

# MATERIAL TRACEABILITY

**SALES ORDER NO.**

509.8-9

**DRWG. NO.**

15770A

| <b>Nozzles:</b>                |                 |             |                     |               |
|--------------------------------|-----------------|-------------|---------------------|---------------|
| Purpose                        | Dia.<br>or Size | Material    | Nozzle Thk.<br>Nom. | Trace<br>Code |
| A OUT                          | 8.625           | SB-241-5083 | 0.322               | T051C         |
| F IN                           | 10.750          | SB-241-5083 | 0.365               | T096C         |
| B IN&OUT                       | 6.625           | SB-241-5083 | 0.432               | T105C         |
| A IN & F OUT                   | 12.750          | SB-241-5083 | 0.375               | T106C         |
| C OUT & E OUT                  | 3.500           | SB-241-5083 | 0.216               | T109C         |
| C IN & D OUT                   | 4.500           | SB-241-5083 | 0.237               | T119C         |
| D IN                           | 2.375           | SB-241-5083 | 0.154               | T138C         |
| E IN                           | 1.900           | SB-241-5083 | 0.145               | T156C         |
| G IN&OUT                       | 14.000          | SB-209-5083 | 0.250               | S472C         |
| <b>Headers:</b>                |                 |             |                     |               |
| Purpose                        |                 | Material    | Nom.<br>Thk.        | Trace<br>Code |
| E IN                           |                 | SB-241-5083 | 0.203               | T007C         |
| B IN                           |                 | SB-209-5083 | 1.000               | S374C         |
| A IN & C OUT                   |                 | SB-209-5083 | 0.375               | S408C         |
| E OUT                          |                 | SB-209-5083 | 0.375               | S416C         |
| D OUT                          |                 | SB-209-5083 | 0.500               | S456C         |
| B OUT & C IN                   |                 | SB-209-5083 | 0.750               | S467C         |
| D IN                           |                 | SB-209-5083 | 0.375               | S468C         |
| A OUT, F IN&OUT, & G IN&OUT    |                 | SB-209-5083 | 0.250               | S472C         |
| <b>End Pieces:</b>             |                 |             |                     |               |
| Purpose                        | End<br>Type     | Material    | Nom.<br>Thk.        | Trace<br>Code |
| B IN                           | MITER           | SB-209-5083 | 1.000               | S374C         |
| F IN&OUT                       | FLAT            | SB-209-5083 | 0.375               | S408C         |
| C OUT & D IN                   | FLAT            | SB-209-5083 | 0.625               | S446C         |
| B OUT & C IN                   | MITER           | SB-209-5083 | 0.750               | S467C         |
| E IN, F IN&OUT, & G IN         | FLAT            | SB-209-5083 | 0.375               | S468C         |
| A OUT & G OUT                  | FLAT            | SB-209-5083 | 0.500               | S477C         |
| A IN, D OUT, & E OUT           | FLAT            | SB-209-5083 | 1.000               | S504C         |
| <b>Permanent End Closures:</b> |                 |             |                     |               |
| Purpose                        | End<br>Type     | Material    | Nom.<br>Thk.        | Trace<br>Code |
| A OUT                          | FLAT            | SB-209-5083 | 0.625               | S446C         |

THE MATERIAL CERTIFICATION USED IN THE FABRICATION OF THE CORE OF THE ABOVE ASSEMBLY CONTAINS RESTRICTED INFORMATION.

THEREFORE IT IS COMPANY CONFIDENTIAL, AND CANNOT BE DIVULGED TO THE CUSTOMER OR ANY THIRD PARTY.

ALL MATERIALS USED MEET THE SPECIFICATIONS AND THE MANUFACTURING CODE AS STATED ON THE DRAWING.

*Traci Leis*

Traci A. Leis

Documentation Coordinator

03/24/04 15:54

9011441752733301

TW METALS

M 83086851 3-24-04 AL Unna

Uelzener Weg 36 - 59423 Unna

## Abnahmeprüfbescheinigung 3.1 B - EN 10204

Inspection Certificate 3.1 B - EN 10204 / Certificat de Reception 3.1 B - EN 10204

Kunde:  
Client:

Anvil Alloys International Ltd.

Unit 17, Fishers Ind. Est  
Wiggenhall Rd Watford, Herts WD1 Great Britain

Tubes: seamless extruded

Produkt:

Product / Produit:

Spezifikation:

Specification:

Werkstoff:

Alloy/Alliage:

Abmessung:

Size / Dimension

Kennzeichnung:

Marking/Marquage:

Lieferung:

Delivered Material / Matériel délivré:

ASME SB 241

5083

219,080 mm x 202,720 mm x 8,160 mm x 6000,00 mm

8" NB Sched. 40

Cast No. 1332-Z-8" NB SCH 40 - 5083-0 - ASME SB 241 - ANU

Zeugnisnummer:

Cert No.: / No. du certificat:

Bestellnummer:

Order No. / No. de commande

Auftrag:

Our Reference/Notre Référence:

12656

71.00/1

Zustand:  
Temper/État

TW METALS

TEST

MAR 24 2004

ACCEPTED BY

## 1. Chemische Analyse

## Chemical Analysis / analyse chimique

|                   | Si                | Fe    | Cu    | Mn    | Mg    | Cr    | Zn    | Ti    | Pb    | Zr     | Bi     | Sn     | Ni     |
|-------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
| Charge/ min.      |                   |       |       | 0,40  | 4,0   | 0,05  |       |       |       |        |        |        |        |
| Cast No. max.     | 0,40              | 0,40  | 0,10  | 1,0   | 4,9   | 0,25  | 0,25  | 0,15  |       |        |        |        |        |
| 1332-2/03         | 0,243             | 0,267 | 0,029 | 0,558 | 4,735 | 0,077 | 0,070 | 0,027 | 0,003 | 0,0031 | 0,0001 | 0,0015 | 0,0020 |
| Hydrogen content: | 0,11 ccm/100 g Al |       |       |       |       |       |       |       |       |        |        |        |        |

Elemente ohne Angabe &lt; 0,01 % / Elements without indication &lt; 0,01 %

## 2. Mechanische Eigenschaften

## Mechanical Properties / Valeurs Mécaniques

| Anforderungen<br>Requirements | tensile<br>(Rm) Ksi | yield<br>(Rp0,2) Ksi | elongation<br>2" % | elongation<br>5" % | Hardness<br>HB |
|-------------------------------|---------------------|----------------------|--------------------|--------------------|----------------|
| min.                          | 39,0                | 16,0                 | 14,0               | 12,0               |                |
| max.                          | 51,0                |                      |                    |                    |                |
| 1                             | 45,820              | 28,275               | 16,0               | 20,0               | 75,4           |
| 2                             | 45,675              | 27,405               | 18,0               | 23,3               | 75,5           |

Reviewed

TÜV SÜDDEUTSCHLAND Bau und Betrieb GmbH

Notified Body No. 16 acc. to Pressure

Equipment Directive 97/23/EC

Testing Laboratory - APR 18 2005

Al Raylowe

9/24/04

REVIEWED

SEP 24 2004

REV 0K

Ergebnis der  
Prüfungen:Test results:  
Resultats:

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellaufnahme entspricht

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order  
Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

01.12.03

/ Since

Certified acc. to DIN EN ISO 9001:2000, valid until 2006-03-09  
Certificate No.: 001959 QM

Not-Notarhaftungsfähig

T.W. METALS

MAR 22 2004 12:50

P. 01.21 69669 224287669

Testing Laboratory-

09/03/2004 14:45

16306902105

TW METALS

PAGE 03/15

Uelzener Weg 36 - 59425 Unger

**Abnahmeprüfbescheinigung 3.1 B - EN 10204****Inspection Certificate 3.1 B - EN 10204 / Certificat de Reception 3.1 B - EN 10204****Kunde:**  
Client:

Anvil Alloys International Ltd.

**Zeugnisnummer:**

Cert No. / No. du certificat:

12988

**Bestellnummer:**

Order No. / No. de commande

**Auftrag:**

Our Reference/Notre Reference:

8970/1

**Produkt:**

Product / Produit:

**Spezifikation:**

Specification:

**Werkstoff:**

Alloy/Alliage:

**Abmessung:**

Size / Dimension

**Kennzeichnung:**

Marking/Marquage:

**Lieferung:**

Delivered Material / Matériel délivré:

ASME SB 241

S083

169,280 mm x 146,340 mm x 10,970 mm x 6000,00 mm  
6" NB Sched. 80

Cast No. 2158-2 - 6" NB SCH 80 - S083-0 - ASME SB 241 - AWU

**Zustand:**

Temper/État

pcs.

lbs

6

1142

**1. Chemische Analyse****Chemical Analysis / analyse chimique**

|               | Si    | Fe    | Cu    | Mn    | Mg    | Cr    | Zn    | Ti    | Pb    | Zr     | Bi     | Sn     | Ni     |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
| Charge/ min.  |       |       |       | 0,40  | 4,0   | 0,05  |       |       |       |        |        |        |        |
| Cast No. max. | 0,40  | 0,40  | 0,10  | 1,0   | 4,9   | 0,25  | 0,25  | 0,15  |       |        |        |        |        |
| 2158-2/04     | 0,199 | 0,297 | 0,027 | 0,515 | 4,620 | 0,076 | 0,045 | 0,023 | 0,003 | 0,0019 | 0,0002 | 0,0013 | 0,0020 |

