

TCR ARABIA COMPANY LIMITED

Limited Liability Company

C.R. 2050059845



India | Kuwait | Saudi Arabia | USA

PO Box 3422, King Abdullaziz Sea Port, Near Al Kadi Tent Factory, Opp. Gasoline Station

Tel: +966-3-8475784/85 | Fax: +966-3-8475768 | www.tcr-arabia.com

شركة تي سي آر العربية المحدودة

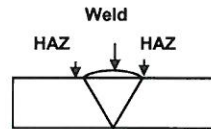
شركة ذات مسؤولية محدودة

سجل تجاري : 2050059845

HARDNESS TEST REPORT

REPORT NO : TCR/HT/AR-TA/001
 PROCEDURE NO. : QCP/TCR/HT/2.0 REV.1
 CLIENT : SABIC (ARRAZI)
 PROJECT : AR RAZI - III /TURN AROUND - 2012
 COMPONENT : R-3401 A & B
 EQUIPMENT : MIC 10
 MATERIAL SPEC : SA 516Gr 55
 HARDNESS SCALE : HB

Date 01/07/2012



S. No.	Component	Material	Joint	Location	Hardness in HB			
					HAZ	WELD	HAZ	Remarks
1	R 3401 A	SA 516 Gr 55	Circumferential Weld (TOP)	North	237	247	237	
				South	237	258	243	
				East	243	253	237	
				West	231	247	243	
2	R 3401 A	SA 516 Gr 55	Circumferential Weld (BOTTOM)	North	226	243	237	
				South	237	247	237	
				East	237	258	247	
				West	237	243	237	
3	R 3401 B	SA 516 Gr 55	Circumferential Weld (TOP)	North	237	253	243	
				South	231	247	237	
				East	252	264	237	
				West	226	243	237	
4	R 3401 B	SA 516 Gr 55	Circumferential Weld (BOTTOM)	North	237	271	247	
				South	231	253	237	
				East	231	247	237	
				West	243	264	247	

Hardness Test Carried out By

Reviewed By

TCR ARABIA COMPANY LTD.

AR RAZI

Signature

Name

Date

K. JAFFAR

01.07.2012

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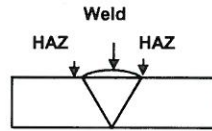
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شركة ذات مسؤولية محدودة
سجل تجاري : 2050059845

HARDNESS TEST REPORT

REPORT NO : TCR/HT/AR-TA/002
PROCEDURE NO. : QCP/TCR/HT/2.0 REV.1
CLIENT : SABIC (ARRAZI)
PROJECT : AR RAZI - III /TURN AROUND - 2012
COMPONENT : R-3102 B
EQUIPMENT : MIC 10
MATERIAL SPEC : A 204
HARDNESS SCALE : HB

Date 02/07/2012



S. No.	Component	Material	Joint	Location	Hardness in HB			
					HAZ	WELD	HAZ	Remarks
1	R 3102 B	A 204	Circumferential Weld (TOP)	North	237	258	237	
				South	-	-	-	
				East	-	-	-	
				West	231	264	243	

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سجل تجاري : 2050059845

HARDNESS TEST REPORT

REPORT NO : TCR/HT/AR-TA/003

Date 02/07/2012

PROCEDURE NO. : QCP/TCR/HT/2.0 REV.1

CLIENT : SABIC (ARRAZI)

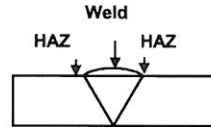
PROJECT : AR RAZI - III /TURN AROUND - 2012

COMPONENT : REFORMER - 3201 / HEADERS

EQUIPMENT : MIC 10

MATERIAL SPEC : Alloy Steel

HARDNESS SCALE : HB



S. No.	Component	Material	Joint	Location	Hardness in HB		
					HAZ	WELD	Remarks
1	HEADERS	Alloy Steel	H1	West	226	243	
2	HEADERS	Alloy Steel	H2	South	231	247	
3	HEADERS	Alloy Steel	H3	East	226	226	
4	HEADERS	Alloy Steel	H4	South	226	237	
5	HEADERS	Alloy Steel	H5	North	231	253	
6	HEADERS	Alloy Steel	H6	West	226	243	
7	HEADERS	Alloy Steel	H7	South	226	253	
8	HEADERS	Alloy Steel	H8	North	226	243	
9	HEADERS	Alloy Steel	H21	West	226	231	
10	HEADERS	Alloy Steel	H22	North	231	243	
11	HEADERS	Alloy Steel	H23	North	226	247	
12	HEADERS	Alloy Steel	H24	East	226	253	

