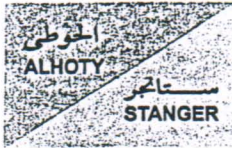


Product Test Certificates

Test Certificates

2009

AL HOTY-STANGER



AWAZEL CO. LTD.

RIYADH

TEST REPORT OF AWAZEL ASAD 1.6 CLPE

Our Ref.: RD-17485

Date: 21 February 2009

Page: 1 of 1

PRODUCT DESCRIPTION:

1.6mm Thick, Self Adhesive Membrane, Bonded to Cross Laminated High Density Polyethylene Film

Property Tested	Test Method	Results	Specs.	Remarks	
Roll Size, m	UEAtc, M.O.A.T. 31	20 x 1	20 x 1	Pass	
Thickness, mm	UEAtc, M.O.A.T. 31	1.69	1.6 (± 5 %)	Exceeds	
Weight g/m ²	UEAtc, M.O.A.T. 31	1903	1600 (± 10 %)	Exceeds	
Coating Asphalt : Type	Softening Point, °C	ASTM D 36	121	> 115	Pass
	Penetration @ 25°C, 0.1 mm	ASTM D 5	64	60 - 80	
Tensile Strength, Film N/mm ²	Longitudinal	ASTM D 638	46.5	45 (± 20 %)	Within Spec. Range
	Transversal		49.3		
Elongation Film, %	Longitudinal	ASTM D 638	318	N/A	-
	Transversal		265		
Tensile Strength, Membrane, N/5cm	Longitudinal	DIN 52123	225	230 (± 20 %)	Within Spec. Range
	Transversal		304		
Elongation, Membrane %	Longitudinal	DIN 52123	316	310 ± 15 %	Pass
	Transversal		259		
Tear Resistance, N	Longitudinal	ASTM D 4073	212	N/A	"
	Transversal		264		
Tear Resistance, N	Longitudinal	ASTM D 1004	46	N/A	"
	Transversal		39		
Puncture Resistance, N-mm	ASTM E 154	230 - 76	> 200 - 70	Pass	
Peel Strength (Adhesion), kg/cm	ASTM D 1000	8.96	6.5	Exceeds	
Cold Flexibility at - 20 to - 25°C	UEAtc, M.O.A.T. 31	No Cracking	No Cracking	Pass	
Heat Resistance at 120°C	UEAtc, M.O.A.T. 31	No Flowing	No Flowing	Pass	
Moisture Vapor Transmission, g/m ² /24 hours	ASTM E 96	0.05318	< 0.3	Pass	
Water Absorption After 24 Hours, %	ASTM D 5147	0.0212	--	--	
Water Absorption After 35 Days, %		ASTM D 570	0.8670	--	--
Environmental Resistance (Different Chemical Reagents)	ASTM D 543	Changes within range	N/A	--	

NOTE:

Al Hoty Stanger Ltd. was requested only for witnessing of test and does not take any responsibilities for the efficiency of testing procedure, calibration of test apparatus and other aspect of testing.

TEOFILO D. CABAL JR.
Regional Manager - Riyadh
For AL HOTY-STANGER LTD.



This report relates only to the sample tested and shall not be reproduced by others without the written approval of Al Hoty Stanger Ltd. Co. Laboratory

INDEPENDENT LABORATORIES & MATERIALS TESTING

P.O. BOX 1122 AL-KHOBAR 31952 - TEL: (03) 8891000 (11 LINES) / 8980958 / 8642539

Jubail Tel: (03) 341-6791 - Hofuf Tel: (03) 586-3210 - Riyadh Tel: (01) 478-4292 - Jeddah Tel: (02) 660-1924 - Yanbu Tel: (04) 322-5495 - Abu Dhabi Tel: (02) 5542234 - Dubai Tel: (04) 9472201 - Jeddah Tel: (04) 9040451



Center of Engineering, Laboratory Testing & Calibrations
مركز الفحوصات الهندسية والمخبرية والمعايرة



Kuwait University
College of
Engineering & Petroleum

مركز الفحوصات الهندسية والمخبرية والمعايرة
Center of Engineering, Laboratory
Testing & Calibrations

To : MPW Ref. : 16414
From : Center of Engineering, Laboratory Testing & Calibrations Report : CELTC 110117/11/2009
College of Engineering & Petroleum Date : 10/11/2009
Kuwait University Page : [1 / 2]

Dear Sir,

Please find attached the requested report according to the information below, and as per reporting department.

Report : CELTC 110117/11/2009
Test : Self Adhesive Membrane
Standard : As Enclosed
Client Name : Combined Group Contracting Co.
Tested For : MPW
Project Name: Airport Baxculvert
Contract No. : RA/160
No. of Pages : 2

Sample Delivered, State & Number:
Self Adhesive Membrane Sample in Good Condition.

