

CONFIDENTIAL REPORT

Lucideon Reference: UK213902 (QT-65405/1/KNA)/Ref. 1

Project Title: CE Marking of Sinks

Client: Shaws Since 1897 Ltd
Whitebirk Works
Waterside
Darwen
Lancashire
BB3 3NX

For the Attention of: Mr Anthony Cristoforo

Author(s): Dr Richard White

Report Date: 02 November, 2021

Purchase Order No.: BACS

Work Location: Lucideon UK



Mr Ian Campbell
Consultancy Team
Reviewer



Dr Richard White
Consultancy Team
Project Manager



SUMMARY

Ten "Belfast" sinks were supplied to Lucideon Limited from normal production at Shaws Since 1897 Ltd. These sinks were used to perform a series of tests to assess the durability of the products, using temperature, impact and abrasion testing.

The test results have shown the sinks to have a very robust nature and to be highly resistant to serious damage.

As has been shown with Shaw's sinks in the past (previous report Refs. 162769, 182532 and 192532).



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1 INTRODUCTION

Ten sinks were supplied by Shaws Since 1897 Ltd for evaluation using standard and bespoke tests. The factors which were considered were:

- a) Edge Chipping Resistance - In House Method based on EN 12980:2000. Materials and articles in contact with foodstuffs.
- b) Impact Resistance – Based on BS EN ISO 10545-5. Determination of impact resistance by measurement of coefficient of restitution.
- c) Resistance to Chemicals & Staining Agents - assessing acetic acid, sodium hydroxide, ethanol, sodium hypochlorite, methylene blue and sodium chloride in accordance with BS EN 13310:2003. Kitchen sinks functional requirements and test methods Section 5.5.
- d) Resistance to Scratching – Based on in-house method PT38 using a diamond tip, using straightline reciprocating marking. Loading determined by experienced Lucideon operator and examined at intervals before 1000 cycles were completed.
- e) Resistance to Abrasion - Based on ISO 9352:2012 – Methods of Testing Plastics – Mechanical Properties – determination of ware by abrasive wheels.
- f) Filling/Draining – Based on Section 5.2 of BS EN 13310:2015.
- g) Resistance to Dry Heat – Based on Section 5.3 of BS EN 13310:2015.
- h) Resistance to Temperature Changes, over the temperature range of 40-100°C, bespoke test based on Section 5.4 of BS EN 13310.

Items a) – d) were conducted by the Lucideon Testing department using UKAS (United Kingdom Accreditation Service), Items f) - h) were conducted by the Lucideon Materials team, and Item e) was conducted at a Lucideon Approved Laboratory.

2 TESTS

Test House reports for each of the tests are attached as Appendices 1-5. Most of these are self-explanatory, however there are some comments on these tests in addition which are outside of the scope of the accreditation.

Some reports refer to the samples being “deviating”. This is due to the adaptation of test methods intended for a range of different products to assess the sinks; as a result the samples tested are of differing thicknesses, etc. to the products for which the tests were originally developed.

2.1 Edge Chipping Resistance

The resistance of the sinks to impact to edge chipping was significant and high loads were required to cause damage. [Appendix 1].

The mean final failure load was 0.48 J, which is typical for ceramics of this type.

2.2 Impact Resistance

The Impact Resistance Test based on BS EN ISO 10545-5, examines the behaviour of a ball bearing when dropped onto the test piece from a fixed height. The height to which the ball bearing bounces is a function of the test surface, plus the analysis of the surface after the ball has been dropped onto it.

No damage was observed on the glaze surface. A coefficient of restitution value of 0.61 was obtained and is in line with typical values for vitreous ceramic bodies with some porosity. The value is in line with previously measured values. [Appendix 2].

2.3 Resistance to Chemicals & Staining Agents

Samples were submitted for testing as per BS EN 13310:2015 Section 5.5.

No visible attack was shown by applying any of the reagents under the test method. [Appendix 3].

2.4 Resistance to Scratching

Visible scratches were produced by each of the tests, although the shortest test (5 cycles) only produced a faint scratch line. [Appendix 4].

An optical microscope with a calibrated scale was utilised to examine the scratched lines.

Measurements of the scratch width were made using calibrated graduations in a microscope while the scratches were examined, giving the values shown in Table 1. The scratch produced in the 5 cycle test showed a slightly rough edge to the line, as the number of cycles increased the cycle tests showed more uniform, well-defined grooves cut into the glaze.

The diamond indenter used had a cone-shaped tip, with an included angle of 110 degrees at the tip. Using this value, scratch depths corresponding to the measured widths were calculated; these are listed in Table 1.

Table 1 - Dimensions of Scratches Produced by Diamond Indenter

Cycles	Scratch Width (mm)	Scratch Depth (mm)	Comments
10	0.51	0.18	Shallow groove cut into glaze with an irregular edge
25	0.55	0.19	Shallow groove cut into glaze
50	0.56	0.20	Shallow groove cut into glaze
100	0.58	0.20	Shallow groove cut into glaze
1000	0.60	0.21	Clearly visible groove cut into glaze

None of the test scratches penetrated through the glaze layer, with the extreme case of the diamond tip being given 1000 cycles run over the same location the glaze thickness was not reached. As the worn groove becomes wider with increasing depth, the process has a progressively slowing effect. Therefore, the glaze layer was not penetrated during the testing.

Overall, the results indicate that normal service conditions would not cause any significant effect on the glaze surface.

2.5 Abrasion Resistance Test

The abrasion resistance test report is attached as Appendix 5. The results show the glaze finish to be very resistant to abrasion, with only some reduction in the gloss of the glaze surface evident after heavy abrasion. Very slight gloss remember was noted at 100 cycles, with slight gloss removal at 400 cycles, severe gloss removal was noted at 700 cycles.

2.6 Draining Test

Five fireclay Belfast sinks were supplied by Shaws Since 1897 Ltd. for drainage testing. In the order they were tested, each specimen was coded from A to E with a marker pen on the outside of the sink.

The procedure followed was that taken from Section 5.2 of BS EN 13310.

2.6.1 Test Procedure

Each sink was installed on a floor standing steel-framed test rack and adjusted to be level with reference to a spirit level. The inside of the installed sink was cleaned using the cleaning agent “Flash” and a plug was added to the waste outlet.

Tap water was decanted into the sink, after which a dye (Methylene blue) was added and manually mixed into the water to act as a colour contrast. The plug was then removed, allowing water to drain without intervention.

The specimen was judged to have passed the test if the water had drained in a satisfactory manner – water remaining due to surface tension was permitted.

2.6.2 Results

Table 2 summarises the results from the drainage test.

Table 2 – Results for the Drainage Test

Sink Identification	Sink A	Sink B	Sink C	Sink D	Sink E
Result	Pass	Pass	Pass	Pass	Pass

Results indicate that all five of the tested Belfast sinks drained to a satisfactory level.

2.7 Resistance to Dry Heat

Five fireclay sinks were provided for testing. The sinks were numbered in order of being unloaded from the shipping pallet from A to E; the dates of manufacture were not stamped into the undersides of the pieces.

The standard test from Section 5.3 of BS EN 13310, was followed.

2.7.1 Test Apparatus and Chemicals

The following apparatus was utilised for this test.

- a) Floor standing steel frame test rack.
- b) A thermometer capable of reading temperatures between 0°C and 250°C to an accuracy of ± 1 .
- c) A cast cylindrical aluminium vessel without a lid, the bottom of which is machined flat, having an external diameter of 100 ± 1.5 mm and an overall height of 90 ± 1.5 mm with a base thickness of 2.5 mm.
- d) Hot plate.
- e) Magnetic stirrer.
- f) Heat insulating board.
- g) Glycerol tristearate (new batch).

2.7.2 Test Method

- The aluminium vessel was filled to 10 mm below the top with Glycerol Tristearate and placed onto the hot plate.
- The temperature was raised to 185°C at 6-10 mm from the base of the vessel with regular stirring.
- The vessel was then transferred to the heat insulating board and stirred continuously until the temperature dropped to $180 \pm 1^\circ\text{C}$.
- The vessel was then placed in the centre of the bowl of the test piece and allowed to stand for 20 minutes.
- The vessel was removed and the test piece allowed to cool for a further 45 minutes.
- The test piece was then inspected for damage utilising a methylene blue solution which was spread over the surface of the piece with a wet sponge and allowed to stand for a further 5 minutes to penetrate any faults before inspection.