Hydrogen content: 0,13 ccn/100 g Al

Elements ohne Angabe &lt; 0,01 % / Elements without indication &lt; 0,01 %

**2. Mechanische Eigenschaften****Mechanical Properties / Valeurs Mécaniques**

| Anforderungen<br>Requirements | tensile<br>(Rm) Ksi | yield<br>(Rp0,2) Ks | elongation<br>2" % | elongation<br>A 5 % | Hardness<br>HB |
|-------------------------------|---------------------|---------------------|--------------------|---------------------|----------------|
| min.                          | 39,0                | 16,0                | 14,0               |                     |                |
| max.                          | 51,0                |                     |                    |                     |                |
| 1                             | 46,835              | 27,260              | 18,5               |                     | 72,3           |
| 2                             | 45,820              | 26,970              | 17,5               |                     | 71,8           |

AI  
Reviewed

NOV 20 2004

Reviewed

TUM Süddeutsche Bau und Betrieb GmbH

Notified Body - Pressure

Equipment Directive 97/23/EC

-Testing Laboratory- APR 18 2005

REVIEWED

NOV 20 2004

PER 01

**Ergebnis der  
Prüfungen:**

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

**Test results:**

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

**Results:**

Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

03.06.2004 / Sinde

Certified acc. to DIN EN ISO 9001:2000, valid until 2006-03-09  
Certificate No.: 001959 QM

Der Werksachverständige

21/07/12

## Inspection Certificate

**BA TUBES LIMITED**Studley Road, Redditch, Worcester B98 7HN, England  
Telephone: 015271 484500, Facsimile 015271 484501

Customer Copy No. 98750/1

Other Tests Passed

Order No : 1318  
 Your Part No : 12" NB STD  
 Our Order No : 5841472  
 Packing Note No : 128992  
 Date : 10 Sep 2004  
 Packages : 2 BUNDLE

Per 2485792

T-106-C

11-20-04

Customer  
 ANYIL ALLOYS INTERNATIONAL LTD  
 UNIT 12, FISHERS INDUSTRIAL ESTATE  
 WIGGERSHALL ROAD  
 WATFORD  
 HERTS  
 WD18 0FN

Specification  
 5083  
 ASMESH241

Size / Description  
 SEAMLESS DRAWN TUBE 323.900 O/D 9.520 WT 5083 Alloy  
 Length - 4000.00 mm

| Tensile Test |     |            |          |                       |                      |                  |     |     |     | Chemical Analysis % |      |     |    |     |         |     |          |  |  | H |  |
|--------------|-----|------------|----------|-----------------------|----------------------|------------------|-----|-----|-----|---------------------|------|-----|----|-----|---------|-----|----------|--|--|---|--|
| No of Pieces |     | Net Weight | Test No. | 0.2% Proof Stress KSI | Tensile Strength KSI | % Elongation 2in | Si  | Fe  | Cu  | Mn                  | Mg   | Cr  | Ni | Zn  | Na      | Ti  | cc/100gm |  |  |   |  |
| 2            | 437 |            | 274726   | 20.02                 | 44.82                | 27               | .15 | .24 | .02 | .61                 | 4.49 | .12 |    | .01 | <0.0001 | .02 | .10      |  |  |   |  |
| 2            | 437 |            | 274727   | 18.42                 | 44.09                | 31               | .15 | .24 | .02 | .61                 | 4.49 | .12 |    | .01 | <0.0001 | .02 | .10      |  |  |   |  |

SEAMLESS DRAWN TUBE 323.900 O.D. 5.220 I.D. 4000.00 mm  
Length - 4000.00 mm

Net Weight

No of Pieces

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NGV 20 2001

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REVIEWED

NGV 20 2001

SEAMLESS DRAWN TUBE 323.900 O.D. 5.220 I.D. 4000.00 mm  
Length - 4000.00 mm

Net Weight

No of Pieces

2

437

274726

20.02

44.82

27

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REVIEWED

NGV 20 2001

SEAMLESS DRAWN TUBE 323.900 O.D. 5.220 I.D. 4000.00 mm  
Length - 4000.0

Reviewed

TUV Sueddeutsche AG

100% acc. to Pressure

Equipment Directive 97/23/EC

Testing Laboratory

APR 18 2005

VIEWED

NOV 20 2004

Remarks  
 TEST CERTS TO EN10204 3.1 B ASME CONFORMITY STATEMENT REQ'D  
 WT + TOL GUIDANCE ONLY (MASS CONTROLLED) 5083/ALMG4-MN

REP OK

Reviewed  
 NOV 20 2004

( THIS CERTIFICATE CONFORMS TO THE REQUIREMENTS OF EN 10204 3.1B )  
 Issued on behalf of BA Tubes Limited Ltd/0045

Registered in England No. 08813885  
 Registered Office: Victoria House,  
 100-102 The Square, Epsom, Surrey, Middlesex, England,  
 VAT Registration No. GB 869 27 42 26

07/30/04 07:50

6306900147

"TW Metals."

006/006

M83087V87 7-30-04

ALUNNA

Uelzener Weg 36 - 59425 Unna

## Abnahmeprüfbescheinigung 3.1 B - EN 10204

Inspection Certificate 3.1 B - EN 10204 / Certificat de Reception 3.1 B - EN 10204

P02485792

Kunde:  
Client:

Anvil Alloys International Ltd.

Unit 17, Fishers Ind. Est  
Wiggenhall Rd Wadford, Herts WD1 Great Britain

Zeugnisnummer:

Cert No. / No. du certificat:

Bestellnummer:

Order No. / No. de commande

Auftrag:

Our Reference/Notre Référence:

13003

8986/1

T-109-C

JUL 30 2004

Produkt:

Product / Produit:

Spezifikation:

Specification:

Werkstoff:

Alloy/Alliage:

Abmessung:

Size / Dimension:

Tubes drawn seamless

ASME SB 241

5083

98,900 mm x 77,920 mm x 5,490 mm x 6000,05 mm

3" NB SCH 40

Zustand:  
Temper/État

0

Kennzeichnung

Marking/Marquage:

Lieferung:

Delivered Material / Matériau livré:

Cast No. 2083-1 - 3" NB SCH 40 - 5083 - 0 - ASME SB 241 - AWU

pcs.

lbs

18

917

## 1. Chemische Analyse

## Chemical Analysis / analyse chimique

|                   | Si    | Fe           | Cu    | Mn    | Mg    | Cr    | Zn    | Ti    | Pb    | Zr     | B      | Sn     | Ni     |
|-------------------|-------|--------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
| Charge/ min.      |       |              |       | 0,40  | 4,0   | 0,05  |       |       |       |        |        |        |        |
| Cast No. max.     | 0,40  | 0,40         | 0,10  | 1,0   | 4,9   | 0,25  | 0,25  | 0,15  |       |        |        |        |        |
| 2083-1/04         | 0,160 | 0,274        | 0,029 | 0,530 | 4,685 | 0,070 | 0,050 | 0,023 | 0,004 | 0,0018 | 0,0001 | 0,0014 | 0,0020 |
| Hydrogen content: | 0,12  | ccm/100 g Al |       |       |       |       |       |       |       |        |        |        |        |

Elemente ohne Angabe &lt; 0,01 % / Elements without indication &lt; 0,01 %

## 2. Mechanische Eigenschaften

## Mechanical Properties / Valeurs Mécaniques

| Anforderungen<br>Requirements | tensile<br>(Rm) Ksi | yield<br>(Rp0.2) Ksi | elongation<br>2" % | elongation<br>A 5 % | Hardness<br>HB |
|-------------------------------|---------------------|----------------------|--------------------|---------------------|----------------|
| min.                          | 39,0                | 16,0                 | 14,0               |                     |                |
| max.                          | 51,0                |                      |                    |                     |                |
| 1                             | 41,180              | 20,445               | 30,0               |                     | 77,8           |
| 2                             | 40,165              | 21,170               | 30,0               |                     | 78,7           |

AI  
Reviewed  
NOV 20 2004

Reviewed

REVIEWED

NOV 20 2004

TÜV SÜD Deutschland Rat und Betrieb GmbH

Notified Body No. 1102 acc. to Pressure

Equipment Directive 97/23/EC

APR 18 2005

Testing Laboratory

Ergebnis der  
Prüfungen:

Test results:

Results:

Es wird bestätigt, dass die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

27.05.2004 / Sincé

Certified acc. to DIN EN ISO 9001:2000, valid until 2006-03-09  
Certificate No.: 001959 QM

Der Werkstoffverständliche

T.W. METALS

6124287669 P.07/11

JUL-16-2004 08:53

18/20/2004 15:26

6306900147

TWMETALS

PAGE 06/09

M8308741

10-20-04

ALUMINA AG

Uelzener Weg 36 - 59425 Unna

# Abnahmeprüfbescheinigung 3.1 B - EN 10204

## Inspection Certificate 3.1 B - EN 10204 / Certificat de Reception 3.1 B - EN 10204

**Kunde:**  
**Client:**

Anvil Alloys International Ltd.