Information Provided by Supervision:
N.A

Best regards,

Dr. Ammar Ben-Nakhi
CELTC Manager



I hereby certify that I have received & accepted all results as complete, and find this report to fulfill all requested services.

Name: Mohamed Adel Signature: [Signature] Date: _____
No. of Pages: _____

(في حالة قيام المركز بعمل فحوصات لدى طرف ثالث، فإن الطرف الثالث يتحمل مسؤولية نتائج هذه الفحوصات)



Center of Engineering, Laboratory Testing & Calibrations

مركز الفحوصات الهندسية والمخبرية والمعايرة



Kuwait University
College of
Engineering & Petroleum

مركز الفحوصات الهندسية والمخبرية والمعايرة
Center of Engineering, Laboratory
Testing & Calibrations

Test of Self Adhesive Membrane

AWAZEL ASAD 1.6 CLIPE

16414

10 NOV 2009

Test No : T-17
Date : 9/11/2009
Page : 2/2

1- Average thickness Membrane (UEATC M.O.A.T.30) : 1.68

2-Tensile Strength and Elongation of Film (ASTM D-638) :

Specimen No.	Tensile Strength (N/mm ²)		Elongation % (@break)	
	Longitudinal	Transverse	Longitudinal	Transverse
1	44.04	42.88	428.8	950.0
2	48.24	60.82	422.5	1050.0
3	42.09	56.82	381.3	926.3
4	56.53	56.72	421.3	935.0
5	44.04	56.72	288.8	930.0
Avg.	46.99	54.79	388.5	958.3

3- Elongation of Compound(ASTM D-638) :

Specimen No.	Elongation % (@break)	
	Longitudinal	Transverse
1	1300.0	612.5
2	1315.0	838.8
3	1302.5	565.0
4	1305.0	490.0
5	1310.0	495.0
Avg.	1306.5	600.3

4- Tensile / Tear strength of Film (ASTM D-1004) :

Specimen No.	Tear Resistance (N)		Thickness Film (mm)	Tear Resistance (N/mm)	
	Longitudinal	Transverse		Longitudinal	Transverse
1	17.5	15.0	0.045	388.9	333.3
2	16.0	15.5	0.04	400.0	387.5
3	16.5	15.0	0.04	412.5	375.0
Avg.	16.7	15.2	0.05	400.5	365.3

5)Water Resistance after 24 hrs (ASTM D-570):

Sample No.	Oven dry wt. (gm)	Wt.after 24 hr.Immers (gm)	Absorption %
1	3.2320	3.2360	0.124
2	3.6030	3.6070	0.111
3	3.7890	3.7940	0.132
Average			0.122

6-Water Vapor Transmission (ASTM E-96) :

Specimen No.	Water vapor transmission gm/m ² -24hr
1	0.144
2	0.192
3	0.138
Avg.	0.158



Test Certificates

2010

To : شركة عوازل الكويت
From : Center of Engineering, Laboratory Testing & Calibrations
College of Engineering & Petroleum
Kuwait University
Ref. : 16989
Report : CELTC 041410133
Date : 20/04/2010
Page : [1 / 2]

Dear Sir,

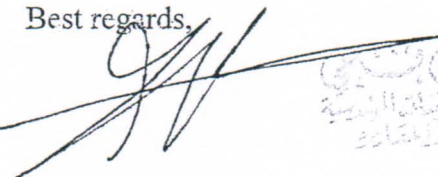
Please find attached the requested report according to the information below, and as per reporting department.

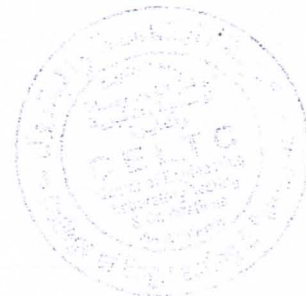
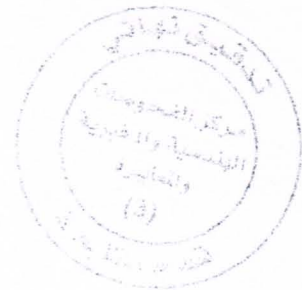
Report : CELTC 041410133
Test : Water Proffing Membrane Test
Standard : As Enclosed
Client Name : شركة عوازل الكويت
Tested For : شركة عوازل الكويت
Project Name: N.A
Contract No. : N.A
No. of Pages : 2

Sample Delivered, State & Number:
One Water Proffing Membrane Sample in Good Condition.