2.7.3 Results

Table 3 summarises the results from the dry heat test.



Table 3 – Results for Resistance to Dry Heat

Sink Identification	Sink A	Sink B	Sink C	Sink D	Sink E
Resistance to 180°C dry heat	No effect	No effect	No effect	No effect	No effect

No damage or change was observed from any of the basins.

The test results show that the samples were resistant to the temperatures which can be expected from hot items being placed onto the glaze surface.

2.8 Resistance to Temperature Changes

Five fireclay sinks were provided for testing. The sinks were numbered in order of being unloaded from the shipping pallet from 1-5; the dates of manufacture were not stamped into the undersides of the pieces.

2.8.1 Test Method

A bespoke test, based on Section 5.4 of BS EN 13310, was devised for this purpose. The sinks were tested complete, with a drain outlet and plug fitted.

Each sink was placed on, but not attached to, a floor standing steel frame test rack. Each test commenced with the sink at an ambient temperature of 20-25°C (68-77°F).

- i) 25 litres of heated water was decanted from a boiler directly into the centre of the sink over a period of 2–3 minutes, then allowed to stand for 2 minutes.
- ii) The heated water was drained off and replaced with 20 litres of water at ambient temperature, run in over 1 minute and allowed to stand for 2 minutes.
- iii) The water was drained off and replaced with a further 20 litres of water, as in ii).
- iv) The water was drained off and the sink was then filled with water at ambient temperature to the level of the overflow and the water. This was allowed to stand until the outer faces of the sink were cooled to ambient temperature.
- v) The final volume of water was drained off and the inside of the sink was wiped dry.
- vi) Tests were made to detect damage.
 - a. By “ringing” the sink. This involves striking the side to detect any change in the resulting sound; this is a frequently used method to detect damage in ceramic articles which may not be visible.
 - b. By applying methylene blue dye to the interior surface to detect any cracks.
- vii) Testing resumed at the next highest water temperature.

2.8.2 Results

The results from the tests are listed in Table 4.



As no effect of the testing was detected in the first two samples, the lowest temperature tests (at 40 and 50°C) were not performed on the subsequent samples.

Table 4 - Results of Dye Application Test after Temperature Change Cycles

Heated Water Temperature (°C)	Sink 1	Sink 2	Sink 3	Sink 4	Sink 5
40	No effect	No effect	Not tested	Not tested	Not tested
50	No effect	No effect	Not tested	Not tested	Not tested
60	No effect	No effect	No effect	No effect	No effect
70	No effect	No effect	No effect	No effect	No effect
80	No effect	No effect	No effect	No effect	No effect
90	No effect	No effect	No effect	No effect	No effect
100	No effect	No effect	No effect	No effect	No effect

No effect due to cracking was detected by the “ringing” method in any test.

The test results show that the samples were resistant to the temperature changes, which can be expected from alternating hot and cold water supplies.

3 DISCUSSION

The test work has shown the sinks provided have proven to be very robust and durable for the tests performed, with degradation only occurring in extreme circumstances.

The test results are very similar to the previous testing carried out in 2016, 2018 and 2019.

The summary of this testing highlights the capability of this ceramic product which performs at a high standard.

PHYSICAL TESTING REPORT

Shaws Since 1897 Ltd
 Whitebirk Works
 Waterside
 Darwen
 Lancashire
 BB3 3NX

0013

FAO: Mr Anthony Cristoforo

Report of Tests on: Belfast Sinks**Your Reference:** CE Marking BS EN 13310**Lucideon Reference:** UK213902-26274**Date Reported:** 01-Nov-2021**Order Number:** BACS**Date Logged:** 14-Sep-2021**Date(s) of Test(s):** 21-Oct-2021 to 21-Oct-2021**Determination of Impact Resistance of Non-Metallic Articles for Catering and Industrial Use**

BS EN 12980: 2000

Edge Chipping Results**Test Specimen Description:** Belfast Sink

	Initial Failure	Final Failure
	J	J
1a	0.15	0.65
1b	0.15	0.33
1c	0.14	0.54
1 - Mean	0.15	0.51
2a	0.12	0.62
2b	0.19	0.65
2c	0.15	0.60
2 - Mean	0.15	0.62
3a	0.09	0.14
3b	0.14	0.41
3c	0.09	0.41
3 - Mean	0.11	0.32

	Initial Failure	Final Failure
	J	J
Overall Mean	0.14	0.48
Standard Deviation	0.02	0.15

Tup Type: Cylindrical Ended

Tup Mass: 141.7 g

Specimen Support: Fixed

Test Temperature: 17.0 °C

The articles tested were selected by the client. Information not supplied.

BS 8654:2015 states that: "When tested in accordance with BS EN 12980, the impact energy to produce failure shall not be less than 0.05J."

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

End of Test Report

Mr Simon Hall
 Manager

PHYSICAL TESTING ANALYSIS REPORT

Description: Determination of Impact Resistance

Test Method: BS EN ISO 10545-5:1998

Lucideon Reference: UK213902-26274

Client: Shaws Since 1897 Ltd
Whitebirk Works
Waterside
Darwen
Lancashire
BB3 3NX

For the Attention of: Mr. Anthony Cristoforo

Date Logged: 14-Sep-2021

Date of Tests: 30-Sep-2021 to 30-Sep-2021

Report Date: 04-Oct-2021

Purchase Order No.: BACS

Please find attached the results for the sample(s) recently submitted for analysis.



Mr Simon Hall
Manager

Lucideon Reference: UK213902-26274
Customer Reference: CE Marking BS EN 13310
Description: Belfast Sinks



**DETERMINATION OF IMPACT RESISTANCE – COEFFICIENT OF RESTITUTION
BS EN ISO 10545-5:1998**

Specimen No.	Coefficient of Restitution 1	Coefficient of Restitution 2	Coefficient of Restitution 3
1	0.62	0.62	0.63
2	0.62	0.62	0.61
3	0.60	0.61	0.61
4	0.59	0.61	0.59
5	0.63	0.62	0.61

Description of test specimens: five pieces (cut to 75 mm x 75 mm).

Average coefficient of restitution: 0.61.

There was no visible damage to the surface of the glaze.

END OF TEST REPORT

PHYSICAL TESTING ANALYSIS REPORT

Description: Resistance against Chemicals and Staining Agents

Test Method: BS EN 13310-5:2015

Lucideon Reference: UK213902-26274

Client: Shaws Since 1897 Ltd
Whitebirk Works
Waterside
Darwen
Lancashire
BB3 3NX

For the Attention of: Mr. Anthony Cristoforo

Date Logged: 14-Sep-2021

Date of Tests: 29-Sep-2021 to 30-Sep-2021

Report Date: 04-Oct-2021

Purchase Order No.: BACS

Please find attached the results for the sample(s) recently submitted for analysis.



Mr Simon Hall
Manager

Lucideon Reference: UK213902-26274
Customer Reference: CE Marking BS EN 13110
Description: Belfast Sinks



**RESISTANCE AGAINST CHEMICALS AND STAINING AGENTS FOR KITCHEN SINKS
BS 13310-5:2015**

Test Chemicals	Test Area
Acetic Acid 10% V/V	12.5 cm ²
Sodium Hydroxide 5% m/m	12.5 cm ²
Ethanol 70% V/V	12.5 cm ²
Sodium Hypochlorite 5% Cl ₂	12.5 cm ²
Methylene Blue 1% m/m	12.5 cm ²
Sodium Chloride 170 g/l (50% dil)	12.5 cm ²

The glazed pieces exhibited no visible attack by any of the chemicals and stains applied.