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سجل تجاري : 2050059845

HARDNESS TEST REPORT

REPORT NO : TCR/HT/AR-TA/004

Date 09/07/2012

PROCEDURE NO. : QCP/TCR/HT/2.0 REV.1

CLIENT : SABIC (ARRAZI)

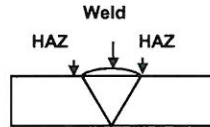
PROJECT : AR RAZI - III /TURN AROUND - 2012

COMPONENT : REFORMER - 3201 / HEADERS

EQUIPMENT : MIC 10

MATERIAL SPEC : Alloy Steel

HARDNESS SCALE : HB



S. No.	Component	Material	Joint	Location	Hardness in HB		
					WELD	HAZ	Remarks
1	HEADERS	Alloy Steel	H9	South	231	226	
				East	231	226	
				North	239	228	
				West	260	246	
2	HEADERS	Alloy Steel	H10	South	256	243	
				East	260	240	
				North	258	241	
				West	261	243	
3	HEADERS	Alloy Steel	H11	South	235	228	
				East	247	229	
				North	226	219	
				West	226	211	
3	HEADERS	Alloy Steel	H12	South	236	222	
				East	246	226	
				North	242	231	
				West	253	237	

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سجل تجاري : 2050059845

HARDNESS TEST REPORT

REPORT NO : TCR/HT/AR-TA/005

Date 09/07/2012

PROCEDURE NO. : QCP/TCR/HT/2.0 REV.1

CLIENT : SABIC (ARRAZI)

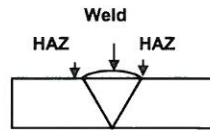
PROJECT : AR RAZI - III /TURN AROUND - 2012

COMPONENT : REFORMER - 3201 / HEADERS

EQUIPMENT : MIC 10

MATERIAL SPEC : Alloy Steel

HARDNESS SCALE : HB



S. No.	Component	Material	Joint	Location	Hardness in HB		
					WELD	HAZ	Remarks
1	HEADERS	Alloy Steel	H13	South	246	230	
				East	231	226	
				North	256	231	
				West	241	235	
2	HEADERS	Alloy Steel	H14	South	236	226	
				East	256	242	
				North	231	226	
				West	252	236	
3	HEADERS	Alloy Steel	H15	South	246	233	
				East	243	234	
				North	242	236	
				West	261	246	
3	HEADERS	Alloy Steel	H16	South	252	234	
				East	246	232	
				North	236	226	
				West	231	226	

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سجل تجاري : 2050059845

HARDNESS TEST REPORT

REPORT NO : TCR/HT/AR-TA/006

Date 09/07/2012

PROCEDURE NO. : QCP/TCR/HT/2.0 REV.1

CLIENT : SABIC (ARRAZI)

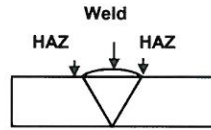
PROJECT : AR RAZI - III /TURN AROUND - 2012

COMPONENT : REFORMER - 3201 / HEADERS

EQUIPMENT : MIC 10

MATERIAL SPEC : Alloy Steel

HARDNESS SCALE : HB



S. No.	Component	Material	Joint	Location	Hardness in HB		
					WELD	HAZ	Remarks
1	HEADERS	Alloy Steel	H17	South	231	226	
				East	246	226	
				North	232	226	
				West	231	226	
2	HEADERS	Alloy Steel	H18	South	234	226	
				East	241	226	
				North	254	238	
				West	246	226	
3	HEADERS	Alloy Steel	H19	South	231	226	
				East	232	226	
				North	238	226	
				West	231	226	
3	HEADERS	Alloy Steel	H20	South	244	231	
				East	231	226	
				North	246	229	
				West	237	226	

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