ERA PRODUCTS

UKAS TESTING
4052

CERTIFICATE OF TESTING	Approved Signatory
Issued by: A. Crutchley	Name: A. Crutchley
Date of issue: 12/03/2008 Issue 2	Signature: A. Crutchley
Test report number: 042	Page 1 of 11

TEST DETAILS

Test of:	Senior Aluminium Top Hung Window
Test to:	BS 7950:1997
For:	Senior Aluminium Systems
On behalf of:	N.A

Client Details:

Company Name:	Senior Aluminium Systems
Address:	Eland Road Denaby Main Doncaster DN12 4HA
Contact:	Mark Durose

Order Details:

Order number:	117867
Dated:	17/1/2008

Sample Details:

Product:	Top Hung Window
Model:	SPW600
Markings:	N.A
Manufacturer:	Senior Aluminium Systems
Date of Manufacture:	17/01/2008
Other Information:	N.A

Test Details:

Test Reference No:	012/2
Date Samples Received:	18/02/2008
Date Test Started:	19/02/2008
Date Test Completed:	19/02/2008
Specification Tests Conducted To:	BS 7950:1997
Class or Category:	N.A
Special Test Requirements:	N.A
Other Reports to be used in - Conjunction with this report:	N.A

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TEST SUMMARY

Specification / Clause No / Description:	Pass / Fail:
BS 7950:1997	
A.4 Manipulation Test	Pass
A.5.1 Glazing Removal Test – Manual Test	Pass
A.5.2 Glazing Removal Test – Mechanical Test	Pass
A.6 Mechanical Loading Test	Pass
A.7 Manual Check Test	Pass
A.8 Additional Mechanical Loading Test	N.A.

Specification Form		
Note: If a range of products are to be tested then a form will have to be completed for each variable within the range.		
Customer Name / Supplier:	**Senior Aluminium Systems**	
Specific product identification:	**SPW600**	
Specimen type (door or window):	**Casement Window**	
Size and Configuration:	**1200mm x 1200mm Top Hung**	
Profile type (drawings if available):	**Outer Frame Espag Vent**	
Method of jointing:	**Cleated and Crimped**	
Materials & Surface Treatment:	**Mill Finish Aluminium**	
Profile Part No:		
Frame:	**Sash (including mullion, transom ect)**	
SPW 60102	**SPW 68693**	
Reinforcing Part Numbers:		
Frame:	**Sash (including mullion, transom ect)**	
N.A.	**N.A.**	
Glazing:		
Type (glazed in or out) / Beading:	**Gasket type:**	**Thickness (4-20-4mm):**
IN SPW643 Bead	**Captive, Wedge**	**4-20-4 Tough**
Locking system:		
Manufacturer / Model	**Configuration (no of hooks / rollers ect)**	
Maco	**Shoot bolt and roller cam**	
Lock fixings: / **Manufacturer:**	**Keeps & fixings:**	
1" 8 Self taper / **Infast**	**1" 8 Self taper**	
Hinges:		
Manufacturer / Model	**Configuration (butt, flag ect)**	
Securistyle Vector plus	**SWVPT Friction stays**	
Fixings:	**1" 10 Pan head / 1" 10 C/S**	
Handle:	**SW4EHS**	
Other Hardware details (dog bolts, glazing clips, risers blocks ect):		
Two off SPW4101 Runner blocks fitted on sides. SW3E Espag locking Set		
The results are valid only for the conditions under which the test was conducted and for the specific window range.-		

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Certificate of Testing
UKAS Accredited calibration Laboratory No: 4052

NOTE: All test samples have been stored in the test house for at least 1 hour before the testing was commenced.

TEST RESULTS FOR SAMPLE 1

Test Number:	012/2/1	**Tested By:**	A. C & A. S
Date of Test:	19/01/2008	**LAB Temperature:**	20.1 C
Specimen Number:	1	**Lab r/h:**	28%