END OF TEST REPORT

PHYSICAL TESTING ANALYSIS REPORT

Description: Resistance to Scratching

Test Method: BS 13310-6:2015

Lucideon Reference: UK213902-26274

Client: Shaws Since 1897 Ltd
Whitebirk Works
Waterside
Darwen
Lancashire
BB3 3NX

For the Attention of: Mr. Anthony Cristoforo

Date Logged: 14-Sep-2021

Date of Tests: 29-Sep-2021 to 30-Sep-2021

Report Date: 04-Oct-2021

Purchase Order No.: BACS

Please find attached the results for the sample(s) recently submitted for analysis.



Mr Simon Hall
Manager

Lucideon Reference: UK213902-26274
Customer Reference: CE Marking BS EN 13310
Description: Belfast Sinks



RESISTANCE TO SCRATCHING FOR KITCHEN SINKS BS 13310-6:2015

1 TEST METHOD

A modified version of the Lucideon in-house PT38 method was employed.

Reciprocal indentations were made 60 mm long at 20 N applied load, using a diamond scribe.

The degree of visible scratching was observed after set reciprocal periods up to 1000.

2 RESULTS

Grooves in the glaze surface were observed at all the applied loads. The tested sample was submitted for microscopic analysis.

END OF TEST REPORT

MICROSTRUCTURE ANALYSIS REPORT

Lucideon Reference: UK213902

Client: Shaws Since 1897 Ltd
Whitebirk Works
Waterside
Darwen
Lancashire
BB3 3NX

For the Attention of: Mr. Anthony Cristoforo

Date Logged: 14-Sep-2021

Date of Tests: 30-Sep-2021 to 30-Sep-2021

Report Date: 30-Sep-2021

Purchase Order No.: BACS

Work Location: Lucideon UK

Please find attached the results for the samples recently submitted for analysis.



Mr Alan Neale
Scientist



Description	Customer Reference	Lucideon Sample No
Belfast Sinks	CE Marking BS EN 13310	UK213902-26274



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1 INTRODUCTION

A glazed tile was submitted which had been subjected to reciprocating scratch testing for increasing numbers of cycles. The scratches had been induced using a diamond indenter with a cone shaped tip of internal angle 110° and an applied load of 20 N. The indenter was repeatedly drawn along a 60 mm length in a reciprocating motion for either 10, 25, 50, 100 or 1000 cycles. The resultant scratches were visible to the naked eye but were examined using optical microscopy to assess the depth of the scratches.

2 TEST METHOD

The scratches were examined using a Leica 205C stereo-optical microscope using coaxial illumination to produce a reflected light image. The scratch widths were measured using the in-built, image analysis software and these were then used to calculate the depth of the scratch based on the tip geometry of the indenter.

3 RESULTS

Table 1 shows the measured scratch widths and calculated scratch depths for the five different cycle lengths.

At low cycles, the scratch edges were more ragged and less uniform. As the number of cycles increased, the scratch edges became straighter and more uniform and the increase in scratch depth began to plateau.

After 1000 cycles, the scratch depth was 0.21 mm; the glaze or glaze/engobe system was observed to be double that in thickness, indicating that the scratches did not come close to reaching the body.

Images are included in Appendix 1 (in each case, the scratch is the black, non-reflecting stripe running vertically down the centre of the image).

Table 1 – Scratch Dimensions Produced by Reciprocating Indenter with Increasing Number of Cycles

Number of Cycles	Width of Scratch (mm)	Depth of Scratch (mm)
10	0.51	0.18
25	0.55	0.19
50	0.56	0.20
100	0.58	0.20
1000	0.60	0.21

