

Our Ref: MAT/LAB 562M

4<sup>th</sup> February 2008

Mr Lee Smith  
Line-X Protective Coatings Limited  
Line-X House, Brannam Crescent  
Roundswell Business Park  
Barnstaple  
North Devon  
EX31 3TD

Dear Lee

BS 6920 leaching tests for non-metallic products for use in contact with potable water.

Please find enclosed a copy of our final report for BS 6920 leaching tests on test samples of Aquasurethane Extreme XS 350.

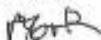
We are pleased to inform you that your product gave satisfactory results in the BS 6920 leaching tests (five separate tests). The enclosed report does not constitute approval and has not been forwarded to the Water Regulations Advisory Scheme (WRAS).

In order to obtain WRAS approval, a letter citing a Directory Reference Number, you will need to send a copy of the enclosed report, a completed copy of the form M2 (issued by WRAS) and a remittance to the WRAS at the following address;

Water Regulations Advisory Scheme  
Fern Close,  
Pen-y-Fan Industrial Estate,  
Oakdale,  
Gwent,  
NP11 3EH,

If you have any queries or we can be of any further assistance with BS 6920 or other testing please do not hesitate to contact me.

Best regards



Mark Norris  
Materials Test Manager  
WRc-NSF Ltd  
DDI Number: +44 (0) 1495 236268, Reception +44 (0) 1495 236260  
Email: mark.norris@wrcnsf.com, Fax Number: +44 (0) 1495 249234  
<http://www.wrcnsf.com>  
Enc

**Offices at:** Unit 30, Fern Close, Pen-y-Fan Industrial Estate, Oakdale, Newport, NP11 3EH  
Unit 25, Robert Cort Estate, Britten Road, Reading, RG2 0AU



Tel: +44 (0)1495 236260. Fax: +44 (0)1495 249234. E-mail: [info@wrcnsf.com](mailto:info@wrcnsf.com) Website: [www.wrcnsf.com](http://www.wrcnsf.com)

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## WATER REGULATIONS ADVISORY SCHEME

## BS6920 TEST ON EFFECT OF WATER QUALITY

## FINAL REPORT

**Organisation:** Line-X Protective Coatings Limited

**Product:** Aquaurethane Extreme XS 350

WRc-NSF REPORT No MAT/LAB 562M

Date of Report 18<sup>th</sup> December 2007



WRc-NSF Final Report for the Testing of a Product for Water Regulations Advisory Scheme Approval	WRc-NSF Report No MAT/LAB 562M
Name of Organisation: Line-X Protective Coatings Limited	Date of Report 18/12/07
Product: Aquasurethane Extreme XS 350	

## 1. SUMMARY

Test	Result
Odour and flavour of water	Pass
Appearance of water	Pass
Growth of aquatic microorganisms	Pass
The extraction of substances that may be of concern to public health	Pass
Extraction of metals	Pass

This product has satisfied the criteria set out in BS6920: Part 1: 2000 "Specification" and thus does comply with the requirements of the Water Regulations Advisory Scheme Tests of Effect on Water Quality and is suitable for use with cold water but not hot water.

*Mark Norris*  
Mr Mark Norris, Materials Test Manager

Date 18<sup>th</sup> Dec 2007

Please note the following statements
a) The samples of the product referred to in this report have been tested in accordance with the methods specified in BS6920: 2000 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.
b) This work has been undertaken in the UKAS accredited laboratory of WRc-NSF Ltd Oakdale, UKAS registration number 0626, unless otherwise stated. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
c) The results specified in this report relate only to the samples(s) of this product submitted for testing. Any changes in the nature or source of ingredients and the process of manufacturer or application could affect the suitability of this product for use in contact with potable water.
d) We draw to your attention that reports issued by the accredited test laboratories do not of themselves constitute approval by the Water Regulations Advisory Scheme or the test laboratory. Only a letter from the Scheme, citing a Directory Reference number can be regarded as indicating approval.
e) Materials and products intended for use by a public water supply company in the preparation or conveyance of water may need to satisfy more comprehensive toxicological requirements as specified by the Drinking Water Inspectorate. These additional requirements are necessary to ensure Water Company usage complies with Regulation 31 of the Water Supply (Water Quality) Regulations 2000.

