

**PCSIR LABORATORIES COMPLEX, KARACHI**

Shahrah-e-Dr.Salimuzzaman Siddiqui, Off University Road, Karachi - 75280

TEST REPORT*KL/ILO/FF.510/01(NA)
Revision #: 02
Issue #: 01
Issue Date: 19-11-2009S. No: **10399**Test Report #. ILD/ ATR-1787/2010Date: 22-04-2010

- Name and Address of Client: M/s. SMEC International Pty Ltd. (JV). Suit Office: C-8. Near Irshad Hospital G-T Road. Sadhoki Tehsil Kamoki Distt. Gujranwala Punjab
Ref. SMEC/ACE/C-08/MS/04.05/2103 Dated: 1st April, 2010 Date of receipt: **07-04-2010**
- Description of the Sample: **Interbuna Expansion Joint ET-75 (Chloroprene Rubber)**
(Lahore Gujranwala ACW/ECW (North/South Bound) N-5 Contract -08
Item: _____ Make: Nil
Lab. Code No. ILD/ATR-1787/2010 Mark if any: Nil
Condition found on receipt: Normal
- Sample Plan / Procedure used: N.A. Date of sampling: N.A.
- Environmental Conditions: Temp: N.A. Humidity: N.A.
(Where applicable)
- Method Used: ASTM D 412, D 573, D 2240, D 624, D 395(B), D 746, D-470, D 1149
- Measurements & Results:

S. #	Tests Items	Unit	Original Properties	After Aging 100°C x 70hrs	Change
1.	Tensile Strength	kgf/cm ²	167	174	+04%
2.	Elongation at Break	%	674	602	-11%
3.	Hardness (Shore-A)	Pts	45	47	+ 4.4
4.	Tear Strength	Kgf/cm	43	--	--
5.	Compression Set (67°C x 22hrs)	%	09	--	--
6.	Oil Deterioration Volume Increase (ASTM Oil # 3 for 70hrs @ 100°C)	%	38		
7.	Low Temperature Brittleness Test (-40°C x 5hrs)	No sign of failure such as cracking or chipping.			
8.	Ozone Resistance Test: <i>Test Conditions:</i> Dimension of Specimen 2 x 25 x 150mm No of specimen 03 Strain 20% Ozone Concentration 100 ± 10 PPHM Test Temperature 40 ± 2°C Test duration 100 hrs Movement Static with planetary effect Observation No cracks were observed after 100hrs				

Statement of Compliance: N.A.

Opinion / Interpretation (where required):--

Tested By: (A.F.K. Ifrahim)
S.E.O.

Head of Centre/Division:

(Dr. Arfa Yasmin)
CSO/HOC(Zuzzer Ali Shamsuddin)
Director General**END OF REPORT****Project: Lahore-Gujranwala N-5, C-08**
Material: Interbuna Spain. Expansion joint ET-75

**PCSIR LABORATORIES COMPLEX, KARACHI**


Shahrah-e-Dr.Salimuzzaman Siddiqui, Off University Road, Karachi - 75280

KL/ILO/FF/510/01(NA)
Revision #: 02
Issue #: 01
Issue Date: 19-11-2009**TEST REPORT***S. No: ¹²²⁴¹ Test Report #. ILD/ATR-48/2011Date: 11-01-2011



- Name and Address of Client: M/s. Republic Engineering Corporation (Pvt.) Ltd. 1st Floor, PAAF Building, 7-D, Kashmir Egerton Road, Lahore
Ref. RE/REC/MPSB/161/11 Dated: 29th Dec., 2010 Date of receipt: 03-01-2011
- Description of the Sample: Bridge Expansion Joint Type ET-75 of Interbuna (Construction of Moosa Pak Shaheed Bridge Over River Sutlej at Aimenwala, Bahawalpur)
Item: Make: Spain
Lab. Code No. ILD/ATR-48/2011 Mark if any: Nil
Condition found on receipt: Normal
- Sample Plan / Procedure used: N.A. Date of sampling: N.A.
- Environmental Conditions: Temp: N.A. Humidity: N.A.
(Where applicable)
- Method Used: ASTM D 412, D 573, D 2240, D 624, D 395(B), D-471, D 746, D 1149
- Measurements & Results:

S. #	Tests Items	Unit	Original Properties	After Aging 100°C x 70hrs	Change
1.	Tensile Strength	kgf/cm ²	163	158	-03%
2.	Elongation at Break	%	563	528	-06%
3.	Hardness (Shore-A)	Pts	60	63	+ 03
4.	Tear Strength	Kgf/cm	46	--	--
5.	Compression Set (67°C x 22hrs)	%	11	--	--
6.	Oil Resistance Properties Change in Volume In ASTM Oil # 3 (100°C at 70hrs.)	%	30.5	--	
7.	Low Temperature Brittleness Test (-40°C x 5hrs)	No sign of failure such as cracking or chipping.			
8.	Ozone Resistance Test: <i>Test Conditions:</i> Dimension of Specimen 2 × 25 × 150mm No of specimen 03 Strain 20% Ozone Concentration 100 ± 10 PPHM Test Temperature 40 ± 2°C Test duration 100 hrs Movement Static with planetary effect Observation No cracks were observed after 100hrs				

- Statement of Compliance: N.A.
- Opinion / Interpretation (where required):--

Tested By: 
(A.F.K. Ifrahim)
S.E.O.

Head of Centre/Division:


(Dr. Arfa Yasmin)
CSO/HOC
(Dr. Tanzil Haider Usmani)
Director General**END OF REPORT**Project: Construction of Moosa Pak Shaheed Bridge
Material: INTERBUNA ET-75 Expansion Joint

Nº: 099/11

CLIENTE/: AZMOON CONSTRUCTION Afghanistan
ALBARAN/ N° INVOICE: 12/F100021
CUSTOMER ORDER N°: EX12/AFG01
FECH. ENVIO/ EXPEDITION DATE: 02/05/2011

PRODUCTO/ PRODUCT	REFERENCIA/ REFERENCE	MEDIDAS (mm)/ DIMENSIONS	CANTIDAD/ QUANTITY	LOTE/ LOT	Nº OF
JOINTS	REJ70	1829	43.92	2/11-05-11	AFG-01

INTERBUNA, S.L., asegura que, salvo excepciones o derogaciones abajo detalladas, las piezas con el número de albarán indicado, han sido fabricadas de acuerdo a la NORMA ISO 9001:2000.

INTERBUNA, S.L., assures that, except for exceptions or derogations down detailed, the pieces with the number of indicated delivery note, they have been made according to STANDARD ISO 9001:2000.

CAUCHO Chloroprene (CR)/ Chloroprene RUBBER (CR)

ENSAYOS/TESTS	UNIDADES/ UNITS	ESPECIFICACIÓN/ SPECIFICATIONS	NORMA/ STANDARD
Dureza /Hardness	°Sh A	46	ASTMD2240
Resistencia a la tracción/Tensile Strength	N/mm ²	170	ASTMD412
Alargamiento a rotura/Elongation at Break	%	650	ASTM D412
Resistencia al Ozono(100 pphm 20% 70h. a 40°C +- 2°C)/ Ozone Resistance (100 pphm 20% 70h. a 40°C +-2°C)		Sin grietas/ No Cracks	ASTM D 1149
Deformación remanente por compresión(24h a 70°C)/ Compression Set (24h a 70°C), Method B	%	10	ASTM D 395
Desgarro/Tear Strength	Kgf/cm	43	ASTM D624
Envejecimiento térmico acelerado/Oil deterioration (70h at 100°C)	Volume Increase ASTM Oil#3	%	ASTM D470





**CERTIFICADO DE CALIDAD – CONFORMIDAD/CERTIFICATE OF QUALITY - AGREEMENT
JUNTAS/ JOINTS**

All frame rails are according to ASTM A36M grade 250 along with weight 20 kg/LM.