APPENDIX 1 – Reflected Light Optical Microscope Images

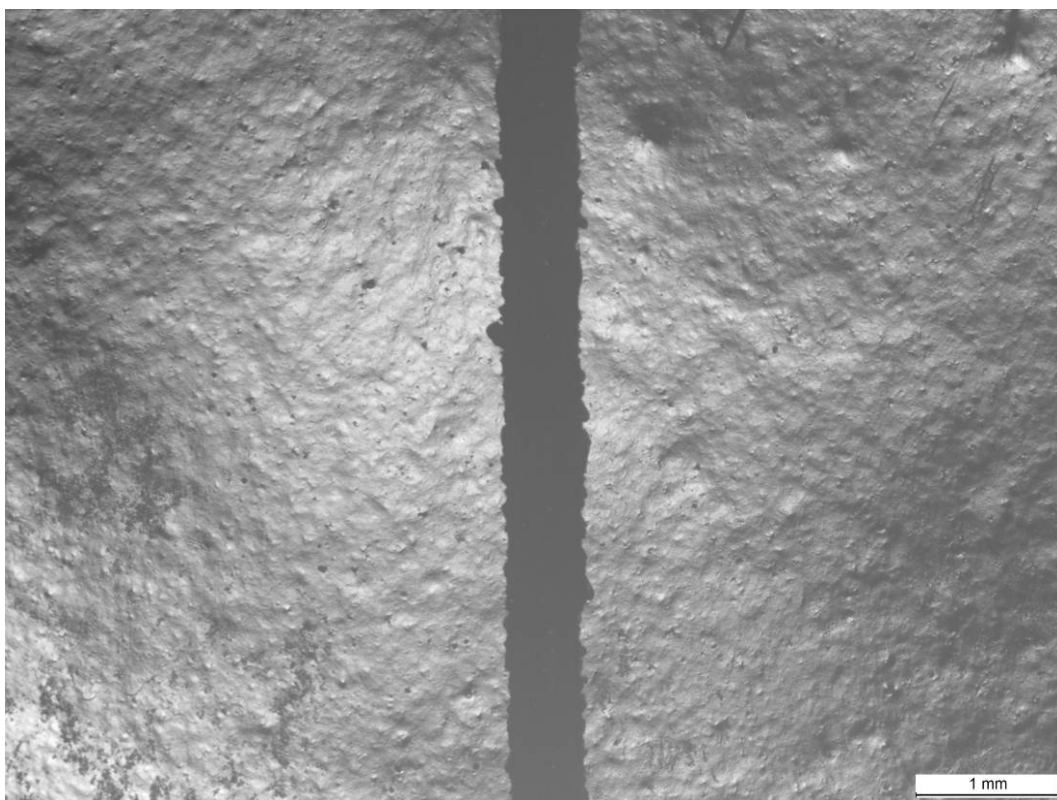


Figure 1 – Scratch in Glaze Surface Produced after 10 Cycles

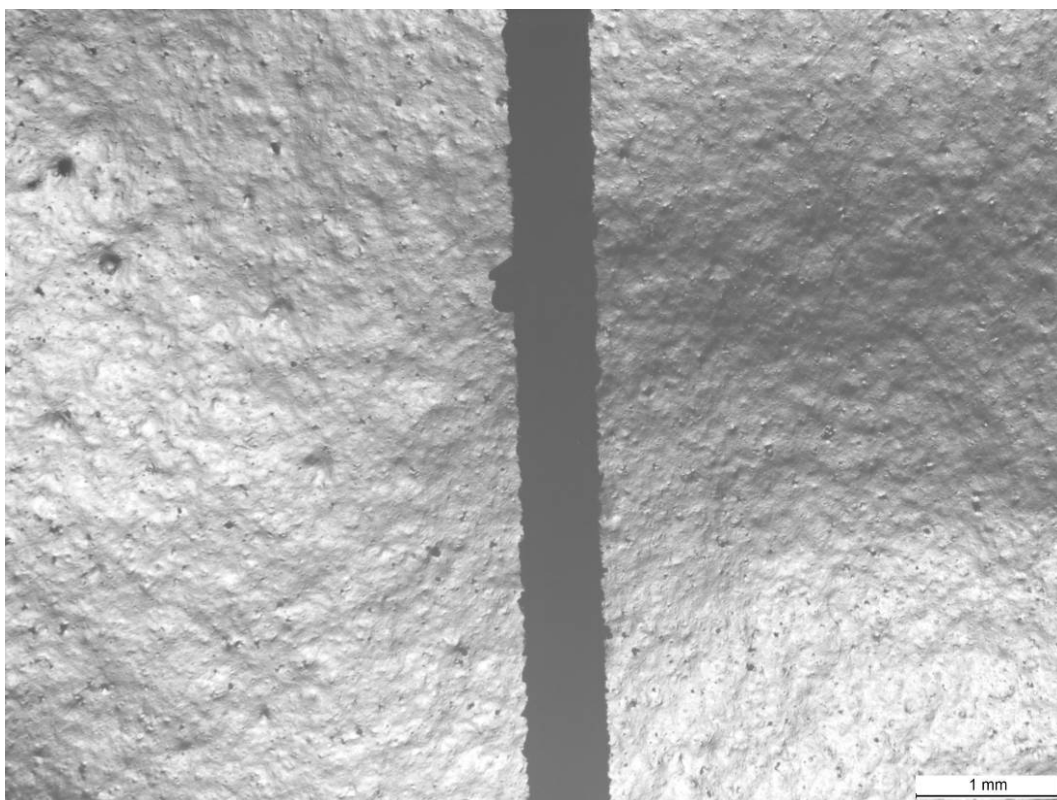


Figure 2 – Scratch in Glaze Surface Produced after 25 Cycles

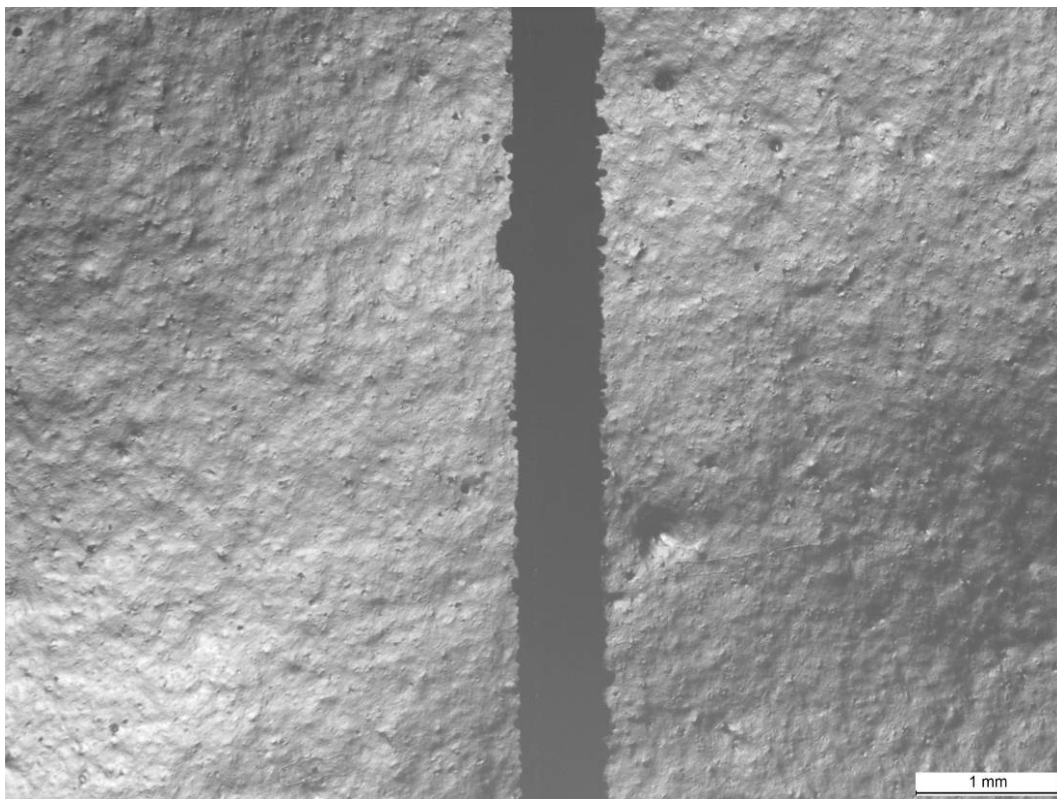


Figure 3 – Scratch in Glaze Surface Produced after 50 Cycles

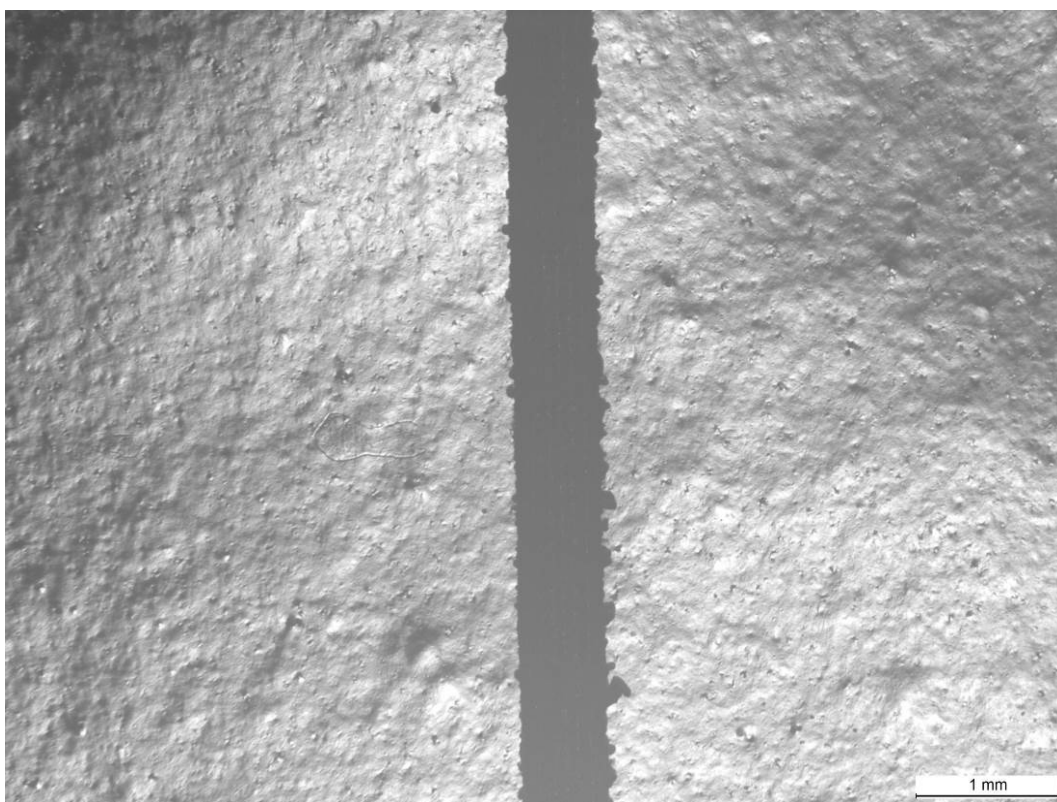


Figure 4 – Scratch in Glaze Surface Produced after 100 Cycles

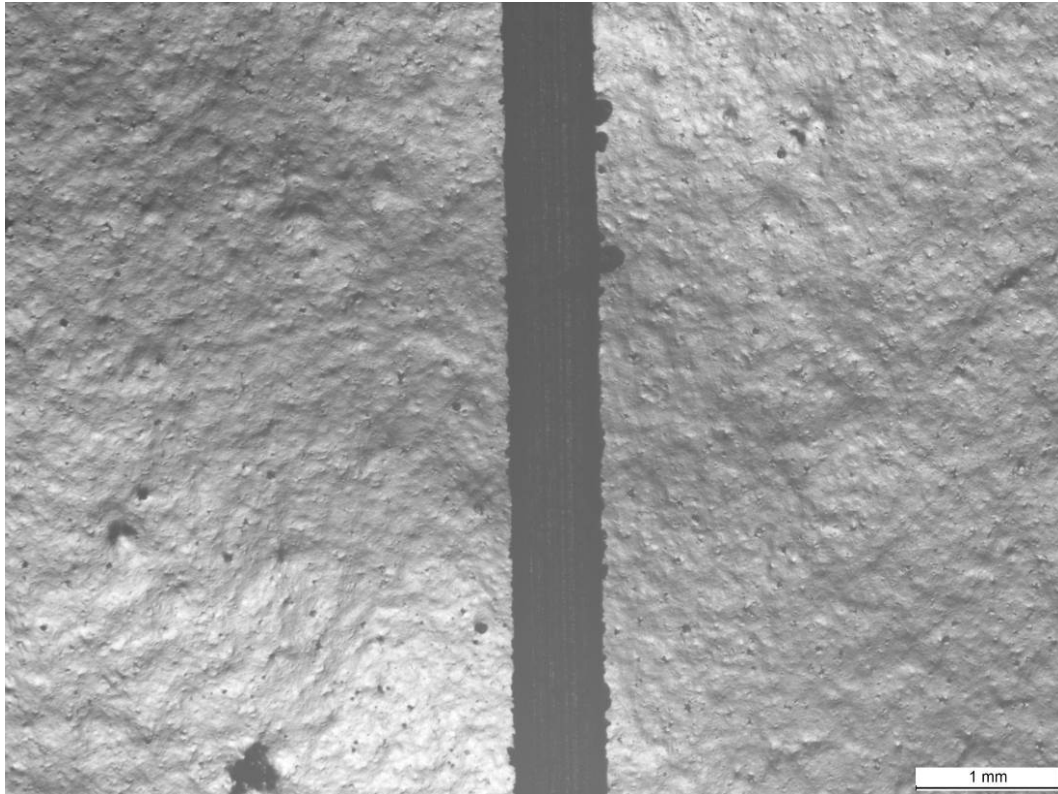


Figure 5 – Scratch in Glaze Surface Produced after 1000 Cycles

END OF TEST REPORT



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Lucideon Ltd Queens Road Penkhull Stoke-on-Trent Staffordshire ST4 7LQ UK	SATRA reference:	FLO0320720 2141 1
	Report ID/Issue number:	19010/1
	Your reference:	22706
	Date samples received:	01/10/2021
	Date(s) work carried out:	01/10/2021 to 27/10/2021
	Date of report:	27/10/2021

TECHNICAL REPORT

Testing of one product described by the customer as a "Fireclay Sink for CE Marking" to ISO 9352:2012. 750 cycles to be conducted utilising S-33 Sandpaper strips under a 500g load, according to requirements as stated in EN 13310:2015 - Clause 5.7.

Conditions of Issue:

This report may be forwarded to other parties provided that it is not changed in any way. It must not be published, for example by including it in advertisements, without the prior, written permission of SATRA.

Results given in this report refer only to the samples submitted for analysis and tested by SATRA. Comments are for guidance only.

A satisfactory test report in no way implies that the product tested is approved by SATRA and no warranty is given as to the performance of the product tested. SATRA shall not be liable for any subsequent loss or damage incurred by the client as a result of information supplied in the report.

Where values for uncertainty of measurement are included within the report then the uncertainty of the corresponding results are based on a standard uncertainty multiplied by a coverage factor $k=2$, which provides a coverage probability of approximately 95%.

Where values for uncertainty of measurement are included within the report then the uncertainty of the corresponding results are based on a standard uncertainty multiplied by a coverage factor $k=2$, which provides a coverage probability of approximately 95%.

When reporting results against a conformance statement (Pass/Fail or the allocation of a class or level) then uncertainty of measurement is taken into account based on a non-binary acceptance which itself is based on the guard band being equal to the expanded uncertainty.

Where the result corrected for uncertainty falls within the tolerance of the conformance statement then the risk of the conformance statement being a false accept or false reject is up to 2.5% and SATRA will in this instance quote a Pass/Fail, class or level.

Where the result corrected for uncertainty falls outside of the tolerance of the conformance statement then the risk of the conformance statement being a false accept or false reject is up to 50%. In this instance SATRA will not provide a Pass/Fail statement or a class or level but will include information in the notes in relation to the result obtained.

Where a report contains SATRA guidelines values then uncertainty of measurement values have been taken into account when determining the guideline values and as such are not considered when determining pass/ fail criteria.