WRc-NSF Final Report for the Testing of a Product for Water Regulations Advisory Scheme Approval	WRc-NSF Report No MAT/LAB 562M
Name of Organisation: Line-X Protective Coatings Limited	
Product: Aquaurethane Xtreme XS 350	Date of Report 18/12/07

## 2. SAMPLES FOR TESTING

BS6920, Section 2.1 and in-house method PROC/MAT 001.

Contact name: Mr Lee Smith
Name of organisation: Line-X Protective Coatings Limited
Address: Line-X House Brannam Crescent Roundswell Business Park Barnstaple North Devon EX31 3TD

Product:	Aquaurethane Xtreme XS350
Product manufacturer:	Line-X Protective Coatings Limited
Submitting organisation:	Line-X Protective Coatings Limited

Date of receipt of product for test:	25/10/07
Trade name and reference of product:	Aquaurethane Xtreme XS350
Batch number	Not known
General composition of product:	Polyurea
Shore hardness:	Not applicable
Typical use of the product:	Lining for water containing structures

Sampling procedure:	Random
Receipt conditions and packaging:	In good condition
Storage conditions:	As in BS 6920 Part 2 Section 2.1 Clause 5.2
Description/Appearance of the product:	Black coating

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Product: Aquasurethane Extreme XS 350	Date of Report 18/12/07

Component name/reference:	Not applicable
Component manufacturer:	Not applicable
Fitting name/reference:	Not applicable
Fitting manufacturer:	Not applicable

Test sample preparation:	Product prepared by applicant
Date test sample manufactured:	Not known
Date test sample prepared:	25/10/07

Surface area of one article:	7500 mm <sup>2</sup>
Number of articles constituting a sample:	Two
Surface area for test:	15000 mm <sup>2</sup>
Calibration mark of test container:	1 Litre

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Product: Aquasurethane Extreme XS 350	Date of Report 18/12/07

### 3. ODOUR AND FLAVOUR OF WATER

Methodology: BS6920, Section 2.2.1 and in-house method PROC/MAT 004 and 006.

Test results

Date leaching tests started: 30/10/07	Date leaching tests finished: 08/11/07
Number of panellists: 3	Temperature of extraction: 23 ±2 °C

Odour test

Extract	Date of test	Test water	Dilution number*	Odour descriptor
First	31/10/07	Chlorine free	0(0)	None
First	31/10/07	Chlorinated	0(1)	Sweet
Final	-	Chlorine free	-	-
Final	08/11/07	Chlorinated	0(1)	No descriptor

Flavour test

Extract	Date of test	Test water	Dilution number*	Flavour descriptor
First	31/10/07	Chlorine free	1(0)	None
First	31/10/07	Chlorinated	Not suitable for flavour failed odour	
Final	-	Chlorine free	-	-
Final	08/11/07	Chlorinated	1(0)	None

\* figure in brackets is the number of panellists detecting an odour or flavour at this dilution

On the basis of these results the samples of this product referred to in this report have been found to comply with the requirements of BS6920, Part 1, Clause 4

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Product: Aquasurethane Extreme XS 350	Date of Report 18/12/07

#### 4. APPEARANCE OF WATER

Methodology: BS6920, Section 2.3 and in-house methods PROC/MAT 004, ING 78 (colour) and ING 100 (turbidity).

##### Test results

Date leaching tests started: 30/10/07	Date leaching tests finished: 31/10/07
Temperature of extraction: 23 ±2 °C	

##### Colour

Extract	Date of test	Hazen units		Test sample effect
		Blank	Extract	
First	31/10/07	<2	<2	None
Final	-	-	-	-

##### Turbidity

Extract	Date of test	Formazine Nephelometric units		Test sample effect
		Blank	Extract	
First	31/10/07	<0.1	<0.1	None
Final	-	-	-	-

First extract becomes final extract

On the basis of these results the samples of this product referred to in this report have been found to comply with the requirements of BS6920, Part 1, Clause 5

WRC-NSF Final Report for the Testing of a Product for Water Regulations Advisory Scheme Approval	WRC-NSF Report No MAT/LAB 582M
Name of Organisation: Line-X Protective Coatings Limited	
Product: Aquasurethane Extreme XS 350	Date of Report 18/12/07

## 5. GROWTH OF MICROORGANISMS

**Methodology:** BS6920, Section 2.4 and in-house method PROC/MIC 001.

### Test Results

Date leaching tests started: 30/10/07	Date leaching tests finished: 18/12/07
Incubation temperature: 30 ± 1 °C	