All Anchor studs are according to ASTM A108.

Expansion Joints Assemblies are hot dip galvanized after fabrication and all welding operations (including stud welding) are done according to ASTM A123.

All welding is according to ANSI/ AASHTO/ AWS D1.5-95

Aprobado por/Approved by: Narciso Fernández Domínguez

Fecha/Date: 03/05/2011

Responsable de Calidad/Quality Manager

**Project:Kabul Kandhar Bridge Afganistan
Material:INTERBUNA Expansion joint REJ-70**

Interbuna, S.I. TFO:00.34.91.6093463. FAX:00.34.91.6094072 e-mail:interbuna@interbuna.com



Sistema de Calidad Certificado Nº Reg.: 07 100 43016/2 TMS
Página 2 / Sheet 1

Nº : 98/11

CLIENTE/: AZMOON CONSTRUCTION Afghanistan
 Nº ALBARAN/ N^o INVOICE : 12/F100021
 CUSTOMER ORDER N^o: EX12/AFG01
 FECH. ENVIO/ EXPEDITION DATE: 02/05/2011

PRODUCTO/ PRODUCT	TIPO/ TYPE	LOAD/ DESIGNED	MEDIDAS (mm)/ DIMENSIONS	CANTIDAD/ QUANTITY	LOTE/ LOT
BEARING PAD	B	65TON	63*230*360(39)	8	3/11-5-11
BEARING PAD	B	40TON	63*180*280(39)	16	3/11-5-11
X	X	X	X	X	X

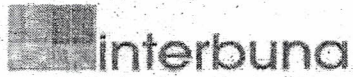
INTERBUNA asegura que, salvo excepciones o derogaciones abajo detalladas, las piezas con el número de albarán indicado, han sido fabricadas de acuerdo a la NORMA ISO 9001:2008 y/o UNE EN 1337-3.

INTERBUNA assures that, except for exceptions or derogations down detailed, the pieces with the number of indicated delivery note, they have been made according to NORMA ISO 9001:2008 and/or UNE-EN 1337-3.

CAUCHO Chloroprene (CR)/ Chloroprene RUBBER (CR)

ENSAYOS/TESTS	UNIDADES/ UNITS	ESPECIFICACIÓN/ SPECIFICATIONS	NORMA/ STANDARD
Resistencia a la tracción/Tensile Strength	Kg/cm ²	165	ASTM D412
Alargamiento a rotura/Elongation at Break	%	425	ASTM D412
Resistencia al Ozono(20% strain,100h @38°C +-100+-20parts 1 degree°C)/		Sin grietas/ No Cracks	ASTM D1149
Deformación remanente por compresión(22h @ 67°C)/ Compression Set (22h a 67°C), method B	%	10	D395
Desgarro/Tear Strength	Kg/cm ²	20	D624
Variación de dureza/Hardness ∇	°Sh A	65	D2240
Low temp. Brittleness @-40°C		Pass	D736
Low temp. stiffness Young's module @35°C	Kg/cm2	250	D797





CERTIFICADO DE CALIDAD – CONFORMIDAD / CERTIFICATE OF QUALITY - AGREEMENT
APOYOS ELASTÓMERICOS / ELASTOMERIC BEARINGS

Elastomeric bearing pads conform to AASHTO M251 with 60 durometer hardness, reinforcing steel plates are fabricated from ASTM A570 Grade 36 (A 570 M grade 250)

Aprobado por/Approved by: Narciso Fernández Domínguez

Fecha/Date: 03/05/2011

Responsable de Calidad/Quality Manager

Project: KABUL KANDHAR BRIDGE PROJECT AFGHANISTAN
Material: INTERBUNA Bearing pad (63x230x360)
Material: INTERBUNA Bearing pad (63x180x280)

Interbuna, S.L. TFNO.00.34.91.6093463. FAX:00.34.91.6094072 e-mail:interbuna@interbuna.com