Description / Clauses for the Test Method:	Relevant Test Equipment:	Specification:	Results:	Status:
BS 7950: 1997 – A.4 Manipulation Test	Impact test rig – **A.3.1** Assorted mild steel wire 2mm * 700mm. **A.3.2** Two credit cards 55mm * 85mm*0.7mm. **A.3.3** Two paint scrapers 75mm. **A.3.4** One craft knife 180mm – 0.6mm*28mm. **A.3.5** Two flat blade screwdrivers 150mm*75mm*3mm vanadium / chrome tool grade steel. **Group B** Only use if access of head of any threaded fastener becomes available, tools are not to be used for any other purpose, such as levering. **A.3.8** One flat blade screwdriver 200mm * 6mm. **A.3.10** One cross point screwdriver 200mm * 6mm No 2. **A.3.11** One cross head screwdriver 200mm * 6mm, No PZ2. Rig Ref: 041	Establish that there is no inherent vulnerability in the design of the window, from the outside would permit entry by locking system being operated, unfastened or disengaged. Methods of manipulation include removal of trim sections, insertion of a tool to slide latches or bolts, undoing threaded fasteners in externally fixed hardware and blows by hand to dislodge locking devices. Engineer may apply a force sufficient to explore any potential vulnerability but this force shall not result in permanent set or plastic deformation of any tool. Manipulation shall be terminated if permanent set, plastic deformation of tool occurs. There is no overall time limit for this test, however, no one technique shall be used for more than **3** minutes.	Removed some of the gasket with paint scraper & then tried to force the mushroom out of the keep at the bottom centre of the window. 3 minutes was used in total and no entry was gained. Tried to push the shoot bolt & roller out of the keep in the right corner. Bent aluminium on the mitre joint slightly. 3 minutes used and no entry gained. Tried to lever the top right hinge out with paint scraper, removed gasket from side. 3 minutes used and no entry gained.	Pass

BS 7950: 1997 – A.5.1 Glazing Removal Test, Manual	Impact test rig – **A.3.1** Assorted mild steel wire 2mm * 700mm. **A.3.2** Two credit cards 55mm * 85mm*0.7mm. **A.3.3** Two paint scrapers 75mm. **A.3.4** One craft knife 180mm – 0.6mm*28mm. **A.3.5** Two flat blade screwdrivers 150mm*75mm*3mm vanadium / chrome tool grade steel. **Group B** **A.3.6** One wood chisel, 250mm * 25mm. **A.3.7** One wood chisel, 250mm * 6mm. **A.3.8** One flat blade screwdriver 200mm * 6mm. **A.3.9** One brick bolster 250mm * 60mm **A.3.10** One cross point screwdriver 200mm * 6mm No 2. **A.3.11** One cross head screwdriver 200mm * 6mm, No PZ2. Rig Ref: 041	Using the tools specified in **A.3.** Attempt to remove gaskets, beads, security devices (if applicable) and the glazing from the exterior face of the glazing system, for a period of **3** minutes.	Cut gasket out with knife and then tried to push the internal bead of through the drainage hole, but could not. Then positioned credit card against glass and tried to lever the glass out but could not. No entry was gained and 3 minutes used.	Pass

BS 7950: 1997 – A.7 Manual Check Test	Impact test rig – **A.7.2.1** Two flat bladed screwdrivers, of length 270mm * 8mm * 8mm. **A.7.2.2** Two nail bars 300mm +/- 20mm. Rig Ref: 041	Objective is to explore the possibility that vulnerability other than that covered by the standard cases exists from exterior face. Attempt to gain entry by levering at any location & in any direction such that the combined direction & location of the forces exhibited by the standard loading cases used in annex b are not replicated. Attempts shall be made to gain entry by defeating any hinge, locking point, fixing point or other potentially vulnerable locations. The overall attack time limit for this test is **15** minutes, no one technique shall be used for more than **3** minutes. The test shall be conducted with any one or two of the tools specified in **A.7.2** for each technique. If entry is gained the method shall be recorded, the direction of applied loads noted, new loading positions & directions defined for parallel-to-plane & perpendicular-to-plane loads & an additional mechanical loading test shall be performed in accordance with **A.8.**	Two nail bars used on right hand side to try and force the sash open however no entry gained & 3 minutes used. Used two nail bars on bottom left corner either side of the locking points to try & lever sash open. Aluminium was bent, but no entry gained & 3 minutes used. Two nail bars used on top of the sash between the hinges. Levered aluminium back, however no entry gained & 3 minutes used. Nail bar & screwdriver used at the bottom in the centre of sash to try and lever window open, however no entry gained & 3 minutes used. Two nail bars used to lever the left side of sash open. Bent part of the hinge straps out but no entry gained & 3 minutes used. Total attack time used 15 minutes.	Pass