Information Provided by Supervision:
N.A

Best regards,


Dr. Ammar Ben-Nakhi
CELTC Manager





Center of Engineering, Laboratory Testing & Calibrations

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Kuwait University
College of
Engineering & Petroleum

مركز الفحوصات الهندسية والمخبرية والمعايرة
Center of Engineering, Laboratory
Testing & Calibrations



Test of Water Proofing Membrane (Asad 1.6 CLPE)

Test No : T-133
Date : 19/4/2010
Page : 2/2

- 1- Average thickness (ASTM D- 1000) :
2- Water absorption (ASTM D- 570) :

1.64 mm

Specimen No	Water Absorption (%)
1	0.082
2	0.091
3	0.093
Avg.	0.089

3- Tensile Strength and elongation (ASTMD-1000) :

Specimen No.	Tensile Strength (N/2.5cm)		Elongation %	
	Longitudinal	Transverse	Longitudinal	Transverse
1	129.0	132.5	857.3	755.3
2	126.0	122.0	660.7	666.0
3	129.0	118.0	769.3	893.3
4	125.0	123.5	800.0	800.0
5	126.0	121.5	818.7	840.0
Avg.	127.0	123.5	781.2	790.9

4- Tensile / Tear strength (ASTM D-1004) :

Specimen No.	Tear Resistance (N)		Tear Resistance (N/mm)	
	Longitudinal	Transverse	Longitudinal	Transverse
1	58.5	59.0	36.56	36.88
2	59.0	60.0	38.31	38.96
3	62.0	57.0	39.74	36.54
Avg.	59.8	58.7	38.21	37.46

5-Water Vapor Transmission (ASTM E-96) :

Specimen No.	Water vapor transmission gm/m ² -24hr
1	0.342
2	0.305
3	0.330
Avg.	0.326





**DEPARTMENT OF BUILDING AND ENERGY TECHNOLOGIES
KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH**

P.O. Box 24885

13109-Safat-Kuwait

TEL: 24989101, 24989129, FAX: 24989099.

LABORATORY TESTING REPORT

TEST REPORT NO. 67/2010.


Client : Awazel Kuwait Co.


Sample : Water Proofing Membrane, Asad 1.6 CLPE. Awazel, Saudi Arabia.

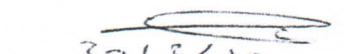
Date : 30th March , 2010.

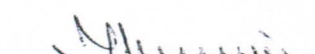
Tests Performed : - Elongation of film.
- Tear Resistance.
- Elongation of Compound.
- Water Resistance.
- Water Vapour Transmission.
- Thickness.

The results in this report relate to the samples submitted by the client and to no other.


31.3.2010
Approved by
F/ DM/BET


30/3/2010
Lab Supervisor
Eng. Ali M. Ali


30/3/10
Checked and Verified by
Mr. Amer Alarbeed


30/3/2010
Test conducted by
Mr. Tarun K. Mukherjee

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DEPARTMENT OF BUILDING AND ENERGY TECHNOLOGIES
KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH
LABORATORY TESTING RESULTS

Client : Awazel Kuwait Co.

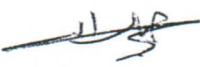
Test : Elongation of Film, ASTM D 638.

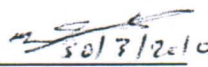
Sample : Water Proofing Membrane, Asad 1.6 CLPE. Awazel, Saudi Arabia.

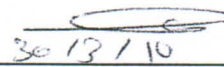
Procedure : The thin film of the membrane was removed and tested for the Determination of its tensile strength as per ASTM D 638.

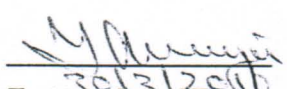
Results :

Specimen No.	Elongation (%)	
	Longitudinal	Transverse
1	637.4	719.1
2	691.6	719.4
3	566.5	689.7
4	450.5	719.4
5	643.6	719.4
Average	597.9	713.4


31.2.2010
Approved by DM/BET


30/7/2010
Lab Supervisor Eng. Ali M. Ali


30/7/10
Checked and Verified by Mr. Amer Alarbeed


30/3/2010
Test conducted by Mr. Tarun K. Mukherjee

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KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH
LABORATORY TESTING RESULTS

Client : Awazel Kuwait Co.

Test : Tear Resistance, ASTM D 624; Die C.

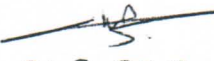
Sample : Water Proofing Membrane, Asad 1.6 CLPE. Awazel, Saudi Arabia.


Procedure : Standard procedure of ASTM D 624 was applied on die C type of specimens cut out from the received sample.

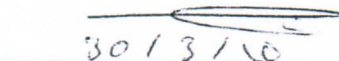
Results :


Specimen No.	Tear Resistance (N)*		Tear Resistance (MPa)	
	Longitudinal	Transverse	Longitudinal	Transverse
1	36.31	28.69	18.62	14.71
2	34.03	26.24	17.45	13.46
3	39.03	29.86	20.02	15.31
4	33.06	28.85	16.95	14.79
5	42.36	28.70	21.72	14.72
Average	36.96	28.47	18.95	14.60

*Average thickness of the specimens was 1.54 mm


31-3-2010
Approved by
DM/BET


30/3/2010
Lab Supervisor
Eng. Ali M. Ali


30/3/10
Checked and Verified by
Mr. Amer Alarbeed


30/3/2010
Test conducted by
Mr. Tarun K. Mukherjee

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DEPARTMENT OF BUILDING AND ENERGY TECHNOLOGIES
KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH
LABORATORY TESTING RESULTS

Client : Awazel Kuwait Co.

