



**SETSCO SERVICES PTE LTD**

18 Teban Gardens Crescent  
Singapore 608925  
Tel : (65) 6566 7777  
Fax: (65) 6566 7718  
Website: www.setsco.com  
Business Reg. No. 196900269D

**TEST REPORT**

(This Report is issued subject to the terms & conditions set out below)

Your Ref: PO: 2012-07-073 &  
2012-07-074

Our Ref: MM-29049/HKJ

Date: 26 July 2012

Page 1 of 2

**Subject** : Testing of coupon samples submitted by Richport Technology Pte Ltd on 06 June 2012.

**Tested for** : **RICHPORT TECHNOLOGY PTE LTD**  
No.107 Neythal Road  
Singapore 628595

**Attn** : LEAH S. REGLOS

**Date & Place of Test** : 24 to 25 July 2012 at Setsco Laboratory

**Method of Test** : ASTM B578 : 2004 -Standard Test Method for Micro-hardness of Electroplated Coating.


**Description of Sample** : Four (02) pieces of coupon samples were received as follows:-

S/No.	Sample Ref.	Qty
1	High Phosphorus EN Plating –Batch 1	02

For identification purposes, the two sample was labelled as B1-1 and B1-2

**Results** : Microindentation hardness test  
Refer to table 1 attached

  
**HAN KIAN JUAN**  
Testing Officer

  
**WONG KOK WAH**  
Executive Engineer (Mechanical Testing)  
Mechanical Technology Division

**Terms & Conditions:**

- (1) The Report is prepared for the sole use of the Client and is prepared based upon the Item submitted, the Services required by the Client and the conditions under which the Services are performed by SETSCO. The Report is not intended to be representative of similar or equivalent Services on similar or equivalent Items. The Report does not constitute an endorsement by SETSCO of the Item.
- (2) SETSCO agrees to use reasonable diligence in the performance of the Services but no warranties are given and none may be implied directly or indirectly relating to the Services, the Report or the facilities of SETSCO.
- (3) The Report may not be used in any publicity material without the written consent of SETSCO.
- (4) The Report may not be reproduced in part or in full unless approval in writing has been given by SETSCO.
- (5) SETSCO shall under no circumstances be liable to the Client or its agents, servants or representatives, in contract, tort (including negligence or breach of statutory duty) or otherwise for any direct or indirect loss or damage suffered by the Client, its agents, servants or representatives howsoever arising or whether connected with the Services provided by SETSCO herein.

\*The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme" LA-1994-0068-A, LA-1987-0001-B, LA-1993-0067-G, LA-1993-0051-C, LA-1998-0144-D, LA-2000-0181-F.



**Results:**

**Table 1a and 1b: Microindentation Hardness Measurement (HK<sub>100gf</sub> #) using 1000X mag**

(1a)

Sample Reference (High Phosphorus EN plated coupon)		B1-1		B1-2	
		HK 100gf	HV Converted	HK 100gf	HV Converted
Location (Randomly Selected)	Point 1	475.3	453.9	472.0	451.1
	Point 2	488.8	465.6	475.0	453.7
	Point 3	488.3	465.1	492.5	468.8
	Point 4	474.6	453.3	475.3	453.7
	Point 5	479.5	457.5	471.7	450.8
Standard Deviation		6.2	5.3	7.7	6.7
Mean Average		481.3	459.1	477.3	455.6

Notes: # Conversion is based on relationship for carbon steel materials.  
(HK denotes Knoop Hardness Value, HV denotes Vickers Hardness Value)



Samples as received.

*Handwritten signature/initials*

*Wong*



**SETSCO SERVICES PTE LTD**

18 Teban Gardens Crescent  
Singapore 608925  
Tel : (65) 6566 7777  
Fax: (65) 6566 7718  
Website: www.setsco.com  
Business Reg. No. 196900269D

**TEST REPORT**

(This Report is issued subject to the terms & conditions set out below)