Unit 17, Fishers Ind. Est  
Wiggenhall Rd Watford, Herts WD1 Great Britain**Produkt:****Product / Produit:****Spezifikation:****Specification:****Werkstoff:****Alloy / Alliage:****Abmessung****Size / Dimension****Kennzeichnung****Marking / Marquage:****Lieferung:****Delivered Material / Matériau livré:**

Tubes seamless extruded

ASME SB 241

5083

114,300 mm x 102,260 mm x 6,020 mm x 6000,00 mm

4" Sched. 40

ALUnna - Cast No. 2447-2 - 4" NB SCH 40 - 5083 - 0 - ASME SB 241

**Zeugnisnummer:****Cert No. / No. du certificat:****Bestellnummer:****Order No. / No. de commande****Auftrag:****Our Reference / Notre Référence:**

13098

9925/1

**Zustand:****Temper / État**

0

AI  
Reviewed

DEC 2004

### 1. Chemische Analyse

### Chemical Analysis / analyse chimique

|                  | Si               | Fe    | Cu    | Mn    | Mg    | Cr    | Zn    | Ti    | Pb    | Zr     | Bi     | Sn     | Ni     |
|------------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
| Charge/ min.     |                  |       |       | 0,40  | 4,0   | 0,05  |       |       |       |        |        |        |        |
| Cast No. max.    | 0,40             | 0,40  | 0,10  | 1,0   | 4,9   | 0,25  | 0,25  | 0,15  |       |        |        |        |        |
| 2447-2/04        | 0,192            | 0,323 | 0,030 | 0,569 | 4,705 | 0,075 | 0,048 | 0,023 | 0,003 | 0,0259 | 0,0008 | 0,0017 | 0,0030 |
| Hydrogen content | 0,12 cm/100 g Al |       |       |       |       |       |       |       |       |        |        |        |        |

Elemente ohne Angabe &lt; 0,01 % / Elements without indication &lt; 0,01 %

### 2. Mechanische Eigenschaften

### Mechanical Properties / Valeurs Mécaniques

| Anforderungen<br>Requirements | tensile<br>(Rm) Ksi | yield<br>(Rp0,2) Ksi | elongation<br>2" % | elongation<br>A S % | Hardness<br>HB |
|-------------------------------|---------------------|----------------------|--------------------|---------------------|----------------|
| min.                          | 39,0                | 16,0                 | 14,0               |                     |                |
| max.                          | 51,0                |                      |                    |                     |                |
| 1                             | 40,890              | 21,750               | 26,0               |                     | 73,9           |
| 2                             | 45,530              | 24,070               | 22,0               |                     | 72,2           |

Reviewed

TÜV SÜDDEUTSCHLAND RAG und Betrieb GmbH

Notified body for Pressure

Equipment Directive 97/23/EC

Testing Laboratory

APR 18 2005

NOV 30 2004

TW METALS

TEST

OCT 20 2004

ACCEPTED BY

**Ergebnis der  
Prüfungen:**

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht.

**Test results:**

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order.

**Results:**

Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande.

13.08.2004

/ Sincé


 Certified acc. to DIN EN ISO 9001:2000, valid until 2006-03-09  
 Certificate No.: 001999 QM

Der Werkstoffverständige

OCT-01-2004 12:34

P.10/10

25 JUL 1964 1002-91-700



M83085261 12/20/02 CW



ALUNNA AG

Uelzener Weg 36 - 59425 Unna

# Abnahmeprüfbescheinigung 3.1 B - EN 10204

Inspection Certificate 3.1 B - EN 10204 / Certificat de Reception 3.1 B - EN 10204

**Kunde:**  
Client:  
Anvil Alloys International Ltd.  
Anvil House, Vale Industrial Park  
Tolpits Lane Watford WD1 8QP  
Great Britain  
Tubes seamless extruded

**Zeugnisnummer:**  
Cert No.: / No. du certificat: 12034  
**Bestellnummer:**  
Order No. / No. de commande 139707/1  
**Auftrag:**  
Our Reference/Notre Reference:

**Produkt:**  
Product / Produit:  
**Spezifikation:**  
Specification:

**Werkstoff:**  
Alloy/Alliage:

ASME SB 241

**Abmessung**  
Size / Dimension

EN AW-5083  
48,260 mm x 40,900 mm x 3,680 mm x 6000,00 mm  
1 1/2" NB Sched. 40

**Kennzeichnung**  
Marking/Marquage:

Cast No. 7726 - 1 1/2" NB Sched 40 - 5083 - 0 - ASME SB 241 - AWU

**Lieferung:**

Delivered Material / Matériel délivré:

pcs. lbs  
34 602

**Zustand:** 0  
Temper/Etat

## 1. Chemische Analyse

## Chemical Analysis / analyse chimique

|                   | Si               | Fe    | Cu    | Mn    | Mg    | Cr    | Zn    | Ti    | Pb    | Zr     | Bi     | Sn     | Ni     |
|-------------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
| Charge/ min.      |                  |       |       | 0,40  | 4,0   | 0,05  |       |       |       |        |        |        |        |
| Cast No. max.     | 0,40             | 0,40  | 0,10  | 1,0   | 4,9   | 0,25  | 0,25  | 0,15  |       |        |        |        |        |
| 7726/02           | 0,261            | 0,336 | 0,051 | 0,600 | 4,765 | 0,072 | 0,067 | 0,027 | 0,009 | 0,0074 | 0,0001 | 0,0018 | 0,0033 |
| Hydrogen content: | 0,12 cm/100 g Al |       |       |       |       |       |       |       |       |        |        |        |        |

Elemente ohne Angabe < 0,01 % / Elements without indication < 0,01 %

## 2. Mechanische Eigenschaften

## Mechanical Properties / Valeurs Mécaniques

| Anforderungen<br>Requirements | tensile<br>(Rm) Ksi | yield<br>(Rp0,2) Ksi | elongation<br>2" % | elongation<br>A 5 % | Hardness<br>HB |
|-------------------------------|---------------------|----------------------|--------------------|---------------------|----------------|
| min.                          | 39,0                | 16,0                 | 14,0               |                     |                |
| max.                          | 51,0                |                      |                    |                     |                |
|                               | 40,310              | 20,155               | 22,0               | 25,7                | 72,2           |

AI  
JAN 18 2005

Reviewed

TÜV SÜDDEUTSCHLAND RAY und Betrieb GmbH

Notified body for the Pressure

Equipment Directive 97/23/EC

Testing Laboratory

APR 18 2005

JAN 06 2005

REP  
st

**Ergebnis der Prüfungen:**

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

**Test results:**  
**Resultats:**

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order  
Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

Certified acc. to DIN EN ISO 9002 valid until 2003-02-03

05.00.02

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10/15/2004 13:40

6306900147

TWMETALS

PAGE 03/03

14/10 2004 19:05 FAX +30 22620 53683

ELVA S.A./V. GRIMANIS

001/001

m49107483 10-1504



ATHENS - LAMIA NATIONAL ROAD (57th Km), 32011 INORTA VOTIA, GREECE  
 TEL: +30 22620-32 269, 31503, 32 241  
 FAX: +30 22620-32 236, 32 237. TEL: +601-299327, 299324, 299325, 299326

## - MILL TEST CERTIFICATE -

Crtf No : 55717  
 DATE 11/9/06/2004

Customer : COMBOWHEALTH - USA  
 Order No : 0 1883  
 Your Ref. : 6310-06

Notes : INVOICE NR:95005100  
 INTERNAL PACKING LIST NR:80010662  
 PD M4907483  
 ACCORDING TO AA, ASTM B209-04, AMS-00A-250/6 AND ASME B209 SPECIFICATIONS.

TEST REPORT ACC TO EN 10204/3, 1B

## PRODUCTS LIST

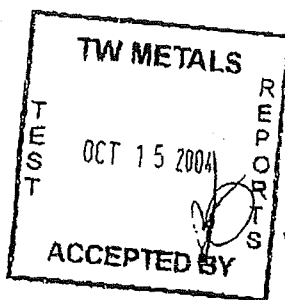
| OrdLine | Product Name     | Alloy | Temper   | Thickn /Step | Width   | Length  | Coil No   | A. CHEMICAL ANALYSIS (%) |     |     |      |      |      |      |      |
|---------|------------------|-------|----------|--------------|---------|---------|-----------|--------------------------|-----|-----|------|------|------|------|------|
|         |                  |       |          |              |         |         |           | Si                       | Fe  | Mn  | Mg   | Cu   | Ti   | Zn   | Cr   |
| 0188301 | ALUMINIUM SHEETS | 5083  | -0-      | 6.3500       | 1524.00 | 3657.60 | 040555201 | .12                      | .33 | .60 | 4.77 | .029 | .015 | .016 | .092 |
|         |                  |       | Inches : | .25000       | 60.000  | 144.000 |           |                          |     |     |      |      |      |      |      |

## B. MECHANICAL PROPERTIES

| Heat Nr  | Coil No   | Test No | Posit | RPB N/mm2 | RD2 N/mm2 | ELONG % |
|----------|-----------|---------|-------|-----------|-----------|---------|
| 04201620 | 040555201 | 4563    | AL    | 310.4     | 171.8     | 20.6    |
|          |           |         | Ksi : | 45.012    | 24.913    |         |

