

# TEST REPORT

Caslad Agencies cc  
**Mr. Clayton Foster**  
P.O. Box 10057  
The falls  
Benoni  
1501

Our ref : 16ME 050  
Enquiries : K. Malekutu  
Tel : (012) 428 6984  
Report No. : 2536/16ME 050  
Page No. : 1 of 8  
Date : 2017 - 02 - 09

## TESTING TO SANS 1304-2:2009

"Light ladders

Part 2: Portable aluminium ladders, steps and trestles for household use"

### 1 CONCLUSION

The samples submitted complied with the requirements of SANS 1304-2:2009, "Light ladders - Part 2: Portable aluminium ladders, steps and trestles for household use", specification. Refer to clause 3 of this report for detailed results

### 2 DESCRIPTION OF SAMPLE

Sample No.	Quantity	Description
16ME 050	2	A - Frame Ladder

1 Dr Lategan Road, Groenkloof, Private Bag X191, Pretoria, 0001.  
Tel +27 12 428 7911. Fax +27 12 344 1568

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### 3 RESULTS

Clause	Test	Requirements	Results	Remarks
<b>4 General requirements</b>				
<b>4.1</b>	<b>Safe working load and colour coding</b>	The safe working load shall be a minimum of 100 kg and the load-rating label shall be colour coded with signal red (A11).	135 kg, load rating colour coded red	Complied
<b>4.2</b>	<b>Materials</b>			
<b>4.2.1</b>	<b>General</b>	The construction and materials from which the component parts are made shall be in accordance with 4.2.2 to 4.2.5.	The construction and materials from which the component parts were made complied with the requirement of clause 4.2.2 to 4.2.5 of SANS1304-2:2009.	Complied
<b>4.2.2</b>	<b>Guide brackets and fixed and latching hooks</b>	Guide brackets and fixed and latching hooks shall be made from the materials given in either a), b), c) or d), as follows: a) aluminium alloys, as specified in 4.2.5; b) mild steel; c) white heart malleable cast iron conforming to, EN 1562; or d) Plastics (suitable for the intended application) or see Note 2 in 4.2.5.	The guide brackets were made of plastics and fixed and latching hooks were made of mild steel.	Complied
<b>4.2.3</b>	<b>Hinges</b>	Hinges shall be made from the materials given in either a), b), c) or d) as follows: a) aluminium alloys, as specified in 5.5; b) forged steel or steel strip; c) white heart malleable cast iron conforming to EN 1562; or d) plastics (suitable for the intended application) or see Note 2 in 4.2.5	The hinges were made of forged steel	Complied

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4.2.4	<b>Feet of stiles and capping for upper ends of stiles or ends of treads</b>	Feet of stiles and capping for upper ends of stiles or ends of treads shall be made from the materials given in either a), b), c), d) or e) as follows: a) plastics (suitable for the intended application); b) rubber; c) timber; d) steel; or e) aluminium.	The feet of stiles and ends of stiles or ends of treads were made of plastic.	Complied
4.2.5	<b>Other components</b>	Other components shall be made from aluminium alloys as given in a) to f) as follows; a) drawn tube b) extruded sections minimum material thickness of 1,2 mm c) longitudinally welded tube d) castings e) components formed from sheet and strip f) Forgings	There were no other components except to be made of aluminium alloys.	Not applicable
4.3	<b>Tolerances on sizes</b>	The spacing of rungs and treads on an individual ladder shall not vary by more than 2, 0 mm from the nominal spacing selected by the manufacturer from the range specified in clause 5.  A tolerance of $\pm 25$ mm (excluding fittings) shall be permitted on the nominal length of all ladders covered by this standard.	The spacing of rungs and treads on an individual ladder did not vary by more than 2, 0 mm from the nominal spacing  A measurement of 2360 mm (excluding fittings), was measured as the nominal length of the ladders	Complied