Please note that where uncertainty of measurement values have not been included then uncertainty has not been applied to these results. SATRA uncertainty of measurement values are however available upon request.

Report signed by: Reece Johnson

Department: Furniture and Floor Coverings

TESTING OF ONE PRODUCT DESCRIBED BY THE CUSTOMER AS "FIRECLAY SINK FOR CE MARKING" TO ISO 9352:2012. 750 CYCLES, UTILISING S-33 SANDPAPER STRIPS UNDER A 500G LOAD ACCORDING TO REQUIREMENTS AS STATED IN EN 13310:2015+A1:2018.

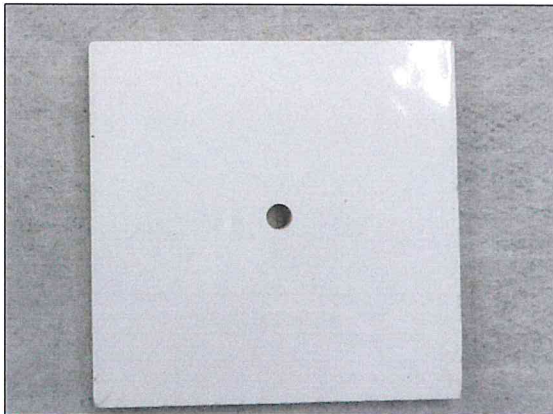
As requested by Lucideon Ltd, SATRA has assessed the samples referenced as "Fireclay Sink for CE Marking" to determine its resistance to abrasion, as required by EN 13310:2015+A1:2018, as detailed below.

CONCLUSION

When this product was tested in accordance with the requirements of EN 13310:2015+A1:2018, using ISO 9352:2012, visual inspection only, the sample submitted, described as "Fireclay Sink for CE Marking" has demonstrated a satisfactory level of abrasion resistance, meeting the requirement of no abrasion through the top layer into the sub layer on all three test samples.

SAMPLE SUBMITTED

Sample reference: "Fireclay Sink for CE Marking" ⁽¹⁾
Appearance:



Date conditioned: 01 October 2021
Testing commenced: 27 October 2021
Testing completed: 27 October 2021
Testing conducted by: Philip Weal

TESTS CARRIED OUT

- ISO 9352:2012 – Methods of testing plastics. Mechanical properties. Determination of resistance to wear by abrasive wheels. ⁽²⁾⁽³⁾

Notes:

- (1) *The information supplied by the customer. Not verified by SATRA.*
- (2) *Abrasive wheels used are CS 0 rubber wheels with S-33 sandpaper strips, which were replaced after each 100 cycles. 500g total loading on each arm. With stopping point at 750 cycles as per requirement.*
- (3) *Method usually designed for plastic materials. Tested at customer's request as it is specified in EN 13310:2015+A1:2018 - Clause 5.7 Resistance to abrasion- Kitchen sinks. Functional requirements and test methods.*

RESULTS

Sample Reference	Specimen	Requirement: EN 13310:2015+A1:2018 (750 cycles is endpoint)	Results (Number of quadrants that showed wear through to sub layer)
"Fireclay Sink for CE Marking"	1	No wear through to sub layer (≥ one point in each of the four quadrants demonstrates wear through to sub layer)	0 of 4 – no wear through ⁽⁴⁾
	2		0 of 4 – no wear through ⁽⁴⁾
	3		0 of 4 – no wear through ⁽⁴⁾

General observations: all 3 tested specimens showed a similar level of gloss removal:

- At 100 cycles very slight gloss removal was observed in wear path.
- At 300 cycles very slight gloss removal was observed in wear path
- At 400 cycles slight gloss removal was observed in wear path.
- At 500 cycles moderate gloss removal was observed in wear path.
- At 700-750 cycles severe gloss removal was observed in wear path.

COMMENTS

ISO 9352:2012 - Methods of testing plastics. Mechanical properties. Determination of resistance to wear by abrasive wheels is intended to assess the wear properties of plastics in laboratory conditions. 98mm x 98mm samples were prepared (cut) by the customer and conditioned in a laboratory at 23 ± 2°C, 50 ± 5% Relative Humidity, for greater than 48hours.

Three samples were abraded using 'CS-0' rubber wheels with S-33 sandpaper abrasive strips under a load of 500g to 750 revolutions. Visual inspection took place after each cycle of 100 revolutions and the sandpaper S-33 replaced with a fresh strip. The stopping point was according to the requirement in EN 13310:2015+A1:2018 - Requirements - Kitchen sinks. Functional requirements and test methods.

