED,ANNEALED+PICKLED
TOLES,LAMINEES A CHAUD,RECUITS+DECALES
BLECHE,WARMGEWALZT,GEGLUEHT+GEBEIZT
B01

Customer article number
N.article client
Artikelnummer des Kunden
7681060060999 A09

Steel designation
Désignation de l'acier
Stahlbezeichnung
B02

| | Finish<br>Présentation<br>Ausführung |
|---|---|
| EN 10088-2:2005 1.4301 / 1.4301 | 1D |
| ASME SA 240:2010 TYPE 304L / 304 | NO 1 |
| ASTM A 240:2010 TYPE 304L / 304 | NO 1 |
| ASTM A 666:2010 TYPE 304L / 304 | NO 1 |

Steelmaking process
Mode d'élaboration de l'acier - Stahlherstellungsverfahren
Prod.process: Electric arc furnace - VOD/AOD - Continuous casting
Proc. fabric.: Four à arc - VOD/AOD - Coulée continue
Fertigungsablauf: Elektro-Ofen - VOD/AOD - Stranggussanlage
C70

Any supplementary requirements
Prescriptions supplémentaires - Zusätzliche Anforderungen
B03

Product delivery condition
Etat de livraison du produit - Lieferzustand

Solution treated:
Hypertrempe: 1050 C
Lösungsgeglüht+abgeschreckt:

Forced air - Air forcé
Gebläse Luft
B04

ASTM A480 / A480M -10 -- ASME SA480 /SA480M - 0 // CORROSION TEST: ASTM A262-E 10E // ATTESTATION PED 97/23/EC PAR TUV SUD
Z06

Identification of the product
Identification du produit - Identifizierung des Erzeugnisses
MELTED IN BELGIUM, MADE IN BELGIUM
B07

Coil n.
N.Bobine - Band Nr.
11630829

Heat n.
N.Coulée - Schmelz Nr.
610940

Dimensions
Dimensions - Abmessungen

| Thickness<br>Epaisseur - Dicke B08 | Width<br>Largeur - Breite B10 | Length<br>Longueur - Länge B11 |
|---|---|---|
| 12.70 mm<br>0.500 " | 1524.00 mm<br>60.000 " | 3048.00 mm<br>120.000 " |

Number of pieces
Nb de pièces - Stückzahl B06 30

Net weight
Poids net - netto Gewicht B13 13974 KG

CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG

| | C | Si | Mn | Ni | Cr | Mo | Ti | N | S | P | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Required - Exigé - Gefordert | | | | 8.00<br>10.50 | 18.00<br>19.50 | | | 0.100 | 0.015 | 0.045 | | | | | | |
| Cast Analysis<br>Analyse coulée<br>Analyse Schmelze | 0.022<br>C71 | 0.42<br>C72 | 1.41<br>C73 | 8.07<br>C74 | 18.08<br>C75 | C76 | C77 | 0.079<br>C78 | 0.006<br>C79 | 0.032<br>C80 | C81 | C82 | C83 | C84 | C85 | C86 |

D02

Tests to verify heats and quality have been carried out : OK
Tests de vérification de la coulée et de la nuance fournie : OK
Verwachungsprüfung wurde durchgeführt : OK
C04

Alfa Partie | Delta Partie
C83

MECHANICAL PROPERTIES - PROPRIETES MECANIQUES - MECHANISCHE WERTE ASTM A370 C20

Room temperature - Température ambiante - Raumtemperatur

Test temperature (°C) : C03

| Location (1) | Direction (2) | | Yield or proof strength<br>Limite d'élasticité<br>Dehngrenze KSI | | Tensile Strength<br>Résistance à la traction<br>Zugfestigkeit KSI | Elongation after fracture<br>Allongement après rupt.<br>Bruchdehnung % | | Hardness<br>Dureté<br>Härte | Yield or proof strength<br>Limite d'élasticité<br>Dehngrenze KSI | | Tensile str.<br>Résist. KSI<br>Zugfestigkeit | Elongation %<br>Allongement<br>Bruchdehnung |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Rp0.2% | Rp1% | Rm | 50mm | | HRB C30 | Rp0.2% | Rp1% | Rm | 50mm |
| | | Required<br>Exigé<br>Anforderung mini | 30 | 36 | 75 | 45 | | 92 | | | | |
| | | maxi | | | 102 | | | | | | | |
| 1 | T | Obtained<br>Obtenu | 59 | 66 | 94 | 55 | | 91 | | | | |
| 2 | | Ergebnisse | C11 | C14 | C12 | C13 | C15 | 91<br>C31 | C16 | C17 | C18 | C19 |