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4.4	Marking	The following markings shall be displayed on the ladders and steps: a) duty rating; b) maximum length (closed and extended); c) the name or brand, trademark, model code of the manufacturer; d) angle of inclination of straight and extension ladder; e) conductivity warning; f) maximum standing height warning; g) date of manufacture; h) mass of ladder if it exceeds 25 kg; and i) Instructions indicating the correct use of the ladder.	The following markings were displayed on the ladders and steps: a) 135 kg b) Not applicable c) Caslad d) Not applicable e) sticker on the ladder f) sticker on the ladder g) 13/01/2014 h) the ladder is less than 25 kg i) sticker on the ladder	Complied
5	Specific types of ladders and steps			
5.1	Single-section ladders and extension ladders		A frame ladder has been submitted for testing therefore this clause is not applicable	Not applicable
5.2	A-frame ladders			
5.2.1	Construction			
5.2.1.1	Distance between stiles	The minimum working width between the inner edges of the stiles at the level of the uppermost tread shall be not less than 260 mm, and this dimension shall increase progressively, by at least 20 mm, at the level of each successive lower tread.	320 mm 350 mm 380 mm 410 mm  30 mm increase progressively	Complied
5.2.1.2	Stiles	Stiles shall be of sufficient width to provide secure bearing for the treads. The steps shall be designed so that when fully open the inclination of the front stiles to the horizontal is within the limits of not less than 65° and not more than 75°.	When fully open the inclination of the front stiles to the horizontal is within the limits. The actual value 70°.	Complied

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<b>5.2.1.3</b>	<b>Back</b>	<p>5.2.1.3.1 A back shall be hinged to the top by means of:</p> <p>a) a single hinge extending across the full width of the steps; or</p> <p>b) a pair of hinges of wrought or forged aluminium alloy, steel or malleable cast iron; or</p> <p>c) pin hinges; or</p> <p>d) Plastic moulded top step.</p> <p>5.2.1.3.2 The back shall either be constructed of</p> <p>a) stiles and rails; or</p> <p>b) stiles and rungs in accordance with 5.1.1.4, 5.1.1.5 and 5.2.1.2. Rungs shall be spaced such that the top of the rungs and treads are at the same level when the steps are opened</p>	<p>5.2.1.3.1 d) Plastic moulded top step</p> <p>5.2.1.3.1 a) stiles and rails</p>	Complied
<b>5.2.1.4</b>	<b>Feet</b>	The four feet of the steps shall be effectively on the same plane when the steps are standing in the open position such that when three feet are in contact with a horizontal surface and the tread surface is horizontal the gap below the fourth foot shall not be greater than 5 mm. The feet shall be soled with wood, plastics, rubber, or aluminium. The soling material shall be securely fixed but easily removable for renewal.	Samples were plastic soled	Complied
<b>5.2.1.5</b>	<b>Treads</b>	Treads shall not be less than 50 mm wide from back to front and shall have textured upper surfaces. The steps shall be so designed that when they are in use on a level surface the treads are horizontal $\pm 2^\circ$ .	Treads are 79 mm	Complied
<b>5.2.1.6</b>	<b>Length of stiles</b>	Stiles shall have maximum length of 2,4 m.	Stiles were measured to have maximum length of 2360 mm.	Complied
<b>5.2.1.7</b>	<b>Spacing of treads</b>	Treads shall be uniformly spaced at 245 mm to 310 mm centres, measured along the stiles. The distance from the bottom of the feet to the upper surface of the lowest tread shall be 125 mm to 300 mm.	<p>Treads are uniformly spaced at 269 mm</p> <p>The upper surface of the lowest treads measured to be 204 mm</p>	Complied