Quality Control Department

PIP D. MOUTSOPOULOS



REVIEWED

PEN BK

Reviewed  
 TÜV SÜddeutschland Frau und Betrieb GmbH  
 Notified body for Pressure  
 Equipment Directive 97/23/EC  
 -Testing Laboratory- APR 18 2005

TR

**BRITISH ALUMINIUM TUBES**

Division of British Aluminium Specialty Extrusions and Tubes Ltd.  
 Studley Road, Redditch, Worcester B99 7HN, England  
 Telephone (01527) 484500, Facsimile (01527) 404501

Customer

ANVIL ALLOYS INTERNATIONAL LTD B/B  
 ANVIL HOUSE  
 VALE INDUSTRIAL PARK  
 TOLPITS LANE  
 WATERFORD HEATHS  
 WDI 80P

Your Order No : 10819  
 Our Order No : 71615  
 Packing Note No : 83414  
 Date : 06 Mar 2001  
 Package : 1 BUNDLE

Other Tests Passed

Customer Copy No. 00002/1

ASME CERTIFICATE OF CONFORMITY

THIS MATERIAL HAS BEEN MANUFACTURED, SAMPLING  
 TESTED AND INSPECTED AND MEETS THE REQUIREMENTS  
 OF THE NATIONAL SPECIFICATION

SEAMLESS DRAWN TUBE - 73.00MM OD X 1.160MM WT  
 SPECIFICATION 1003 0  
 ASME B31.2

Tensile Test

Chemical Analysis %

| No of Pieces | Net Weight | Lot or Test No. | 0.2% Proof Stress KSI | Tensile Strength KSI | % Elongation 2in | Chemical Analysis % | Other No. | Si  | Pt  | Cu  | Mn  | Ni  | Zn  | Ti  | H   |
|--------------|------------|-----------------|-----------------------|----------------------|------------------|---------------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1            | 265        | 190425          | 19.73                 | 45.40                | 20               | 4.56                | 2D210     | .16 | .19 | .05 | .66 | .15 | .03 | .03 | .14 |
| 2            | 152        | 190426          | 20.16                 | 45.25                | 23               | 4.56                | 2D210     | .16 | .39 | .05 | .66 | .15 | .03 | .03 | .14 |
| 2            | 75         | 190427          | 20.60                 | 45.54                | 21               | 4.46                | 2D162     | .16 | .40 | .04 | .69 | .14 | .02 | .00 | .14 |

T.W. METALS

JUN 1 2004

REPORT  
ACCEPTED BY

Resource ASME CONFORMITY STATEMENT REQD. TEST CERTS TO EN 10204 3.1B  
 WT + TOL GUIDANCE ONLY (BASED ON CONFORMANCE)

TUV SÜDDEUTSCHLAND AG und Betrieb GmbH

acc to Pressure

Notified Body

Equipment Directive 97/23/EC

Testing Laboratory

Registered in England No. 3081335  
 Registered Office: The Victoria, Harborough, Leicestershire  
 VAT Registration No. GB 558 2142 26

(THIS CERTIFICATE CONFORMS TO THE REQUIREMENTS OF EN 10204 3.1B AND DIN 5019 3.1D)

REVIEWED

AL ROYCE

APR 1 2004

APR 6/14/04

JUN 14 2004

T.W. METALS - SHIPPING

06/11/04 FRI 09:24 FAX 630

SENT BY: ANVIL ALLOYS INT;

44 01923 800722 ; 10-JUN-04 9:05;

PAGE 2

M8308287 6-11-04 08 3118  
 1.80

Test Report

05/24/04 MON 13:42 FAX 630  
MAY-18-2004 12:05

T.W. METALS

TW METALS - SHIPPING

6124297669 05/17

S-374-C

M49099407

5-24-04

|                             |   |                     |                   |            |
|-----------------------------|---|---------------------|-------------------|------------|
| S.C. ALPROM S.A.<br>SLATINA | CERTIFIED SRAC-IQNet<br>ISO 9001/2000 No. 23/2-2002 | MILL<br>CERTIFICATE | EN 10204<br>3.1.B | No.<br>739 |
|-----------------------------|---|---------------------|-------------------|------------|

CUSTOMER : COMMONWEALTH METAL CORPORATION

CONTRACT/ORDER : 4742-06

BILL OF DELIVERY : 62011

TRUCK/CONTAINER : UXXU 2359024

ALUMINUM PRODUCTS - SHIPMENT OF 10372.574 LBS ALUMINUM PLATES 5063 "O" MILL FINISH,  
PRODUCED ACCORDING TO ASTM B209, AMS/QQA 250/6 & ASME SB 209 STANDARDS, TO  
BALTIMORE, MD LETTER OF CREDIT NUMBER G-797497. SHIPMENT FROM CONSTANTA ROMANIA  
TO BALTIMORE MD, BUYERS CONTRACT NUMBER 4742-06. SHIPPING TERMS: CFR BALTIMORE, MD

MATERIAL : ALUMINUM PLATE

ALLOY : 5063

DIMENSIONS (mm) : MF105 1 000" THX60.00" WDX144".00LT

TEMPER: O

ACCORDING TO : ASTM B209; AMS-QQA-250/6; ASME-SB-209

| MECHANICAL PROPERTIES                      |      |                |       | 1 MPa = 1 N/mm2 = 0.145 ksi = 0.102 kgf/mm2 |      |       |       |          |          |     |
|--|------|----------------|-------|---|------|-------|-------|----------|----------|-----|
| 1 lbs = 0.4536 kg                          |      |                |       | UTS   |      | YTS   |       | Elong. % | Hardness |     |
|  |      |                |       | ksi   |      | ksi   |       | 50mm     | HB       |     |
|  |      |                |       | min.  | max. | min.  | max.  | min.     | min.     |     |
| Specified values:                          |      |                |       | 40  | 51   | 18    | 29    | 16       |          |     |
| LOT  | CASE | NET WEIGHT lbs |       | Measured values:                            |      |       |       |          |          |     |
| MF105                                      | 6:7  | 10,372.574     |       | 40 S  | 28.7 |       | 19    |          |          |     |
|  |      |                |       | 40.6  | 21.6 |       | 22    |          |          |     |
| CHEMICAL COMPOSITION %                     |      |                |       |   |      |       |       |          |          |     |
| LOT  | Si   | Fe             | Cu    | Mn  | Mg   | Cr    | Zn    | Ni       | Ti       | Al  |
| MF105                                      | 0.21 | 0.33           | 0.024 | 0.49  | 4.56 | 0.075 | 0.021 | 0.005    | 0.019    | REM |
| Min.                                       |      |                |       | 0.4   | 4    | 0.05  |       |          |          | REM |
|  | 0.4  | 0.4            | 0.1   | 1   | 4.9  | 0.25  | 0.25  | 0.05     | 0.15     |     |
| Cond. Others Each: 0.05 Others Total: 0.15 |      |                |       |   |      |       |       |          |          |     |

REMARKS:

We hereby certify that the material detailed hereon has been produced and tested according to the requirements of the relevant specification and/or order. Keep in dry conditions, without large temperature variations.

Date: QUALITY CONTROL DEPT.

3/3/2004

cod F-4.10.-04/3

TUV SÜDDEUTSCHLAND

Notified Body

Equipment Directive 97/23/EC

Testing Laboratory

APR 18 2005

S.C. ALPROM S.A.  
SLATINA  
RSCG T.E. Laborator GmbH

Pressure

TW METALS

MAY 24 2004

ACCEPTED BY

REVIEWED

JUN 01 2004

6-1-04

08/04/04 14:51 26306900147  
04/08 '04 18:16 FAX 00302262031494

"TW Metals."

0006/000

ELVAL S.A. SALES DEP. - COMMONWEALTH

001/001

jobnr

04-AUG-04 16:52 FROM-Elval SA Plant Sec

1902262031347

T-258 P.001/001 F-039

S-408-C



ATHENS - LAMIA NATIONAL ROAD (57th Km), 32011 INORTA VOTIA, GREECE  
TEL: +30 2620-32 269, 31503, 32 241

HELLENIC ALUMINIUM INDUSTRY S.A.

FAX: +30 2620-32 236, 32 137, TLX: +601-299327, 299324, 299325, 209326

Page: 1

- MILL TEST CERTIFICATE -

DrTf No: 53084  
DATE: 05/04/2004

Customer: COMMONWEALTH - USA  
Order No: 0 0415  
Your Ref.: 5049-06

INVOICE NR:  
Note: INTERNAL PACKING LIST NR: 00005715  
ACCORDING TO AA, ASTM B209/02, ASME B209/02 AND AMS4004-250/6 SPECIFICATIONS.