| Impact strength test<br>Essai de résilience<br>Kerbschlagzähigkeitstest | Corrosion test<br>Test de corrosion<br>Korrosionstest | BD.2(T)/BN(T)<br>% | | | | | Sample Thickness |
|---|---|---|---|---|---|---|---|
| | | | C61 | C62 | C63 | C64 | C65 12.44 m |

A: B: C: D: C67

Certification of Material - Per ASME
HT# 610940
Qualifies to all requirements of
SA240-304L304L per
Sect. II 10 Edition 11 Addenda

Organisation inspection
Organisme et/ou service contrôle
Ueberwachungsabteilung
Z01 A05

Quality Department
A10
7/9/2011

The inspector
Le responsable
Der Werksachverständige
S. Hillen
D01 Z02

W.O. #
M.L. #
THK. # 508
P.O. # N422-9742Q

# Mill Test Report

EN 10204-3.1

TA CHEN STAINLESS PIPE CO., LTD.
NO. 125 HSIN-TIEN 2ND ST.,
JENG-TEH, TAINAN, TAIWAN
TEL:(06)2793254 FAX:(06)2701382
COUNTRY ORIGIN:TAIWAN

**Commodity** : STAINLESS STEEL WELDED PIPE

**Specification** : ASTM A312-2009/ASME SA312-2010/ASTM A999-2009

**Grade** : TP304/304L

**Supply Condition:** ANNEALED AND PICKLED

**Customer** :PINACLE STAINLESS STEEL INC.

**Shipper** : TA CHEN STAINLESS PIPE CO., LTD.

**Destination** :TORONTO

**Customer O/N** 61991...

**Factory O/N** :CA05L9595

**Certificate No** : LP1036003

**Date** : 2011/10/21 **INVOICE No** : CA05LP1036

| Item No. | Case No. (Crate No.) | Heat No. | Size | | Quantity (Pcs) | Weight (Kgs) | Chemical Composition in % C | Si | Mn | P | S | Ni | Cr | Mo | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 133,134,135 | 206468 | 2" | SCH10S 20'(6.1M) | 69 | | 0.028 | 0.590 | 0.970 | 0.037 | 0.005 | 8.010 | 18.120 | - | 0.057 |
| 14 | 135,136,137,138 | 207074 | 2" | SCH10S 20'(6.1M) | 81 | | 0.024 | 0.550 | 0.980 | 0.039 | 0.002 | 8.030 | 18.180 | - | 0.044 |
| 15 | 144,145,146,147,148,149 | 120466 | 2" | SCH40S 20'(6.1M) | 142 | | 0.020 | 0.490 | 0.910 | 0.034 | 0.003 | 8.010 | 18.190 | - | 0.063 |
| 16 | 149,150,151,152,153 | 120563 | 2" | SCH40S 20'(6.1M) | 97 | | 0.025 | 0.530 | 1.000 | | | | | | |
| 17 | 153 | 120564 | 2" | SCH40S 20'(6.1M) | 11 | | 0.025 | 0.480 | 1.000 | | | | | | |
| 18 | 084,085,086,087,088,089,090,091,092,093 | 166144 | 3" | SCH10S 20'(6.1M) | 130 | | 0.016 | 0.420 | 1.490 | | | | | | |
| | | | | Total | 530 | | | | | | | | | | |

Certification of Material - Per ASME
HT# 120466
Qualifies to all requirements of SA312-304/304L per
Sect. II D Edition II Addenda