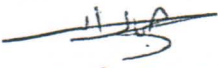
Tests : Tensile Strength and Elongation of Compound, ASTM D 638.

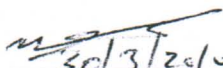
Sample : Water Proofing Membrane, Asad 1.6 CLPE. Awazel, Saudi Arabia.

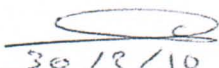
Procedure : Standard procedure of ASTM D 638 was applied on specimens cut out from the received membrane sample.

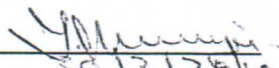
Results :

Specimen No.	Elongation (%)		Tensile Strength (MPa)	
	Longitudinal	Transverse	Longitudinal	Transverse
1	616.3	719.8	2.36	2.90
2	686.2	719.7	2.58	2.62
3	719.5	719.7	2.91	2.48
4	718.3	715.4	2.78	2.30
5	719.6	719.5	2.80	2.77
Average	692.0	718.8	2.69	2.61


31.3.2010
F/ Approved by
DM/BET


30/3/2010
Lab Supervisor
Eng. Ali M. Ali


30/3/10
Checked and Verified by
Mr. Amer Alarbeed


30/3/2010
Test conducted by
Mr. Tarun K. Mukherjee

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DEPARTMENT OF BUILDING AND ENERGY TECHNOLOGIES
KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH
LABORATORY TESTING RESULTS

Client : Awazel Kuwait Co.

Tests : Water Absorption; ASTM D 570.


Sampl : Water Proofing Membrane, Asad 1.6 CLPE. Awazel, Saudi Arabia.


Procedure : Standard procedure of ASTM D 570 was applied on specimens cut out from the received sample.


Results :

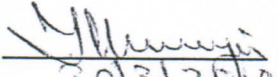
Specimen No.	Water Absorption* (%)
1	0.18
2	0.21
3	0.16
Average	0.18

*Water absorption by weight.


31.3.2010
Approved by
f/ DM/BET


30/3/2010
Lab Supervisor
Eng. Ali M. Ali


30/3/10
Checked and Verified by
Mr. Amer Alarbeed


30/3/2010
Test conducted by
Mr. Tarun K. Mukherjee

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**DEPARTMENT OF BUILDING AND ENERGY TECHNOLOGIES
KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH**

LABORATORY TESTING RESULTS

Client : Awazel Kuwait Co.


Test : Water Vapour Transmission (WVT) and Permeance, ASTM E 96.

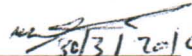
Sample : Water Proofing Membrane, Asad 1.6 CLPE. Awazel, Saudi Arabia.

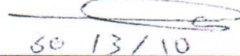
Procedure : Standard procedures of ASTM E 96 was applied using desiccant method at 23 °C and 50 % relative humidity. The thickness of the tested sample was 50 mm.

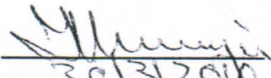
Results :

Sample No.	WVT		Permeance (g/Pa.s.m ²)	Permeability (Perm inch)
	(g/h .m ²)	(g/24h .m ²)		
1	0.004	0.095	4.586 x 10 ⁻¹⁰	4.744 x 10 ⁻⁴
2	0.005	0.114	5.503 x 10 ⁻¹⁰	5.693 x 10 ⁻⁴
3	0.004	0.095	4.586 x 10 ⁻¹⁰	4.744 x 10 ⁻⁴
Average	0.004	0.104	4.892 x 10⁻¹⁰	5.060x 10⁻⁴


31.3.2010
Approved by
F/ DM/BET


30/3/2010
Lab Supervisor
Eng. Ali M. Ali


30/3/10
Checked and Verified by
Mr. Amer Alarbeed


30/3/2010
Test conducted by
Mr. Tarun K. Mukherjee

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KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH

LABORATORY TESTING RESULTS

Client : Awazel Kuwait Co.


Test : Thickness.

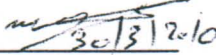
Sample : Water Proofing Membrane, Asad 1.6 CLPE. Awazel, Saudi Arabia.


Procedure : The total thickness of the received sample was measured using digital micrometer.