TEST REPORT ACC TO EN 10204/3.18

| PRODUCTS LIST    |              |       |         |               |         | A. CHEMICAL ANALYSIS (%) |           |     |     |     |      |      |      |      |      |
|------------------|--------------|-------|---------|---------------|---------|--------------------------|-----------|-----|-----|-----|------|------|------|------|------|
| ProdLine         | Product Name | Alloy | Temper  | Thickn / Step | Width   | Length                   | Coil No   | Si  | Fe  | Mn  | Mg   | Cu   | Ti   | Zn   | Cr   |
| ALUMINIUM SHEETS |              |       |         |               |         |                          |           |     |     |     |      |      |      |      |      |
| 0041501          |              | 5083  | -O-     | 9.5250        | 1524.00 | 3657.60                  | 040180401 | .12 | .35 | .49 | 4.24 | .025 | .014 | .016 | .208 |
|                  |              |       | Inches: | .37500        | 60.000  | 144.000                  |           |     |     |     |      |      |      |      |      |
| 0041502          |              | 5083  | -O-     | 12.7000       | 1524.00 | 3657.60                  | 040180501 | .12 | .35 | .49 | 4.24 | .025 | .014 | .016 | .208 |
|                  |              |       | Inches: | .50000        | 60.000  | 144.000                  |           |     |     |     |      |      |      |      |      |

B. MECHANICAL PROPERTIES

| Heat No  | Coil No   | Test No | Posit | RDH N/mm2 | ROZ N/mm2 | ELONG % |
|----------|-----------|---------|-------|-----------|-----------|---------|
| 04201630 | 040180401 | 1630    | AL    | 311.0     | 188.6     | 16.5    |
|          |           |         | Ku:   | 45.099    | 27.349    |         |
| 04201630 | 040180501 | 2699    | AL    | 306.4     | 159.6     | 17.7    |
|          |           |         | Ku:   | 44.432    | 23.144    |         |

Quality Control Department

Reviewed

TÜV Süddeutschland Bau und Betrieb GmbH

Notified Body acc. to Pressure

Equipment Directive 97/23/EC

-Testing Laboratory-

Art. Sirek Di Bond

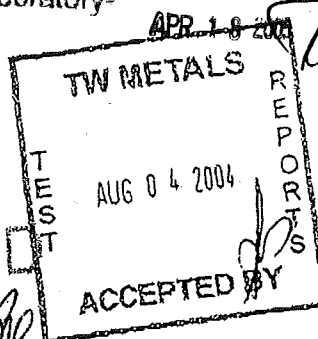
B.R.  
K. MAZIMAKIS

At Reviewed

8/27/04

REVIEWED

AUG 26 2004



P60  
d/c

08/04/04 14:51 26306900147

"TW Metals."

04/08 '04 18:16 FAX 00302262031494

ELVAL S.A. SALES DEP. - COMMONWEALTH

0001/001

jobnr

04-AUG-04 16:52

FROM: Elval SA Plant Secr

+902262051347

T-289 P.001/001 F-089


 ATHENS - LAMIA NATIONAL ROAD (57th Km), 52011 INERATA VOTIA, GREECE  
 TEL: +30 2620-32 269, 31503, 32 241

HELLENIC ALUMINIUM INDUSTRY S.A.

FAX: +30 2020-32 236, 32 237, TLX: +601-290327, 299324, 299325, 200326

Page: 1

- WILL TEST CERTIFICATE -

 Cert No: 53084  
 DATE: 05/04/2004

 Customer: COMMONWEALTH - USA  
 Order No: 0 0415  
 Your Ref.: 5049-06

 INVOICE NR:  
 Notes: INTERNAL PACKING LIST NR: 00005715  
 ACCORDING TO RA, ASTM B209/02, ASME B209/02 AND AMS4924-250/6 SPECIFICATIONS.

TEST REPORT ACC TO EN 10204/3.1B

| PRODUCTS LIST    |              |       |                |                      | A. CHEMICAL ANALYSIS (%) |           |     |     |     |      |      |      |      |      |
|------------------|--------------|-------|----------------|----------------------|--------------------------|-----------|-----|-----|-----|------|------|------|------|------|
| OrdLine          | Product Name | Alloy | Temper         | Thickn / Strip Width | Length                   | Coil No   | Si  | Fe  | Mn  | Mg   | Cu   | Ti   | Zn   | Cr   |
| ALUMINIUM SHEETS |              |       |                |                      |                          |           |     |     |     |      |      |      |      |      |
| 0041501          |              | 5083  | -0-            | 9.1230               | 1524.00 3657.60          | 040180401 | .12 | .35 | .49 | 4.24 | .025 | .014 | .016 | .208 |
|                  |              |       | Inches: .37500 |                      | 60.000 144.000           |           |     |     |     |      |      |      |      |      |
| 0041502          |              | 5083  | -0-            | 12.7000              | 1524.00 3657.60          | 040180501 | .12 | .35 | .49 | 4.24 | .025 | .014 | .016 | .208 |
|                  |              |       | Inches: .50000 |                      | 60.000 144.000           |           |     |     |     |      |      |      |      |      |

## B. MECHANICAL PROPERTIES

| Heat Nr  | Coil No   | Test No | Posit | RPN N/mm <sup>2</sup> | ROZ N/mm <sup>2</sup> | ELONG % |
|----------|-----------|---------|-------|-----------------------|-----------------------|---------|
| 04201630 | 040180401 | 1630    | RL    | 311.0                 | 188.6                 | 16.5    |
|          |           |         | Kai   | 45.099                | 27.349                |         |
| 04201630 | 040180501 | 2699    | RL    | 306.4                 | 179.6                 | 17.7    |
|          |           |         | Ksi   | 44.432                | 23.144                |         |

Reviewed

TUV SÜDDEUTSCHLAND Pru und Betrieb GmbH

Notified body for Pressure

Equipment Directive 97/23/EC

- Testing Laboratory -

APR 1 2005 BOND

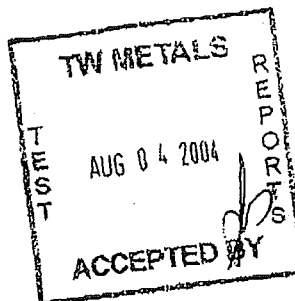
Art. Signed

B.R.

K. MAZIANAKIS

Test 9/15/04

Quality Control Department

 P/R  
 D. MAZIANAKIS


REVIEWED

SEP 15 2004

PED OK

CERTIFIED INSPECTION REPORT

Arcoa Inc.

PITTSBURGH, PA DAVENPORT WORKS

We hereby certify that the material represented by this certificate has been inspected with, and has been found to meet the applicable requirements described herein, including any specifications, forming a part of the description and that samples representative of the material meet the composition limits and the mechanical properties shown on this report.

*John J. Vrabec*

John J. Vrabec  
Director of Manufacturing Davenport Works

*Ken P. Young*

Ken P. Young  
Quality Assurance Manager

259871 Ship Date 75071  
2004-03-16 U.C. No. 48186  
P.O. No./Cust. Contract No. Customer

Ship From: RIVERDALE, IA.  
Alcoa No. Item  
DS-71522-1

TW METALS-ROGERS

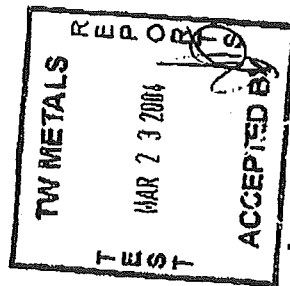
Ship To: TW METALS  
14600 JAMES RD  
ROGERS, MN 55374

Item Description

.500 IN THK X 60.000 IN W X 144.000 IN LN (H) A/T 5083-  
O STORAGE TANK & CRYOGENIC PLATE MILL FINISH, SAWED. PBR ASM8-  
SB-209 REV A99 & EXCEPT MARKING AMS-QQ-A-  
250/6 & EXCEPT MARKING ASTM209 REV 02A &  
EXCEPT MARKING AMS4056 REV F DIMENSIONAL  
TOLERANCES F ANS1315.2 REV 2003  
(MARKED)) PAPER INTERLEAVED  
SKID WGT: 6000 LB QUAN TOL +/-10  
1 CQR 0146716 REV 01 CUST REQ 04-03-  
13 \*\*\* W/E 04-03-27 \*\*\*

9-456-C

PO 2488400  
25 11/10/04



| Num | Package Ticket | Lot    | Weight | Quantity | UOM | Pc Id/Set1 |
|-----|----------------|--------|--------|----------|-----|------------|
| 1   | 754703         | 433321 | 6364   | 15       | PC  |            |
| 2   | 754758         | 433321 | 4662   | 11       | PC  |            |
| 3   | 754758         | 433322 | 1696   | 4        | PC  |            |
| 4   | 754826         | 433322 | 1262   | 1        | PC  |            |
| 5   | 754868         | 433322 | 6362   | 15       | PC  |            |
|     |                |        | 20346  | 48       |     |            |

Notes For CQR: 0146716.1  
PRODUCT PRODUCED AND MARKED TO THE REQUIREMENTS OF AMS-QQ-A-250/6 ALSO MEETS THE REQUIREMENTS OF QQ-A-250/6G. PRODUCT  
PRODUCED AND MARKED TO THE REQUIREMENTS OF QQ-A-250/6G ALSO MEETS THE REQUIREMENTS OF AMS-QQ-A-250/6.

