IISIRIM QAS International Sdn.Bhd. (Company No.: 410334-X)
No.1, Persiaran Dato' Menteri, P.O.Box 7035, Section 2, 40700 Shah Alam,
Selangor Darul Ehsan, Malaysia.
Tel. no: 03-55446651/55446658
Fax. no: 03-55446688
www.sirim-qas.com.my

TEST REPORT

REPORT NO. : 2017CE0175	PAGE : 1 OF 6

This Test Report refers only to samples submitted by the applicant to SIRIM QAS International Sdn. Bhd. and tested by SIRIM QAS International Sdn. Bhd. This test report shall not be reproduced, except in full and shall not be used for any purpose by any means or forms (including but not limited to advertising purposes) without written approval from the Managing Director, SIRIM QAS International Sdn. Bhd. Please refer overleaf of Page 1 for Conditions Relating To The Use of Test Report

Applicant	:	LAMACO SYSTEM SDN BHD 407 & 408, Jalan Perusahaan 6, Taman Bandar Baru Mergong, 05150 Alor Setar, Kedah.
Product	:	INJECT SEAL ADVANCE
Reference standard / Method of test	:	BS 6920-1: 2014 Suitability of non-metallic materials and products for use in contact with water intended for human consumption with regard to their effect on the quality of the water Part 1: Specification
Description of sample	:	Received one (1) sample of **INJECT SEAL ADVANCE** for testing. The sample was identified as: **BRAND : LaMaCO**
Date received of Complete Application	:	14th December 2016
0Job No.	:	J20161401626
Description of test results	:	The test results of the submitted sample are described in Page 2 to Page 6 of this test report.
Issued date	:	23rd February 2017

Approved Signatory :

(NOR AZLIN BT M NOOR ARZMI, *MMIC*)
IKM M/3012/5811/2010
Testing Executive

(HAHNAS MAHBUT)
Head
Chemical & Consumer Section
Testing Services Department

TEST RESULTS

TEST : **ODOUR AND FLAVOUR OF WATER**
PRODUCT : **INJECT SEAL ADVANCE**
BRAND : **LaMaCO**

No.	Type of Tests	Requirement under BS 6920-1: 2014 : Clause 4	Test results after final extraction	
			Unchlorinated extracts	Chlorinated extracts
1.	Odour	No discernable odour	Plastic	Plastic
2.	Flavour	No discernable flavour	N/A	N/A

Note: **1. The final unchlorinated and chlorinated extracts for odour tests were after 7th extractions**

2. Flavour test for unchlorinated and chlorinated extracts was not proceed since odour was detected

3. N/A = not applicable

Comment: The sample tested did not comply with the requirements of BS 6920-1: 2014: Clause 4

SIRIM QAS International Sdn. Bhd. CHEMICAL & CONSUMER SECTION Nor Adlin M Noor Azmi IKM A/3012/5811/2010

TEST RESULTS

TEST : APPEARANCE OF WATER
PRODUCT : INJECT SEAL ADVANCE
BRAND : LaMaCO

No.	Type of Tests	Methods Used	Requirement under BS 6920-1: 2014 : Clause 5	Test results after final extraction		
				Control	Sample	Net Increase
1.	Colour, mg/L Pt	APHA 2120 B	The increase in colour and turbidity of the water in the final extract shall not be more than 5 mg/L Pt or 0.5 FNU respectively	Less than 5	Less than 5	Less than 5
2.	Turbidity, FNU	APHA 2130 B		0.05	0.20	0.15

Note : The final extract for colour and turbidity tests were after 24 hours (1st extraction)

Comment : The sample tested complied with the requirements of BS 6920-1: 2014: Clause 5

SIRIM QAS International Sdn. Bhd. CHEMICAL & CONSUMER SECTION Nor Azlin M Noor Azmi (KM A2301258111/2010)

TEST RESULTS

TEST : **GROWTH OF AQUATIC MICROORGANISMS**
PRODUCT : **INJECT SEAL ADVANCE**
BRAND : **LaMaCO**

Type of Tests	Requirement under BS 6920-1: 2014 : Clause 6	Test results after final extraction		
		After 5th week	After 6th week	After 7th week
The mean dissolved oxygen difference (MDOD), mg/L	2.39 or less	0.11	0.08	0.07

Comment : The sample tested complied with the requirements of BS 6920-1: 2014: Clause 6

SIRIM QAS International Sdn. Bhd.
CHEMICAL & CONSUMER SECTION
Nor Azlin M Noor Arzmi
IKM A/3012/5811/2010