TERMS AND CONDITIONS FOR THE SALE OF GOODS AND/OR THE PROVISION OF SERVICES

1. GENERAL

- 1.1 Work done, Services undertaken or the sale of Goods are subject to the terms and conditions detailed below and (subject to clause 5.2) all other conditions, warranties and representations, expressed or implied by statute relating thereto are hereby excluded.
- 1.2 SATRA Technology Centre Limited, its subsidiaries and associated companies (hereinafter referred to as "SATRA") may perform Services for or supply Goods to persons or entities (public, private or governmental) issuing instructions (hereinafter termed the "Client"). Each also known individually as a Party, or jointly as Parties.
- 1.3 These terms and conditions will apply to the Contract between SATRA and the Client to the exclusion of any other terms which the Client may seek to impose or which may be implied by trade, custom, practice or course of dealing.
- 1.4 Unless otherwise agreed in writing no party other than the Client is entitled to provide instructions or information relating to the Goods or Services required or to the delivery of goods, results, reports or certificates.
- 1.5 All references in these terms and conditions to:
- (a) the "Contract" is the contract between SATRA and the Client for the supply of Goods or Services which is made subject to these terms and conditions; and
- (b) "Services" are the work or services to be supplied or performed under the Contract (including where relevant the supply of software, components and consumables); and
- (c) "Goods" are the equipment, consumables or other physical items sold under the Contract (including documents, drawings or other information required in order to operate the equipment).
- 1.6 All drawings, descriptive matter, specifications and advertising material (including brochures and catalogues) are issued or published with the sole purpose of giving an indication of the goods or services being described and shall not form part of the Contract.
- 1.7 Where SATRA and the Client agree that the sale of Goods shall be governed by Incoterms 2010 (or any subsequent revision thereto) then the sale shall be governed by the relevant Incoterms mode of transport which is agreed by SATRA and the Client.

2. FEES AND PAYMENT

- 2.1 Where SATRA has agreed to perform the Services or supply the Goods on the basis of credit then payment terms are net 21 days from date of invoice, unless otherwise specified and may require part payment prior to delivery of the Services or Goods. In the event of the Client failing to make payment as agreed SATRA will be entitled to withhold delivery of the Goods or Services or cancel the Contract. SATRA reserves the right to charge interest on any overdue payments at a rate of 1.5% per month accruing on a daily basis from the date the invoice is due until the date payment is received.
- 2.2 Where the provision of Services or the sale of Goods is subject to a proforma invoice then SATRA shall not be obliged to start working on the provision of the Goods or Services until after payment in full has been made as cleared funds to SATRA.
- 2.3 SATRA reserves the right to charge for any and all expenses incurred as a result of performing the Services required by the Client. Although SATRA will try and provide an estimate of such expenses these may change as a result of circumstances out of SATRA's control.
- 2.4 Unless otherwise agreed in writing, the price for the Goods or Services shall be the price set in the order acknowledgement. SATRA shall not be bound by any price quoted which is not in writing. Prices for the sale of Goods include packing cases and materials but not carriage or installation which will be quoted separately and as agreed with the Client.
- 2.5 Quotations are valid from the date of issue for a period of 90 days unless otherwise specified or agreed in writing.
- 2.6 Should the Client become insolvent, bankrupt, subject to an administration order, enter into liquidation or receivership, or make arrangements with creditors SATRA reserves the right to cancel the Contract and terminate the supply of the Goods or Services. Where the Contract with SATRA is terminated all outstanding monies due from the Client to SATRA shall be immediately payable, and any materials supplied by SATRA to the Client returned. Termination of the Contract shall be without prejudice to any of SATRA's accrued rights.
- 2.7 All invoices issued by SATRA are payable in full. The Client is responsible for payment of withholding and any other taxes and all import duties. Payments made to SATRA shall not be reduced by such amounts.
- 2.8 The Client shall not be entitled to withhold or defer payment due to SATRA as a result of any dispute or counter claim that it may allege against SATRA.
- 2.9 SATRA reserves the right to bring action against the Client in order to collect unpaid fees, including court action. All fees associated with such actions shall be paid for by the Client including legal fees and related costs.
- 2.10 Where unforeseen costs arise as a result of provision of the Goods or carrying out the Services SATRA shall inform the Client immediately but reserves the right to charge additional costs to cover said costs and expenses.

3. INTELLECTUAL PROPERTY RIGHTS

- 3.1 All intellectual property rights belonging to a Party prior to entry into the Contract shall remain with that Party. Nothing in this Contract shall allow transfer of any intellectual property rights from one Party to the other.
- 3.2 In the event of certification services the use of certification marks by the Client may be subject to national and international laws and regulations. The responsibility for the use of these certification marks lies solely with the Client.
- 3.3 All intellectual property rights in reports, drawings, graphs, charts, photographs or any other material (in whatever medium) produced by SATRA pursuant to this Contract shall belong to SATRA. The Client shall have the right to use said material in accordance with the terms of this Contract.
- 3.4 The Client agrees and acknowledges that SATRA retains any and all proprietary rights in concepts, ideas and inventions that may arise during the preparation or provision of any report (including any deliverables provided by SATRA to the Client) and the provision of the Services to the Client.
- 3.5 All intellectual property rights in any software supplied to the Client shall belong to SATRA or SATRA's licensors. With respect to the sale of SATRA Timeline, SATRASUMM and SATRA Visionstitch, provided that the Client is a member of SATRA and has paid its annual Smartcare fee then the Client will be entitled to use the software for its own internal use and will be entitled to receive minor software upgrades and fixes. SATRA may however terminate the supply of software upgrades and fixes for older versions of software which it no longer considers viable to support. The Client's rights to use the software and receive software upgrades and fixes will terminate if the Client has not paid its annual Smartcare fee. Major upgrades are not included within the entitlement to upgrades but may be offered by SATRA from time to time for an additional fee.
- 3.6 SATRA shall observe all statutory provisions with regard to data protection including but not limited to the provisions of the Data Protection Act 2018 and the EU General Data Protection Regulation (GDPR) Regulation (EU) 2016/679. To the extent that SATRA processes or gets access to personal data in connection with the Services or otherwise in connection with this Contract, it shall take all reasonable technical and organisational measures to ensure the security of such data (and guard against unauthorised or unlawful processing, accidental loss, destruction or damage to such data).

4. SUSPENSION OR TERMINATION OF SERVICES

- 4.1 Cancellation by the Client of orders for Goods or Services will only be acceptable by prior agreement with SATRA and a charge will usually be made.
- 4.2 SATRA shall not be liable for any delay or failure in providing the Goods or Services due to circumstances beyond its reasonable control (including any failure by the Client to comply with its obligations). If any such circumstances arise which prevent SATRA from delivering the Goods or completing the Services, then SATRA will be entitled to cancel or reschedule the delivery of Goods or Services at its discretion. In the event of cancellation SATRA will be entitled to retain all fees paid by the Client for Goods or Services already supplied but will refund to the Client any fees paid by the Client for Goods or Services which have not yet been supplied. The Client will not be liable for any non-refundable expenses already incurred by SATRA in relation to Goods or Services not yet supplied unless the cancellation is due to the Client's failure to comply with its obligations under the Contract.

5. LIABILITY AND INDEMNIFICATION

- 5.1 Reports are issued on the basis of information, documents and or samples submitted to SATRA by the Client or on behalf of the Client and are provided solely for the benefit of the Client who is responsible for acting as it sees fit on the basis of such reports and findings. Subject to clause 5.2, neither SATRA nor any of its employees, agents or subcontractors shall be liable to the Client or any third party for any actions taken or not taken on the basis of such findings and reports, nor for any incorrect results arising as a result of unclear, erroneous, incomplete, misleading or false information provided to SATRA.
- 5.2 Nothing in these terms and conditions shall limit or exclude SATRA's liability for:
- (a) death or personal injury caused by its negligence or the negligence of its employees or agents; fraud or fraudulent misrepresentation;
- (b) breach of the terms implied by Section 12 of the Sale of Goods Act 1979;
- (c) defective products under the Consumer Protection Act 1987; or
- (d) any other liability which cannot be limited or excluded by applicable law.
- 5.3 Subject to clause 5.2 SATRA shall not be liable to the Client whether in contract, tort (including negligence), breach of statutory duty or otherwise arising under or in connection with the Contract for loss of profits, sales, contracts, anticipated savings, loss or damage to goodwill or any indirect or consequential loss.
- 5.4 Subject to clause 5.2 SATRA's total aggregate liability to the Client, whether in contract, tort (including negligence), breach of statutory duty or otherwise arising under or in connection with the Contract shall be limited to the total amount of fees for the Services or the price of the Goods (excluding any value added tax or other sales tax or expenses) payable by the Client to SATRA under the Contract or £100,000 whichever is the lower figure.