CQR: 0146716.1 -Specification Limits

| Temp                 | Dir | Longitudinal | Max    | Min  | DYS   | KSI      | GYS | ELAD | PCF |
|----------------------|-----|--------------|--------|------|-------|----------|-----|------|-----|
|                      |     |              | 51.0   | 40.0 |       |          |     |      |     |
|                      |     |              | 18.0   | 16   |       |          |     |      |     |
| Chemical Composition |     |              |        |      |       |          |     |      |     |
|                      |     |              | Max    | Min  | SI    | FE       | CU  | MN   | MG  |
|                      |     |              | 40     | 10   | 1.0   | 4.9      | 25  | 25   | 15  |
|                      |     |              | 40     | 4.0  | 05    |          |     |      |     |
| Alloy 5083           |     |              |        |      |       |          |     |      |     |
|                      |     |              | Other  | Each | Total | Aluminum |     |      |     |
|                      |     |              | REMAIN |      |       |          |     |      |     |

REVIEWED

TUV SÜddeutschland Bau und Betrieb GmbH

Notified Body according to Pressure

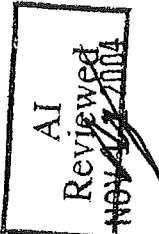
Equipment Directive 97/23/EC

-Testing Laboratory-

APR 1 3 2005

REVIEWED

NOV 10 2004  
PSP OK



0003/007

TW METALS

09011441752733301

03/23/04 15:23

6124287669 P.06/12

T.W. METALS

# CERTIFIED INSPECTION REPORT

Alcoa Inc.

PITTSBURGH, PA DAVENPORT WORKS  
Ship From: RIVERDALE, IA.

We hereby certify that the material covered by this certificate has been inspected with, and has been found to meet the applicable requirements described therein, including any specifications forming a part of the description and that an appropriate representation of the material met the inspection criteria and had the mechanical properties shown on the front of this sheet.

*Matthew K. Kline*

Math J. Vialter  
Director of Manufacturing Davenport Works

*Karen P. Young*

Karen P. Young  
Quality Assurance Manager

75071

259871

Ship Date

2004-03-16

P.O. No./Govt Contract No.

H: 45099747

B.L. No.

48166

Invoice No.

29910

Alcoa No.

DS-71522-7

Page

TW METALS-ROCKERS

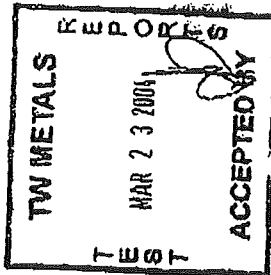
*9-456C*

Lot: 43321 -Mechanical, Physical, Metallography, Quantometer Results

| Temp        | Dir      | Longitudinal | Test | UTS | KSI  | TYS  | ELAD |
|-------------|----------|--------------|------|-----|------|------|------|
| 0           |          |              |      | Max | 44   | 22.5 | 25   |
|             |          |              |      | Min | 43   | 22.2 | 25   |
| Cast Number | Chemical | SI           | FE   | CU  | MN   | MG   | CR   |
| H2685025    | Actuals  | .09          | .23  | .04 | 0.64 | 4.5  | .03  |
|             |          |              |      |     |      |      | .02  |

Lot: 43322 -Mechanical, Physical, Metallography, Quantometer Results

| Temp        | Dir      | Longitudinal | Test | UTS | KSI  | TYS  | ELAD |
|-------------|----------|--------------|------|-----|------|------|------|
| 0           |          |              |      | Max | 43.5 | 21.2 | 25   |
|             |          |              |      | Min | 43.2 | 22.6 | 25   |
| Cast Number | Chemical | SI           | FE   | CU  | MN   | MG   | CR   |
| H2685021    | Actuals  | .09          | .23  | .04 | 0.64 | 4.5  | .03  |
|             |          |              |      |     |      |      | .02  |



REVIEWED

NOV 10 2004

TUV SÜDDEUTSCHLAND Bau und Betrieb GmbH

Notified Body No. 1000 acc. to Pressure

Equipment Directive 97/23/EC

Testing Laboratory-

APR 18 2005





PITTSBURGH, PA DAVENPORT, KS

Ship From: RIVERDALE, IA.

Page 1

Kenton P. Young

**Kenton P. Young**  
Quality Assurance Manager

7640 REINHOLD DRIVE  
CINCINNATI, OH 45237

| Item | Description |
|------|-------------|
| 1    | ...         |
| 2    | ...         |
| 3    | ...         |
| 4    | ...         |
| 5    | ...         |
| 6    | ...         |
| 7    | ...         |
| 8    | ...         |
| 9    | ...         |
| 10   | ...         |
| 11   | ...         |
| 12   | ...         |
| 13   | ...         |
| 14   | ...         |
| 15   | ...         |
| 16   | ...         |
| 17   | ...         |
| 18   | ...         |
| 19   | ...         |
| 20   | ...         |
| 21   | ...         |
| 22   | ...         |
| 23   | ...         |
| 24   | ...         |
| 25   | ...         |
| 26   | ...         |
| 27   | ...         |
| 28   | ...         |
| 29   | ...         |
| 30   | ...         |
| 31   | ...         |
| 32   | ...         |
| 33   | ...         |
| 34   | ...         |
| 35   | ...         |
| 36   | ...         |
| 37   | ...         |
| 38   | ...         |
| 39   | ...         |
| 40   | ...         |
| 41   | ...         |
| 42   | ...         |
| 43   | ...         |
| 44   | ...         |
| 45   | ...         |
| 46   | ...         |
| 47   | ...         |
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| 72   | ...         |
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| 81   | ...         |
| 82   | ...         |
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| 84   | ...         |
| 85   | ...         |
| 86   | ...         |
| 87   | ...         |
| 88   | ...         |
| 89   | ...         |
| 90   | ...         |
| 91   | ...         |
| 92   | ...         |
| 93   | ...         |
| 94   | ...         |
| 95   | ...         |
| 96   | ...         |
| 97   | ...         |
| 98   | ...         |
| 99   | ...         |
| 100  | ...         |

750 IN TK (+.0370 -.0370) X 60.000 IN W (+5/16  
0) X 144.000 IN LN (+1/2 -0) (N) A/T 5083-  
O STORAGE TANK & CRYOGENIC PLATE MILL FINISH. SAW  
SB-209 REV A99 & EXCEPT MARKING  
AMS-QQ-A-250/6 & EXCEPT MARKING ASTM B209 REV  
04 & EXCEPT MARKING AMS4056 REV F  
DIMENSIONAL TOLERANCES F ANSI H35.2 REV  
2003 ((MARKED)) STADNARD INTERLEAVED  
SKID WGT: 6000 LB QUAN TOL +/-  
40 \$ QOR 0141846 REV 03 CUST REQ 04-09-  
20 \*\*\* W/E 04-10-02 \*\*\*

| Num | Package Ticket | Lot    | Weight | Quantity | UOM | Pc Id/Seril |
|-----|----------------|--------|--------|----------|-----|-------------|
| 1   | 226752         | 649283 | 6073   | 10       | PC  |             |
| 2   | 226861         | 649283 | 4256   | 7        | PC  |             |
|     |                |        | 10329  | 17       |     |             |

Notes for CDR: 0141846.3

COR: 0141846.3 -Specification Limits

| Temp | Dir          | UTS | KSI  | TYS  | EL4D |
|------|--------------|-----|------|------|------|
| 0    | Longitudinal | Max | 51.0 | 29.0 | PCT  |
|      |              | Min | 40.0 | 18.0 | 16   |

| Chemical Composition |     | SI  | FE  | CU  | MN  |
|----------------------|-----|-----|-----|-----|-----|
| Alloy 5083           | Max | .40 | .40 | .10 | 1.0 |
|                      | Min |     |     |     | .40 |

Lot: 649283 -Mechanical, physical, Metallography, Quantometer Results

Reviewed

| Temp | Dir          | No.  | UTS      | TYS  | EL4D |
|------|--------------|------|----------|------|------|
|      |              | Test | KSI      | KSI  | PCT  |
| 0    | Longitudinal | 3    | Max 44.7 | 23.1 | 28.4 |
|      |              |      | Min 44.4 | 22.8 | 26.5 |

Quantometer Results  
Reviewed  
RFE  
TUV SÜddeutsche AG Bau und Betrieb GmbH

**Notified Body No.**      **Access to Pressure**

Equipment Directive 97/23/EC

-Testing Laboratory- APR 18 2012

RECEIVED  
REVIEWED  
APR 1967

TEST REPORTS  
NOV 01 2004  
TW METALS  
ACCEPTED BY

REVIEWED ACCEPTED BY

9.10.10

# CERTIFIED SECTION REPORT

Alcoa

PITTSBURGH, PA DAVENPORT, KS  
Ship From: RIVERDALE, IA.

Page 2

We hereby certify that the material covered by this certificate has been inspected with, and has been found to meet, the applicable requirements described therein, including any specifications forming a part of the description and that samples representative of the material met the composition limits and had the mechanical properties shown on the face of this sheet.