TEST RESULTS

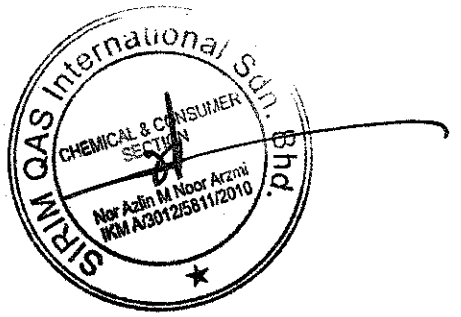
TEST [1]	**: EXTRACTION OF SUBSTANCES THAT MAY BE OF CONCERN TO PUBLIC HEALTH**
PRODUCT	**: INJECT SEAL ADVANCE**
BRAND	**: LaMaCO**
TEST RESULT	**: REFER APPENDIX 1 – REPORT NO R001/17/B19/01**

Note : [1] Test subcontracted to Industrial Biotechnology Research Centre, Building 19, SIRIM Berhad

SIRIM QAS International Sdn. Bhd.
CHEMICAL & CONSUMER SECTION
Nor Azlin M Noor Arzmi
IKM A/3012/5811/2010

Report No. : 2017CE0175

APPENDIX 1



INDUSTRIAL BIOTECHNOLOGY RESEARCH CENTRE
Building 19, SIRIM Complex
1, Persiaran Dato' Menteri, Section 2, P. O. Box 7035
40700 Shah Alam, Selangor Darul Ehsan, MALAYSIA
Tel: 603 - 5544 6953 / 6960 Fax: 603 - 5544 6988
Website: www.sirim.my

TEST REPORT

REPORT NO: R001/17/B19/01	PAGE: 1 of 4

Applicant	:	SIRIM QAS International Sdn. Bhd. Chemical and Consumer Section, Building 16, SIRIM Berhad. (Pn Nor Azlin M. Nor Arzmi)
Manufacturer / Company	:	Lamaco System Sdn. Bhd
Sample/Trade Name	:	Inject Seal Advance
Reference Standard / Method of Test	:	1. BS 6920-2.1:2014. Suitability of non-metallic materials and products for use in contact with water intended for human consumption with regard to their effect on the quality of the water - Part 2: Methods of test - Section 2.1: Samples for testing. 2. BS 6920-2.5:2000+A2:2014. Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water - Part 2: Methods of test - Section 2.5: The extraction of substances that may be of concern to public health
Description of Sample	:	Received one sample in good condition consisting of 3 pieces for testing with the following identification: 1. Model/Brand/Marking: Lamaco 2. Product Marking: Not provided 3. Reference No: J20161401626 4. Designation: Not provided 5. Date of Manufacture: Not provided 6. Nature of Material: Not provided 7. Storage Condition: Room temperature 8. Colour: Light Yellow 9. Shape/Form: Square 10. Dimension: Approximate length 54mm, width 54mm, thickness 10mm 11. Appearance: Solid Rough Surface 12. Opacity: Opaque
Date Received	:	29 December 2016
Job No.	:	J001/17
Issue Date	:	20 JAN 2017

TEST REPORT

REPORT NO: R002/17/B19/01	PAGE: 2 of 4

KEY PERSONNEL PARTICIPATING IN THIS TESTING

We, the undersigned, declare that the methods, results and data contained in this report faithfully reflect the procedures used and raw data collected throughout the testing.

20 JAN 2017

(DR. NURUL IZZA NORDIN)
Deputy Technical Manager
Industrial Biotechnology Research Centre
SIRIM Berhad

Date

20 JAN 2017

(JUANI MAZMIN HUSIN)
Officer In-Charge
Industrial Biotechnology Research Centre
SIRIM Berhad

Date

TEST REPORT

1.0 Test timetable

Receipt of sample:	29 December 2016
Maintenance of cell culture:	12 January – 13 January 2017
Extraction procedure:	12 January – 13 January 2017
Growth procedure:	13 January – 14 January 2017
End of test:	14 January 2017

2.0 Test method

2.1 Test summary

A screening procedure (simple cytotoxicity test) to test leachates from the **inject Seal Advance** for biologically active compound was carried out according to BS 6920. Leachates from the sample after a 24-hour extraction at (23±2) °C was used to prepare growth medium. The morphology of a mammalian cell line following a 24-hour culture in the growth medium was observed. NO OTHER TESTS WERE UNDERTAKEN ON THIS PRODUCT.

2.2 Significance and rationale

This method is only an initial screening test for substances potentially hazardous to health and suitable for all non-metallic materials that may be used in contact with water intended for human consumption. A satisfactory result indicates that the leachate probably does not contain significant amounts of acutely toxic substances, but it does not indicate the absence of small quantities of substances, which may be harmful on prolonged exposure.