Sistema de Calidad Certificado N° Reg.: 07 100 43018/2 TMS
Página 2 / Sheet 2

ATTN: MR. SHABIR



PCSIR LABORATORIES COMPLEX, KARACHI
Shahrah-e-Dr.Salimuzzaman Siddiqui, Off University Road, Karachi - 75280

KL/ILO/FF/510/01(NA)
Revision # : 02
Issue # : 01
Issue Date: 19-11-2009

TEST REPORT*

S. No.: **15282**

Test Report #. ILD/ATR-277/2012

Date: 15-02-2012

- Name and Address of Client: M/s. EA Consulting Pvt. Ltd.
Site Office: NLC (HCS) Chandni Chowk, Muree Road, Rawalpindi.
Ref.: #. EACL/CCFP/059 Date: 03-01-2012 Date of receipt: 16-01-2012
- Description of the Sample: Bridge Pad (Construction of Flyover Covering Junction at Chandni Chowk and Rawal Road, Rawalpindi)
Item: _____ Make: Nil
Lab. Code No. ILD/ATR-277/2012 Mark if any: Nil
Condition found on receipt: Normal
- Sample Plan / Procedure used: N.A. Date of sampling: N.A.
- Environmental Conditions: Temp: N.A. Humidity: N.A.
(Where applicable)
- Method Used: ASTM D 412, D 573, D 2240, D 624, D 395(B), D 746
- Measurements & Results:

S. #	Tests Items	Unit	Original Properties	After Aging 100°C x 70hrs	Change
1.	Tensile Strength	kgf/cm ²	177	173	-2%
2.	Elongation at Break	%	412	367	-11%
3.	Hardness (Shore-A)	Pts	60	65	+05
4.	Tear Strength	Kgf/cm	58	--	--
5.	Compression Set (67°C x 22hrs)	%	13	--	--
6.	Low temperature Brittleness Test (-40°C x 5hrs)	No sign of failure such as cracking or chipping			

- Statement of Compliance: N.A.
- Opinion / Interpretation (where required):--

Tested By: (Syed Junaid Mehmood)
S.O.

(A.F.K. Ibrahimi)
S.E.O.

Head of Centre/Division:

(Dr. Arfa Yasmin)
CSO/HOC

(Dr. Tanzil Haider Usmani)
Director General

END OF REPORT

Project: Construction of Chandni Chowk Flyover.
Material: Interbuna Spain Bearing pad (400x250x87)



TEST REPORT*

16012

S. No: _____

Test Report #. ILD/ ATR-2328/2012

Date: 24-04-2012

- Name and Address of Client: M/s. Habib Construction Services (Pvt.) Ltd. 15-A, Canal Bank, Near Doctor's Hospital, Johar Town, Lahore - Pakistan.
- Ref. No: HCS 01-04/2001 Dated: 04-04-2012 Date of receipt: 10-04-2012
Description of the Sample: Elastomeric Rubber Sheet {Construction of Flyover at Chandni Chowk Rawalpindi, Interbuna Spain for Chandni Chowk Flyover for Ozone Test only}
- Item: Rubber Sheet Mark if any: A
Lab. Code No: ILD/ATR-2328/2012 Make if any: Interbuna Spain
Condition found on receipt: Normal
- Sample Plan / Procedure used: N.A. Date of sampling: N.A.
- Environmental Conditions: N.A. Temp: N.A. Humidity: N.A.
(Where applicable)
- Method Used: ASTM - D 1149
- Measurements & Results:

Ozone Resistance Test:

Test Conditions:

Dimension of Specimen	2 × 25 × 150mm
No of specimen	03
Strain	20%
Ozone Concentration	100 ± 10 PPHM
Test Temperature	40 ± 2°C
Test duration	100 hrs
Movement	Static with planetary effect
Observations	No crack were observed after 100hrs

- Statement of Compliance: N.A.
- Opinion / Interpretation (where required):--

Tested By: (Syed Junaid Mehmood)

S.O.