6. MISCELLANEOUS

- 6.1 If any one or more provisions of these conditions are found to be illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.
- 6.2 During the course of providing the Goods or Services and for a period of one year thereafter the Client shall not directly or indirectly entice, encourage or make any offer to SATRA's employees to leave their employment with SATRA.
- 6.3 The use of SATRA's corporate name or registered marks for advertising purposes is not permitted without SATRA's prior written authorisation.
- 6.4 All reports and documentation which are supplied to the Client under the Contract remain the property of SATRA until paid in full. Under no circumstances will a Client's purchase order override SATRA's retention of title in accordance with this clause.
- 6.5 The Client acknowledges that in entering into this Contract it has not relied on any representation, warranty, collateral contract or other assurance (except those set out or referred to in these terms and conditions) made by or on behalf of SATRA or any other party before entering into the Contract. The Client waives all rights and remedies that, but for this clause, might otherwise be available to it in respect of any such representation, warranty, collateral contract or other assurance.
- 6.6 All provisions of the Contract that limit or exclude the liability of SATRA are intended also to be for the benefit of SATRA's holding company (called SATRA, and being a company limited by guarantee and incorporated in England and Wales with company number 00153475), and shall accordingly be enforceable by such holding company as well as or instead of by SATRA, and on the basis that any limit on the liability of SATRA shall apply to it and to such holding company in the aggregate.

7. CONFIDENTIALITY

- 7.1 Unless specifically excluded in the terms of an individual contract between SATRA and the Client, the following shall apply to all deliverables including, reports, advice, drawings, photographs, specifications, data or other forms of media.
- 7.2 Deliverables referred to in clause 7.1 shall not be disclosed to third parties or used in litigation without the consent of SATRA.
- 7.3 Where SATRA has given consent to disclosure of any service deliverables referred to in clause 7.1, the Client shall draw the attention of the third party to these terms of business and the basis on which SATRA undertakes testing, reporting and advising. The Client shall indemnify SATRA for any failure to do so.
- 7.4 The service deliverables referred to in clause 7.1 are submitted to the Client as confidential documents. Confidentiality shall continue to apply after completion of the business, but shall cease to apply to information or knowledge which has come into the public domain through no breach of this Contract by the Client.
- 7.5 The Client shall not disassemble, remove parts or carry out any form of analysis on goods or materials sold by SATRA for the purposes of reverse engineering or obtaining information on the construction, content or composition of the item without the consent of SATRA.

8. AMENDMENT

- 8.1 No amendment to this Contract shall be effective unless it is in writing, expressly stated to amend this Contract and signed by an authorised signatory of both Parties.

9. DISPUTE RESOLUTION

- 9.1 If there should be a dispute between the parties to this Agreement they undertake to act with goodwill and to use all reasonable endeavours to resolve that dispute.
- 9.2 Failure to resolve any dispute by discussions between the parties shall, in the first instance, be referred to a mediator for resolution. The parties shall attempt to agree upon the appointment of a mediator, upon receipt, by either of them, of a written notice to concur in such appointment. Should the parties fail to agree within 21 days, either party, upon giving written notice, may apply to the President or the Vice President, for the time being, of the Chartered Institute of Arbitrators, for the appointment of a mediator.
- 9.3 Should the mediation fail, in whole or in part, either party may, upon giving written notice, and within twenty-eight days thereof, apply to the President or the Vice President, for the time being, of the Chartered Institute of Arbitrators, for the appointment of a single arbitrator, for final resolution. The arbitrator shall have no connection with the mediator or the mediation proceedings, unless both parties have consented in writing. The arbitration shall be governed by both the Arbitration Act 1996 and the Controlled Cost Rules of the Chartered Institute of Arbitrators (2000 Edition), or any amendments thereof, which Rules are deemed to be incorporated by reference into this clause. The seat of the arbitration shall be England and Wales.
- 9.4 The laws of England shall govern the interpretation of this Contract. Subject to clauses 9.1, 9.2 and 9.3 any dispute arising out of or in connection with the Contract shall be subject to the exclusive jurisdiction of the courts of England. However, the Party obtaining a judgement in such courts shall be entitled to enforce it in any court it chooses.