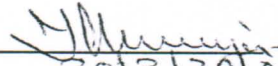
Results :

Thickness (mm)	
Readings	Average
1.49 – 1.55 – 1.38 – 1.49 – 1.49	1.54
1.45 – 1.46 – 1.43 – 1.66 – 1.62	
1.50 – 1.62 – 1.58 – 1.66 – 1.67	


31.3.2010
Approved by
F/DM/BET


30/3/2010
Lab Supervisor
Eng. Ali M. Ali


30/3/10
Checked and Verified by
Mr. Amer Alarbeed


30/3/2010
Test conducted by
Mr. Tarun K. Mukherjee

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Center of Engineering, Laboratory
Testing & Calibrations

Center of Engineering, Laboratory Testing & Calibrations

مركز الفحوصات الهندسية والمخبرية والمعايرة



Kuwait University
College of
Engineering & Petroleum

To : المؤسسة العامة للرعاية السكنية
From : Center of Engineering, Laboratory Testing & Calibrations
College of Engineering & Petroleum
Kuwait University

Ref. : 16485
Report : CELTC 022110193
Date : 14/03/2010
Page : [1 / 2]

Dear Sir,

إدارة ضبط الجودة
صادر / / ٢٠١٠
نتائج

إدارة ضبط الجودة
زاره / ١٦ / ٢٠١٠ / ٣
نتائج

Please find attached the requested report according to the information below, and as per reporting department.

Report : CELTC 022110193

Test : Water Proffing Membrane Test

self adhesive

Standard : As Enclosed

Client Name : شركة عوازل الكويت

Tested For : المؤسسة العامة للرعاية السكنية

Project Name: جابر الاحمد

Contract No. : 1137/2009-2010

No. of Pages : 2

Sample Delivered, State & Number:

One Water Proffing Membrane Sample in Good Condition.

Information Provided by Supervision:

N.A

Best regards,

Dr. Ammar Ben-Nakhi
مدير مركز الفحوصات الهندسية والمخبرية والمعايرة

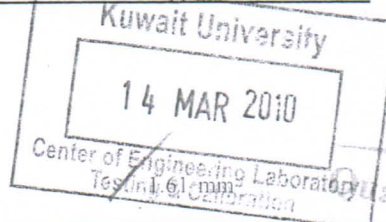
Dr. Ammar Ben-Nakhi
CELTC Manager





16485

Test on Water Proofing Membrane



Test No : T-193
Date : 9/3/2010
Page : 2/2

- 1- Average thickness (ASTM D- 5147) :
2- Water absorption (ASTM D- 5147) :

Specimen No	Water Absorption (%)
1	0.093
2	0.099
3	0.130
Avg.	0.107

- 3- Tensile Strength and elongation of compound (ASTM-1000) :

Specimen No.	Tensile Strength (N/2.5cm)		Elongation %	
	Longitudinal	Transverse	Longitudinal	Transverse
1	102.0	99.5	630.00	630.0
2	104.0	88.0	631.00	638.0
3	100.0	99.8	601.00	637.0
4	102.0	100.0	620.00	628.0
5	105.0	92.0	625.00	630.0
Avg.	102.6	95.9	621.4	632.6

- 4- Tensile / Tear strength of Compound(ASTM D-1004) :

Specimen No.	Tear Resistance (N)	
	Longitudinal	Transverse
1	43.0	53.0
2	44.5	48.5
3	39.5	55.0
Avg.	42.3	52.2

- 5-Water Vapor Transmission (ASTM E-96) :

Specimen No.	Water vapor transmission gm/m ² -24hr
1	0.324
2	0.300
3	0.354
Avg.	0.326



Test Certificates

2011



مركز الفحوصات الهندسية والمخبرية والمعايرة
Center of Engineering Laboratory
For Testing & Calibrations

Center of Engineering Laboratories for Testing & Calibration

مركز الفحوصات الهندسية والمخبرية والمعايرة



Kuwait University
College of
Engineering & Petroleum

To : MPW (LPG-BACE)
From : Center of Engineering, Laboratory for Testing & Calibrations
College of Engineering & Petroleum
Kuwait University

Ref. : 27388
Report : CELTC 071711061
Date : 20/07/2011
Page : [1 / 2]

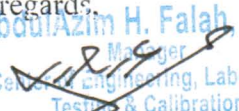
Dear Sir,

Please find attached the requested report according to the information below, and as per reporting department.

Report : CELTC 071711061
Test : Awazel ASAD 1.6 CLPE
Standard : As Enclosed
Client Name : Arab Contractors شركة المقاولون العرب
Tested For : MPW (LPG-BACE)
Project Name: N.A.
Contract No. : RA/166 Jahra Road
No. of Pages : 2

Sample Delivered, State & Number:
One Awazel ASAD 1.6 CLPE Sample in Good Condition

Information Provided by Supervision:
من انتاج شركة عوازل السعودية

Best regards,

Abdulazim H. Falah, PH.D.
Manager
Center of Engineering, Laboratory
Testing & Calibration
Dr. Abdulazim H. Falah
CELTC Manager