TEST RESULTS FOR SAMPLE 2

Test Number:	012/2/2	**Tested By:**	A.C & A.S
Date of Test:	19/02/08	**LAB Temperature:**	20 C
Specimen Number:	2	**Lab r/h:**	28%

Description / Clauses for the Test Method:	Relevant Test Equipment:	Specification:	Results:	Status:
BS 7950: 1997 – A.5.2 Glazing Removal Test, Mechanical	Impact test rig – load cells & various attachments. Rig Ref: 041	Apply a perpendicular-to-plane load of **2.0kN** to each corner of the glazing in turn and in a direction towards the inside, progressively and without shock over a period of 10 s to 20 s and within 5 degrees of the perpendicular to the plane. Apply the load via an articulated pad secured to a nominal 150mm * 150mm plywood block of 25mm minimum thickness, and maintain until it has been held for **8s to 12 s**. If failure of the glazing system is exhibited at the corners then continue the loading test along each section in an attempt to deglaze the window.	2kN applied to all four corners for 10 seconds ok and no entry gained.	Pass
BS 7950: 1997 – A.6 Mechanical Loading Test	Impact test rig – load cells & various attachments.	The objective of the mechanical loading test is to assess whether the sample can withstand a specified sequence of loading without creating an entry. Apply & remove loads over a period of not more than **5 minutes** at each loading point. The loading consists of an application of parallel-to-plane which is maintained until a perpendicular-to-plane load has been applied and removed.		

BS 7950: 1997 – A.6.3 Parallel-to-Plane Loading For other than vertical sliding windows.	Impact test rig – load cells & various attachments. (Fig 4, 5, 6). Rig Ref: 041	Apply a parallel-to-plane load of **1kN** progressively & without shock over period of not more than **30 seconds**. Maintain this parallel-to-plane load until either the perpendicular-to-plane loading is completed & removed or a perpendicular-to-plane movement of **150mm** is achieved. Remove the load without shock over a period not exceeding **30seconds**. Parallel-to-plane loads are of two types: a) Parallel-to-plane: along edge – apply the force at the corner of the vent with a line of action which is parallel to the edge & directed towards the adjacent corner. B) Parallel-to-plane: at right angles to edge – apply the force at the vent frame between the corners & with a line of action which is at right angles to the edge & directed towards the opposite edge. On multilights only, apply an opposing force to the mullion / transom on the opposite side to the opening face, where the locking point is between the vent frame & the mullion or transom	All loading points applied with 1kN * 3kN for 10 seconds ok and no entry was gained.	Pass

BS 7950: 1997 – A.6.4 Perpendicular-to-Plane Loading	Impact test rig – load cells & various attachments. (figures 7, 10) Rig Ref: 041	Apply a perpendicular-to-plane load to the face of the vent frame & in the direction of opening for an opening vent or in the direction of removal for a dummy vent & fixed light. Ensure that the line of force of this load passes as close as possible through the centre of the contact area of the locking point within a radial tolerance of 50mm. apply the load within 5 degrees of the perpendicular to the plane. Where two adjacent loading points are within 100mm, use a single point midway between the original loading points & apply the load as close to the outer edge of the vent frame as practical (fig 7). In multilight windows, prop the mullion / transom to prevent movement adjacent to the point where the perpendicular-to-plane load is applied (fig 10). Note propping is only carried out when loading vent to mullion / transom locking points.		
BS 7950: 1997 – A.6.4 .1.1 Perpendicular-to-Plane Loading for Windows with key unlocking hardware	Impact test rig – load cells & various attachments. (figures 7, 10) Rig Ref: 041	For windows with key unlocking hardware, apply the load of 3kN progressively & without shock over a period of between **10 to 20 seconds**. If component failure occurs during loading then the application period may be increased by **10 seconds**. Apply the load until either: a) it has been held for **8 to 12 seconds**; or b) a deflection of 150mm +5mm of the vent relative to its frame is achieved. If deflection of **150mm** is achieved then apply load of 1kN & maintain until it has been held for a further **8 to 12 seconds** or entry has been gained (see 3.2.1). If the **3kN** or the 1Kn load is held, then remove it without shock over a period not exceeding **20 seconds.**	All loading points applied with 1kN * 3kN for 10 seconds ok and no entry was gained.	Pass

Photograph of Sample 012/2