Your Ref: PO: 2012-07-074

Our Ref: MM-29048/HKJ

Date: 26 July 2012

Page 1 of 2

**Subject** : Testing of coupon samples submitted by Richport Technology Pte Ltd on 06 June 2012.

**Tested for** : **RICHPORT TECHNOLOGY PTE LTD**  
No.107 Neythal Road  
Singapore 628595

**Attn:** LEAH S. REGLOS

**Date & Place of Test** : 24 to 25 July 2012 at Setsco Laboratory

**Method of Test** : ASTM B578 : 2004 -Standard Test Method for Micro-hardness of Electroplated Coating.

**Description of Sample** : Two (02) pieces of coupon samples were received as follows:-

S/No.	Sample Ref.	Qty
1	High Phosphorus EN Plating –Batch 2	02

For identification purposes, the two sample was labelled as B2-1 and B2-2

**Results** : Microindentation hardness test  
Refer to table 1 attached

HAN KIAN JUAN  
Testing Officer

*Wong*  
WONG KOK WAH  
Executive Engineer (Mechanical Testing)  
Mechanical Technology Division

**Terms & Conditions:**

- (1) The Report is prepared for the sole use of the Client and is prepared based upon the Item submitted, the Services required by the Client and the conditions under which the Services are performed by SETSCO. The Report is not intended to be representative of similar or equivalent Services on similar or equivalent Items. The Report does not constitute an endorsement by SETSCO of the Item.
- (2) SETSCO agrees to use reasonable diligence in the performance of the Services but no warranties are given and none may be implied directly or indirectly relating to the Services, the Report or the facilities of SETSCO.
- (3) The Report may not be used in any publicity material without the written consent of SETSCO.
- (4) The Report may not be reproduced in part or in full unless approval in writing has been given by SETSCO.
- (5) SETSCO shall under no circumstances be liable to the Client or its agents, servants or representatives, in contract, tort (including negligence or breach of statutory duty) or otherwise for any direct or indirect loss or damage suffered by the Client, its agents, servants or representatives howsoever arising or whether connected with the Services provided by SETSCO herein.



\*The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme\*  
LA-1994-0068-A, LA-1987-0001-B, LA-1993-0067-G, LA-1993-0051-C, LA-1998-0144-D, LA-2000-0181-F.

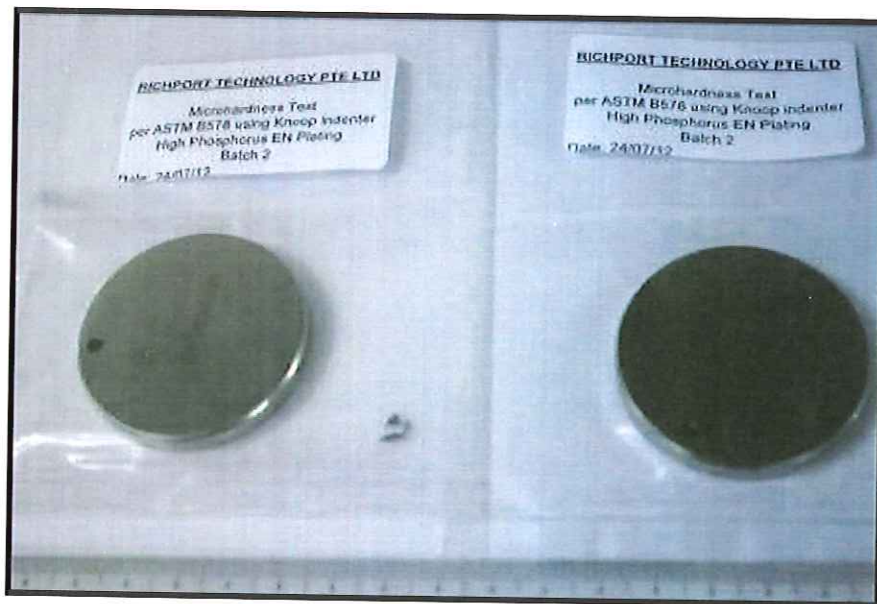
**Results:**

**Table 1a and 1b: Microindentation Hardness Measurement (HK100gf#) using 1000X mag**

(1a)

Sample Reference (High Phosphorus EN plated coupon)		B2-1		B2-2	
		HK 100gf	HV Converted	HK 100gf	HV Converted
Location (Randomly Selected)	Point 1	477.2	455.6	472.7	451.7
	Point 2	482.5	460.1	479.9	457.9
	Point 3	484.1	461.5	473.4	452.3
	Point 4	480.4	458.3	484.5	461.9
	Point 5	482.5	460.1	478.6	456.8
Standard Deviation		2.4	2.0	4.4	3.8
Mean Average		481.3	459.1	477.8	456.1

Notes: # Conversion is based on relationship for carbon steel materials.  
(HK denotes Knoop Hardness Value, HV denotes Vickers Hardness Value)



Samples as received.

*H*

*Wong*