(A.F.K. Ifrahim)

S.E.O.

Head of Centre/Division:

(Dr. Arfa Yasmin)

CSO/HOC

(Dr. Tanzil Haider Usmani)
Director General

END OF REPORT

Project: Construction of Chandni Chowk Fly over
Material: Interbuna SPAIN Expansion joint Rej-80



TEST REPORT*

16085

S. No: _____

Test Report #. ILD/ ATR-2329/2012

Date: 24-04-2012

1. Name and Address of Client: M/s. Habib Construction Services (Pvt.) Ltd. 15-A, Canal Bank, Near Doctor's Hospital, Johar Town, Lahore - Pakistan.

Ref. No: HCS 02-04/2001 Dated: 04-04-2012

Date of receipt: 10-04-2012

2. Description of the Sample: Elastomeric Rubber Sheet {Construction of Flyover along Ferozpur Road Canal / Wahdat Road Junction Lahore, Interbuna Spain for Muslim Town Flyover for Ozone Test only.}

Item: Rubber Sheet

Mark if any: B

Lab. Code No

ILD/ATR-2329/2012

Make if any: Interbuna Spain

Condition found on receipt: Normal

3. Sample Plan / Procedure used: N.A.

Date of sampling: N.A.

4. Environmental Conditions: N.A. Temp: N.A.

Humidity: N.A.

(Where applicable)

5. Method Used: ASTM - D 1149

6. Measurements & Results:

Ozone Resistance Test:

Test Conditions:

Dimension of Specimen	2 × 25 × 150mm
No of specimen	03
Strain	20%
Ozone Concentration	100 ± 10 PPHM
Test Temperature	40 ± 2°C
Test duration	100 hrs
Movement	Static with planetary effect
Observations	No crack were observed after 100hrs

7. Statement of Compliance: N.A.

8. Opinion / Interpretation (where required):--

Tested By: (Syed Junaid Mehmood)

S.O

(A.F.K. Ifrahim)

S.E.O

Head of Centre/Division:

(Dr. Arfa Yasmin)

CSO/HOC

24/4/12

(Dr. Tanzil Haider Usmani)

Director General

END OF REPORT

Project: muslim Town Flyover Lahore.

Material: Interbuna Spain Bearing (Pad 400x250x87)



PCSIR LABORATORIES COMPLEX, KARACHI
Off University Road Karachi - 75280
TEST REPORT*

KL/IL0/FP/510/01 (NA)
Revision # 02
Issue # 01
Issue Date 19-11-2009

S. No: . . .

Test Report #. ILD/ ATR-4914/2012

Date: 10-09-2012

1. Name and Address of Client: M/s. National Engineering Services Pak (Pvt.) Ltd.
NESPAK House: I-C, Block-N, Model Town Extension, Lahore 54700.
Project: Construction of Metro Bus Transit System Lahore.
From Qartaba Chowk to M.A.O College (Package-III)

Ref. #: 3416/103/SH/P-III/01/77 dated 09-08-2012 Date of receipt: 13-08-2012

2. Description of the Sample: Physico-Mechanical Evaluation
Item: Elastomeric Bearing Pad Size: (400 x 250 x 87) mm Make: Interbuna (Spain)
Lab. Code No. ILD/ATR-4914/2012 Mark if any: Nil
Condition found on receipt: Normal