2.3 Cell culture

American Type Culture Collection CCL-1, NCTC clone 929 Areolar Fibroblast Mouse.

2.4 Test procedure

The procedure was divided into three stages as follows.

2.4.1 Cell culture maintenance

Cells were grown in tissue culture grade flasks and routinely examined to ensure they remain healthy.

2.4.2 Sample extraction and preparation of growth media

Two sample pieces was selected. The sample surface area was measured at 5500 mm^2 to 9500 mm^2. The sample was extracted in 500 mL of reverse osmosis water at (23±2)°C for 24 hours. A validation solution (800 mg/L zinc sulfate) and a blank were included in the test. Portions of the sample extracts, validation solution and blank were used to dilute the concentrated growth medium. Freshly trypsinized cells was added to each preparation and transferred into a 24-well tissue culture plate. The extracts were assessed in replicates of three. The plate was incubated at (37±1) °C in a humidified atmosphere of 5 % carbon dioxide and 95 % air for 24 hours.

2.4.3 Effect on cell culture

The condition of cells in each well was examined microscopically. The presence or absence of a confluent cell layer, the presence of any irregular shaped cell or cells showing signs or 'rounding off', and the appearance of any cells floating in the growth medium was recorded.

JUANI MAZMIN BINTI HUSIN
Researcher
Bioprocess Programme
Industrial Biotechnology Research Centre
SIRIM Berhad

TEST REPORT

REPORT NO: R002/17/B19/01	PAGE: 4 of 4

3.0 Results

The table below shows cytotoxicity effects of **Inject Seal Advance**

	Replicates	Effects on cell culture
Extract of sample piece 1	A	Healthy confluent monolayer
	B	Healthy confluent monolayer
	C	Healthy confluent monolayer
Extract of Sample piece 2	A	Healthy confluent monolayer
	B	Healthy confluent monolayer
	C	Healthy confluent monolayer
Validation solution	A	Cells 'rounding off' and floating. No monolayer
	B	Cells 'rounding off' and floating. No monolayer
	C	Cells 'rounding off' and floating. No monolayer
Blank	A	Healthy confluent monolayer
	B	Healthy confluent monolayer
	C	Healthy confluent monolayer

4.0 Analysis and interpretation

Cell cultures in the extract of samples showed healthy confluent monolayer, comparable to the blank, which indicate a non-cytotoxic response.
Monolayer of cell culture was not present in the validation solution. The cells showed severe 'rounding off' and floating in the validation solution preparation, which indicate a cytotoxic response.

5.0 Conclusion

The sample **Inject Seal Advance** exhibited no cytotoxicity response under the conditions of this test.

JUANI MAZMIN BINTI HUSIN
Researcher
Bioprocess Programme
Industrial Biotechnology Research Centre
SIRIM Berhad

TEST RESULTS

TEST : **EXTRACTION OF METALS**
PRODUCT : **INJECT SEAL ADVANCE**
BRAND : **LaMaCO**

No.	Type of Tests	Method Used	Requirement under BS 6920-1: 2014: Clause 8 (maximum allowed)	Test results after 24 hours extraction/final extraction[1]
1.	Aluminium (as Al), µg/L	APHA 3120 B	200	5
2.	Antimony (as Sb), µg/L	APHA 3120 B	5	2
3.	Arsenic (as As), µg/L	APHA 3120 B	10	Less than 4[2]
4.	Boron (as B), µg/L	APHA 3120 B	1000	Less than 5[2]
5.	Cadmium (as Cd), µg/L	APHA 3120 B	5	Less than 1[2]
6.	Chromium (as Cr), µg/L	APHA 3120 B	50	Less than 1[2]
7.	Iron (as Fe), µg/L	APHA 3120 B	200	Less than 0.4[2]
8.	Lead (as Pb), µg/L	APHA 3120 B	10	Less than 6[2]
9.	Manganese (as Mn), µg/L	APHA 3120 B	50	Less than 0.1[2]
10.	Mercury (as Hg), µg/L	CTS/TP/AE/ In-house 002	1	Less than 1[2]
11.	Nickel (as Ni), µg/L	APHA 3120 B	20	Less than 1[2]
12.	Selenium (as Se), µg/L	APHA 3120 B	10	Less than 2[2]

Note : **[1] Since result of test after the first 24 hours extraction comply with the requirements, this first extract is defined is as the final extract.**
[2] Limit of detection

Comment: The sample tested complied with all the requirements of BS 6920-1: 2014: Clause 8