TERMS AND CONDITIONS FOR THE SALE OF GOODS AND/OR THE PROVISION OF SERVICES

- 10. PROVISION OF SERVICES**
- 10.1 SATRA shall provide Services using reasonable care and skill and in accordance with the Clients specific instructions and as confirmed by SATRA as part of the Contract review process.
- 10.2 Estimates for completion of the Services are made in good faith and date from receipt of a written order, payment of a proforma invoice if required, full information and samples to enable SATRA to proceed. While SATRA will make every effort to fulfill them, such estimates are subject to unforeseen events and if not achieved, cannot give rise to any claim. Time will not be of the essence in relation to the performance of the Services.
- 10.3 Results given in test reports or certificates refer only to samples submitted for analysis to SATRA. A satisfactory test report in no way implies that the product tested is approved by SATRA and no warranty is given as to the performance of the product tested.
- 10.4 SATRA may delegate all or part of the Services to a subcontractor and the Client authorises SATRA to disclose all information required to undertake the Services.
- 10.5 Where the Client requests SATRA to witness testing of other services being undertaken by a third party the Client agrees that SATRA's sole responsibility is to be present at the time of the work and to forward the results or confirm that the service has been undertaken. The Client agrees that unless otherwise agreed SATRA is not responsible for the condition or calibration of any equipment unless provided by SATRA.
- 10.6 Unless otherwise agreed in advance, test samples will be retained for 6 weeks from the date of the final report after which time they will be disposed of and SATRA shall cease to have any responsibility for such samples.
- Where the nature of the samples or the Services undertaken results in specialist disposal then SATRA reserves the right to pass the cost of such disposal onto the Client. Storage for longer periods may be possible only if agreed in advance and may incur a storage charge payable by the Client.
- Where practical and agreed in advance, samples may be returned at the Client's expense. However, samples are in most instances partially or fully destroyed as part of the work undertaken and SATRA cannot guarantee that samples will be returned in an "as new" condition.
- 10.7 Where SATRA receives documents reflecting engagements between the Client and third parties or documents belonging to third parties, such documents shall be considered as being for information only and shall not release the Client from any or all obligations to SATRA.
- 10.8 SATRA reserves the right to make changes to the Services, provided that such changes do not materially affect the nature or quality of the provision of these Services or where they are necessary in order to ensure that any applicable laws or safety requirements are complied with.
- 10.9 The Client acknowledges that SATRA by providing the Services, neither takes the place of the Client or any third party or releases them from any of their obligations.
- 11. CLIENT RESPONSIBILITIES RELATING TO THE PROVISION OF SERVICES**
- 11.1 The Client shall provide sufficient samples, information, instructions and documents as required to enable SATRA to carry out the Services in accordance with the methods, standards or other specifications as agreed.
- 11.2 Where applicable the Client shall allow access by members of SATRA staff to such premises where the Services are to be performed and provide any specialist equipment and personnel.
- 11.3 The Client shall inform SATRA in advance of any known hazards, dangers or other safety matters relating to samples submitted to SATRA or on site visits made by SATRA.
- 11.4 Where the Client fails to comply with any of its responsibilities SATRA reserves the right to suspend any Services until such time as the Client has complied and may require the Client to reimburse SATRA the amount of any additional costs arising from the suspension.
- 12. DELIVERY AND NON-DELIVERY OF GOODS**
- 12.1 Delivery dates for the supply of the Goods are approximate only and not guaranteed. Time of delivery is not of the essence of the Contract and SATRA shall not be liable for any delay in delivery of Goods.
- 12.2 Should expedited delivery be requested and agreed, SATRA shall be entitled to make additional charges to cover overtime or any other additional costs.
- 12.3 Delivery of the Goods shall take place at such location as SATRA and the Client agree. If the Client agrees to collect the Goods from SATRA's premises, then delivery will take place at those premises in which case the consignment of Goods as recorded by SATRA upon dispatch shall be evidence of the Goods received by the Client unless the Client can provide conclusive evidence to the contrary.
- 12.4 SATRA shall not be liable for the non-delivery of Goods (even if caused by SATRA) unless the Client provides written notice of non-delivery in accordance with clause 13.2. Liability for non-delivery of Goods shall in any event be limited to replacing the Goods within a reasonable time frame or the issue of a credit note to the value of the Goods not delivered.
- 12.5 Should delivery of the Goods be suspended or delayed by the Client for any reason SATRA reserves the right to charge for storage and for all expenses incurred, including loss of or wastage of resources that cannot otherwise be used. If the delay extends beyond 30 days SATRA shall be entitled to immediate payment for any Goods that are ready for delivery, and any other additional costs.
- 12.6 If for any reason the Client fails to accept delivery of any of the Goods when they are ready for delivery, or SATRA is unable to deliver the Goods on time because the Client has not provided appropriate instructions, documents, licenses or authorisations then risk in the Goods shall pass to the Client, the Goods and/or Services shall be deemed to have been delivered; and SATRA may store the Goods until delivery, whereupon the Client shall be liable for all related costs and expenses (including, without limitation, storage and insurance).
- 13. RISK/TITLE OF GOODS**
- 13.1 Subject to clause 12.6 the risk in the Goods will transfer to the Client on delivery of the Goods unless SATRA and the Client have agreed that the sale of the Goods will be governed by Incoterms 2010 (or any subsequent revision thereto) in which case risk will transfer to the Client in accordance with the Incoterms mode of transport which is agreed by SATRA and the Client.
- 13.2 The Company shall not accept responsibility for loss or damage in transit unless:
- a) In the case of sales where delivery of Goods is made in the United Kingdom SATRA is notified by the Client within 10 days of the invoice date of non-arrival of Goods and within 3 days of the invoice date of receipt of Goods damaged in transit; or
- b) In all other cases the Client notifies SATRA on the non-arrival or damage in transit within a reasonable period of time as determined by SATRA.
- 13.3 Title to the Goods shall not pass to the Client until the earlier of when: -
- a) SATRA receives payment in full (in cash or cleared funds) for the Goods and any other Goods that SATRA has supplied to the Client in which case title to the Goods shall pass at the time of payment of all such sums; and
- b) the Client resells the Goods in accordance with clause 13.5 in which case title shall pass to the Client immediately before the time at which the resale by the Client occurs.
- 13.4 Until ownership of Goods has passed to the Client, the Client shall:
- a) hold the Goods as SATRA's bailee;
- b) store the Goods (at no cost to SATRA) separately from all other goods belonging to the Client or any third party in such a way that they remain readily identifiable as SATRA's property (including where the Goods have been sold to a 3rd party);
- c) not destroy, deface or obscure any identifying mark or packaging on or relating to the Goods; and
- d) maintain the Goods in satisfactory condition and keep them insured on SATRA's behalf for their full price against all risks to the reasonable satisfaction of SATRA. The Client shall obtain an endorsement of SATRA's interest in the goods on its insurance policy. On request the Client shall allow SATRA to inspect such Goods and shall produce the policy of insurance.
- 13.5 The Client may resell the Goods before ownership has passed to it solely on condition that sale shall be effected in the ordinary course of the Client's business at full market value.
- 13.6 If before title to the Goods passes to the Client, the Client becomes subject to any of the events referred to in clause 2.6 then without limiting any other right or remedy SATRA may have:
- a) the Client's right to resell the Goods or use them in the ordinary course of its business ceases immediately; and
- b) SATRA may at any time require the Client to deliver up all Goods in its possession that have not been resold or irrevocably incorporated into another product; and
- c) if the Client fails to do so promptly SATRA may exercise its rights under clause 13.7.
- 13.7 The Client grants SATRA, its agents and employees an irrevocable licence at any time to enter any premises where the Goods are or may be stored in order to inspect them, or, where the Client's right to possession has terminated, to recover them.
- 13.8 On termination of the Contract, howsoever caused, SATRA's (but not the Client's) rights contained in this clause 13 shall remain in effect.
- 14. PATENTS**
- 14.1 SATRA gives no indemnity against any claim of infringement of Letters Patent, Registered Design, Trade Mark or Copyright by the use of or sale of any article or material supplied to the Client. If its use is impossible without infringement of Letters Patent, Registered Design, Trade Mark or Copyright published at the date of the contract, SATRA will refund to the Client the purchase price of the said article or material provided that it is returned to SATRA free of charge. The Client warrants that any design or instruction furnished or given by the Client shall not be such as will cause SATRA to infringe any Letters Patent, Registered Design, Trade Mark or Copyright in the execution of the Client's order.
- 15. WARRANTY OF GOODS**
- 15.1 SATRA warrants that on delivery and for a period of 12 months from the date of delivery or within the shelf life of the Goods (whichever is the shorter period) the Goods shall be free from defects in design, material and workmanship.
- 16. DEFECTIVE GOODS**
- 16.1 Subject to clauses 16.6 and 16.7 if:
- a) the Client gives notice in writing to SATRA in accordance with clause 16.3 and during the period referred to in clause 15.1 that the Goods do not comply with the warranty in that clause; and
- b) SATRA is given a reasonable opportunity of examining such Goods; and
- c) the Client (if asked to do so by SATRA) returns such Goods to SATRA's place of business then SATRA will, at its option, repair or replace the defective Goods or refund the price of the defective Goods in full. SATRA reserves the right to repair the Goods at the Client's premises.
- 16.2 The Client must inspect all Goods upon delivery. Failure to do so may result in further charges being applied in the event of a return.
- 16.3 If Goods are found to be faulty, defective or damaged the Client must inform SATRA in writing as soon as reasonably possible and in any event within 10 working days of the fault, damage or defect being discovered.
- 16.4 Without prejudice to clause 16.1 if no notice of rejection has been received by SATRA within 3 months of delivery, the Client shall be deemed to have accepted the Goods.
- 16.5 SATRA will pay the reasonable costs of carriage, packaging and insurance for any defective Goods which are returned by the Client provided that SATRA is liable under clause 16.1 to repair or replace the defective Goods. If SATRA determines that the Goods are not defective or if SATRA is not liable to repair or replace the Goods due to the circumstances under clauses 16.6 or 16.7 then the Client will be responsible for the payment of such costs.
- 16.6 SATRA shall not be under any liability to repair or at its option replace or pay for the repair or replacement of any Goods which are found to be defective if:
- a) the defect is caused or substantially caused by wear and tear, overloading, misuse, neglect, modification or attempted modification carried out by any organisation other than by SATRA or their approved agents, or use with ancillary equipment not approved in writing by SATRA, or default in proper maintenance or cleaning; or
- b) the Client authorises or carries out any repair or replacement of any Goods without first affording SATRA a reasonable opportunity to replace or repair them; or
- c) the Client has breached any of the terms of the Contract under which the Goods were supplied; or
- d) the Goods have been manufactured to a design or specification or in compliance with other information provided by the Client and the defect has arisen as a result of that design, specification or information;
- 16.7 Where Goods or parts of Goods are not manufactured by SATRA then SATRA shall be liable for defects only to the extent that SATRA obtains redress from the manufacturer or supplier thereof provided that:
- a) SATRA shall not be obliged to take any step to attempt to obtain such redress except at the request and expense of the Client and upon provision by the Client of a full indemnity as to costs for which SATRA may thereby become liable;
- b) nothing in this condition 16.7 shall have effect as to impose upon SATRA any additional liability or obligations other than those referred to in condition 16.1.
- 16.8 Except as provided in clause 16.1 SATRA shall have no liability to the Client arising from any failure of the Goods to comply with the warranty in clause 15.1.

Terms and conditions – May 2021