3. Sample Plan / Procedure used: N.A. Date of sampling: N.A.

4. Environmental Conditions: Temp: N.A. Humidity: N.A.
(Where applicable)

5. Method Used: ASTM D 412, D 573, D 2240, D 624, D 395(B), D-797, D 746, D 1149

6. Measurements & Results:

S. #	Tests Items	Unit	Original Parameters	Parameters after Aging at 100°C for 70 hours	Change
1.	Tensile Strength	kgf/cm ²	202	194	-4%
2.	Elongation at Break	%	510	401	-21%
3.	Hardness (Shore-A)	Pts	60	65	+ 05
4.	Tear Strength	kgf/cm	52	--	--
5.	Compression Set (at 67°C for 22 hours)	%	24	--	--
6.	Low Temperature Stiffness	kgf/cm ²	340	--	--
7.	Low Temperature Brittleness Test (at -40°C for 5 hours)	No sign of failure such as cracking or chipping.			
8.	Ozone Resistance Test: <i>Test Conditions:</i> Dimension of Specimen 2 × 25 × 150mm No of specimen 03 Strain 20% Ozone Concentration 100 ± 10 PPHM Test Temperature 40 ± 2°C Test duration 100 hours Movement Static with planetary effect Observation No cracks were observed after 100 hours				

7. Statement of Compliance: N.A.

8. Opinion / Interpretation (where required):-

Tested By: (Syed Juzzaid Mehmood)

(A.F.K. Ibrahīm)
S.E.O.

Head of Centre/Division:

(Dr. Yrfa Yasmin)
CSO/HOC

(Askari Begum) 11.9.
Director General

END OF REPORT

Project: Construction of Metro Bus Transit System, LHR, (Package III)
Material: Elastomeric Bearing Pad (250x400x87mm)

**PCSIR LABORATORIES COMPLEX, KARACHI**

Shahrah-e-Dr.Salimuzzaman Siddiqui, Off University Road, Karachi - 75280

TEST REPORT*KL/ILO/FF/510/01(NA)
Revision #: 02
Issue #: 01
Issue Date: 19-11-2009S. No: **17858**Test Report #: ILD/ ATR-6554/2012Date: 27-12-2012

1. Name and Address of Client: M/s. National Engineering Services Pakistan Pvt. Ltd.
NESPAK House: I-C, Block-N, Model Town Ext. Lahore.
Project: Metro Bus System (MBS) Along Ferozepur Road Lahore, Phase-I
(Installation of Expansion Joint at Lahore Bridge)
Ref. #-: BRTS/244/103/MZ/01/394 dated 28-11-12 Date of receipt: 03-12-2012
2. Description of the Sample: Testing of Expansion Joint
Item Size: (360 x 356 x 47) mm Make: INTERBUNA SPAIN
Lab. Code No. ILD/ATR-6554/2012 Mark if any: EJN-80
Condition found on receipt: Normal
3. Sample Plan / Procedure used: N.A. Date of sampling: N.A.
4. Environmental Conditions: Temp: N.A. Humidity: N.A.
(Where applicable)
5. Method Used: ASTM D 412, D 573, D 2240, D 624, D 395 (B), D 1149
6. Measurements & Results:

S. #	Tests Items	Unit	Original Properties	After Aging 100°C x 70 Hours	Change
1.	Tensile Strength	kgF/cm ²	145	152	+ 5 %
2.	Elongation at Break	%	525	528	+ 1 %
3.	Hardness (Shore-A)	Pts	60	65	± 05 %
4.	Tear Strength	kgF/cm	44	--	--
5.	Compression Set (67°C x 22 Hours)	%	10	--	--
6.	Low Temperature Brittleness Test (- 40°C x 5 Hours)	No sign of Cracking / Chipping was observed under mentioned conditions.			
7.	Ozone Resistance Test: Test Conditions: Dimension of Specimen 2 × 25 × 150 mm No of specimen 03 Strain 20% Ozone Concentration 100 ± 10 PPHM Test Temperature 38 ± 2°C Test duration 100 Hours Movement Static with Planetary Effect Observation Sample was withstand under above mentioned experimental conditions.				

7. Statement of Compliance: N.A.
8. Opinion / Interpretation (where required):--

Tested By:

(Syed Junaid Mehmood)
S.O.(A.F.K. Ibrahīm)
S.E.O.

Head of Centre/Division:

(Dr. Arfa Yasmin)
CSO/HOCIftikhar Ahmed Soomro
27/12/2012
Director General**END OF REPORT**Project: Installation of Expansion joint at Lahore Bridge. Package 1
Material: Interbuna Spain Expansion joint EJN-80