W.O. #
M.L. #
THK. # .148
P.O. #N398-97420

| Item No. | Tensile Test (Gage Lth x W.Lth=50mm x 12.5mm) 0.2% Yield Strength PSI | 1.0% Yield Strength PSI | Tensile Strength PSI | Elongation % | Hardness Test HRB | Bend Test | Flattening Test | Heat Treatment TEMP. o F | Dimension And Surface Condition | Hydrostatic Test PSI |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 46200 | - | 98100 | 51.00 | 86.00 | | OK | 1904 | OK | 1100 |
| 14 | 41400 | - | 98700 | 49.00 | 84.00 | | OK | 1904 | OK | 1100 |
| 15 | 42900 | - | 96400 | 54.00 | 84.00 | | OK | 1904 | OK | 1600 |
| 16 | 45300 | - | 95500 | 53.00 | 86.00 | | OK | 1904 | OK | 1600 |
| 17 | 44900 | - | 94100 | 53.00 | 87.00 | | OK | 1904 | OK | 1600 |
| 18 | 41300 | - | 89600 | 52.00 | 85.00 | | OK | 1904 | OK | 850 |

We hereby certify the above statement to be true and correct every detail
TA CHEN has established a QMS according to ISO 9001, which is certified by LRQA (cert. no.TWN0936925)

Manager of Inspection Section/George Yang

# MATERIAL TEST REPORT

From: North American Stainless
6870 Highway 42 East
Ghent , KY410459615

Page : 1
Heat/Lot : 65Y2
TIN : 0265Y2B

Sold To: INTEGRIS METALS, LTD.
161 THE WEST MALL
ETOBICOKE , ON M9C 4V8

Ship To: 43 CENTURY DRIVE
AMBRIDGE
PA15003

## Vendor Information

Cust PO #: 104134

Cust PO DT: 05/20/05

## Specifications

STAINLESS STEEL COIL, COLD ROLLED, ANNEALED AND PICKLED.
ASTMA240/04a,480/04a,666/03,ASMESA240/04,SA480/04,SA666/04
QQS766D-A X MG PERM,AMS5507F/AMS5524K X MRK&FINISH/
CORROSION: ASTM A262/02aE;180Bend-OK
Buyer Part: 74486436
316/316L 2B .12 IN 60 IN 817.9 FT
Country of Origin: UNITED STATES

## Mechanical Tests

| | | UOM | L | O | UOM | L | O |
|---|---|---|---|---|---|---|---|
| Yield Strength - 0.2% Offset | 44.83 | KSI | F | TRANSV | | | |
| Tensile Strength (UTS) | 87.49 | KSI | F | TRANSV | | | |
| Rockwell B | 82 | | F | TRANSV | | | |
| Pct Uniform Elongation 2"/50mm | 48.96 | PCT | F | TRANSV | | | |
| Rockwell B | 81 | | T | TRANSV | | | |

## Chemical Composition

| | | | | | |
|---|---|---|---|---|---|
| C | Carbon-Pct | .019 | CR | Chromium-Pct | 16.695 |
| CU | Copper-Pct | .431 | MN | Manganese-Pct | 1.603 |
| MO | Molybdenum-Pct | 2.128 | N | Nitrogen-Pct | .047 |
| NI | Nickel-Pct | 10.151 | P | Phosphorus-Pct | .029 |
| S | Sulfur-Pct | .000 | SI | Silicon-Pct | .303 |

## Comments

Certification of Material - Per ASME
HT# 65Y2
Qualifies to all requirements of
SA240 316/316L per
Sect. II ___ Edition ___ Addenda

W.O. # 9833
M.L. #
THK. # .121
P.O. # B888-116411

# MATERIAL TEST REPORT

From: North American Stainless
6870 Highway 42 East
Ghent , KY410459615

Page : 2
Heat/Lot : 65Y2
TIN : 0265Y2B

Material free from mercury contamination. No weld repairs.
EN 10204 3.1.B QQS763F Cond A
MINIMUM SOLUTION ANNEAL TEMPERATURE 1950 F.
- MELTED & Manufactured in the USA
QQS766D Amd 3 cond A, AMS5507E exc. 2B fin
NO weld repairs.
This document certifies the material has been tested in accordance with applicable specifications described herein and has met those requirements.

QA by ERIC HESS 04/28/2005

***Miscellaneous Data***

Control #: 35DR9908 Date: 07/24/05
S.O. Number :435 511525 2
316L/316 SS SHEET 2B FIN Customer P.O.: B604-110411
.120 X 60 X 120

The Chemical Analysis and Mechanical Test data was received via EDI from the above mentioned vendor.