مركز الفحوصات الهندسية والمخبرية والمعايرة
Center of Engineering, Laboratory
Testing & Calibrations

Center of Engineering, Laboratory Testing & Calibrations

مركز الفحوصات الهندسية والمخبرية والمعايرة



Kuwait University
College of
Engineering & Petroleum

27388

Test on Awazel ASAD 1.6 CLPE

Test No : T-61
Date : 17/7/2011
Page : 2/2



Tensile force and elongation of Film (ASTM D-882) :

Specimen No.	Tensile Force (N/mm ²)		Elongation %	
	Longitudinal	Transverse	Longitudinal	Transverse
1	42.0	48.0	230.7	178.0
2	42.5	46.0	241.3	172.7
3	43.0	44.5	237.3	162.7
4	47.5	44.5	240.0	184.7
5	45.5	43.0	254.0	176.0
Avg.	44.1	45.2	240.7	174.8





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Kuwait University
College of
Engineering & Petroleum

Test of Awazel ASAD 1.6 CLPE Self Adhesive Film (Valaron)

Client Name : Arab Contractors Co. (Osman Ahmed Osman) Report No. : 091311060
Test For : MPW-LBG/PACE Date : 18/09/2011
Project Name : Jahra Road Page : [1 / 1]
Contract No. : RA/166

Sample Description : Awazel ASAD 1.6 CLPE Self Adhesive Film (Valaron) in Good Condition.
Supplier: Khajah Co.

Test Name	Average Result	Standards
Tensile Strength:		
- Longitudinal (MD)	47.02 N/mm ²	ASTM D882-02
- Transverse (CD)	42.19 N/mm ²	
Elongation:		
- Longitudinal (MD)	258.20%	
- Transverse (CD)	165.40%	



Dr. Abdulazim H. Falah, PH.D.
Manager
Center of Engineering Laboratory
Testing & Calibration

Dr. Abdulazim H. Falah
CELTC Manager





Center Of Engineering Laboratories For Testing & Calibration

مركز الفحوصات الهندسية والمخبرية والمعايرة



TEST OF AWAZEL ASAD 1.6 CLPE

Client Name : شركة عوازل الكويت Report No. : 103011145
Test For : وزارة الأشغال (إدارة ضبط الجودة) Date : 15/11/2011
Project Name : N.A. Page : [1 / 1]
Contract No. : N.A.

Sample Description : Water Proofing Membrane AWAZEL ASAD 1.6 CLPE in Good Condition.
انتاج شركة عوازل السعودية

Test Name	Average Result	Standards
- Thickness	1.72 mm	UEAtc M.O.A.T.30
- Water Absorption (2hrs)	0.06%	ASTM D-570
Tensile Strength: - Longitudinal - Transverse	282.4 N/5cm 321.6 N/5cm	DIN 52123
Elongation: - Longitudinal - Transverse	348.30% 311.80%	
Tear Strength: - Longitudinal - Transverse	79.88 N 77.5 N	ASTM D-1004
-Resistance to Heat at 100°C	No effect or drops at all	UEAtc M.O.A.T.30
-Water Vapour Transmission	0.267 g/m ² /24 hrs	ASTM E-96



(Handwritten signature)

Dr. Abdulazim H. Falah
CELTC Manager
AbdulAzim H. Falah, PH.D.
Manager
Center of Engineering, Laboratory
Testing & Calibration

Kuwait University will not be held liable for consequent action based upon the results so obtained in this report

Test Certificates

2012



Center of Engineering Laboratories For Testing & Calibration
مركز الفحوصات الهندسية والمخبرية والمعايرة



Test of Awazel ASAD 1.6 CLPE

Client Name : شركة عوازل الكويت Report No. : 122911093
Test For : وزارة الأشغال العامة (إدارة ضبط الجودة) Date : 08/01/2012
Project Name : N.A. Page : [1 / 1]
Contract No. : N.A.

Sample Description : One Awazel ASAD 1.6 CLPE Good Condition.

Test Name	Average Result	Standards
- Water Absorption (24hrs)	0.122%	ASTM D-570



AbdulAzim H. Falah, PH.D.
Manager
Center of Engineering Laboratories
Testing & Calibration

Dr. Abdulazim H. Falah
CELTC Manager



Center of Engineering Laboratories For Testing & Calibration
مركز الفحوصات الهندسية والمخبرية والمعايرة



Test of Awazel ASAD 1.6 CLPE

Client Name : شركة عوازل الكويت Report No. : 122911094
Test For : وزارة الأشغال العامة (إدارة ضبط الجودة) Date : 09/01/2012
Project Name : N.A. Page : [1 / 1]
Contract No. : N.A.

Sample Description : One Awazel ASAD 1.6 CLPE in Good Condition.