*Mark J. Vrabec*  
Mark J. Vrabec  
Director of Manufacturing Davenport Works

*Kenton P. Young*  
Kenton P. Young  
Quality Assurance Manager

293992  
Ship Date  
2004-10-30  
P.O. No./Govt Contract No.  
M 49110533

303022  
B.L. No.  
62938  
Customer  
TW METALS-ROGERS

*9-467-C*

Lot: 649283 - Mechanical, Physical, Metallography, Quantometer Results (cont.)

| Cast Number | Chemical | SI  | FE  | CU  | MN   | MG  | CR  | ZN  | TI  |
|-------------|----------|-----|-----|-----|------|-----|-----|-----|-----|
| H2788045    | Actuals  | .07 | .21 | .03 | 0.64 | 4.5 | .08 | .01 | .02 |

Reviewed

TÜV SÜddeutschland Bau und Betrieb GmbH

Notified Body No. 0001 ACC to Pressure

Equipment Directive 97/23/EC

-Testing Laboratory-

APR 18 2005

AI  
Reviewed  
DEC 02 2004

TW METALS  
REPORTS  
TEST  
NOV 01 2004  
ACCEPTED BY  
*See*

REVIEWED  
*Re*

JUL. 1. 2004 7:16AM

COMMONWEALTH METAL

NO. 119

P. 3/3

commonwealth PD # M49103125

**ELVAL**ATHENS - LAMIA NATIONAL ROAD (57th Km), 32011 INORTA VIOTIA, GREECE  
TEL: +30 2620-32 269, 31503, 32 241

HELLENIC ALUMINIUM INDUSTRY S.A.

FAX: +30 2620-32 236, 32 237, TLX: +601-299327, 299324, 299325, 299326

Page 1

## - WILL TEST CERTIFICATE -

Crtf-No : 54389

DATE : 26/05/2004

Customer : COMMONWEALTH - 152  
Order No : 0763  
Your Ref. : 5523-06

Notes :

INVOICE NO:

4309

INTERNAL PACKING LIST NO: 40009082

PD M49103125

ACCORDING TO EN, ASTM B209, AMS-494-250/6 AND AMS 5209 SPECIFICATIONS.

TEST REPORT ACC TO EN 10204/3.1B

## PRODUCTS LIST

## A. CHEMICAL ANALYSIS (%)

| Ord Line         | Product Name | Alloy | Temper   | Thickn /Step | Width   | Length  | Coil No   | Si  | Fe  | Mn  | Mg   | Cu   | Ti   | Zn   | Cr   |
|------------------|--------------|-------|----------|--------------|---------|---------|-----------|-----|-----|-----|------|------|------|------|------|
| ALUMINIUM SHEETS |              |       |          |              |         |         |           |     |     |     |      |      |      |      |      |
| 0076301          |              | 5083  | -0-      | 9.5250       | 1524.00 | 3657.60 | 040267301 | .11 | .31 | .43 | 4.30 | .032 | .006 | .019 | .180 |
|                  |              |       | Inches : | .37500       | 60.000  | 144.000 |           |     |     |     |      |      |      |      |      |
| 0076302          |              | 5083  | -0-      | 12.7000      | 1524.00 | 3657.60 | 040453101 | .12 | .33 | .55 | 4.54 | .032 | .013 | .017 | .118 |
|                  |              |       | Inches : | .50000       | 60.000  | 144.000 |           |     |     |     |      |      |      |      |      |

## B. MECHANICAL PROPERTIES

| Heat No    | Coil No   | Test No | Posit | RPM N/mm2 | R02 N/mm2 | ELONG % |
|------------|-----------|---------|-------|-----------|-----------|---------|
| * 04203000 | 040267301 | 2989    | RL    | 313.0     | 190.2     | 15.8    |
|            |           |         | K61 : | 45.389    | 27.581    |         |
| * 04201610 | 040453101 | 3943    | RL    | 313.0     | 173.0     | 18.0    |
|            |           |         | K61 : | 45.389    | 25.087    |         |

TW METALS

TEST

AUG 0 4 2004

ACCEPTED BY

PE0616

REPORTS

AI

Reviewed

DEC 03 2004

Quality Control Department

B. KALANTZIS

Item # 11450 + 11452

REVIEWED

DEC 03 2004

Attn: Sue McD +  
Tm Crippen

TUV SÜDDEUTSCHLAND RHEINLAND-BETRIEB GMBH

Notified Body No. 1001 to Pressure

Equipment Directive 97/23/EC

-Testing Laboratory- APR 18 2005

M49103125

Corus Aluminium Walzprodukte GmbH  
Carl-Spaeter-Str. 10  
56070 Koblenz



## Inspection Certificate (EN 10204/3.1.B)

Page 2 from 2

Certificate No. : 879190

Purchaser : CORUS ALUMINIUM ROLLED PRODUCTS USA- A DIVISION  
475 N. MARTINGALE RD/S.400  
SCHAUMBURG, IL 60173

Purchase Order No. : 1843/M49106732/TW METALS

Order number : 75131

Order item : 1

Lot No. : [REDACTED]

Dimensions : 15,875x2,438,400x7,315,200 mm

Master standard : [REDACTED]

ASTM B 209 2002a

AMS-QQ-A-250/AUG 1997

Material : 1021966  
Cust. part no. :  
Mat. Design. :  
Alloy :  
Temper :  
Drawing number :  
Quantity : 3

9-446-C  
P02491687  
re  
11/11/04

## TECHNOLOGICAL PROPERTIES

### Mechanical properties

Temper: O

|        | Pl-No. | Spec. No. | Rp1,0 | Rp0,2<br>ksi | Rm<br>ksi | A2"<br>% | Z | Rp/Rm |
|--------|--------|-----------|-------|--------------|-----------|----------|---|-------|
| L Min: | -      | -         | -     | 18,0         | 40,0      | 16,0     | - | -     |
| Max:   | -      | -         | -     | 20,0         | 51,0      | -        | - | -     |
| Act.:  | -      | 1         | -     | 24,5         | 45,0      | 25,4     | - | -     |
| Act.:  | -      | 2         | -     | 26,3         | 45,1      | 22,8     | - | -     |

### Chemical composition in %, remainder Al

Core Alloy : 5083 Cast No. : 5-04-1909  
Alloy spec. : ASTM B 209 2002a

|       | Si     | Fe     | Cu     | Mn     | Mg     | Cr     | Zn     | Ti     | others<br>each | others<br>total |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|----------------|-----------------|
| Min:  | -      | -      | -      | 0,40   | 4,0    | 0,05   | -      | -      | -              | -               |
| Max:  | 0,40   | 0,40   | 0,10   | 1,0    | 4,9    | 0,25   | 0,25   | 0,15   | 0,05           | 0,15            |
| act.: | 0,2660 | 0,2140 | 0,0450 | 0,6360 | 4,6670 | 0,1050 | 0,1010 | 0,0272 | 0,0103         | 0,0387          |

REVIEWED

### Other tests

OCT 29 2004

PT

AI  
Reviewed

OCT 29 2004

Dimensional control:

Surface control:

Quality Assurance, 30.08.2004

REVIEWED

OCT 28 2004

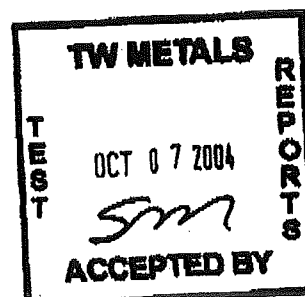
PS

M. Thon

TÜV Süddeutschland Bau und Betrieb GmbH  
Notified Body for Pressure

Equipment Directive 97/23/EC

-Testing Laboratory- APR 18 2005



Valid Qualitymanagement System Approvals see: [www.corusgroup-koblenz.com](http://www.corusgroup-koblenz.com)  
WT-QS 166A COR 11.00 SAP

# CERTIFIED INSPECTION REPORT

We hereby certify that the material covered by this certificate has been inspected with, and has been found to meet, the applicable requirements described therein, including any special conditions forming a part of the description and that the inspection was performed in accordance with the standard multiple correspondence form and had the mechanical properties shown on the face of this sheet.

*Mark J. Vazir*

Mark J. Vazir  
Director of Manufacturing Development/Vitals

*Ketan P. Young*

Ketan P. Young  
Quality Assurance Manager

Ship To: TW METALS  
14600 JAMES RD.  
ROGERS, OK 73174

Item Description  
.500 IN TH X 60.000 IN W X 144.000 IN LH (IN) A/T 5083-  
O STORAGE TANK & CRYOGENIC PLATE MILL FINISH,  
SAWED ITEM 11450. PER ASME-SB-209 REV A99 & EXCEPT MARKING AMS-QQ-  
A-250/6 & EXCEPT MARKING ASTM A209 REV 02A &  
EXCEPT MARKING AMS4056 REV F DIMENSIONAL  
TOLERANCES P AMS4056 REV F DIMENSIONAL  
((MARKED)) PAPER INTERLEAVED  
SKID WGT: 6000 LB QUAN TOL +/-40  
3 CQR 0146716 REV 01 CUST REQ 04-05-  
07 \*\*\* W/E 04-05-08 \*\*\*

| Item | Package Ticket | Lot    | Weight | Quantity | UOM | Pc Id/Serl |
|------|----------------|--------|--------|----------|-----|------------|
| 1    | 773225         | 485709 | 6114   | 15       | PC  |            |
| 2    | 773258         | 485709 | 4636   | 11       | PC  |            |
|      |                |        | 10950  | 26       |     |            |

Notes for CQR: 0146716.1

PRODUCT PRODUCED AND MARKED TO THE REQUIREMENTS OF AMS-QQ-A-250/6 ALSO MEETS THE REQUIREMENTS OF QQ-A-250/60. PRODUCT PRODUCED AND MARKED TO THE REQUIREMENTS OF QQ-A-250/66 ALSO MEETS THE REQUIREMENTS OF AMS-QQ-A-250/6.