*INTEGRIS METALS, LTD.*

# INSPECTION CERTIFICATE

In accordance with EN 10204 - 3.1

Date: 2009-11-24

Certificate number: EC21445653 rev. 0

Our order:
Our reference:
Customer number: NA
Customer order date:

Your order:
Your reference:
Your fax number:
Your e-mail:

Invoice address
NA

Receiver of certificate

Delivery address

## DELIVERED PRODUCT

Brand: ESAB
Description: OK Tigrod 316L 1/16x39.4 11lb
Item number: **163016R15A**
Lot number: **PV9125205370**
Quantity:

## CLASSIFICATIONS

| | |
|---|---|
| EN ISO 14343 | W 19 12 3 L |
| SFA/AWS A5.9 | ER316L |
| Werkstoffnummer | ~1.4430 |

## CHEMICAL ANALYSIS

Wire/strip
Auxiliary:

| | |
|---|---|
| C | 0.01% |
| Si | 0.40% |
| Mn | 1.5% |
| P | 0.02% |
| S | 0.01% |
| Cr | 18.2% |
| Ni | 11.8% |
| Mo | 2.5% |
| Cu | 0.1% |
| N | 0.04% |
| Ferrite FN | 8 |

## COMMENTS

Product supplied under a QA Programme fulfilling the EN ISO 9001 standard.
This certificate is produced electronically and is valid without signature.
Please refer any queries to:

**ESAB Group Canada, Inc, 6010 Tomken Road, CA-MISSISSAUGA, Ontario, L5T 1X9**

Validation
Josef Mysak Quality Manager

# VIRAJ PROFILES LIMITED

## ( FORGING DIVISION)

SURVEY NO-140/1,SARAVALI & G-75 MIDC , TARAPUR, MAHARASHTRA, INDIA

## INSPECTION CERTIFICATE & MILL TEST REPORT - EN 10204 3.1

| | | | |
|---|---|---|---|
| CUSTOMER : | MANUFACTURER'S SYMBOL | MTR NO. | 932484 / 8 |
| | | DATE | 25.11.2011 |
| M/S PINACLE STAINLESS STEEL . | | MATERIAL SPECIFICATION | ASTM A182/A182M - 11 |
| 455 AMBASSADOR DRIVE | | | ASME SA182/SA182 M - 11 |
| MISSISSAUGA, ONTARIO | | GRADE | F316/316L |
| L5T 2J3 | | DIMENSIONAL SPECIFICATION | ASME B16.5 - 2009 |
| | | MATERIAL CONFORMS TO NACE MR 0175 / ISO 15156 - 2009 & NACE MR 0103 - 2010 | |
| ORDER NO.: 58207, 58819, 59412, 59805 | | STAINLESS STEEL FORGED FLANGES | |

### CHEMICAL ANALYSIS

| ORDER NO | ITEM DESCRIPTION | | | HEAT NO | QTY | %C | %Mn | %Si | %S | %P | %Cr | %Ni | %Mo | N2 PPM | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 59805 | 2' | BLRF | 300# | 87716 | 29 | 0.022 | 1.70 | 0.45 | 0.018 | 0.040 | 16.56 | 10.02 | 2.04 | 700 | |
| 59805 | 3" | BLRF | 150# | 87276 | 24 | 0.020 | 1.75 | 0.47 | 0.011 | 0.040 | 16.66 | 10.10 | 2.00 | 500 | |
| 59805 | 3" | BLRF | 150# | 87276 | 49 | 0.020 | 1.75 | 0.47 | 0.011 | 0.040 | 16.66 | 10.10 | 2.00 | 500 | |
| 59805 | 6" | BLRF | 300# | 82173 | 14 | 0.021 | 1.76 | 0.44 | 0.009 | 0.040 | 16.65 | 10.05 | 2.04 | 735 | |
| 58819 | 8" | BLRF | 150# | 23549 | 6 | 0.016 | 1.74 | 0.46 | 0.012 | 0.036 | 16.62 | 10.05 | 2.01 | 420 | |
| 59805 | 10" | BLRF | 150# | 23549 | 1 | 0.016 | 1.74 | 0.46 | 0.012 | 0.036 | 16.62 | 10.05 | 2.01 | 420 | |
| 58819 | 24" | BLRF | 150# | 87336 | 2 | 0.017 | 1.86 | 0.48 | 0.023 | 0.039 | 16.75 | 10.66 | 2.03 | 740 | |
| 58819 | 24" | BLRF | 150# | 87336 | 4 | 0.017 | 1.86 | 0.48 | 0.023 | 0.039 | 16.75 | 10.66 | 2.03 | 740 | |