Test Name	Average Result	Standards
- Puncture resistance	404.5 N	ASTM E-154
- Adhehision to prime concrete	2.68 N/mm	ASTM D-1000
Elongation:		
- Longitudional	463.20%	
- Transverse	373.80%	



AbdulAzim H. Falah, PH.D.
Manager
Engineering Laboratory
Testing & Calibration

Dr. Abdulazim H. Falah
CELTC Manager



Center of Engineering Laboratories For Testing & Calibration

مركز الفحوصات الهندسية والمخبرية والمعايرة



Test of Water Proofing Membrane (Awazel)

Client Name : **RIZZANI Co.** Report No. : **082312074**
 Test For : **MPW - LB - PAC** Date : **30/09/2012**
 Project Name : **J. A. N. Street** Page : **[1 / 1]**
 Contract No. : **RA / 167**

Sample Description : Water Proofing Membrane (Awazel) Sample in Good Condition. - *Retest*

Test Name	Units	Results					Average	Standard
		1	2	3	4	5		
- Thickness:	mm	1.51	1.62	1.72	1.69	1.62	1.63	-
Tear Resistance:								
- Longitudinal	N	45.4	51.1	48.3	50.6	44.3	47.9	ASTM D1004
- Transverse		56.4	60.7	56.2	58.70	59.40	58.3	
- Water Absorption after 24hrs:	%	0.091	0.090	0.092	-	-	0.091	ASTM D570
- Water Absorption after 35 days:	%	0.933	0.959	0.952	-	-	0.948	
- Water Vapour Transmission for 24hrs:	gm/m ²	0.372	0.294	0.246	0.384	0.288	0.317	ASTM E96
- Puncture Resistance:	N	349.50	329.00	-	-	-	339.25	ASTM E154

Delivery Note # 42317 & 42369 MIR 77



Dr. Ammar Ben-Nakhi
 CELTC Manager

Dr. Ammar E. Ben-Nakhi
 Manager
 Center of Engineering
 Laboratories For Testing & Calibrations

Kuwait University will not be held liable for consequent action based upon the results so obtained in this report



Client : AWAZEL

Project : Riyadh

Sample ID. : AWAZEL ASAD 1.6 CLPE
 1.6 mm thick, Bituminous Self Adhesive Membrane Laminated with Cross Laminated High Density Polyethylene Film
 Batch No. 71/2013

Date Sample Received : N/A

Date Sample Tested : 02 July 2013

Sampling Performed by: UAEtc MOAT / DIN / ASTM

Sampling Method : -

Testing Witnessed by : GG Reyes

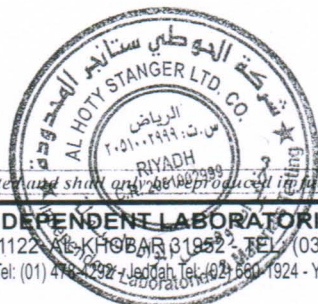
Testing Conducted at : @ Site (Awazel Lab.)

PROPERTY TESTED	TEST METHOD	RESULTS	SPECIFICATION	REMARKS
Thickness, mm	UEAtc, MOAT 31	1.68	1.6	PASSED0
Water Absorption, wt. %	ASTM D 5147 ASTM D 570	0.072	< 0.14	
Tensile Strength, N/5cm				
▪ Longitudinal	DIN 52123	341	230	PASSED
▪ Transversal		323	310	
Elongation Film, %				
▪ Longitudinal	ASTM D 638	423	310	PASSED
▪ Transversal		348	220	
Tear Strength, N/mm ²				
▪ Longitudinal	DIN 52123	353	340	PASSED
▪ Transversal		336	310	
Resistance to Heat at 100°C	UEAtc, MOAT 31	No Dripping	No Dripping	PASSED
Water Vapor Transmission, g/m ² /24 hrs	ASTM E 96	0.2019	< 0.3	PASSED
Elongation, %				
▪ Longitudinal	DIN 52123	412	310	PASSED
▪ Transversal		361	220	PASSED
Puncture Resistance, N	ASTM E 154	406	> 200	PASSED
Water Absorption after 35 days, %	ASTM D570 / ASTM D 5147	0.8689	< 0.95	PASSED
Tensile Strength of Film, N/mm ²				
▪ Longitudinal	ASTM D 638	48.3 (492 kg/cm ²)	45	PASSED
▪ Transversal		50.8 (518 kg/cm ²)	50	

NOTE:

Al Hoty Stanger Ltd Co. was requested only for witnessing of test and does not take any responsibilities for the efficiency of testing procedure, calibration of test apparatus and other aspect of testing.


 TEOFILO D. CABAL JR.
 Regional Manager - Riyadh
 AL HOTY-STANGER LTD.




 AYMAN A. TANINNAH
 Assistant Regional Manager - Riyadh
 For AL HOTY-STANGER LTD.