CQR: 0146716.1 -Specification Limits

| Temp | Dir | Longitudinal | Max | Min | UTS   | TYS   | KSI | EL40 | PCT |
|------|-----|--------------|-----|-----|-------|-------|-----|------|-----|
|      |     |              | Max | Min | 40.40 | 40.10 | 4.9 | .25  | .15 |
|      |     |              | Min | Max | 40.40 | 4.0   | .05 |      |     |

Chemical Composition

| Alloy | 5083 | Max | Min | Other    | Other |
|-------|------|-----|-----|----------|-------|
|       |      | Max | Min | Each     | Total |
|       |      | Min | Max | Aluminum |       |

Lot: 485709 -Mechanical, Physical, Metallurgy, Quantometer Results

| Temp | Dir | Longitudinal | Max | Min | UTS  | TYS  | KSI  | EL40 | PCT |
|------|-----|--------------|-----|-----|------|------|------|------|-----|
|      |     |              | Max | Min | 44.5 | 24.2 | 23.2 |      |     |
|      |     |              | Min | Max | 43.5 | 24   | 22.1 |      |     |

REVIEWED

TÜV SÜDPRÜFUNGSGESAMT und Betrieb GmbH  
Notified Body No. 000010 Pressure

Equipment Directive 97/23/EC  
Testing Laboratory

APR 18 2005

05/25/04 TUE 08:15 FAX 630  
MAY-18-2004 12:04

T. E. METALS

TW METALS - SHIPPING

6124287669 P.02/17

Alcoa Inc.

PITTSBURGH, PA DAVENPORT WORKS

Ship From: REVERDALE, IA.

269660 Ship Date

2004-05-17

Invoice No.

39461

Alcoa No.

DS-73930-1

P.O. No./Govt Contract No.

M 49101120

Customer

TW METALS-ROGERS

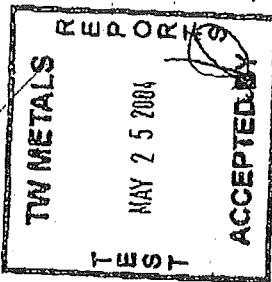
Quality Assurance Manager

Director of Manufacturing Development/Vitals

902488592

S-477-C

401-605



JAN 25 2005

PER Q/C

REVIEWED

JAN 06 2005

CERTIFIED INSPECTION REPORT

Alcoa Inc.

PITTSBURGH, PA DAVENPORT WORKS  
Ship From: RIVERDALE, IN.

We hereby certify that the material covered by this certificate has been inspected with, and has been found to meet, the applicable requirements described herein, retaining any specifications forming a part of the description and that such inspection is the responsibility of the manufacturer for compliance with, and that the mechanical properties shown on the label are those of the material.

*Mark J. Vrabec*  
Mark J. Vrabec  
Director of Manufacturing Operations

*Kathryn Young*  
Kathryn Young  
Quality Assurance Manager

269660  
Ship Date  
2004-05-17  
P.O. No./Govt Contract No.  
M 49103120

132028  
B.L. No.  
51670  
Invoice No.  
19481  
Alcoa No. Item  
NS-71930-1

Customer  
TW METALS-ROGERS

Lot: 485709 - Mechanical, Physical, Metallurgy, Quantometer Results (cont.)  
Cast Number  
H2740014  
Chemical  
SI FE CU MN MG CR ZN TI  
Actuals  
.10 .22 .04 0.65 4.6 .09 .02 .02

S-477-C

Reviewed

TÜV SÜDdeutscher Bau und Betrieb GmbH  
Notified Body No. 10000000000000000000  
Equipment Directive 97/23/EC  
Testing Laboratory

APR 18 2005

TW METALS  
TEST  
MAY 25 2004  
ACCEPTED BY

REVIEWED

JAN 06 2005

05/25/04 TUE 08:15 FAX 630  
MAY-18-2004 12:04  
T.W. METALS

TW METALS - SHIPPING

Alcoa Inc.

CERTIFIED INSPECTION REPORT

321315 6034  
Ship Date B.L. No.  
2005-01-07 67081  
P.O. No./Govt Contract No.  
M 49118997

We hereby certify that the material covered by this certificate has been inspected with and has been found to meet the applicable requirements described herein, including any specifications forming a part of the description and that samples representative of the material met the composition limits and had the mechanical properties shown on the face of this sheet.

Per: *Mark J. Vrabec*  
Director of Manufacturing Davenport Works

Per: *Robert P. Young*  
Quality Assurance Manager

Invoice No. 79299  
Alcoa No. Item DS-81952-1

CUSTOMER  
TW METALS, CINCINNATI

2-29-05 488587  
S-504-C  
Jas

Item Description  
1.000 IN TK X 96.000 IN W X 288.000 IN LN (A) A/T 5083-  
O STORAGE TANK & CRYOGENIC PLATE MILL FINISH, SAWED PER ASME  
SB-209 REV A99 & EXCEPT MARKING AMS-QQ-A-  
250/6 & EXCEPT MARKING ASTM B209 REV 04 &  
EXCEPT MARKING AMS4056 REV F DIMENSIONAL  
TOLERANCES F ANS H35.2 REV 2003  
((MARKED)) INTERLEAVED SKID WGT: 6000 LB QUAN TOL +/-  
40 % CQR 0101480 REV 08 CUST REQ 05-01-  
07 \*\*\* W/E 05-01-08 \*\*\*

Ship To: TW METALS  
7640 REINHOLD DRIVE  
CINCINNATI, OH 45237

| Num | Package Ticket | Lot    | Weight | Quantity | UOM | Pc Id/Ser1 |
|-----|----------------|--------|--------|----------|-----|------------|
| 1   | 244367         | 701492 | 5356   | 2        | PC  |            |
| 2   | 244375         | 701492 | 5381   | 2        | PC  |            |
|     |                |        | 10737  | 4        |     |            |

Notes for CQR: 0101480.8  
PRODUCT PRODUCED AND MARKED TO THE REQUIREMENTS OF AMS-QQ-A-250/6 ALSO MEETS THE REQUIREMENTS OF QQ-A-250/6G. PRODUCT  
PRODUCED AND MARKED TO THE REQUIREMENTS OF QQ-A-250/6G ALSO MEETS THE REQUIREMENTS OF AMS-QQ-A-250/6.

CQR: 0101480.8 -Specification Limits

| Temp Dir             | Longitudinal  | Max | Min | UTS  | KSI  | TYS  | EL4D | PCT  |
|----------------------|---|-----|-----|------|------|------|------|------|
| 0                    |   |     |     | 51.0 | 29.0 | 40.0 | 18.0 | 16   |
| Chemical Composition |   | Max | Min | SI   | FE   | CU   | MN   | MG   |
|                      |   |     |     | .40  | .40  | .10  | 1.0  | 4.9  |
|                      |   |     |     |      |      |      |      | .25  |
|                      |   |     |     |      |      |      |      | .25  |
|                      |   |     |     |      |      |      |      | .15  |
|                      |   |     |     |      |      |      |      | .15  |
|                      |   |     |     |      |      |      |      | .05  |
|                      |   |     |     |      |      |      |      | .05  |
| Alloy 5083           |   |     |     |      |      |      |      |      |
| Lot: 701492          | -Mechanical, Physical, Metallography, Quantometer Results |     |     |      |      |      |      |      |
| Temp Dir             | Longitudinal  | 3   | Max | Min  | UTS  | KSI  | TYS  | EL4D |
| 0                    |   |     |     |      | 46   | 25.3 | 20.2 | 19.7 |
|                      |   |     |     |      | 45.4 |      |      |      |

FEB 01 2005  
A.7 JM  
2-1-05  
P.d ok

TW METALS REPORT  
TEST  
JAN 11 2005  
ACCEPTED BY

TUV Sueddeutscher Lloyd und Betrieb GmbH  
Notified Body No. 100010 Pressure

Equipment Directive 97/23/EC

-Testing Laboratory-

APR 18 2005

# CERTIFIED INSPECTION REPORT

Alcoa Inc.

PITTSBURGH, PA DAVENPORT RKS  
Ship From: RIVERDALE, IA

Page 2

We hereby certify that the material covered by this certificate has been inspected with, and has been found to meet, the applicable requirements described therein, including any specifications forming a part of the description and that samples representative of the material met the composition limits and had the mechanical properties shown on the face of this sheet.

*Mark J. Vrabec*  
Director of Manufacturing Davenport Works

*Kevin P. Young*  
Quality Assurance Manager

321315  
Ship Date  
2005-01-07  
P.O. No./Contract No.  
M 49118997

6034  
B.L. No.  
79299  
Invoice No.  
DS-81952-1  
Alcoa No. Item  
METALS-CINCINN

(cont.)

Lot: 701492 - Mechanical, Physical, Metallography, Quantometer Results  
Cast Number H2944031  
Chemical SI FE CU MN MG CR ZN TI  
Actuals .11 .22 .04 0.64 4.5 .08 .02 .02

S-504-C

UV Suiddeutschem Bau und Betrieb GmbH  
Notified Body No. 0001 to Pressure  
Equipment Directive 97/23/EC

Testing Laboratory- APR 18 2005

FEB 01 2005

A. J. J. 2-1-05

TW METALS REPORTS  
JAN 11 2005  
TEST  
ACCEPTED BY  
SM