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5.2.1.8	Restriction of opening	The degree of opening of the steps shall be limited by means of a locking bar on each side between the front stile and the back so that when fully opened the inclination of the front stiles is that specified in 5.2.1.2, and that of the back not less than 72° and not more than 80°. The locking bar or device shall engage positively in the open position to form a rigid connection between the front and back sections. Folding stay bars shall positively engage in the open position by locking over the centre.	The angle is 73°	Complied
5.2.2	Performance of A-frame ladder			
5.2.2.1	Rigidity	When tested in accordance with K.1, the A-frame ladder shall show no damage or permanent deflection on removal of the load except that a residual spread of up to 8 mm, measured between the ends of the front and rear stiles, is acceptable.	Maximum deflection is (1370 - 1375) = 5 mm	Complied
5.2.2.2	Test for treads	When tested in accordance with K.2, the tread shall support the load. In addition, upon removal of the test load the residual deflection of the tread shall not exceed 1,0 mm.	No permanent residual deflection	Complied
5.2.2.3	Deflection under load	When the front is tested in accordance with annex C, the deflection of the loaded stiles shall not exceed the limit determined by the equation given in 5.1.2.1 (see also figure 1). In addition, in the case of the front assembly, upon removal of the test load there shall be no permanent damage and the residual deflection shall not exceed 1 mm per metre of test span.  $\Delta = L/37,2$ $\Delta = 1900/37,2 = 51$	Deflection – (1270 – 1268 mm) = 2 mm  Deflection – (1270 – 1267 mm) = 3 mm  No permanent residual deflection	Complied
5.2.2.4	Strength	The strength of A-frame ladder shall be as specified in 5.1.2.3.	D = (1270-1269)mm = 1 mm  RD = 1 mm/ 1,900 m = 0,53 mm/m	Complied

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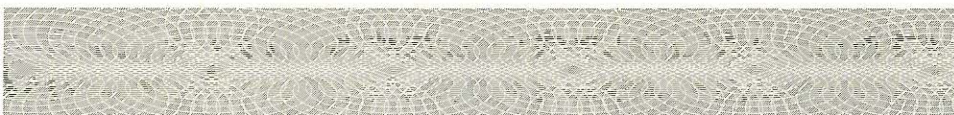
This report relates only to the specific sample(s) tested as identified herein. It does not imply SABS approval of the quality and/or performance of the item(s) in question and the test results do not apply to any similar item that has not been tested. (Refer also to the complete conditions printed on the back of official test reports.)

<b>5.2.2.5</b>	<b>Sideways bending</b>	When tested in accordance with annex F, the deflection measured midway between supports shall be as specified in 5.1.2.5.  $0,0033 \times 1900 \text{ mm} + 18 \text{ mm} = 24,27$	Maximum bending measured is = $(1270 - 1266) = 6 \text{ mm}$	Complied
<b>5.2.2.6</b>	<b>Cantilever bending</b>	When tested in accordance with annex G, the residual deflection of either stile shall not exceed 6 mm.	Maximum deflection is $(1270 - 1267) \text{ mm} = 3 \text{ mm}$	Complied

<b>5.3</b>	<b>Folding platform steps</b>	A frame ladder has been submitted for testing therefore this clause is not applicable	Not applicable
<b>5.4</b>	<b>5.4 A-frame double-sided ladders</b>	A frame ladder has been submitted for testing therefore this clause is not applicable	Not applicable
<b>5.5.2</b>	<b>Performance of folding trestles of aluminium construction</b>	A frame ladder has been submitted for testing therefore this clause is not applicable	Not applicable
<b>5.6</b>	<b>Combination ladders</b>	A frame ladder has been submitted for testing therefore this clause is not applicable	Not applicable

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**6 SAMPLE SUBMITTED**

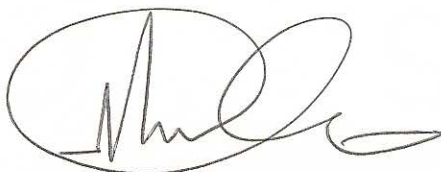
Date sample received : 2016 – 11 – 16  
Test commencement date : 2017 – 02 – 06  
Test completion date : 2017 – 02 – 09

**7 REMARKS**

Tested samples will be disposed of, if not collected within a period of one week for a date of this test report.

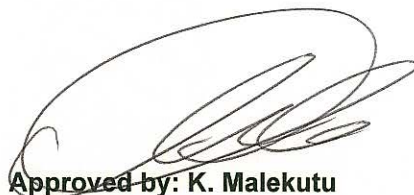
**8 EQUIPMENTS**

Equipment	Serial number	Calibration date	U o M
Digital Vernier	MMV 03	18/05/2016	± 0,023 mm
Measuring tape	S0653	2016/05/18	± 0,60 mm



Tested by: M.W. Msecho

**TEST OFFICER: MECHANICAL TESTING**



Approved by: K. Malekutu

**MANAGER: MECHANICAL TESTING**

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