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INDEPENDENT LABORATORIES & MATERIALS TESTING

P.O. BOX 1122 - AL KHOBAR 31852 - TEL: (03) 8891000 (11 LINES) / 8980958 / 8642539

Jubail Tel: (03) 341 - 6791 - Hofuf Tel: (03) 586 - 3210 - Riyadh Tel: (01) 478 - 732 - Jeddah Tel: (02) 660 - 1924 - Yanbu Tel: (04) 322-5495 - Abu Dhabi Tel: (02) 5542234 - Dubai Tel: (04)3472201 - Jebel Ali Tel: (04) 8818451



Client	: AWAZEL
Project	: Riyadh
Sample ID.	: AWAZEL ASAD 1.6 CLPE 1.6 mm thick, Bituminous Self Adhesive Membrane Laminated with Cross Laminated High Density Polyethylene Film Batch No. 78/2013

Date Sample Received	: N/A
Date Sample Tested	: 26 September 2013
Sampling Performed by:	: UAEtc MOAT / DIN / ASTM
Sampling Method	: -
Testing Witnessed by	: GG Reyes
Testing Conducted at	: @ Site (Awazel Lab.)

PROPERTY TESTED	TEST METHOD	RESULTS	SPECIFICATION	REMARKS
Thickness, mm	UEAtc, MOAT 31	1.63	1.6	PASSED
Water Absorption, wt. %	ASTM D 5147 ASTM D 570	0.0761	< 0.14	
Tensile Strength, N/5cm				
▪ Longitudinal	DIN 52123	346	230	PASSED
▪ Transversal		322	310	
Elongation Film, %				
▪ Longitudinal	ASTM D 638	427	310	PASSED
▪ Transversal		339	220	
Tear Strength, N/mm ²				
▪ Longitudinal	DIN 52123	353	340	PASSED
▪ Transversal		341	310	
Resistance to Heat at 100°C	UEAtc, MOAT 31	No Dripping	No Dripping	PASSED
Water Vapor Transmission, g/m ² /24 hrs	ASTM E 96	0.2187	< 0.3	PASSED
Elongation, %				
▪ Longitudinal	DIN 52123	416	310	PASSED
▪ Transversal		359	220	PASSED
Puncture Resistance, N	ASTM E 154	402	> 200	PASSED
Water Absorption after 35 days, %	ASTM D570 / ASTM D 5147	0.8712	< 0.95	PASSED
Tensile Strength of Film, N/mm ²				
▪ Longitudinal	ASTM D 638	48.5 (494 kg/cm²)	45	PASSED
▪ Transversal		51.2 (521 kg/cm²)	50	

NOTE:

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TEOFILO D. CABAL JR.
 Regional Manager – Riyadh
AL HOTY-STANGER LTD.




AYMAN A. TANINNAH
 Assistant Regional Manager – Riyadh
For AL HOTY-STANGER LTD.

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INDEPENDENT LABORATORIES & MATERIALS TESTING

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Test of Water Proofing Membrane Self Adhesive ASAD 1.6mm CLPE

Client Name : شركة المجموعة المشتركة
 Test For : وزارة الأشغال العامة - إدارة الطرق السريعة
 Project Name : تقاطعات وخدمات على الجزء الأوسط من طريق الجهراء
 Contract No. : RA/212

Report No : 100113005
 Date : 10/10/2013
 Page : [1 / 1]

Sample Description : Water Proofing Membrane Self Adhesive ASAD 1.6 mm CLPE Sample in Good Condition.

Test Name	Units	Results					Average	Standard
		1	2	3	4	5		
- Thickness:	mm	1.68	1.63	1.69	1.70	1.74	1.69	ASTM D1004
Tensile Strength:								
- Longitudinal	N/mm ²	3.93	3.73	4.19	4.11	3.83	3.96	ASTM D638
- Transverse		3.73	4.26	3.66	3.57	3.74	3.79	
Ultimate Elongation:								
- Longitudinal	%	897.28	1161.40	909.35	956.15	905.45	926.33	ASTM D638
- Transverse		746.65	763.58	690.00	782.20	781.13	764.71	
Tear Resistance:								
- Longitudinal	N	56.75	55.29	52.47	57.37	54.78	55.33	ASTM D1004
- Transverse		47.14	48.17	44.83	49.22	46.35	47.14	
-Puncture Resistance:	N	330.0	331.0	-	-	-	330.50	ASTM E154
- Water Absorption (24hrs):	%	0.087	0.052	0.059	-	-	0.066	ASTM D570
- Adhesion Strength to prime concrete:	N/10mm of width	27.550	27.560	20.290	-	-	25.133	ASTM D1000
- Water Vapour Transmission for 24hrs:	gm/m ²	0.288	0.252	0.276	0.228	0.324	0.274	ASTM E96

Handwritten signature/initials

Dr. Ammar Ben-Nakhi
 CELTC Manager
 Dr. Ammar Ben-Nakhi



004626