### MECHANICAL PROPERTIES

| HEAT NO | ITEM DESCRIPTION | | | TENSILE STRENGTH (Mpa) | YIELD STRENGTH (Mpa) | ELONGATION % Lo=4D | REDUCTION OF AREA % | IMPACT TEST CHARPY V-NOTCH AT 20 °C (JOULES) 1 | 2 | 3 | AVG | HARDNESS (Bhn) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 87716 | 2' | BLRF | 300# | 590.81 | 285.96 | 58.80 | 70.70 | - | - | - | - | 153 |
| 87276 | 3" | BLRF | 150# | 566.12 | 245.06 | 59.00 | 72.42 | - | - | - | - | 150 |
| 87276 | 3" | BLRF | 150# | 566.12 | 245.06 | 59.00 | 72.42 | - | - | - | - | 150 |
| 82173 | 6" | BLRF | 300# | 561.79 | 282.43 | 57.80 | 70.00 | - | - | - | - | 152 |
| 23549 | 8" | BLRF | 150# | 528.94 | 242.11 | 57.80 | 73.69 | - | - | - | - | 145 |
| 23549 | 10" | BLRF | 150# | 528.94 | 242.11 | 57.80 | 73.69 | - | - | - | - | 145 |
| 87336 | 24" | BLRF | 150# | 552.69 | 243.94 | 59.40 | 72.51 | - | - | - | - | 147 |
| 87336 | 24" | BLRF | 150# | 552.69 | 243.94 | 59.40 | 72.51 | - | - | - | - | 147 |

| | |
|---|---|
| MELTING PROCESS | : INDUCTION/AOD (IRS)/CONCAST |
| HEAT TREATMENT | : SOLUTION ANNEALED AT 1050°C AND WATER QUENCHED |
| DIMENSIONAL INSPECTION | : CONFORM WITH THE SPECIFICATION (100% INSPECTED) |
| SURFACE INSPECTION | : SATISFACTORY |
| PMI | : NO OBJECTION(100% TESTED WITH MOBILE SPECTRO) |
| MICRO OBSERVATION | : NO CARBIDE PRECIPITATION OBSERVED ON GRAIN BOUNDARIES |
| INTER GRANULAR CORROSION TEST | : PASSED IGC TEST IN ACCORDANCE WITH ASTM A262 PRACTICE E |
| RADIOACTIVITY TEST | : ALL THE ABOVE MATERIAL IS TESTED FOR RADIOACTIVITY AND FOUND WITH IN THE LIMIT OF BACKGROUND RADIATIO |

**CRN REGISTRATION NOS. FOR FLANGES:**

| | |
|---|---|
| OB-0686-9 - Prince Edward Island | CSA.OB-0686-96 - Quebec |
| OB-0686-90 - Labrador | CSA.OB-0686-96 - Saskatchewan |
| OB-0686-90 - Newfoundland | OB-0686-97 - New Brunswick |
| OB-0686-92 - Alberta | OB-0686-96 - Nova Scotia |
| OB-0686-95 - Ontario | OB-0686-9T - Northwest Territories |
| OB-0686-951 - British Columbia | OB-0686-9Y - Yukon |
| CSA.OB-0686-96 - Manitoba | |

WE CERTIFY THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE ORDER/CONTRACT AND IS OF INDIAN ORIGIN.

Certification of Material - Per ASME
HT# 82173
Qualifies to all requirements of
SA182/316/316L per
Sect. II 10 Edition 11 Addenda

W.O. # 98330
M.L. # 11(19/1)
THK. #
P.O. # N609-9833Q

WORK INSPECTOR

10,Imperial Chambers, 1st Floor, Wilson Road, Ballard Estate, Bombai-400 038,INDIA TEL: 91-22-2613054/2614284 FAX: 91-22-2612988
OFFICE & WORKS:140/1 & G-75 MIDC,Tarapur,Thane(Dist),Maharashtra,INDIA TEL: 91-02525-264909 1038 TO 1041 FAX: 91-02525-274444 E-MAIL:vflqc@viraj.com