Mean dissolved oxygen difference MDOD (mg l <sup>-1</sup> O <sub>2</sub> )	
Test sample	0.94
Positive reference (paraffin wax)	6.87
Negative reference (glass)	0.29

Test water control dissolved oxygen (mg l <sup>-1</sup> O <sub>2</sub> )	8.79
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Comments on changes in appearance of test material and any visible microbial growth	At the end of this test, the test pieces showed no change in colour or appearance.
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On the basis of these results the samples of this product referred to in this report have been found to comply with the requirements of BS6920, Part 1, Clause 6



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## 6. THE EXTRACTION OF SUBSTANCES THAT MAY BE OF CONCERN TO PUBLIC HEALTH

**Methodology:** BS6920, Section 2.5 in-house methods PROC/MAT 004 and PROC/MIC 004.

**Test set-up** Date: 31/10/07

Cell line: VERO cell line of African green monkey kidney cells (ATCC number CCL 81).	
Media preparation date: 28/10/07	Passage number: 47
Cell concentration in sample: $7.5 \times 10^5$	Positive control: Zinc sulphate Bt 39
Morphology: Confluent growth of elongated cells, some round cells and cell debris. Media orange/pink in colour.	
Media log batch numbers	Medium concentrate (CCM): B95 Distilled water (SDW): B40

### Test results

Date leaching tests started: 30/10/07	Date leaching tests finished: 31/10/07
Temperature of extraction: $23 \pm 2$ °C	

Cell Morphology	
Test Sample	Confluent growth of elongated cells, some round cells and cell debris. Media orange/pink in colour.
Blank	Confluent growth of elongated cells, some round cells and cell debris. Media orange/pink in colour.
Negative control	Confluent growth of elongated cells, some round cells and cell debris. Media orange/pink in colour.
Positive control	All cells rounded and mainly still in suspension. Media pink in colour.

On the basis of these results the samples of this product referred to in this report have been found to comply with the requirements of BS6920, Part 1, Clause 7

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## 7. THE EXTRACTION OF METALS

**Methodology:** BS6920, Section 2.6, in-house methods PROC/MAT 006 and INGs, as specified, metals analysis undertaken in the UKAS accredited laboratory of WRc-NSF Ltd Reading, UKAS registration number 1550.

### Test results

Date leaching tests started: 30/10/07	Date leaching tests finished: 31/10/07
Analysis Registration No N22467	Temperature of extraction: 23 ±2 °C

Metal ( $\mu\text{g l}^{-1}$ )	Analytical Method (in-house method)	MAC ( $\mu\text{g l}^{-1}$ )	LOD ( $\mu\text{g l}^{-1}$ )	Blank ( $\mu\text{g l}^{-1}$ )	Sample 1 ( $\mu\text{g l}^{-1}$ )	Sample 2 ( $\mu\text{g l}^{-1}$ )
Aluminium	ICPMS (ING113)	200	20	<20	<20	<20
Antimony	HGAAS (ING95)	10 #	0.5#	<0.5	<0.5	<0.5
Arsenic	ICPMS (ING113)	50 #	1#	<1	<1	<1
Barium	ICPMS (ING113)	1000	100	<100	<100	<100
Cadmium	ICPMS (ING113)	5	0.5	<0.5	<0.5	<0.5
Chromium	ICPMS (ING113)	50	5	<5	<5	<5
Iron	ICPMS (ING113)	200	20	<20	<20	<20
Lead	ICPMS (ING113)	50 #	1#	<1	<1	1.63
Manganese	ICPMS (ING113)	50	5	<5	<5	<5
Mercury	CVAAS (ING75)	1	0.1	<0.1	<0.1	<0.1
Nickel	ICPMS (ING113)	50 #	2#	<2	3.28	3.30
Selenium	ICPMS (ING113)	10	1	<1	<1	<1
Silver	ICPMS (ING113)	10	1	<1	<1	<1
MAC - Maximum admissible concentration		ICPMS Inductively Coupled Plasma Mass Spectrometry				
LOD - Required limit of detection		CVAAS Cold Vapour Atomic Absorption Spectrometry				
		HGAAS Hydride Generation Atomic Absorption Spectrometry				
# - MAC is taken from the 1989 Drinking Water Directive requirements						
LOD is based on the 1998 Drinking Water Directive requirements.						

First extract becomes final extract

On the basis of these results the samples of this product referred to in this report have been found to comply with the requirements of BS6920, Part 1, Clause 8

